THE Antrim 1-5-

GARDENER'S DICTIONARY:

Containing the METHODS of
CULTIVATING *and* IMPROVING
THE
Kitchen, Fruit, *and* Flower Garden,
AS ALSO, THE
Phyſick Garden, Wilderneſs, Conſervatory,
AND
VINEYARD;
According to the PRACTICE of the
Moſt *Experienced Gardeners* of the *Preſent Age.*

Interſperſed with
The Hiſtory of the PLANTS, the Characters of each GENUS,
and the Names of all the particular SPECIES, in *Latin* and *Engliſh*; and an
Explanation of all the TERMS uſed in BOTANY and GARDENING.

Together with
Accounts of the Nature and Uſe of *Barometers*, *Thermometers*, and *Hygrometers*,
proper for GARDENERS; And of the Origin, Cauſes, and Nature of METEORS, and the
particular Influences of *Air*, *Earth*, *Fire*, and *Water*, upon *Vegetation*, according to the beſt
NATURAL PHILOSOPHERS.

Adorn'd with COPPER PLATES.

By *PHILIP MILLER*, Gardener to the Worſhipful Company of APOTHECARIES,
at their *Botanick Garden* at *Chelſea*, and F. R. S.

——*Digna manet divini gloria ruris.* VIRG. GEO.

The FIFTH EDITION, Corrected.

DUBLIN:
Printed by S. POWELL,
For R. GUNNE, in *Capel-ſtreet*; G. RISK, G. EWING, and W. SMITH, in *Dame-ſtreet*;
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MDCCXLI.

BRITISH MUSEUM
15 OCT 67

TO

Sir *HANS SLOA*

PRESIDE

AND, TO THE

COUNCIL *and* FELLOWS

OF THE

ROYAL SOCIETY of *LONDON*,

FOR

Improving Natural Knowledge;

THIS

GARDENER's DICTIONARY

Is Humbly DEDICATED;

By Their moſt Obedient Servant,

Philip Miller.

RTISEMENT,

CONCERNING THIS

dition of the *Gardener's Dictionary.*

is a very uncommon Thing for Books of ſuch Bulk as this to go through ſo many Editions in ſo ſhort a Time. This is the fifth Edition within leſs than Ten Years; which is an undoubted Evidence of its great Excellency and Uſefulneſs above any other Book of the Kind.

Since the laſt Dublin *Edition of this Work, which was ſo well received by the Public, that the whole Impreſſion was bought up in a very ſhort Time, the Author has publiſh'd a new Edition of the Firſt Volume, to which he has added a Second Volume, containing ſuch Things as had been omitted in the Firſt, together with ſuch Alterations and Amendments, as, upon a Review of the Whole, the Author thought proper to make, ſome Account of which is to be found in his Prefaces.*

The Editors of the former Dublin *Edition have been ſolicited to give a new Edition of this Work; and, in order to make it as uſeful as poſſible, have been prevailed with to range the two Alphabets in the two Volumes of the* London *Edition under one Alphabet; which they have done with great Care.*

Beſides this obvious Advantage, of not being obliged to have recourſe to more Volumes, or more Alphabets, than one, for any Thing that is ſought for in ſuch a Work as this, the preſent Edition has ſome other conſiderable Advantages above the London *one, as,*

I. *The Author having intended the Second Volume as a Supplement to the Firſt, was obliged in many Places, to make Uſe of Repetitions of what he had ſaid, under the ſame Heads, in the Firſt Volume, which add conſiderably to the Bulk and Expence of the Book. As theſe can be of no manner of Uſe, and would rather create Confuſion in the Work, as it is now diſpoſed, they have been intirely omitted.*

II. *Many Errors have been corrected, and thoſe not merely typographical, but ſuch as made many Paſſages quite unintelligible, particularly in Quotations from other Authors, where ſometimes whole Lines, and intire Sentences, have, by the Careleſſneſs of thoſe who had the Direction of the Preſs, been left out; and in the mathematical Parts, where the utmoſt Care is neceſſary, many groſs Errors have crept in. All theſe have been carefully corrected from the Authors referred to in thoſe Places. And,*

III. *That this uſeful Book may get into the greater Number of Hands, the Editors have publiſh'd it in ſuch a Form as might make it cheap to the Buyer, at the ſame Time that they have conſulted Neatneſs and Elegancy.*

For the Benefit of thoſe who cannot go to the Expence of buying the large Work, the Editors have publiſh'd The GARDENER'S KALENDAR, *directing what Works are neceſſary to be done every Month in the Kitchen, Fruit, and Pleaſure Gardens,* &c. *by the ſame Author; which is ſold for one* Engliſh *Shilling.*

BRITISH MUSEUM 15 OCT 67

THE AUTHOR's PREFACE TO THE THIRD *English* EDITION.

AS the two former Editions of this Work have been ſo generally well receiv'd, not only in *England*, but alſo in ſeveral other Parts of *Europe*: I thought there was no better Way of making my Acknowledgments to the Publick, for their kind Reception of my poor Performance; than by devoting all my leiſure Hours, to improve it as much as I was able, agreeably to what I had promiſed in the Preface to the firſt Edition.

ACCORDINGLY I minuted down all my Obſervations from time to time, as they occurred to me; and alſo noted whatever any of my Friends (who had been ſo good as to remark ſuch Things as had been omitted in the former Editions) had obſerved to me.

THESE I propoſed to inſert in this Edition; but while I was drawing of them up, it was obſerved to me, by many of my Friends, that there were a great Number of Plants, in ſeveral curious Gardens in *England*, which were not to be found mentioned in the *Gardener's Dictionary*; which being the moſt generally uſed Book of the kind, they judged to be a great Fault. Some of theſe Plants were deſignedly omitted in the firſt Edition of the Work, as I was at that Time in ſome Doubt of the Succeſs of the Book, had I ſwell'd it to too great a Bulk, eſpecially as there had been ſo many Pieces of Gardening publiſhed, that the Publick might be eaſily ſuppoſed to be tired of reading any more on that Subject. Others, indeed, were accidentally ſlipped over by Miſtake.

But beſides theſe, a great Number of new Plants have been brought into *England*, from many different Parts of the World, within a few Years paſt; eſpecially from *America*, many of which are ſo very different in their outward Structure, that they afford an agreeable Pleaſure, even to ſuch Perſons who only conſider them as Varieties, without examining their Parts more diſtinctly. But to the Curious in Botany they are much more ſurprizing, ſince many of them are ſo different in their Characters, as not to be ranged under the many Genus's which had been conſtituted by the ſeveral Writers in Botany.

This has occaſioned the many new Names of Plants, which are not to be found in any of the former Books of Botany. Some of theſe new-diſcovered Plants retain the Names by which they were known amongſt the Natives of *America*: but the greateſt Part of them have been named after the moſt eminent Botaniſts in *Europe*. But as theſe Names of the Plants are ſcattered in ſeveral Books of Botany, and many of them, which were lately diſcovered, not yet publiſhed; ſo it was recommended to me, by ſome Gentlemen, to whoſe Judgment I ſhall always pay a great Regard, to add them in this Edition of the *Gardener's Dictionary*.

This I immediately undertook, and had made a conſiderable Progreſs in it before the Book went to the Preſs; but finding the Number of Plants increaſe upon me very much, and that the adding of their Culture would ſwell the Book greatly beyond the former Size, I choſe rather to deſiſt from adding new Matter, and thought it beſt to reprint it with Corrections only, and reſerve the reſt to be publiſhed in a ſeparate Volume; which muſt alſo be much more agreeable to the Purchaſers of the former Editions, for whom I ſhall always have ſo juſt a Regard, (agreeable to my former Promiſe, and my conſtant Intentions) as not to do any thing which may render their Books imperfect.

For which Reaſon, where-ever there are any Corrections of Moment in this Edition, they ſhall be inſerted in the Second Volume, for the ſake of perfecting the former Impreſſions.

The moſt material Difference between the preſent Edition and the former ones, is in the *Kalendar*, which is here printed as it was inlarged in the *Octavo* Edition; but it may be preſumed, that the far greater Number of the Purchaſers of the *Dictionary*, have alſo bought the *Kalendar*, ſo there are few of thoſe Perſons who will conſult the *Folio* for ſuch Things as are comprized in the *Kalendar*, where they are much eaſier to be turned to, than where the ſeveral Months are diſtributed according to the Alphabetical Order obſerved in the *Dictionary*.

As the *Art of Gardening* is univerſally acknowledg'd to be one of the moſt delightful and uſeful Amuſements that can entertain the Mind of Man, I think it needleſs in this place to expatiate in its Praiſe; I ſhall therefore only beg leave to tranſcribe a few Things from the Preface to the former Editions, which are more immediately applicable to the preſent Work.

In the firſt place, I muſt repeat my Acknowledgments to the Learned Dr. *Hales* of *Teddington*, to whoſe large Diſcoveries in the vegetable Kingdom (whereby many miſtaken Notions concerning the Motion of the *Sap* in Plants, *&c.* are ſet in a clear Light) I am greatly indebted for many valuable Things in this Performance.

I must alſo obſerve, that where I have borrowed any thing from the Works of the moſt reputed Philoſophers of the preſent Age, I have generally acknowledged whence I had it. But this has been principally with regard to the Theory relating to Meteors, *&c.* on which Heads, it would have been a Preſumption to offer any thing of my own. For in the Directions laid down for the Management of all the various Plants herein-mentioned, there is little ſaid but from my own Experience, or from that of ſome other particular Friends. And here I can ſay, what few, who have written before me on this Subject, could do, *viz.* That there are very few Plants (out of the great Number herein mentioned) which I have not cultivated; and the Inſtructions given for their Propagation, *&c.* are ſuch as have ſucceeded beſt with me.

As to the Method purſued in the following Work, it is proper to repeat, that I choſe rather to range the Plants under their proper *Latin* Names, which are better aſcertained than the *Engliſh*, and more generally known: But in order to render it eaſy to thoſe who were not acquainted with the *Latin* Names, I have generally inſerted the ſeveral *Engliſh* Names, in their Order of the Alphabet, referring to the *Latin*, under which they are treated; and have alſo added an *Index* of the ſeveral Names by which each Plant is known, in which the Name is referr'd to, where it may be found.

After mentioning the *Genus*, I have added the *Etymology* thereof; and next have ſet down the diſtinguiſhing *Characters* by which each Plant is known, whereby a Perſon, who will attend to the ſeveral Characteriſticks, need not be at a Loſs where to refer a Plant he may not be well acquainted with; in this I have choſen to follow the Methods of *Tournefort* and *Boerhaave*, who have written ſo well on the Subject of Botany, that their Works are now generally read by every one who purſues that Study: Then I have inſerted moſt of the particular *Species* which are cultivated in *England*, either for Uſe or Beauty, with the beſt Methods for propagating and improving them; and the different Soils, Situations, and Degrees of Heat, in which each Plant is found to thrive. To this I have added their ſeveral Growths, with the proper Diſtance which each ſhould be allowed, whereby a Perſon may eaſily judge how to place them to the beſt Advantage in a Garden; and the various Uſes of them, whether for Meat or Medicine, or for the Beauty of their Flowers, *&c.* in adorning the Parts near a Habitation: In all which I have not aſſerted any thing upon Truſt, nor copied from many random Authors, who have written on this ſubject; but ſuch as I have experienced myſelf, or have received from Perſons of undoubted Authority.

I observed in my *Preface* to the former Editions of this Work, that the annual Increaſe of new Plants, Fruits and Flowers would occaſion ſome Alterations in the Book, in the Compaſs of a few Years, which has happen'd accordingly; for as new Things are obtain'd from abroad, ſo the old ones of leſs Value are turn'd out of the Gardens, to make room for them; which, however, has been, ſometimes practiſed with greater Freedom than Diſcretion, many Perſons having, for Novelty ſake, often turn'd out good Fruits to make room for bad ones; therefore I take the Liberty to repeat my humble Advice, that every one would make Trial of ſuch new Fruits before they propagate them in Plenty, and not take their Characters upon Truſt; and eſpecially to be careful how they are impos'd on by the new Names often given to Fruits, by Perſons of ſmall Skill, who, if they happen to meet with a Fruit with which they are not acquainted, preſently impoſe a Name of their own upon it, which has occaſion'd the preſent great Confuſion of that kind in different Places, to the no ſmall Diſcouragement of many curious Perſons in the Study of this Art: In order to remedy which in ſome meaſure, I have taken no ſmall Pains to examine and compare the ſeveral Sorts of Fruit, with the Deſcriptions given in all the beſt Authors, and have added as many of the Names to each Kind, as I could find they were differently known by; to which I have ſubjoin'd a ſhort Deſcription, with their Times of Ripening, and the particular Stocks upon which each Sort

Sort ſucceeds beſt, which I hope, will be of no ſmall Service to the Curious in that way.

Nor is the Confuſion of Names to the ſame ſort of Fruit peculiar to *England*; for in *France* (which has been eſteem'd the greateſt Fruit Country in *Europe*) there is as great a Diſorder, ſcarce any two Provinces calling a Fruit by the ſame Name; ſo that thoſe Trees which are brought from thence, are not more to be depended upon, than ſuch as are procured from the meaneſt Nurſeries in *England*. And this great Perplexity in the Names of Fruit has put ſome curious Gentlemen at *Paris*, upon compoſing a General Treatiſe of Fruit-Trees, in which they deſign to exhibit, on Copper Plates, all the ſeveral Kinds of Fruit, drawn from the Fruits themſelves, and well engraven. And 'tis certain, that if a Work of this Kind were carefully done by ſome judicious Perſons, with the Fruits exhibited in their proper Colours, and conciſe Deſcriptions, with their Culture, added to them, it would be a valuable Performance.

In the Preface to my former Editions, I alſo gave a Caution to my Readers againſt being too forward in propagating Foreign Trees in large Quantities, for the ſake of their Timber, till their Worth be fully known: This I think neceſſary to repeat, becauſe this Practice may, inſtead of being ſerviceable, prove greatly detrimental to the Nation, by neglecting to cultivate our own approved Timber Trees, for the ſake of others of foreign Growth, whoſe Timber is of little Value: An Inſtance of this we have lately had in the *Scarlet Oak*, a great Number of whoſe Acorns have been imported from *America*, and ſold at a large Price, with great Aſſurances of their quick Growth, and of the Value of the Timber, which hath engag'd many curious Perſons to ſow them; but if they cultivate theſe Trees in any Place, except in Gardens, or Plantations near Habitations, for Shade, (for which Purpoſe they are very proper, being of quick Growth) they will find themſelves deceived, the Timber being by no means comparable to our *Engliſh Oak*: However, many other Sorts of Trees there are in *America*, (particularly of the *Fir* Kind) which would be very ornamental to our Plantations, and their Timber very uſeful for many Purpoſes, were they once introduced amongſt us; and this will be found to take up no inconſiderable Part of my Attention in the Second Part.

Permit me to repeat finally, that with regard to Deſigns for *Gardens*, it would be only adding to the Expence of the Book, were I to have Engraved a great Number of Plates, ſince it is impoſſible to lay down Plans which may be ſerviceable to any one particular Deſign, becauſe theſe muſt be varied according to the Situation and Conveniencies of the Place: I have therefore only juſt mentioned the Particulars which ſhould be obſerved in laying out *Gardens*, leaving the other Parts to be ſupplied by thoſe who have the Direction of this Buſineſs.

I take this freſh Opportunity of returning my Thanks to thoſe Gentlemen who had been ſo kind as to favour me with their Remarks on the former Editions, and ſhall always be very thankful for any farther Notices of that Kind.

BRITISH MUSEUM 15 OCT 67

THE AUTHOR'S PREFACE TO THE SECOND VOLUME.

THE Publiſhing of this Second Volume of the *Gardener's Dictionary*, in a few Years after the Firſt, may poſſibly ſeem to require an Apology to the Publick, who have ſo kindly received my former Volume, leſt my omitting ſeveral Things in that, ſhould be interpreted as a Deſign, in order to furniſh Matter for another: But this I muſt declare was very far from my Thoughts; for at the Time when that Volume was compiled, I had room, as I thought, to apprehend, that it might not be ſo well received, after ſo many Books which had appeared on the ſame Subject in the Compaſs of a few Years before. Therefore I purpoſely omitted many Plants, which were not commonly cultivated in Gardens, leſt the Book ſhould ſwell to ſuch a Bulk, as might be an Obſtacle to the Sale, by making it too dear for the Generality of Readers. Some Plants had alſo eſcaped my Notice at that Time, of which I was ſoon informed by ſome of my Friends, who adviſed me to draw up an Account of their Culture, and to publiſh them in a ſmall Piece ſeparately, rather than to add them in any future Edition, that the Purchaſers of the former Volume might not be injured. And this being agreeable to my Reſolution and Promiſe to the Publick, in my firſt Edition, I the more readily complied with it, and accordingly publiſhed them as an Appendix to it, ſome Years ago. But as there has not been a proportionable Demand for them (few Perſons caring to purchaſe ſuch a ſmall Piece, after their Books were bound, as being ſubject to be miſlaid or loſt) ſo it is to be ſuppoſed that they will ſtill be new to a great many Perſons who purchaſed the firſt Volume.

Soon after the Publication of the Appendix, I received ſeveral Letters from Perſons of great Conſideration; in which they took Notice, that as the *Gardener's Dictionary* was now more generally conſulted than any other Book on the Subject, ſo the omitting of any uſeful Plant (however inconſiderable it might appear to ſome Perſons) was thought a Deficiency in the Work. By other Perſons I was informed, that as I had treated of ſeveral Things relating to *Agriculture* in the former Volume, ſo it would be acceptable to the Publick, if I were to communicate ſuch other Obſervations or Experiments as I ſhould have made relating to that Subject. For theſe Reaſons I employed my leiſure Hours in minuting down from my Papers all thoſe Things which might anſwer both Intimations, and be particularly uſeful to ſuch Perſons as were curious in making Improvements in Agriculture.

Theſe Articles, together with the ſeveral new Plants which I found it neceſſary to add, would have too much ſwelled the firſt Volume, had I been diſpoſed to add them to it, as, but for that Reaſon, and the Juſtice due to the Purchaſers of the firſt Edition thereof, I ſhould gladly have done in the laſt Impreſſion of that Piece: And having moreover ſeveral Catalogues and other Matters to add, at the Requeſt of divers worthy and judicious Friends, I thought it beſt, on all theſe Conſiderations, to publiſh all together, as a ſecond Volume, which ſhould complete my general Deſign, and yet in no ſort depreciate the Firſt.

Theſe Catalogues contain, firſt, the Names of the ſeveral Sorts of Trees and Shrubs which will thrive in the open Air in *England*, ranged according to their ſeveral Growths: by the Knowledge of which, ſuch Perſons as are not well acquainted with the Heights to which they uſually riſe, may know how to diſpoſe of them in Gardens, and other Plantations, ſo as to render them moſt ornamental.

The ſeveral hardy Flowers, which will thrive in the open Borders, and do not require Covering in Winter, are alſo, in the next place, ranged in a Catalogue, ſo that any Perſons may eaſily ſelect ſuch of them as are for their Purpoſe.

The next Catalogue is that of ſuch flowering Plants as will thrive under Trees in Wilderneſſes; which I have been often ſolicited to draw up, as what would be of no ſmall Uſe and Pleaſure to many curious Improvers.

To theſe are added Catalogues of tender exotic Plants, which are ranged according to the ſeveral Degrees of Heat they require in Winter; whereby any Perſon may be eaſily inſtructed how to diſpoſe them: for want of knowing which, many have placed ſome of the moſt tender exotic Plants, in common Green-houſes, amongſt Orange-trees and Myrtles, where they have been ſoon deſtroyed.

I have alſo added a Catalogue of ſuch of the Plants as are directed to be uſed in Medicine, as will thrive in the open Air in *England*; ſo that thoſe who are deſirous to cultivate them, may know which will thrive with them to Advantage; and I have diſtinguiſhed thoſe of them which grow wild in *England*, in ſuch a manner that any Perſon may know in what Soils and Situations they may be found; which will alſo be a Direction for their Culture, and is what many Perſons, eſpecially ſuch as live at a Diſtance from *London*, and have frequent Occaſion to make uſe of theſe Plants, have been deſirous of knowing.

In this Volume, I have alſo corrected ſome Miſtakes which had paſſed in the former: But as to the *eſſential Parts* of Gardening, I do not find, upon the moſt diligent Obſervation, that I have any Alterations to make; eſpecially in the Management of Fruit-trees, in which ſome Perſons differ from me at preſent; but from upwards of twenty Years Practice, I am convinced, that more Succeſs is not to be expected, in any other Method of Pruning or Management, than that which is laid down in the former Volume of the *Gardener's Dictionary*: for although, by a particular Method of Pruning, it is poſſible to have more Fruit for two or three Years; yet this will ſo weaken the Trees, that many times they are never to be recovered; and thoſe which are not ſo far reduced, cannot, with the beſt Management, be brought into good Order under ſeveral Years. So that where the future Welfare of Trees is conſulted, a moderate Share of Fruit is much to be preferred; which being better nouriſhed, are alſo always of a larger Size, and generally better flavoured; Conſiderations of much greater Eſtimation to all curious Perſons, than ſuch a Plenty as depreciates the Fruit, and exhauſts the Vigor of the Tree.

In treating on the Culture of the ſeveral Sorts of Plants herein mentioned, I have put down faithfully what is found by Experience to be the beſt Method; and if in this Article it ſhould be thought by any Perſons, that I have been too prolix, or that many of the Plants which I have enumerated, are to be met with but in few Gardens, I hope they will excuſe me, when they conſider that this is intended as a *Syſtem* of *Gardening*, in which it would be thought, by the judicious Part of Mankind, a much greater Fault to have omitted any Plants which are now cultivated in *England*.

The ſeveral Improvements which have of late Years been made in the Culture of exotic Plants, I have here inſerted, particularly of the *Anana*'s, which is now become common in moſt Parts of *England*; ſo that, from the various Experiments which have been made in its Culture, the Fruit of this Plant has been greatly improved, both in the Size and Flavour; whereby it is brought to a Degree of Perfection, very little inferior to that in Countries of its natural Growth. And as there have been ſeveral Methods practiſed in the cultivating theſe Plants, ſo there have alſo been ſeveral Contrivances of Stoves, in order to leſſen the Expence, and to bring the Fruit to a larger Size: for which Reaſon I have inſerted Plans of two Sorts of Stoves, which are found to anſwer theſe Purpoſes beſt; and have given ſuch plain Directions for their Structure, as, it is hoped, cannot be miſtaken, by any Perſon the leaſt converſant with ſuch Sort of Buildings.

I have alſo been pretty full in my Directions for building and managing of Hot-walls, either for accelerating the ripening of Fruit early in Summer, or for bringing ſuch late-ripe Fruit to Perfection; which cannot be obtained in this Country without ſuch artificial Helps: and as this Part of Gardening is at preſent much in Requeſt, ſo I have been the more careful to render the Inſtructions for it as plain as poſſible, that there ſhould not be any Miſtake made by thoſe who are deſirous to put them in Practice.

In the whole of this Work, I have endeavoured to lay down the Inſtructions given, in ſo plain and intelligent a Manner, as may make them eaſily underſtood by Perſons of all Capacities, who will but diligently apply themſelves to the practic Part: for all which Reaſons, I preſume to hope, that this additional Work may be found not altogether unworthy of the Indulgence of thoſe kind Perſons who have ſo favourably received my former Performance.

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An EXPLANATION of the AUTHORS NAMES and WORKS, referr'd to by the Abbreviations in this WORK.

ALDIN. *A Deſcription of ſome rare Plants which were cultivated in the* Farneſian *Gardens at* Rome, *by* Tobias Aldinus. *Printed at* Rome 1625. Fol.

Baniſter. *A Catalogue of Plants obſerved in* Virginia *by* John Baniſter. *Printed in* Ray's *Hiſtory of Plants.*

Bocc. Rar. *Figures and Deſcriptions of rare Plants obſerved by* Paul Boccone *in* Sicily, &c. *Printed at* Oxford 1674. *in* 4to.

Boerh. Ind. *An Index of the Plants growing in the Phyſick-Garden at* Leyden, *by Dr.* Herman Boerhaave. *Printed at* Leyden 1719. *in* 4to.

Breyn. Cent. I. *The firſt Century of Exotick Plants, by Dr.* James Breynius. *Printed* at Dantzick 1678. Fol.

Breyn. Prod. I. & II. *The firſt and ſecond* Prodromus *to the Collection of rare Plants, by Dr.* James Breynius. *The firſt printed* 1680. *the ſecond* 1689. *at* Dantzick, *in* 4to.

Cæſalp. Andrew Cæſalpinus *of Plants. Printed at* Florence 1583. *in 4to.*

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Ferrar. Fl. Cult. *The Culture of Flowers, by* John Baptiſt Ferrarius. *Printed at* Rome 1633. *in* 4to.

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Park. Parad. *The Garden of pleaſant Flowers, by* John Parkinſon. *Printed at* London 1629. *in* Fol.

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Pluk. Alm. Almageſtum Botanicum, *by* Leonard Pluknet. *Printed at* London 1696. *in* Fol.

Pluk. Amal. Amaltheum Botanicum, *by* Leonard Pluknet. *Printed at* London 1703. *in* Fol.

Pluk. Mantiſſ. Mantiſſa Almageſti Botanici, *by* Leonard Pluknet. *Printed at* London 1700. *in* Fol.

Pluk. Phyt. Pluknet's Phytographia, *i. e. a Delineation of Plants. Printed at* London 1691, *and* 1692. *in* Fol.

Plum. N. G. *New Genus's of* American *Plants, by Father* Plumier. *Printed at* Paris 1713. *in* 4to.

Plum. Pl. Am. *A Deſcription of* American *Plants, by Father* Plumier. *Printed at* Paris 1693. *in* Fol.

Raii Hiſt. Ray's *Hiſtory of Plants. Printed at* London 1686, *and* 1704. *in Three Volumes* Fol.

Raii Syn. *A Synopſis of the* Britiſh *Plants, by* John Ray, *augmented by Dr.* Dillenius. *Printed at* London 1724. *in* 8vo.

Rea. Flora, Ceres, and Pomona, *by* John Rea. *Printed at* London 1676. *in* Fol.

Sloan. Cat. *A Catalogue of the Plants growing in the Iſland of* Jamaica, *by Dr.* Hans Sloane. *Printed at* London 1696. *in* 8vo.

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Swert. *A* Florilegium, *or a Collection of Flowers by* Swertius. *Printed at* Frankfort 1612. *in* Fol.

Tab. Ic. *Icons of Plants by* Tabernæ-montanus. *Printed at* Frankfort 1590. *in* Fol.

Tourn. *Inſtitutions of Botany by* Joſeph Pitton Tournefort. *Printed at* Paris 1716. *in* 4to.

T. Cor. *A Corollary to the Inſtitutions of Botany, by* Joſeph Pitton Tournefort. *Printed at* Paris 1703. *in* 4to.

Volk. Flora Norimbergenſis, *i. e.* Flora *of* Nurimberg, *by Dr.* Volkamer. *Printed at* Nurimberg 1700. *in* 4to.

Zan. *A Hiſtory of Plants, by* Jacob Zanoni. *Printed at* Bologna 1675. *in* Fol.

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THE

THE GARDENER'S DICTIONARY.

ABELE Tree. *Vide* Populus.

ABIES; The Firr Tree.

The Name is derived of *Abeo*, becauſe it advances much in Height; and for the ſame Reaſon it is by the *Greeks* called 'Ελάτη of 'ελάω, *promoveo*, *i. e.* to extend in Height; or, as others ſay, of *Abeo*, to go away, becauſe the Bark goes away, or is broken off eaſily.

The *Characters* of this Tree are;

It is ever-green; the Leaves are ſingle, and for the moſt part produced on every Side the Branches; the Male Flowers (or Catkins) are placed at remote Diſtances from the Fruit on the ſame Tree; the Seeds are produced in Cones, which are ſquamoſe.

The *Species* of this Tree, which are at preſent to be found in the *Engliſh* Gardens, are;

1. ABIES, *Taxi folio, fructu ſurſum ſpectante. Tourn.* The Silver *or* Yew-leaved Firr Tree.

2. ABIES, *Tenuiori folio, fructu deorſum inflexo. Tourn.* The Common Firr *or* Pitch Tree; *ſometimes called*, The Norway *or* Spruce Firr.

3. ABIES *Minor, pectinatis foliis, Virginiana, conis parvis ſubrotundis. Pluk. Alm.* The Virginian Firr Tree, with ſmall roundiſh Cones.

4. ABIES, *Taxi folio, fructu longiſſimo, deorſum inflexo.* The Yew-leav'd Firr Tree, with long hanging Cones, *commonly called*, The Long-con'd Corniſh Firr.

5. ABIES, *Piceæ foliis, brevibus, conis minimis. Rand.* The Pitch-leav'd Firr Tree, with ſmall Cones.

6. ABIES, *Piceæ foliis brevioribus, conis parvis, biuncialibus laxis. Rand.* The ſhorteſt Pitch-leav'd Firr Tree, with looſe Cones.

7. ABIES, *Taxi foliis, odora Balſami Gileadenſis. Raii Hiſt. App.* The Balm of Gilead Firr. *Vulgo.*

8. ABIES, *Taxi folio, fructu rotundiore, obtuſo.* The Yew-leav'd Firr Tree, with round Cones, *by ſome called*, The Balm of Gilead Firr.

9. ABIES, *Foliis prælongis, pinum ſimulans. Raii Hiſt.* Firr Tree, with long Leaves, reſembling thoſe of the Pine Tree.

10. ABIES *orientalis, folio brevi et tetragono, fructu minimo, deorſum inflexo. Tourn. Cor.* Eaſtern Firr Tree, with ſhort ſquare Leaves, and ſmall Fruit hanging downward.

11. ABIES *major Sinenſis, pectinatis taxi foliis ſubtus ceſiis, conis grandioribus ſurſum rigentibus, foliorum et ſquamarum apiculis ſpinoſis. Pluk. Amalth.* Great Firr-tree of *China*, with Yew Leaves, large Cones growing upright, and the Points of the Leaves prickly.

12. ABIES *maxima Sinenſis, pectinatis taxi foliis, apiculis non ſpinoſis. Pluk. Amalth.* Greateſt *China* Firr Tree with Yew Leaves, not prickly at their Points.

The firſt and ſecond Sorts of Firrs are very common in moſt Gardens, and Plantations of ever-green Trees; and the ſecond Sort is very common in the Woods of *Norway*, and is the Tree that affords the white Deals.

Theſe Trees were (not many Years ſince) much eſteemed for Ornaments in ever-green Gardens; but the Leaves and lower Branches decaying, and ſoon falling off, ſo as to render the under Part of the Tree bald and unſightly, together with their deſtroying every thing that grows under them, they are not at preſent in ſo much Requeſt.

The third Sort Dr. *Plukenet* mentions to have been formerly growing in the Biſhop of *London*'s Garden at *Fulham*, but hath been ſince deſtroyed, and hath been retrieved again from Seeds ſent from *New-England* by Mr. *Moore*, which were ſown by Mr. *Fairchild* of *Hoxton*, who raiſed ſeveral Plants from them, and finds it hardy enough to reſiſt our ſevereſt Cold in the open Ground.

The fourth Sort was brought, many Years ſince, from *America*, and was planted in *Devonſhire*, where are now large Trees of this Kind, which annually produce ripe Seeds, from whence the Gardens near *London* have been ſupplied. This Tree grows to be very large, and makes a beautiful Figure, the under Part of the Leaves being of a whitiſh, and the upper Part of a glaucous or Sea-green Colour, and are cloſely ſet upon the Branches. This Tree is alſo very hardy.

The fifth and ſixth Sorts were alſo brought from *America*, and planted in *Devonſhire* and *Cornwall*, and are, by the Inhabitants of thoſe Countries, uſed to make Spruce Beer, and are by them called the *Spruce Firrs*; but ſince any of theſe Sorts may be uſed for the ſame Purpoſe, this Appellation doth no more belong to theſe than any other of the Kinds.

Theſe Trees grow much cloſer and thicker than the *Common Firr*; nor are their Branches and Leaves ſo apt to decay and fall off, which renders them more valuable.

The ſeventh and eighth Sorts are promiſcuouſly called, *The Balm of Gilead Firrs*, but they are very diſtinct, according to the Branches which I had ſent me from *Devonſhire* and *Cornwall*. The ſeventh Sort Mr. *Ray* mentions in the Supplement to his *Hiſtory of Plants*, as growing in the Duke of *Beauford*'s Gardens at *Badmington*. It was alſo in the Biſhop of *London*'s Garden at *Fulham*, ſome Years ſince. This Sort produces long Cones, which are ſharp pointed, and ſtand erect upon the Branches, emitting a large Quantity of a reſinous Matter: the Branches grow flat, and the Leaves are very ſhort.

The other Sort produces Cones ſomewhat like thoſe of the Cedar of *Libanus*; the Leaves are of a darker Green, and are produced thicker on every ſide of their Branches, ſo that it is one of the beautifulleſt Trees of all the Firr kind.

The Leaves of theſe two Trees being bruiſed between the Fingers, emit a very ſtrong Balſamick Smell, which hath given Occaſion to ſome to believe that the *Balm of Gilead* was an Exudation from one of theſe Trees, from whence they received their Names; but this is known to be a Miſtake, that curious Balſam being the Production of a Tree very different from this Claſs.

The laſt four Sorts are, at preſent, very rare in *England*; the ninth was formerly growing in the Garden of Mr. *Edward Morgan* in *Weſtminſter*, a Branch of which Tree was given to Mr. *Ray*, by Mr. *Doody*, who was a very curious Botaniſt. The Leaves of this Tree are much longer than thoſe of any other kind of Firr yet known, but it hath not as yet produced any Cones in this Country.

The tenth Sort was diſcovered in the *Levant*, by Dr. *Tournefort*, who ſent the Cones to the Royal Garden at *Paris*. This Kind of Firr is very common in the Mountains of the *Archipelago*, from whence the Cones may be eaſily procured.

The other two Sorts are very common in *China*, from whence I have received Seeds and Branches of both kinds, but the Seeds having been taken out of their Cones before they were brought over, had dried up, and loſt their Germ, ſo that none of them grew; therefore, whoever is deſirous to propagate any of the Coniferous Trees, ſhould have the Cones gathered when ripe (before they open, and let out the Seeds) in which the Seeds will continue freſh a long Time: For if the Seeds are taken out of the Cones, they will not retain their growing Quality, ſo as to be tranſported from one Country to another.

All the Sorts of Firrs are propagated from Seeds, which may be ſown after the manner hereafter directed. The only Difference to be obſerved in their Culture, is, to ſhelter ſuch Sorts as come from a warmer Country, for two or three Winters, while they are young; after which Time all the Sorts of Firrs yet known, will thrive in the open Air in *England*: for there are none of them Natives of very hot Countries, and thoſe which do grow in Countries ten or fifteen Degrees more to the South than *England*, are always obſerved on Hills and Mountains, where they are expoſed to ſharp Froſts in Winter.

Moſt of the Firrs yet known delight in a pretty ſtrong deep Soil; tho' they will grow tolerably well on a light dry Soil for a few Years; but it has been often obſerved, That when the Trees are arrived to the Height of twenty or thirty Feet, on ſuch a Soil, they loſe their Verdure, and their under-Branches begin to decay; after which Time they ſeldom make any farther Progreſs, and many times a whole Plantation will ſuddenly decay. Nor will any of the kinds of Firr thrive in the Smoak of *London*: I don't remember to have ſeen one of theſe Trees of any Magnitude near *London*, tho' there are many of them yet remaining in ſome old Gardens, which have been many Years ſtanding, but are not above twenty Feet high, and in a very declining State.

The common Firr, which is a Native of *Sweden* and *Norway*, always grows in the Plains and low Grounds, where they have a great Depth of ſtrong loamy Soil, in which Places they arrive to a very great Height, tho' they are almoſt buried in Snow for ſeveral Months in Winter, ſo that theſe Trees might be cultivated in the low ſtrong Lands in the North of *England*, and in *Scotland*, where they would greatly improve ſuch Eſtates.

The ſeveral Sorts of Firrs, which are Natives of *America*, do generally grow upon low ſpringy Soils, and upon a light Ground, and ſuch of them which have been propagated in *England*, do thrive exceedingly upon low, light, moiſt Soils; whereas thoſe which have been planted on a drier Soil, have made very little Progreſs, and in very dry Seaſons many of them have quite periſhed, where they were not duly ſupplied with Water. Theſe are all very hardy in reſpect to Cold, ſo that they may be planted into the full Ground, when they are about a Foot high, into the Places where they are deſigned to remain.

The Silver Firr will thrive on a rocky Soil extremely well, provided the Rock be not too dry, in which Caſe they are very ſubject to die in very dry Seaſons, as hath been the Fate of ſome Plantations of theſe Trees a few Years ſince, which were grown to a large Size. The largeſt Trees of this kind which I have ſeen growing, were at *Farley* in *Hampſhire*; theſe were above eighty Feet high, and from ten to eleven Feet in Circumference. They grew in a ſtrong red clayey Soil, and upon Enquiry I found they had been planted near fourſcore Years.

The various Uſes of theſe Trees, either in Medicine, or for mechanical Uſes, are too many to be here enumerated, but whoever hath a mind to ſee theſe Things at large, may turn to *John Bauhin's Hiſtory of Plants*, Vol. I. Page 231. or to *Ray's Hiſtory of Plants*, where they will meet with an ample Account thereof.

Before I proceed to ſay any thing of the Culture of theſe Trees, I ſhall beg leave to add the Sorts of *Pines* to the *Firrs*, which altho' ſeparated to a great Diſtance by the Alphabetical Order here followed, yet have a near Alliance, both in their claſſical Diſtribution, and alſo in their Culture; and are, by the Unſkilful in Botany, frequently confounded together.

PINUS; The Pine Tree.

The *Characters* of this Tree are;

The Leaves are ever-green, longer than thoſe of the Firr, and are produced by Pairs out of each Sheath or Covering.

The *Species* of this Tree, to be found in the *Engliſh* Gardens, are;

1. Pinus *ſativa. C. B. Pin.* 491. The manured Pine.
2. Pinus *ſylveſtris. C. B. Pin.* 491. The Pinaſter, *or* Wild Pine.
3. Pinus *Americana, quinis ex uno folliculo ſetis, longis, tenuibus triquetris ad unum angulum, per totam longitudinem minutiſſimis crenis aſperatis. Pluk. Amalth.* 171. *This is commonly called* Lord Weymouth's Firr, *or* Pine.
4. Pinus *Americana, foliis prælongis ſubinde ternis, conis plurimis confertim naſcentibus. Cat. Plant. Ang.* The Cluſter, *or* Large Bunch'd Pine.
5. Pinus *ſylveſtris, foliis brevibus glaucis, conis parvis albentibus. Raii Syn.* 2. 288. The Scotch Pine, *commonly called* Scotch Firr.
6. Pinus *Americana, paluſtris.* The Swamp Pine. *Vulgo.*

The firſt, ſecond, and fifth Sorts are very common in *England*, but the third and fourth are in very few Gardens. The third was raiſed ſeveral Years ago in the Duke of *Beaufort*'s Gardens at *Badmington*, and is now growing in the Earl of *Pembroke*'s Gardens, where it thrives very well, and is become a large Tree.

In the Year 1724, ſome freſh Seeds of this kind were ſent over from *Carolina*, from which I raiſed ſome Plants in the *Phyſick* Garden, which, altho' but ſmall, ſtand in the open Ground, and reſiſt the Winter's Cold very well. The fourth Sort is now growing in the Biſhop of *London*'s Garden at *Fulham*, and is a very large Tree, producing ripe Cones almoſt every Year; from whence ſeveral young Trees have been raiſed by ſeveral Nurſery Men near *London*. The Leaves of this Tree are commonly three, produced from each Sheath; and the Cones grow in great Cluſters. On a Branch which was taken from the old Tree, I counted 39 Cones in one Bunch.

The ſixth Sort is very proper to continue Plantations of theſe ever-green Trees, when it may ſo happen that a moiſt ſwampy Soil may intervene (as it many times doth) between riſing Grounds, and in which Part we could not carry either the Avenue or other Plantation on with Trees of the ſame Kind, all the other Sorts being, for the moſt part, mountainous Plants; ſo that here is an Advantage which could not be other ways obtained, that ſhould encourage Gentlemen to cultivate as many of the Foreign Trees, as can be by any means naturalized to our Climate, tho' the Uſes of them are not immediately known; for it is certain that Time will diſcover ſomething, either for Uſe or Beauty, in moſt of them.

Beſide theſe, Mr. *Ray*, in his valuable *Hiſtory of Plants*, hath mentioned ſeven or eight other Species; but as there are at preſently ſcarcely any of them in *England*, and if they were brought hither by curious Perſons, their Culture would nearly agree with thoſe above mentioned; the only Difference to be obſerved, is to ſhelter ſuch as come from warmer Climates for two or three Years while they are young, after which Time I am perſuaded moſt of the reſinous Trees will do well with us abroad; therefore I ſhall forbear mentioning any more Sorts, referring the curious Reader to the valuable Book before cited.

Theſe Trees are all raiſed from Seeds taken out of their polyſpermous Cones. The Way to get out the Seeds, is either by expoſing the Cones to a gentle Fire, or by ſoaking them all Night in Water, which will cauſe their ſquamoſe Cells to open, and readily emit their Seeds; but this ought not to be done until you are ready to ſow them, which is beſt perform'd in the Beginning of *March*.

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The Manner of ſowing them (if for large Plantations) is as followeth: After your Ground hath been plow'd to looſen the Earth, and deſtroy the Weeds, (eſpecially if the Ground is ſubject to Heath or Furze) it muſt be plough'd two or three times, and the Roots carefully grubb'd up, the more effectually to deſtroy theſe ſpreading Plants, which would otherwiſe ſoon over-run and ſpoil your young Plantation. This being done, you may with a Spade, level the Earth in ſmall Spots at about every ſix Feet ſquare: In which Spots you may ſow ten or twelve Seeds, covering them about a quarter of an Inch thick with ſome of the ſame Mould broken fine, and the great Stones taken out, (but not ſifted, for Reaſons hereafter mentioned) when this is done, it will be a good Way to lay upon each of theſe Spots ſome Peas Haulm, Furz, or any other light Covering, to prevent the rapacious Birds from deſtroying your young Plants juſt as they peep out of the Ground (they being very fond of the Huſk or Coat of the Seed, which the young Plants bring up on their Heads;) which Covering will alſo prevent the drying Winds and Sun from piercing the Ground and deſtroying your Seed. This covering may remain ſome time after the Plants are come up, provided it is not laid over thick, nor too cloſe, which would thereby draw and weaken the Plants, by preventing the Ingreſs of the Air. When this Haulm or Covering is taken off, it will be neceſſary to draw a little looſe Earth round the Stems of your young Plants, to ſtrengthen them, as alſo to ſtick ſome Furze over them, to prevent the Sun from ſcorching them, which is very hurtful to theſe Plants while young. In each of theſe Spots (if your Seed was good) you may reaſonably expect 6 or 8 Plants to come up, which may remain together until the third Year; but in the mean time it will be a very good Way to preſerve your young Plants, to lay a little Litter, or ſome Mulch upon the Surface, and round the Stems of the Plants, to guard againſt ſevere Froſts in Winter, and extreme Drought in Summer. This being carefully performed, will ſave the Trouble of Watering, and be more ſerviceable to your Plants.

The third Year after ſowing, you may remove ſome of theſe Plants into another Plantation (which Ground ought to be prepared as before directed.) The beſt Seaſon for this Work is towards the latter End of *March*, and Beginning of *April*, the Weather mild, but not when the Eaſterly drying Winds blow, which preſently dry the ſmall Fibres of theſe Plants when out of the Ground. The Diſtance theſe Trees ought to be planted (if for a cloſe Plantation) may be about eight Feet ſquare, which Diſtance will be found ſufficient; for if they be planted at too great a Diſtance, they are ſubject to ſhoot out many lateral Branches, which will retard their upright Growth.

In removing theſe Plants, they ſhould be taken up with as much Earth as poſſible, but Care muſt be had not to hurt the Roots of thoſe Plants left in theſe ſmall Spots, which ſhould be two of the beſt Plants in each, and filling up the Holes made in taking out the Plants, with ſome of the neighbouring Mould, to prevent the Extremity of their Fibres from drying.

When your Plants are ſet in the new Plantation, a Quantity of ſmall Stakes ſhould be provided to faſten the young Trees, that the Wind may not blow them out of the Ground, and beſure cover the Roots with ſhort Litter, as before directed; then give them a gentle Watering to ſettle the Earth to the Roots; and if the Weather ſhould prove very dry, you may repeat this gentle Watering two or three times; but be ſure not to over water, which, I may venture to ſay, hath killed more new-ſet Trees of all Sorts, than the want of Water, or any other Accident whatever; therefore once for all, I would adviſe to have eſpecial Regard that all new-ſet Trees are well mulch'd with ſhort Litter, or Mulch, but to have a great care not to water too much, nor too often, which rots the young Fibres as faſt as they are puſh'd forth, as I have often experienced; and have a great care not to cut any of the Branches or Heads of theſe Trees, which is very hurtful, eſpecially to all thoſe of the reſinous Kind.

The Soil in which the *Scotch* Pine delights, is chalky Hills: And where there have been not above ſix or eight Inches of Mould upon the Surface, I have ſeen the moſt vigorous Trees; as at a Seat belonging to the Hon. Sir *John Guiſe*, near *Great Marlow* in *Buckinghamſhire*, where there are vaſt Numbers of theſe Trees which drop their Seeds, and ſpring up without any Care or Culture. Notwithſtanding theſe Trees chiefly delight in the before-mentioned Soil, yet will they thrive tolerably well in a poor Gravel, (provided it be not too light and ſandy) or in a ſtrong Soil, (if not too wet) but they love a moderate Elevation, and will grow on the North or Eaſt Side, or even upon the Summit of high Hills.

The Common, or Spruce Firr, requires a ſtrong Soil, and is commonly a Native of the low Grounds, and Plains, in *Norway* and *Sweden*, where the Soil is deep, and of a ſtrong loamy Nature; whereas the *Scotch* Pine grows on the Hills and Rocky Parts of thoſe Countries, where there is ſcarce any Earth upon the Surface, their Roots ſtriking into the Fiſſures of the Rocks.

Moſt of the *American Firrs* and *Pines* do delight in a moiſt looſe Earth, in which they will make great Progreſs; but in a very dry Situation they will ſcarcely live, as may be ſeen by many Plantations which have been made with theſe Trees of late.

The *Silver Firr*, and the manured *Pine*, will grow in a drier Situation, but they require a deeper Soil than the *Scotch Pine*, and ſhould not be too much expoſed to the North or Eaſt Winds, which often deſtroy theſe Plants while they are young.

Theſe Trees do not delight in dunged or rich Soils: but obſerve, it is much the better Way to train up any ſort of Plant in a Soil nearly akin to that you intend to plant them in, and not (as is too often the Practice) make a Nurſery upon a good rich Soil, when the Trees there raiſed are deſigned for a poor barren Soil; and this I believe to be the Reaſon why Plantations of Trees procured from rich Nurſeries are often ſeen to make but a poor Progreſs, if they live.

The two Trees left in each Spot, ſhould not continue longer than ſix or ſeven Years together, when you ſhould remove the leaſt thriving Tree, leaving only one of the ſtrongeſt in each Place; in the doing of which, great Care ſhould be taken not to diſturb the Roots of thoſe left. The Seaſon for this Work is before directed. Theſe Trees which you now remove, will be of great Service for planting Viſta's, or Amphitheatres of Ever-greens, or for Clumps in different Parts of Wilderneſſes; in the doing of which, obſerve to plant the *Scotch Pine* and *Pinaſter* on the backward Part of theſe Plantations, theſe being the quickeſt and largeſt growing Trees (in our Country) and are the beſt able to reſiſt ſtrong Winds.

But I ſhall return to give ſome Account of the Way practiſed in raiſing theſe Trees, in ſmaller Nurſeries, for the planting Avenues, or other Lines of Trees, which Method will do very well for the *Cedar*, *Larch*, or moſt other exotick Trees of theſe Kinds (provided they come not from too hot a Country.) You muſt provide yourſelf with ſome ſhallow Caſes, not above ſix or eight Inches deep, and in Length and Breadth in Proportion to the Quantity of Seeds deſigned to be ſown therein; but I would adviſe not to have them too big, which will render them immoveable, and it is upon this Account I chuſe to have them ſowed in Caſes, *viz.* That they may be moved to any Poſition, and, if need be, carried into Shelter, in the Winter. The Bottom of theſe Caſes ſhould be bored full of Holes to let out the ſuperfluous Moiſture. Upon each of theſe Holes, ſhould be laid a Piece of Tile, or an Oyſter Shell, to prevent the Earth from ſtopping the Holes; and if the Bottom of the Caſes were covered with ſmall Stones, or any dry Rubbiſh, it would the better drain off the Moiſture, and keep the Soil looſe about the Roots of the young Plants.

The Soil which I chiefly prefer to fill theſe Caſes with, ſhould be taken from Paſture Ground, not too ſtiff, nor over-light. This ſhould have a Mixture of Lime Rubbiſh, and (if inclining to a Clay) ſhould alſo have a good Quantity of Sea-Sand mix'd therewith, and by no means ſift or ſkreen this Mould, as is moſt commonly practiſed, but only take out the very large Stones, which might obſtruct the Growth of your Plants: for when all the Stones are ſifted out of Mould, the ſmaller Particles of Earth do ſo cloſely join together, as in wet Weather to become one ſolid Maſs, and thereby prevent the Moiſture from draining off, which will rot the Fibres of whatever is planted or ſown therein; and when the Heat of Summer comes on, the Surface of this ſifted Earth will be dried to a hard Cruſt, ſo as to prevent the Moiſture from equally penetrating it.

Your Caſes being filled as before directed, lay the Surface of the Mould even, and thereon ſow your ſeeds pretty thick, covering it with ſome of the ſame Earth broken fine, about a quarter of an Inch thick, laying thereon ſome Furze, as before directed. Theſe Caſes ſhould be placed to have the Morning Sun, but muſt be ſkreened from the Sun in the Heat of the Day, by Trees or Hedges; but by no means place them near a Wall or Pale, which would reflect too great a Heat upon them, and would very much prejudice the Plants while young. Theſe Caſes ſhould be gently watered whenever there may be Occaſion; but remember not to over-water, as was before hinted.

The Seaſon for this Sowing, is the ſame as was directed for larger Plantations. A little after *Michaelmas* it will be convenient to remove ſome of the Earth upon the Surface, which, by this time, will often grow moſſy; but this muſt be done with abundance of Care, leſt the young Plants ſhould thereby be diſturb'd; and then lay thereon a little dry freſh Earth, (well mix'd with Rubbiſh, or Sand, to keep it from retaining the Wet) obſerving not to let any of it remain upon the Tops of your young Plants: This will ſtrengthen them the better to endure the Winter's Cold: And at this Time it will be convenient to remove the Caſes into a warmer Situation, as under ſome South Hedge, and raiſe them from the Ground with Bricks, that they may be kept the drier; and if it proves froſty, it will be neceſſary to lay ſome Furze (or ſuch like light Covering) to guard them from the Injuries thereof; but I would not adviſe the Houſing, unleſs they are of ſuch Sorts as are brought from hotter Countries. They may remain in theſe Caſes till the ſecond Year, at which Time it will be convenient to remove them into Nurſeries, where they may ſtand for four or five Years. The beſt Seaſon for this Work, is towards the latter End of *March*, or the Beginning of *April*. The Manner of performing it being the ſame as was directed for larger Plantations, I ſhall refer to that; only I muſt beg leave to obſerve, that if the Soil you intend to plant them in, be a ſtrong Clay, it will be neceſſary to raiſe a little Hill of lighter Earth, whereon to plant each Tree; and if Trees of this kind are removed at a larger Growth, it will be abſolutely neceſſary to raiſe a Hill for each Tree, (as alſo if the Soil be a Gravel or Chalk) and not, as is too often the Practice, dig a Hole into the Gravel, Chalk, or Clay, and fill it with Mould, and therein plant the Tree. This is next akin to planting them in Ciſterns, which will hold the Water, and rot the Fibres: And if it ſo happens that the Trees live four or five Years, yet, after that, when the Roots are ſpread to the Extremity of theſe Holes, and can get no farther, the Trees grow knotty and ſtunt, and, perhaps, in a few Years, die. The not obſerving this, is the Reaſon we ſee ſo few Plantations in ſo thriving a State as might be wiſh'd for.

Theſe Trees are very often at a Stand, during three or four Years after Planting; but when once they have eſtabliſh'd themſelves in their new Quarters, will ſufficiently recompence for that, by ſhooting near a Yard annually; and ſome of theſe Trees will grow to a prodigious Magnitude; as ſometimes to above an hundred Feet: And it hath been a Matter of Concern, to ſeveral ingenious Perſons, that theſe Trees have not been more propagated, ſince they have ſo many Excellencies to recommend them, *viz.* 1. The Facility of their Propagation. 2. Their delighting to grow in ſuch Places where few other Trees will grow. 3. Their requiring no Culture or Dreſſing, after the firſt five or ſix Years. 4. Their Uniformity and Beauty. 5. Their perpetual Verdure and Sweetneſs: And laſtly, their great Uſefulneſs in many Parts of Life. The Whole of which may be ſeen at large in that Valuable *Hiſtory of Plants* written by Mr. *Ray*, Vol. II. Page 1400, *&c.*

The Seeds of theſe Trees, if preſerved in the Cones, will keep good for many Years. I have been inform'd of a Gentleman who ſow'd ſome Pine Seeds which were taken out of a Cone upwards of twenty Years old, and had ſome Plants from them; but from my own Knowledge, I can aſſure, that Seeds taken from Cones five Years old, grow very well, which is of ſingular Uſe to know; for ſince their Seeds will grow ſo old, we need not deſpair of bringing them from the moſt diſtant Parts of the World, (provided they are brought in the Cones) for otherwiſe they will keep but a ſhort time, which is the Reaſon why the Seeds of the *Silver Firr* are ſo rarely good; for the Cones of this Tree, when ripe, fall to pieces on the firſt Touch, and ſcatter out their Seeds, but the Seeds of all the Kinds of Pines are with ſome Difficulty taken out of the Cones; therefore it would be a very good Method to preſerve the Seeds of Firrs in dry Sand, until the Spring of the Year, which is the proper Seaſon for ſowing them.

ABROTANUM, or Southernwood; ['Αβρήτανον, which ſome derive of ʼΑβροτον, inhuman, becauſe of its being bitterer than Wormwood itſelf: With us it takes its Name from the *Anglo-Saxon* Soðeꞃn-ƿuðu, *Southern-wood.*]

This Plant is better known by its outwand Appearance, than by any diſtinct Characters which can be given of it, agreeing in moſt Parts with the *Wormwood*, from which it is not eaſy to ſeparate it.

Of this Plant there are ſeveral different Sorts, which are Natives of *Europe*; but the firſt two are the moſt common with us in the *Engliſh* Gardens.

1. Abrotanum, *Mas anguſtifolium majus. C. B. Pin.* Common Southernwood.

2. Abrotanum, *Mas anguſtifolium minus. C. B. Pin.* The Leſſer and Narrower-leaved Southernwood.

3. Abrotanum *mas anguſtifolium max. C. B. P.* Greateſt narrow-leav'd Southernwood.

4. Abrotanum *latifolium inodorum. C. B. P.* Broad leav'd Southernwood, without Scent.

5. Abrotanum *mas anguſtifolium incanum. C. B. P.* Hoary narrow-leav'd Southernwood.

6. Abrotanum *campeſtre, cauliculis albicantibus. C. B. P.* Fine leav'd wild Southernwood, with whitiſh Stalks.

7. Abrotanum *campeſtre, cauliculis rubentibus. C. B. P.* Fine leav'd wild Southernwood, with reddiſh Stalks.

8. Abrotanum, *campeſtri ſimile, Tingitanum. H. L.* Tangier Southernwood reſembling the wild Sort.

9. Abrotanum *campeſtre incanum, carlinæ odore. C. B. P.* Hoary Field Southernwood, with a Smell like the Carline Thiſtle.

10. Abrotanum *humile, corymbis majoribus aureis. H. R. Par.* Dwarf Southernwood, with larger Golden Flowers.

11. Abrotanum *Hiſpanicum, abſinthii Pontici folio. Tourn.* Spaniſh Southernwood, with a Pontick Wormwood Leaf.

12. Abrotanum *Hiſpanicum maritimum, folio craſſo ſplendente et rigido. Tourn.* Spaniſh Sea Southernwood, with a thick, ſhining, ſtiff Leaf.

13. Abrotanum *mas ex Surinam, molli hirſutiæ caneſcens. Pluk. Almag.* Hoary Male Southernwood from *Surinam*.

14. Abrotanum *elatius ſubincanum, foliis creberrimis, ſecundum caulem in metæ formam faſtigiatis. Pluk. Almag.* Taller hoary Southernwood, with frequent Leaves gathered into a kind of Pyramid.

15. Abrotanum *orientale annuum, abſinthii minoris folio. Tourn. Cor.* Annual Eaſtern Southernwood, with a Leaf of the leſſer Wormwood.

16. Abrotanum *orientale, chamæmeli folio. Tourn. Cor.* Eaſtern Southernwood, with a Camomile Leaf.

17. Abrotanum *Africanum, foliis argenteis anguſtis, floribus ſpicatis, capitulis copioſo tomento donatis. D. Sherard. Raii Supp. African* Southernwood, with narrow Silver Leaves, ſpiked Flowers, and very woolly Heads.

18. Abrotanum *Africanum, foliis argenteis anguſtis, floribus umbellatis, capitulis tomentoſis. Raii Supp. African* Southernwood, with narrow Silver Leaves, umbellated Flowers, and woolly Heads.

The firſt two Sorts are eaſily increaſed, by planting Cuttings, in a ſhady Place, in any of the Spring or Summer Months. The firſt of theſe Sorts is ſometimes uſed in Phyſick, being accounted good to deſtroy Worms in Children.

It is uſed in Gardens as an Under-ſhrub, and may be kept to a handſome round Head; but it is chiefly raiſed by the Gardeners near *London* to furniſh the Balconies of the Citizens, in the Spring and Summer Months, it enduring the Smoak of the City better than moſt other Shrubs or Plants, and affords (to ſome People) a grateful Smell.

The third, fourth, and fifth Sorts may be propagated by Slips or Cuttings, in the ſame Manner as the firſt and ſecond. Theſe are, at preſent, more rare in the *Engliſh* Gardens, tho' they are equally hardy with the other Sort; and may be planted for Under-ſhrubs, in quarters of low growing Trees, where, by the Diverſity of their Leaves, they will afford an agreeable Variety.

The ſixth and ſeventh Sorts grow commonly in *Germany*, *Italy* and *Narbonne*, by Way-ſides, and in barren Places, and are alſo found in *England* by the Way-ſide from *Newmarket* to *Lyn*, near a Village called *Elden*. Theſe ſeem to be but Varieties from each other, and only differ in the Colour of their Stalks. They are ſeldom preſerved in Gardens, unleſs it be for Variety, by ſome Botaniſts. Whoever is deſirous to have theſe Plants, may eaſily obtain them from the Places of their Growth, either the Plants, or the Seeds, but the Seeds ſhould be ſown ſoon after they are ripe, for they being very light, will loſe their growing Quality, if they are kept long out of the Ground. Theſe Plants ſeldom continue above three or four Years, when tranſplanted into Gardens, ſo that new ones ſhould be raiſed from Seed to ſucceed them.

The eighth Sort is not ſo hardy as any of the former, for being a Native of warm Countries, it requires to be ſheltered from the Froſt in Winter. This may be propagated as the former, but ſhould be kept in Pots, that they may be placed under a Frame in Winter, where they ſhould have as much free Air as poſſible in mild Weather, but in hard Froſts may be covered with Glaſſes and Mats to ſecure them.

The ninth Sort ſhould be treated in the ſame Manner as the ſixth or ſeventh Sorts, and is equally hardy. Theſe will continue much longer on a dry barren Soil, than when they are planted in a rich Garden Earth.

The tenth, eleventh, twelfth and ſixteenth Sorts, may be propagated by Seeds, or from Slips and Cuttings: If from Seeds, they ſhould be ſown on a warm Border of dry Earth early in the Spring, and when the Plants are come up, they muſt be conſtantly kept clear from Weeds, which if ſuffered to grow, would ſoon over-bear and deſtroy the young Plants. When the Plants are about four Inches high, ſome of them may be planted into Pots, that they may be removed under Shelter in the Winter; and the others may be tranſplanted into a warm Border, obſerving to ſhade and water them until they have taken new Root; after which time they will require no farther Care, but to keep them clear from Weeds. Theſe Plants are ſometimes deſtroyed by ſevere Froſt, while they are young, but afterwards they will endure the Cold of our ordinary Winters extremely well; eſpecially if they are planted on a dry lean Soil. If you propagate theſe by Slips or Cuttings, they muſt be treated in the ſame Manner as hath been directed for the common Sort.

The thirteenth and fourteenth Sorts are tenderer than any of the beforemention'd. Theſe may be propagated either by Seeds, or from Slips, as the former; but they muſt be kept in Pots, and require a good Greenhouſe in Winter, where they ſhould be placed to enjoy as much free Air as poſſible in mild Weather.

The fifteenth Sort is an annual Plant, which rarely produces good Seeds in this Country. The ſureſt Method to obtain good Seeds is to raiſe the Plants towards the latter part of Summer, and preſerve the Plants thro' the Winter, which will cauſe them to flower early the following Summer, ſo that they will have time to perfect their Seeds; whereas thoſe which are raiſed in the Spring, will flower late in the Autumn, and the cold Weather will come on before they have time to ripen Seeds.

The ſeventeenth and eighteenth Sorts do rarely produce good Seeds in *Europe*, but they may be eaſily propagated by Cuttings or Slips, which ſhould be planted in Pots filled with light freſh Earth, and plunged into a very moderate hot Bed, obſerving to water and ſhade them until they have taken Root, after which Time they ſhould be inured to bear the open Air by Degrees; then they ſhould be taken out, and placed where they may have the morning Sun, and ſheltered from the ſtrong Winds, in which Situation they ſhould remain till *October*, when they ſhould be removed into the Green-houſe, and placed where they may enjoy as much free Air as poſſible in mild Weather, and muſt be frequently refreſhed with Water; but they muſt be ſecured from Froſt, otherwiſe they will be deſtroyed.

ABROTANUM FŒMINA. Vide *Santolina.*

ABSINTHIUM, Wormwood; [Ἀψίνθιον, *q. d.* Unpleaſant, from ἀ ςερητικȣ͂, Privative, and ψίνθος, which *Heſychius* interprets τέρψις, Delectation.] It is called in *Engliſh* from the *Anglo-Saxon* Ƿẏꞃm-ƿẏꞃꝣ, *i. e.* Wormwort.

The *Character* of this Plant is,

To have an indeterminate Stalk, branching out into many ſmall Shoots, which are furniſh'd with Spikes of naked Flowers hanging downward; the Leaves are hoary, and of a bitter Taſte.

The *Species* are,

1. ABSINTHIUM *vulgare majus. J. B.* Common Wormwood.

2. ABSINTHIUM *Ponticum tenuifolium incanum. C. B. Pin.* True *Roman* Wormwood.

3. ABSINTHIUM *maritimum lavendulæ folio. C. B. Pin.* Sea Wormwood, with Leaves like Lavender.

4. ABSINTHIUM *inſipidum, abſinthio vulgari ſimile. C. B. Pin.* The inſipid Wormwood is ſo like the common, as not eaſily to be diſtinguiſh'd, but by ſmelling and taſting the Herb, unleſs by ſuch as are very ſkilful in Botany; but this Sort is not very commonly met with in *England.*

5. ABSINTHIUM *arboreſcens. Lob. Icon.* 753. Tree Wormwood.

6. ABSINTHIUM *Ponticum montanum. C. B. P.* Common Mountain Wormwood.

7. ABSINTHIUM *Ponticum Creticum, grati odoris. C. B. P.* Candy Pontick Wormwood, of a pleaſant Smell.

8. ABSINTHIUM *Ponticum tenuifolium, caulibus purpuraſcentibus, foliis ſupina parte viridioribus. C. B. P.* Narrow-leav'd Pontick Wormwood, with purpliſh Stalks, and Leaves greener on their under Side.

9. ABSINTHIUM *Ponticum tenuifolium Auſtriacum. C. B. P. Auſtrian* Wormwood.

10. ABSINTHIUM *Ponticum, repens vel ſupinum. C. B. P.* Creeping Pontick Wormwood.

11. ABSINTHIUM *maritimum, foliis ſuperioribus in aliquot lacinias diviſis. C. B. P.* Sea Wormwood, with the upper Leaves divided into ſome Jags.

12. ABSINTHIUM *Seriphium Germanicum. C. B. P.* German Sea Wormwood.

13. ABSINTHIUM *Seriphium Belgicum. C. B. P.* Belgick Sea Wormwood.

14. ABSINTHIUM *maritimum, Seriphio Belgico ſimile, latiore folio, odoris grati. Pluk.* Sea Wormwood, reſembling the Belgick Wormwood, with a broader Leaf, and a pleaſant Smell.

15. ABSINTHIUM *Seriphium Gallicum. C. B. P.* French Sea Wormwood.

16. ABSINTHIUM *Santonicum Gallicum. C. B. P.* French Wormwood.

17. ABSINTHIUM *Seriphium montanum candidum. C. B. P.* White Mountain Wormwood.

18. ABSINTHIUM *Alpinum incanum. C. B. P.* Hoary Wormwood of the *Alps.*

19. ABSINTHIUM *Alpinum, candidum humile. C. B. P.* Dwarf white Wormwood of the *Alps.*

20. ABSINTHIUM *Seriphium Hiſpanicum, flore oblongo. Tourn. Spaniſh* Wormwood, with an oblong Flower.

21. ABSINTHIUM *Halepenſe, grati odoris, coma delicatiore. Pluk.* Wormwood of *Aleppo*, of a pleaſant Smell, with a delicate Spike.

22. ABSINTHIUM *Africanum, arboreſcens, folio vermiculato incano. Oldenl. African* Tree Wormwood, with a hoary vermiculated Leaf.

23. ABSINTHIUM *Africanum ſpicatum, foliis tenuiſſimis & breviſſimis integris. D. Sherard. Raii Supp.* Spiked *African* Wormwood, with narrow ſhort intire Leaves.

24. ABSINTHIUM *maritimum noſtras. D. Preſton. Raii Supp. Scotch* Sea Wormwood.

25. ABSINTHIUM *orientale fruticoſum incanum, amplo folio tenuiſſime diviſo. Tourn. Cor.* Shrubby *Eaſtern* Wormwood, with large hoary Leaves finely divided.

26. ABSINTHIUM *orientale incanum, capillaceo folio, floribus in capitulum congeſtis. Tourn. Cor.* Hoary Eaſtern Wormwood, with a capillaceous Leaf, and Flowers collected into an Head.

27. ABSINTHIUM *orientale incanum tenuifolium, floribus luteis, in capitulum congeſtis & ſurſum ſpectantibus. Tourn. Cor.* Hoary narrow-leav'd Eaſtern Wormwood, with yellow Flowers collected into an Head, and looking upward.

28. ABSINTHIUM *orientale incanum, tanaceti folio, inodorum. Tourn. Cor.* Hoary Eaſtern Wormwood, with a Tanſy Leaf, without Smell.

29. ABSINTHIUM *orientale tenuifolium, argenteum & ſericeum flore magno. Tourn. Cor.* Eaſtern Wormwood, with narrow ſilver colour'd ſilken Leaves.

30. ABSINTHIUM *orientale vulgari ſimile, ſed longe minus amarum. Tourn. Cor.* Eaſtern Wormwood, like the common, but far leſs bitter.

31. ABSINTHIUM *orientale tenuifolium incanum, odore, lavendulæ & inſipidum. Tourn. Cor.* Hoary narrow-leav'd Eaſtern Wormwood, with a Lavender Smell, and inſipid.

32. ABSINTHIUM *orientale tenuifolium incanum, lavendulæ odore, & amarum, flore deorſum ſpectante. Tourn. Cor.* Hoary narrow-leav'd Eaſtern Wormwood, with a Lavender Smell, and bitter, with the Flower hanging down.

The firſt of theſe Sorts is very common in *England*, in the Roads and upon Dunghills; but it is alſo planted in Gardens, for common Uſe: The ſecond, third, and fourth Sorts are only found in curious Gardens of Plants. They are all eaſily raiſed, by planting of Cuttings and Slips, in any of the Summer Months. The Roman and Sea Wormwoods are great Creepers at the Root, and will ſoon ſpread over a large Piece of Ground. The Tree Wormwood riſes to be a Shrub five or ſix Foot high, and is kept in Gardens as a Rarity, and was formerly preſerved in Green-houſes, but hath been found hardy enough to endure our Winters abroad, if planted in Places ſheltered from the Northern Winds: This Shrub makes an agreeable Variety, in ſmall Quarters of Ever-greens or Flowering Shrubs; the hoary Leaves, which continue all the Year freſh, ſtrike the Eye at a great Diſtance, and have a good Effect in diverſifying the Proſpect: This Shrub is eaſily raiſed from Cuttings planted in any of the Summer Months, (under a Hedge or Wall) where they may have only the Morning Sun; and being frequently water'd, will take Root in a Month or ſix Weeks Time, when they may be removed to the Places where they are deſign'd to remain; obſerving in this (as in many other Shrubs and Plants which are Natives of a warmer Climate) to place them in a dry Situation: Wet, eſpecially in Winter, is the moſt deſtructive to all theſe Sorts of Plants.

The twenty-fifth Sort, being a Shrub, muſt be propagated by Cuttings, after the Manner directed for the firſt Sort. This muſt be kept in Pots, that they may be removed into the Green-houſe in Winter, becauſe in very ſevere Froſt it is often deſtroyed, tho' in mild Winters it will live in the open Air, provided it is planted on a dry Soil, and in a warm Situation.

The twenty-ſecond and twenty-third Sorts are Natives of the *Cape of Good Hope*; theſe Sorts may alſo be propagated by planting either Cuttings or Slips in any of the Summer Months, obſerving to water and ſhade them until they have taken Root; then they may be placed abroad amongſt other Exotick Plants, where they may remain till *October*, when they muſt be removed into the Green houſe, and placed with *Myrtles* and other hardy Plants, which require a large ſhare of free Air in mild Weather, and only want Protection from ſevere Froſts. They will require to be frequently watered in mild Weather, and ſhould have a light freſh Soil. The twenty-ſecond Sort will riſe to the Height of ſeven or eight Feet; but the twenty-third Sort is an humble Plant. Theſe ſeldom produce Seeds in *Europe*.

All the other Sorts are low Plants, which may be propagated by their Roots, many of which are apt to creep too much, ſo as to render it difficult to keep them within Compaſs. Theſe do many of them die to the Ground in Autumn, and riſe again the following Spring. The beſt Seaſon for tranſplanting theſe Plants is in *March*, juſt before they begin to ſhoot; they will grow in almoſt any Soil or Situation, but the Eaſtern Kinds ſhould be planted in a warmer Place than the other Sorts. They ſhould be planted in Beds about four Feet broad, with Paths two Feet broad between each Bed, for the more convenient cleaning them from Weeds, and for gathering the Herb for Uſe. The Diſtance which ſhould be allowed to the Plants, ought not to be leſs than eighteen Inches, or two Feet, becauſe as they are great Runners by their Roots, ſo they will ſoon meet and ſpread over the whole Beds. They may remain in theſe Beds three or four Years, and will require no other Culture, but to keep 'em clear from Weeds, and every Spring before they ſhoot, to cut off their dead Stalks, and ſpread a little freſh Earth over the Beds. At which time you ſhould dig up the Paths between the Beds, and cut off the Roots which may have ſpread into them, otherwiſe they will ſoon over-run the Paths.

There are a great Variety of the *Sea Wormwoods*, which grow plentifully on the ſalt Marſhes, in diverſe Parts of *England*, which are indifferently gathered and brought to the Markets, and ſold for the *Roman Wormwood*, from which they differ greatly, in the Colour of their Leaves, as alſo in their Taſte and Smell; but by many Perſons the *Sea Wormwoods* are preferred to the true *Roman Wormwood*, as having a ſtronger and more grateful Scent; tho' the *Roman Wormwood* is thought to be leſs nauſeous to the Stomach. However, as that is now generally diſuſed, it would be to little Purpoſe to recommend it, ſince it would be difficult to alter a Practice which has been ſo long continued.

ABUTILON, [the Name is *Arabick*] Yellow Mallow.

The *Characters* of this Plant are;

It hath the whole Appearance of the Mallow, in both Leaves and Flowers; the Flower hath a ſingle Cup; the Seeds, which are ſhaped like a Kidney, are each of them lodged in a ſeparate Cell.

There are ſeveral *Species* of this Plant known in *Europe*; as,

1. **Abutilon.** *Dod.* The common Yellow Mallow.

2. **Abutilon** *Indicum. J. B.* The *Indian* Yellow Mallow.

3. **Abutilon** *Carolinianum reptans alceæ foliis gilvo flore. Act. Phil.* The *Carolina* Abutilon, with Leaves like the Vervain Mallow.

4. **Abutilon** *Americanum ampliſſimo folio caule villoſo. Plum.* The large-leav'd *American* Abutilon, with woolly Stalks.

5. **Abutilon** *Americanum, fructu ſubrotundo, pendulo, è capſulis veſicariis cripſis conflato. Rand.* The *American* Abutilon, with roundiſh pendulous Fruit, whoſe Seed-Veſſel is like a ſwell'd Bladder.

6. **Abutilon** *Althæoides, flore carneo, fructu globoſo. Hort. Elth.* p. 1. Abutilon with the Appearance of *Althæa*, having a fleſh-colour'd Flower and a globular Fruit.

7. **Abutilon** *Periplocæ acutioris folio, fructu ſtellato. Hort. Elth.* p. 4. Abutilon with a ſharp pointed Periploca Leaf, and a ſtarry Fruit.

8. **Abutilon** *Americanum, folio haſtato, flore amplo purpuro-cæruleo, pediculis longis inſidentibus. Houſt. American* Abutilon, with a Spear-pointed Leaf, and large Purple Flowers with long Footſtalks.

9. **Abutilon** *Americanum, flore albido, fructu e capſulis veſicariis planis conflato, pediculo geniculato. Martyn. Cent.* 1. pl. 33. *American* Abutilon with a whitiſh Flower, a ſmooth ſwelling Seed Veſſel, and a jointed Stalk.

10. **Abutilon** *Americanum, ribeſii foliis, flore carneo, fructu pentagono aſpero. Houſt. American* Abutilon with Currant Leaves, a Fleſh-colour'd Flower, and a rough five-corner'd Fruit.

11. **Abutilon** *Americanum fruteſcens, folio amplo cordato, ſubtus lanuginoſo, floribus amplis luteis. Houſt.* Shrubby *American* Abutilon, with a large heart-ſhaped Leaf, woolly on the under Side, and large yellow Flowers.

12. **Abutilon** *fruticoſum aquaticum, folio cordato ſcabro, flore pallide luteo. Houſt.* Shrubby Aquatick Abutilon, with a rough Heart-ſhaped Leaf, and a pale yellow Flower.

13. **Abutilon** *Americanum, populi folio, leviter ſerrato. Houſt. American* Abutilon, with a Poplar Leaf, ſlightly ſawed on their Edges.

14. **Abutilon** *Americanum fruticoſum, foliis cordatis, floribus parvis purpuraſcentibus. Houſt.* Shrubby *American* Abutilon, with Heart-ſhap'd Leaves, and ſmall purpliſh Flowers.

15. **Abutilon** *Americanum viſcoſum, althææ folio mucronato, flore parvo luteo. Houſt. American* viſcous Abutilon, with pointed Marſh-mallow Leaves, and a ſmall yellow Flower.

16. **Abutilon** *fruticoſum, foliis ſubrotundis ſerratis, floribus albis pentapetalis, ad alas foliorum conglomeratis. Sloan. Cat.* Shrubby *American* Abutilon, with roundiſh ſerrated Leaves, and white Flowers growing in Cluſters from the Wings of the Leaves.

Theſe Plants are moſt of them annual, and require to be raiſed from Seeds every Spring; the firſt and third Sorts may be ſown in the full Ground in *March*, in a light Soil, and an open Expoſure, where they will come up and thrive very well, and perfect their Seeds in *September*. The firſt Sort grows to the Height of three or four Feet, but the third Sort ſpreads on the Ground, ſo ſhould be allow'd Room. Theſe Plants do not bear tranſplanting well, ſo ſhould be ſown where they are to remain; and where they are too cloſe, they ſhould be thinn'd to give them Room to grow. Theſe require no other Culture but to keep them clear from Weeds, which would over-run and deſtroy them.

The ſecond, fourth, fifth, ſeventh, eighth, ninth, and tenth Sorts are alſo annual; but coming from hot Countries, they require to be raiſed on a Hot-bed in the Spring, and muſt be afterwards tranſplanted into Pots, and plunged on a freſh Hot-bed, in order to bring them forward, otherwiſe they will not perfect their Seeds in this Country.

The ſixth Sort grows woody, and will riſe to the Height of eight or ten Feet, the Leaves are very hoary, and the whole Shrub has the Appearance of the *Althæa Frutex*. This Plant may be propagated by ſowing of the Seeds in the Spring, on a moderate Hot-bed, and when the Plants are come up two or three Inches high, they ſhould be tranſplanted each into a ſmall Pot filled with light Earth, and plunged into the Hot-bed, obſerving to water and ſhade them until they have taken new Root, and as the Weather becomes warm, they ſhould be enured to bear the open Air. In Summer theſe Plants may be expoſed to the open Air, in a warm Situation; but in Winter, they muſt be placed in a warm Green-houſe, and will require to be frequently water'd: With this Management the Plants will flower and produce ripe Seeds every Year.

The eleventh, twelfth, thirteenth, and fourteenth Sorts were diſcovered by my late learned Friend Dr. *William Houſtoun*, in the *Spaniſh Weſt-Indies*, from whence he ſent the Seeds, and fair Samples of all the Kinds to *England*. Theſe may all be propagated by Seeds, which muſt be ſown on a Hot-bed early in the *Spring*, and when the Plants are come up about two Inches high, they ſhould be tranſplanted into a freſh Hot-bed, in order to bring them forward, obſerving to water and ſhade them until they have taken Root, after which time they ſhould be conſtantly ſupplied with Water three or four times a Week; and in hot Weather the Glaſſes ſhould be raiſed to admit freſh Air to the Plants, which will greatly ſtrengthen them. When the Plants are grown pretty large, they ſhould be taken up carefully, to preſerve the Earth to their Roots, and each planted into a ſeparate Pot, filled with light rich Earth, and then the Pots ſhould be plunged into a moderate Hot-bed of Tanner's Bark, obſerving to water and ſhade them until they have taken new Root; after which time they ſhould be managed as before. When the Plants are grown too tall to remain under the Glaſſes of the Hot-bed, they ſhould be removed into the Bark-Stove, where they muſt remain all the following *Winter*; but they need not be kept in a very great Heat, a moderate Warmth being much more agreeable to them. The ſecond Year moſt of theſe Plants will flower, provided they are continued in the Stove; for if they are expoſed to the open Air in the *Summer* Seaſon, they will not make any Progreſs, and in a cold *Summer* will be deſtroyed: Therefore it is by far the better Method to keep them conſtantly in the Bark-Stove, and to let them have a large Share of free Air in warm Weather. With this Management moſt of the Sorts will produce Flowers and Seeds in *England*, and may be continued for ſeveral Years.

ACACIA, *Egyptian* Thorn, or Binding Bean Tree. [Ἀκακία of ἀκάζω, Gr. to ſharpen.]

The *Characters* of this Tree are;

It hath ramoſe or branching Leaves; the Flowers adhere cloſely, and form a kind of Sphere or Globe, the Siliqua or Pods are hard and thick, incloſing ſeveral Seeds, which are ſeparated by tranſverſe Diaphragms from each other, and are cloſely ſurrounded with a ſweetiſh pulpy Subſtance.

There is a great Variety of theſe Trees cultivated in the Gardens of *England* and *Holland*, which have been brought from *Africa* and *America*; and are ſome of them hardy enough to endure our Winters abroad (eſpecially ſuch as are Natives of North *America*); others are very tender, and are only to be kept in the warmeſt Stoves.

The *Species* of this Tree are;

1. ACACIA *Americana abruæ foliis triacanthos, ſive ad axillas foliorum ſpina triplici donata, Pluk. Mantiſ.* 1. The American *Acacia* with triple Thorns; or the large-thorn'd *Acacia, commonly called*, The Locuſt Tree in the *Weſt-Indies*.

2. ACACIA *Americana paluſtris abruæ foliis, ſpinis rarioribus.* Water *Acacia* from *Carolina*, with very few Spines.

3. ACACIA *vera. J. B.* The true Egyptian *Acacia*.

4. ACACIA *Indica, foliis ſcorpioides leguminoſæ, ſiliquis fuſcis teretibus reſinoſis. H. L.* The Indian *Acacia*, with taper reſinous Pods.

5. ACACIA *ſimilis Mexiocanæ, ſpinis cornu ſimilibus. Breyn.* The great horn'd *Acacia. Vulgo.*

6. ACACIA *quodammodo accedens, ſive Ceratia & Acacia media Jamaicenſis ſpinoſa, bigeminatis foliis, floſculis flamineis, atronitente, fructu ſiliquis intortis. Pluk. Phyt. Acacia* with branching Leaves and twiſted Pods.

7. ACACIA *arborea, major, ſpinoſa, pinnis quatuor majoribus, ſubrotundis, ſiliquis varie intortis. Sloan. Cat. Plant. Jam.* Large four-leav'd *Acacia*, with twiſted Pods.

8. ACACIA *folio lentiſci, ſempervirens, ſpinis vidua. Hort. Amſt.* Ever-green *Acacia*, without Thorns.

9. ACACIA *non ſpinoſa, flore albo, ſtaminibus longis; foliorum pinnis latiuſculis, glabris & auritis. Houſt. Acacia* without Thorns, having white Flowers, with long Filaments and and broad ſmooth Leaves.

10. ACACIA *humilis, non ſpinoſa, foliis ſubtus incanis, florum ſtaminibus longis rubentibus. Houſt.* Dwarf *Acacia* without Thorns, having red Flowers with long Filaments.

11. ACACIA *Americana, non ſpinoſa, flore purpureo, ſtaminibus longiſſimis, ſiliquis planis villoſis, pinnis foliorum tenuiſſimis. Houſt.* American *Acacia* without Thorns, having Purple Flowers, with very long Filaments, flat hairy Pods, and very narrow Leaves.

12. ACACIA *ſpinoſa, foliorum pinnis tenuiſſimis glabris, floribus globoſis luteis, ſpinis longiſſimis. Houſt.* Prickly *Acacia* with very narrow ſmooth Leaves, round yellow Flowers, and very long Thorns.

13. ACACIA *non ſpinoſa, flore albo, foliorum pinnis latiuſculis glabris, ſiliquis longis planis. Houſt.* White flowering *Acacia* without Thorns, having broad ſmooth Leaves, and long flat Pods.

14. ACACIA *non ſpinoſa, tenuifolia, villoſa, floribus globoſis albis, ſiliquis brevibus hirſutis. Houſt.* Narrow-leav'd hairy *Acacia* without Thorns, having round white Flowers, and ſhort hairy Pods.

15. ACACIA *non ſpinoſa, latiore folio villoſo, floribus globoſis albis, ſiliquis brevibus hirſutis. Houſt.* Broad-leav'd hairy *Acacia*, having round white Flowers, and ſhort hairy Pods.

16. ACACIA *non ſpinoſa, floribus globoſis albis, foliorum pinnis tenuiſſimis glabris; ſiliquis ad ſingula grana tumidis. Houſt. Acacia* without Thorns, having round white Flowers, with very narrow ſmooth Leaves, and jointed Pods.

17. ACACIA *Americana fruteſcens, non aculeata, flore purpureo. Plum.* Shrubby American *Acacia*, without Thorns, and a purple Flower.

18. ACACIA *Americana, flore luteo globoſo, ſpinis exiguis, foliorumque pinnis tenuiſſimis pubeſcentibus. Houſt.* American *Acacia*, with a round yellow Flower, ſmall Thorns with very narrow Leaves, which are hairy.

19. ACACIA *ſpinoſa tenuifolia, floribus ſpicatis luteis, ſiliquis longiſſimis compreſſis flavis. Houſt.* Narrow-leav'd prickly *Acacia*, with ſpiked yellow Flowers, and long compreſſed yellow Pods.

20. ACACIA *ſpinoſa tenuifolia, ſpinis ſingulis cornu bovinum per longitudinem fiſſum referentibus. Houſt.* Prickly narrow-leav'd *Acacia*, with ſingle Thorns reſembling an Ox's Horn, ſplit longitudinally.

21. ACACIA *Americana, faginis foliis, tetraphylla, floſculis ſtaminoſis in ſpicam diſpoſitis. Pluk. Amalth.* Broad four-leav'd *Acacia*, with ſtamineous Flowers, diſpoſed in a Spike.

22. ACACIA *humilis latifolia non ſpinoſa, ſtaminibus florum longiſſimis rubentibus. Houſt.* Dwarf broad-leav'd *Acacia* without Thorns, having long red ſtamineous Flowers.

23. ACACIA *Americana non ſpinoſa latifolia, ſiliquis marginatis, & ad ſingula grana tumidis. Houſt.* Broad-leav'd American *Acacia*, with bordered Pods, which ſwell where each Seed is lodged.

24. ACACIA *ſpinoſa tenuifolia, ſiliquis latis, ſpinis minimis recurvis ſolitariis. Houſt.* Narrow-leav'd thorny *Acacia* with broad Pods, and ſmall crooked Spines, which grow ſingly.

25. ACACIA *non ſpinoſa, ſiliquis latis compreſſis, pinnis foliorum latiuſculis glabris. Acacia* without Thorns, with broad compreſſed Pods, and broad ſmooth Leaves.

26. ACACIA *non ſpinoſa tetraphylla latifolia, ſtaminibus florum longiſſimis rubentibus.* Four-leav'd *Acacia* without Thorns, with broad Leaves, and long ſtamineous red Flowers.

27. ACACIA *non ſpinoſa tenuifolia, ſiliquis varie intortis. Houſt.* Narrow-leav'd *Acacia* without Thorns, and variouſly contorted Pods.

28. ACACIA *Americana tetraphylla & ſpinoſa, floribus globoſis, ſtaminibus florum longis rubentibus.* Four-leav'd prickly *Acacia* with round Flowers having long red Stamina.

The firſt of theſe *Acacia's* Dr. *Plukenet* mentions to have been raiſed in the Garden of the Biſhop of *London* at *Fulham*, about the Year 1698. ſince which Time it hath been raiſed in great Plenty in ſeveral Gardens near *London*, where there are ſeveral very large Trees. This Sort hath produced Flowers in the Phyſick Garden at *Chelſea*, which are very minute, and of an Herbaceous Colour; and in the Year 1729. it produced ripe Fruit in the Gardens of the Biſhop of *London* at *Fulham*. The Seeds of this Tree are frequently brought over from *Virginia* and *Carolina*, by the Name of *Locuſt*, which, I ſuppoſe, is a general Name for moſt Trees which produce Pods, in which are contained a ſweetiſh Pulp ſurrounding the Seeds.

The ſecond Sort is nearly allied to the firſt, but hath very few Thorns; the Shoots are greener, and the Tree is of quicker Growth. The Seeds of this Tree were ſent from *Carolina*, *Anno* 1724. by Mr. *Cateſby*, by the Name of *Water Acacia*, as being an Inhabitant of wet Soils. The Flowers of this Tree have not yet appear'd in *England*, ſo that I can give no Account how this differs in that Particular from the firſt.

The third Sort is the Tree from whence the true *Succus Acaciæ* is taken; which, altho' mention'd as a Native of *Egypt*, yet is alſo found in divers Parts of *America*, from whence the Seeds of this Tree have been ſent into *England*, which have been raiſed in ſeveral Gardens near *London*.

The fourth Sort is the moſt common Kind in *Jamaica*, *Barbadoes*, and the other warm Parts of *America*; and hath, for the Sweetneſs of its Flowers, been diſperſed thro' moſt Parts of *Europe*; which, altho' a Native of the warmer Parts of the *Indies*, yet hath been made familiar to the *Italian Gardens*, and is cultivated in great Plenty in *Portugal* and *Spain*.

The fifth Sort is, at preſent, very rare in *England*, and only to be found in ſome curious Gardens. This Tree produces its Spines by Pairs, which are extreme large and crooked, and of a whitiſh Colour; but I don't remember ever to have ſeen this Flower.

The ſixth Sort was brought from the *Bahama Iſlands* by Mr. *Cateſby*, *Anno* 1726. The Seeds of this Plant (which are flat, and one half, of a beautiful red Colour, the other half a deep black) grow in long twiſted Pods; which, when the Seeds are ripe, open on one Side, and let the Seeds out; which hanging by a ſmall Thread for ſome Time out of the Pods, make a very agreeable Proſpect. The Leaves of this Tree branch out and divide into many Ramifications; the Lobes are roundiſh, and placed in a very regular Order: The Flowers have not as yet appear'd in *England*, but from a Painting done from the Plant in the Country, they ſeem to be very beautiful.

The ſeventh Sort was brought from *Jamaica*, and is growing in the *Phyſick Garden* at *Chelſea*: This hath four large Lobes to each Leaf; the Spines are ſhort, ſtiff, and crooked, and the Seeds grow in twiſted Pods. This Plant is well deſcribed in Sir *Hans Sloane*'s *Natural Hiſtory of Jamaica*.

The eighth Sort was brought firſt into *England* from *Holland*, and is probably a Native of *Africa*. This Plant is an Ever-green, and without Spines, which is peculiar to this Sort alone. The Flowers of this Tree I have never yet ſeen.

The Sorts from the ninth to the ſixteenth are tender, and muſt be placed in Stoves in the Winter, and in Summer muſt be but a ſhort time expoſed to the open Air, and muſt have a warm Situation.

Theſe Trees are all propagated by ſowing their Seeds on a Hot-bed in the Spring of the Year, which will in a ſhort time appear above Ground, when you ſhould prepare another freſh Hot-bed, which if intended for ſuch Sorts as are very tender, ſhould be pretty warm; but if for ſuch as are brought from the Northern Parts of *America*, ſhould be of a very moderate Heat; then you ſhould be provided with a Quantity of ſmall Half-penny Pots, which ſhould be fill'd with freſh light ſandy Earth; theſe ſhould be plung'd into the Hot-bed, and as ſoon as the Earth in the Pots is warm, which will be in about twenty four Hours, you ſhould take up the young Plants carefully out of the firſt Hot-bed, planting a ſingle one in the Middle of each of theſe Pots, giving them a gentle Watering to ſettle the Earth to their Roots, and ſcreening them with Mats over the Glaſſes, from the Heat of the Sun, until they have taken Root; after which time you muſt give them Air, by raiſing the Glaſſes, in proportion to the Heat of the Weather, or to the Conſtitution of the Plants.

The firſt and ſecond Sort being very hardy, may have a greater Proportion of Air, and by *Midſummer* ſhould have the Glaſſes intirely taken off, that they may be hardened to endure the open Air by degrees: Theſe, the firſt and ſecond Winter, ſhould be ſhelter'd in a common Hot-bed Frame, until they are grown woody; after which Time (in the Spring of the Year) they may be turn'd out of the Pots into the open Ground, where they are intended to remain; which ſhould be in Wilderneſs Quarters; or Clumps of Trees, where they may be ſhelter'd from the Fury of violent Winds, otherwiſe they will be very ſubject to be ſplit thereby.

When theſe Trees have ariſen to the Height of 8 or 10 Feet, they will then make very ſtrong and vigorous Shoots; which ſhould be annually ſhorten'd, that the Heads of the Trees may be cloſer, and their Branches by this means will be much leſs liable to break with Winds, than when they are permitted to remain at full Length, and the Trees will be much the handſomer.

Theſe Plants delight in a looſe Soil, rather moiſt than dry, in which they will ſhoot very vigorouſly.

The fourth, fifth, and eighth Sorts are tenderer, and ſhould be kept in the Hot-beds till *July*, when they may be expoſed to the Air by degrees, tho' the Glaſſes ſhould not be quite removed from them the firſt Year: Theſe muſt be ſet in a Stove the firſt and ſecond Winters, while young, as being then pretty tender; but when they are grown woody, will endure in a good Green-houſe very well, and may be expoſed in Summer-time, with Oranges, Myrtles, *&c.* Theſe, if kept in a Green-houſe, will require but little Water in Winter, eſpecially thoſe which ſhed their Leaves, as being at that Seaſon incapable of diſcharging a Redundancy of Moiſture; their Leaves, which were the greateſt Inſtruments in throwing off ſuperfluous Moiſture by Perſpiration, being gone, the whole Tree ſeems to remain for a certain Time in a State of Reſt.

The third, ſixth, and ſeventh Sorts are very tender, (eſpecially while young) and therefore ſhould have a Hot-bed of *Tanners Bark*; and as they increaſe in Bulk, ſhould be ſhifted into bigger Pots; the Earth for theſe ſhould be a little lighter, and more inclined to a Sand than for the other Sorts, but never give them too big Pots, which is full as bad to theſe as to *Orange Trees*, neither give them too much Water, eſpecially in Winter: The third Sort being the hardieſt of the three, will, when grown to be woody, ſtand in a common Stove amongſt *Guava's*, *Viburnums*, &c. which ſhould be kept to the Point of temperate Heat in Winter; and in the Summer-time, in warm Weather, may enjoy the free open Air: But the ſixth and ſeventh Sorts muſt have a Bark Stove in Winter, nor ſhould they be expoſed to the open Air in Summer, at leaſt for four or five Years, until they are grown very woody, for they are very tender, and with great Difficulty preſerved in this Climate: The Stove in which theſe ſhould be placed in Winter, muſt be kept up to about ten Degrees of Heat above the temperate Point, as mark'd on Mr. *Fowler's Botanical Thermometers*: Theſe ſhould have very little Water in Winter, but in the Summer-time will require frequent Refreſhings, tho' at that Seaſon it ſhould not be given them in great Quantities at one time. The ſixth Sort is an Ever-green, but the ſeventh ſheds its Leaves juſt before the new ones come on; ſo that it is naked of Leaves about a Month or ſix Weeks in the Spring of the Year; which hath occaſion'd ſome People to throw them away as dead, when, if they had let them remain, they would have come out freſh again. This I thought proper to mention, in order to caution People not to be too haſty in throwing out Trees for dead, but preſerve them thro' the ſucceeding Summer, to ſee if there is any Life left in them; for I have known ſeveral Plants, which, after having been given over by unſkilful Perſons for dead, have, the *July* following, ſhot out vigorouſly again; and others which have been deſtroyed to the Surface of the Earth, have riſen again from the Root.

The firſt and ſixth Sorts are figured in Dr. *Plukenet's Phytographia*. The third Sort is figured in moſt of the old Botanick Writers, as *John Bauhin*, *Dodonæus*, *Parkinſon*, &c. The Pods of this Kind are jointed and compreſſed into a ſort of Iſthmus between every Seed. The fourth Sort is extremely well figured, and deſcribed in the *Hortus Farneſianus* by *Aldinus*. The fifth Sort is very well figured, and deſcribed in the *Hortus Amſtelodamenſis*. The ſeventh Sort is figured in *Piſo's* Hiſtory of *Braſil*; but the ſecond Sort is new, and not figured in any Botanick Books.

The laſt twenty Sorts of *Acacia* were collected by the late Dr. *Houſtoun*, in *Jamaica*, at *Carthagena*, and *Le Vera Cruz*, who ſent the Seeds and Specimens to *England*, where many of the Kinds are now growing. Theſe Plants are propagated by Seeds, which muſt be procured from the Countries where they naturally grow; for they do not produce Seeds in *Europe*. In the bringing over of the Seeds, great care ſhould be taken to preſerve them from Inſects, which do generally eat into the Pods, and alſo eat up the Subſtance of the Seeds, leaving only the outer Covering: Theſe Inſects are very ſmall, ſo as often to eſcape the Sight; but if you find any Pods to have Holes in them, you may then conclude there are Inſects amongſt them, ſo that the ſooner you take out the Seeds, the more ſurely you will preſerve them; but you ſhould put them into freſh Papers, and throw away thoſe in which the Pods had been, leſt ſome of the Inſects ſhould be left therein.

The Seeds of all theſe Sorts ſhould be ſown on a Hot-bed early in the *Spring*; and when the Plants are come up, they ſhould be tranſplanted into ſmall Pots filled with light freſh Earth, and plunged into a Hot-bed of Tanners Bark, obſerving to water and ſhade them until they have taken new Root, after which time, they muſt be treated in the Manner directed for the *Egyptian Acacia*. Theſe Plants muſt be conſtantly kept in the Bark-Stove, otherwiſe they will make very little Progreſs, eſpecially while they are young. In the *Summer* Seaſon theſe Plants ſhould have a large Share of freſh Air, and muſt be frequently refreſhed with Water, and in *Winter*, the Stove in which they are placed, ſhould be kept to a temperate Degree of Heat; with this Management theſe Plants will thrive extremely well, and moſt of them will produce Flowers in two or three Years from the Time of their being ſown.

ACACIA Germanorum: *Vide* Prunus Sylveſtris.
ACACIA Virginiana: *Vide* Pſeudoacacia.

ACAJOU, *or* Cajou. The Caſhew Nut.

The *Characters* are;

The Cup of the Flower (which is produced at the Extremity of a Foot-ſtalk) is oblong, and quinquifid; the Flower conſiſts of one Leaf, which is divided into five long narrow Segments; in the Bottom of the Calyx is the Ovary, which becomes a ſoft Pear-ſhap'd Fruit, upon the Apex of which grows a Veſſel, in which is contained one Kidney-ſhap'd Seed.

There is but one *Species* of this Plant yet known, which is,

ACAJOU; *Thev. Franc. Antarct.* The Caſhew Nut.

This Tree is very common in many Parts of *America*, particularly in *Jamaica* and *Barbadoes*, where it grows to be a very large Tree, but with us in *England* (notwithſtanding all the Care it can poſſibly have) will rarely ſtand thro' our Winters; or if it is by Art preſerved, in very warm Stoves, yet it is ſo very ſlow of Growth, eſpecially after the firſt Year, as ſcarcely to be diſcern'd in its Progreſs.

The Seeds of this Tree, if ſown in a good Hot-bed in the Spring of the Year, will in a ſhort time appear above Ground, in ſo ſtrong a manner that any one, who hath not been converſant with this Plant, would imagine it to be of very quick Growth; for I have known theſe Plants in two Months from the time of ſowing their Seeds, above ſix Inches in Height, and very ſtrong; which in about two Months time more have been at a Stand, from which time they have ſcarcely advanced two Inches in a Year, with all the Art and Skill which could be uſed to them; nor have I ever ſeen a Plant of this Kind above two Feet high, tho' I have had ſome of them that have been three or four Years old: They are alſo in their own Country of very ſlow Growth, rarely producing either Flowers or Fruits, until they are 15 or 16 Years old from Seeds, ſo that the Inhabitants of the *Weſt Indies* plant them from large Branches taken from the old Trees, which with them take Root very well, and in two Years time produce Fruits.

The Plants of this Kind which are raiſed in *England*, ſhould be planted in ſmall Pots fill'd with freſh, light, rich Earth, and muſt be plung'd into a Hot-bed of *Tanners Bark*, and often refreſh'd with Water: theſe ſhould be kept, in Winter, in a Bark Stove, amongſt the tendereſt Exotick Trees, and ſhould not be expoſed to the open Air even in the hotteſt Seaſon.

One Plant of this Kind flower'd in the Garden of Sir *Charles Wager*, at *Parſons-Green* near *Fulham*, tho' not above two

Years old, but it ſoon after periſh'd without producing any Fruit.

The Seeds of this Tree are the *Anacardium Occidentale*, or Weſtern Anacardium of the Shops: The outer Covering of this Seed is very full of a ſharp, acrid Oil, which will give great Pain to the Mouth, if bitten or chew'd; if burnt off by a Candle, it will emit a Flame of various Colours: The Kernel within is very ſweet, and eſteem'd wholſome.

ACANACEOUS Plants, [of Ἀκάζω, *Gr.* or *Acuo*, *Lat.* I ſharpen; on account of the Prickles they are beſet withal] are ſuch as are of the Thiſtle Kind, which have Heads, and are prickly.

ACANTHUS, [Ἄκανθος, ſo call'd, as ſome ſay, of ἄκανθα, a Thorn, or as others ſay, of the Youth *Acanthus*, whom the Poets fable to be metamorphos'd into the Flower of this Herb] This is call'd *Brancha Urſina*, or *Bear's-breech.*

The *Characters* of this Plant are;

The Leaves are ſomewhat like thoſe of the Thiſtle; the Flowers are labiated; the under Lip of the Flower is divided into three Segments, which in the Beginning is curl'd up in Form of a ſhort Tube; in the Place of the upper Lip are produced the Stamina (or Seeds) which ſupport the Pointals: the Cup of the Flower is compoſed of Leaves which are prickly; the upper Part of which is bent over like an Arch, and ſupplies the Defect of the upper Lip of the Flower: The Fruit is of an Oval Form, which is divided in the Middle into two Cells, each containing one ſingle ſmooth Seed.

There are five *Species* of this Plant to be found in the Gardens of the Curious; *viz.*

1. Acanthus, *ſativus, vel mollis Virgilii. C. B.* The ſmooth-leav'd Garden Bear's-breech.
2. Acanthus, *aculeatus. C. B.* The prickly Bear's-breech.
3. Acanthus, *rarioribus & brevioribus aculeis munitus. Tourn.* The middle Bear's-breech, with ſhort Spines.
4. Acanthus, *Luſitanicus, ampliſſimo folio lucido.* The *Portugal* Bear's-breech, with large ſhining Leaves.
5. Acanthus *orientalis humillimus, foliis pinnatis aculeatis. Tourn. Cor.* Dwarf Eaſtern Bear's-breech, with prickly winged Leaves.

The firſt Sort is what is uſed in Medicine, and is ſuppoſed to be the *Mollis Acanthus* of *Virgil.* The Leaves of this Plant are cut upon the Capitals of the *Corinthian* Pillars, and were formerly in great Eſteem with the *Romans.*

They are all very pretty Varieties, and fit for large Gardens, but ſhould have a warm Situation, and a dry Soil. They are eaſily propagated, by parting the Roots in *February* or *March*, or by Seeds ſown at the ſame time. The ſecond and third Sorts are apt to creep at the Root, therefore ſhould have Room, and muſt not be planted amongſt other Flowers, leſt they overgrow and deſtroy them.

The fifth Sort was diſcovered by Dr. *Tournefort* in the *Levant*, who ſent it to the *Royal Garden* at *Paris.* This may be propagated by Seeds, which ſhould be ſown on a Bed of light freſh Earth in the *Spring* of the Year, and when the Plants are come up, they ſhould be carefully weeded, and in very dry Weather they ſhould be watered, which will greatly promote the Growth of the Plants. In this Bed they may remain until the following *Spring*, when they ſhould be carefully taken up and tranſplanted, where they are deſigned to remain, which ſhould be in a warm Situation, and on a dry freſh Soil. Theſe Plants ſhould be allowed a great Share of Room, for they are very apt to ſpread far, and their Leaves do grow to a great Size, when the Plants are ſtrong, ſo that if any other Plants ſtand near them, they will be in danger of ſuffering by being over-ſpread.

It has been much diſputed by the Learned, whether the common Sort of *Acanthus* is the Plant which *Virgil* mentioned under that Name, but this is not eaſy to be reconciled; for, according to *Pliny*, the *Acanthus* ſhould be a tonſile Plant, and proper to cut into Figures, and *Virgil* makes it an *Ever-green*, a *Berry-bearing Plant*, and a *Climber*; neither of which Properties belong to our *Acanthus*, but the Deſcription which *Dioſcorides* has given of the *Acanthus* agrees very well with our common *Bear's-breech*; and from the remains of ſome antient Buildings at *Rome*, which have the Figure of the *Acanthus* cut on the *Capitals* of the Pillars, which are yet intire, there is a good Reſemblance to the Leaves of the common *Acanthus.*

ACAULIS, or ACAULOS; of *a* Neg. and *Caulis*, [a Stalk or Stem] *i. e*, without Stalk: A Plant is ſaid to be *Acaulis*, or without Stalk, whoſe Flower reſts on the Ground.

ACER, The Maple-Tree, [ſo call'd, according to *Voſſius*, of *Acris*, *L.* becauſe of the very great Hardneſs of the Wood.]

The *Characters* are;

It hath jagged, or angular Leaves; the Seeds grow two together in hard wing'd Veſſels.

There are in *England* eight or nine *Species* of this Tree; *viz.*

1. Acer *majus, multis falſo Platanus. J. B.* The greater Maple, *falſely call'd*, The Sycamore Tree.
2. Acer *majus, foliis eleganter variegatis. Hort. Edin.* The greater Maple, with ſtrip'd Leaves, *commonly call'd*, The ſtrip'd Sycamore.
3. Acer *campeſtre & minus. C. B.* The common, or leſſer Maple.
4. Acer *Virginianum, folio majore, ſubtus argenteo, ſupra viridi ſplendente. Pluk. Phyt.* The *Virginian* flowering Maple.
5. Acer *Americanum, folio majore ſubtus argenteo, ſupra viridi ſplendente, floribus multis coccineis.* The *American* flowering Maple, with larger Bunches of ſcarlet Flowers.
6. Acer *maximum, foliis trifidis vel quinquifidis Virginianum. Pluk. Phyt.* The *Virginian* Aſh-leav'd Maple.
7. Acer *Platanoides. Munt.* The *Norway* Maple, with Plane-tree Leaves.
8. Acer *Platanoides, foliis eleganter variegatis.* The ſtrip'd *Norway* Maple.
9. Acer *trifolium. C. B. P.* Maple Tree with a trifoliated Leaf.

Theſe Trees are eaſily propagated, by ſowing the Seeds, ſoon after they are ripe, in an open Bed of common Earth, covering them about half an Inch thick with light ſandy Earth; the Spring following they will appear above Ground, and if kept clear from Weeds, will grow above a Foot high the firſt Summer: The *Michaelmas* following (if they are thick in the Seed-bed) you may take out a Part of them and tranſplant into a Nurſery, in Rows at three Feet diſtance, and two Feet aſunder in the Rows; in which Place they may remain three or four Years, when they will be large enough to plant out for good.

The firſt Sort is very proper to make Plantations near the Sea, or to ſhelter ſuch Plantations of Trees as are too nearly ſituated thereto: This Tree thrives, and reſiſts the Spray which is uſually blown from the Sea, better than moſt other Trees do. The variegated Sort is alſo raiſed from Seeds of the ſame Kind: Moſt of the Plants ſo raiſed, will be as finely ſtrip'd as the old Plant from whence the Seeds were taken, which is not common to many other variegated Plants.

The common Maple is too well known to need any particular Account, it being a very common Tree in Hedge-rows in moſt Parts of *England*; it is raiſed in the ſame Manner with the former.

The *Virginian* flowering Maple was raiſed from Seeds, which were brought from *Virginia* many Years ſince by Mr. *John Tradeſcant*, in his Garden at *South Lambeth* near *Vaux-hall*, and ſince, in the Gardens of the Biſhop of *London* at *Fulham*, where it has flower'd for ſeveral Years, and produces ripe Seeds, from whence ſeveral Trees have been raiſed: It may be alſo propagated by laying down the young Branches early in the Spring, giving them a little Slit at a Joint, by which Means they will have taken ſufficient Root by that time Twelvemonths, to be tranſplanted out: They require a Situation a little defended from the North-Eaſt Winds, eſpecially while young. This Tree commonly flowers in the Beginning of *April*, and the Seeds are ripe in five or ſix Weeks after; at which Time they ſhould be ſow'd; for they are very apt to periſh, if kept long out of the Ground.

The other flowering Maple was ſent from *America* to Sir *Charles Wager*, and flouriſhes in his curious Garden at *Parſons-Green* near *Fulham*: The Flowers of this Kind come out in very large Cluſters, and ſurround the younger Branches, ſo as to appear at a ſmall Diſtance covered therewith. This Tree is at preſent very rare in *Europe*; but as it produces ripe Seeds in *England*, ſo it is to be hoped it will in Time be more common in the Gardens of the Curious.

The Aſh-leav'd Maple is a very ſtrong ſhooting Tree, and is in *Virginia* one of the largeſt Trees of this Kind: It muſt be planted in Places not too much expoſed to violent Winds, it being ſubject to ſplit therewith. This Tree ripens Seeds very well in *England*, by which means it is eaſily propagated, or by laying down the Branches (as directed for the flowering Maple.)

The *Norway* Maple grows with us to a very large Size, equalling the greater Maple for Bulk, and I believe will anſwer the ſame Purpoſes, for ſheltering Plantations near the Sea, and is by far the handſomer Tree near an Habitation; for the greater Maple is very ſubject to exude a ſweet clammy Juice from the Pores of the Leaves, which lodges upon the Surfaces thereof, and thereby intices vaſt Quantities of Inſects, which eat the Leaves full of Holes, and render them very unſightly.

The *Norway* Maple has a milky ſharp Juice, ſo that few Inſects care to prey thereon; by which means the Leaves are ſeldom eat or defaced: This Tree is alſo raiſed by Seeds, of which it affords great Quantities, which riſe and grow equally as well as the common Sort.

The variegated Kind is propagated by inoculating a Bud of the ſtrip'd Kind into one of the plain Sort, tho' I am not at preſent ſure, whether it will take upon any other Sort of Maple, not having made the Experiment; but I believe it can ſcarce fail: Moſt, if not all the other Sorts of Maples, take very well upon each other.

The ninth Sort of Maple grows plentifully about *Montpelier*, and other Places in the *South* of *France*, where it riſes to the Height of our common Maple; but in *England* it is very rare at preſent, and only to be found in ſome curious Botanick Gardens. This Tree may be propagated from Seeds, in the ſame manner as our common Maple; but the Seeds ſhould be ſown in Autumn, ſoon after they are ripe, otherwiſe they ſeldom grow, which is the Reaſon why this Tree is ſo ſcarce in *England*; for there are no Trees which have yet produced Seeds here, and the Seeds will not retain their growing Quality ſo as to bear tranſporting hither, unleſs they are put into Earth or Sand, by which Method they might be brought over very ſafe.

There is another Sort of Maple, which is very common in *Virginia*, and is known by the Name of the *Sugar Maple*; from which Tree the Inhabitants of that Country make a very good ſort of Sugar, and in large Quantities: but this Tree is at preſent very rare in *Europe*; tho' I am of Opinion, that the People make Sugar from more than one Sort of Maple; Mr. *Ray* and Dr. *Liſter* prepared a tolerable good Sort of Sugar from our greater Maple, by tapping ſome of the Trees in their bleeding Seaſon; and I have obſerved, upon cutting off a Branch of the Aſh-leav'd Maple in *February*, a great Quantity of a very ſweet Juice hath flow'd out for ſeveral Days together.

The Timber of the common Maple is far ſuperior to the *Beech* for all Uſes of the Turner, particularly *Diſhes*, *Cups*, *Trenchers*, and *Bowls*; and when it abounds with Knots (as it very often doth) it is highly eſteem'd by the *Joiners* for Inlayings, *&c.* and alſo, for the Lightneſs of the Wood, is often employ'd by thoſe that make *Muſical* Inſtruments; and for the Whiteneſs of its Wood, is in great Requeſt for *Tables*, &c.

ACETOSA, [of *Acetoſus*, eager, ſour, *L.*] Sorrel, ſo call'd of the *Anglo-Saxon* ꞅuꞃ, ſour.

The *Characters* are;

This Plant agrees with the Dock *in all its Characters, and only differs in having an acid Taſte.*

There are ſeveral Varieties of this Plant, which are cultivated by the Curious in Botany, but there are not above two or three Sorts which are worthy propagating for Uſe; the reſt are only fit for the Curious to amuſe with.

1. Acetosa *pratenſis. C. B.* The Common or Meadow Sorrel.

2. Acetosa *Muſcovitica, ſterilis. M. H.* The Northern barren Sorrel.

3. Acetosa *rotundifolia, hortenſis. C. B.* The Round-leav'd or *French* Sorrel.

4. Acetosa *foliis criſpis. C. B. P.* Sorrel with curled Leaves.

5. Acetosa *montana maxima. C. B. P.* Greateſt Mountain Sorrel.

6. Acetosa *Pyrenaica, anguſtiſſimo & longiſſimo folio. Schol. Bot.* *Pyrenean* Sorrel with very long narrow Leaves.

7. Acetosa *montana, lato ari rotundo folio. Bocc. Muſ.* Mountain Sorrel with a broad Arum Leaf.

8. Acetosa *montana pumila, fagopyri folio. Bocc. Muſ.* Dwarf Mountain Sorrel with a Buck-wheat Leaf.

9. Acetosa *tuberoſa radice, C. B. P.* Sorrel with a tuberoſe Root.

10. Acetosa *calthæ folio, peregrina. C. B. P.* Foreign Sorrel with a Marygold Leaf.

11. Acetosa *lucida, folio atriplicis. H. R. Par.* Shining Sorrel with Orach Leaves.

12. Acetosa *major Italica, ſemine rotundiore & glomerato. H. R. Par.* Greater *Italian* Sorrel, with a round glomerated Seed.

13. Acetosa *arvenſis lanceolata. C. B. P.* 124. Sheep's Sorrel.

14. Acetosa *lanceolata anguſtifolia elatior. Mor. Hiſt.* Taller narrow-leav'd Spear-pointed Sorrel.

15. Acetosa *ocymi folio, Neapolitana. C. B. P.* *Neapolitan* Sorrel with a Baſil Leaf.

16. Acetosa *Americana, foliis longiſſimis pediculis donatis. C. B. P.* *American* Sorrel with Leaves growing on long Pedicles.

17. Acetosa *rotundifolia repens Eboracenſis, folio in medio deliquium patiente. Mor. Hiſt.* Creeping round-leav'd Sorrel of the North.

18. Acetosa *arboreſcens, ſubrotundo folio, ex Inſulis Fortunatis. Pluk. Almag.* Shrubby Sorrel with a round Leaf, from the Fortunate Iſlands.

The firſt of theſe Sorts, tho' but ſmall in the Fields, yet when ſown in Gardens, will produce large fair Leaves, and is the ſame Sort which is commonly cultivated in Gardens. It muſt be ſown early in the Spring, in a ſhady moiſt Border; and if the Plants are afterward planted out in another ſhady Border, four or ſix Inches ſquare, it will produce larger Leaves, and continue longer. This is the common Sorrel uſed in Medicine; but the Northern barren Soil is preferr'd to it in the Kitchen-Garden, it rarely running to Seed, but is increaſed by parting the Roots either in Spring or Autumn, and is fit for Uſe all the Year round.

The Round-leav'd (or *French*) Sorrel, is the moſt grateful Acid, and is preferr'd to the firſt two Sorts for Kitchen Uſe; it is alſo a medicinal Plant, and ſhould not be wanting in any good Garden: It is a great Runner at the Root, by which means it is eaſily propagated, and muſt be planted at a large Diſtance a Foot ſquare at leaſt; it will agree better with an open Situation than the firſt two Sorts.

The fourth Sort of Sorrel is a Variety from the common Sort, which often ariſes from the ſame Seeds, as doth alſo that with white Flowers, ſo that they do not deſerve the Notice which the Writers on Botany have taken of them.

The fifth, ſixth, ſeventh, eighth, ninth, tenth, eleventh, and twelfth Sorts are all of them very hardy Plants, and may be propagated by Seeds, in the ſame manner as the common Sort, with this Difference only, of allowing the large Sorts more room; for the ſixth and ſeventh Sorts grow very large, and therefore require to be left a Foot aſunder, or more. The Roots abide ſeveral Years, and may be parted at *Michaelmas* to propagate their Kinds; tho' they all ſucceed much better by Seeds, which they uſually perfect in this Country.

The thirteenth and fourteenth Sorts grow wild on dry Banks, and on the Sides of Gravel Pits, in diverſe Parts of *England*, and are rarely admitted to have Place in a Garden. Theſe multiply exceedingly by their Roots, which creep very far under Ground, ſo that they ſhould not be ſuffered to grow near other Plants. The thirteenth Sort is placed in the Catalogue of Simples, in the College Diſpenſatory, but, I believe, is ſeldom ordered in Medicine.

The fifteenth and ſixteenth Sorts are annual, and are rarely cultivated, except in Botanick Gardens, for the ſake of Variety; theſe may be propagated by ſowing of their Seed on a Bed of light Earth in *March*, and when the Plants are come up, they ſhould be conſtantly kept clean from Weeds, and where they are too cloſe to each other, they ſhould be thinned, but they do not bear tranſplanting well, therefore they ſhould always be ſown where they are deſigned to remain. In *June* theſe Plants will flower, and their Seeds will ripen in *Auguſt*.

The ſeventeenth Sort grows wild in *Yorkſhire*, and ſeveral other Northern Counties of *England* and *Scotland*, from whence it is often procured for the ſake of Variety, but it doth not thrive in the Southern Parts well; it ſhould have a ſhady Situation, and a moiſt ſtrong Soil.

The eighteenth Sort will grow to the Height of twelve or fourteen Feet and become woody, ſo as to have the Appearance of a Tree. This is preſerved in Green-houſes in Winter, by Perſons who are curious in collecting Exotick Plants. It may be eaſily propagated by planting Cuttings in a Bed of light Earth, during any of the Summer Months, obſerving to water and ſhade them until they have taken Root, when they ſhould be taken up and planted in Pots filled with freſh Earth, and placed in a ſhady Situation, until they have taken new Root, after which Time they may be placed amongſt *Myrtles*, *Geraniums*, and other hardy Exotick Plants, till *October*, when they ſhould be removed into the Green-houſe, where they ſhould be placed to have as much free Air as poſſible in mild Weather, for otherwiſe they will become very weak and unſightly.

ACETOSELLA: *Vide* Oxys.

ACHILLÆA: *i. e.* Millefolium.

ACINOS: Stone *or* Wild Baſil.

The *Characters* are;

It hath Leaves like thoſe of the leſſer Baſil; *the Cup of the Flower is oblong and furrow'd; the Flowers are produced in Bunches, on the Top of little Footſtalks, which ariſe from between the Footſtalk of the Leaf, and the Stalk of the Plants, in which it differs from* Serpyllum.

The *Species* are;

1. Acinos *multis. J. B.* Wild Baſil.
2. Acini *pulchra ſpecies. J. B.* Broad-leav'd *Auſtrian* Wild Baſil.

The firſt of theſe Plants is very common on dry arable Land in many Parts of *England*, but eſpecially on gravelly or chalky Hills: It is an annual Plant, ſowing itſelf, and riſing again early in the Spring: This is not cultivated in Gardens, nor doth it care to grow on a good Soil; but it may be propagated in a dry poor Soil, by ſowing the Seeds ſo ſoon as they are ripe. This Plant hath been brought to the Markets by the Herb-women for the Mountain Poley.

The ſecond Sort is preſerved in curious Botanick Gardens, but is a Plant of no great Beauty or Uſe.

ACINUS, or ACINI, by good Authors is uſed not for the Grape-ſtone, but the Grape itſelf, as *Columella, cum expreſſeris Vinacea, quæ acinis celantur:* It is commonly uſed for thoſe ſmall Grains growing in Bunches, after the manner of Grapes, as the *Sambucus, Liguſtrum*, &c.

ACONITUM, Wolf's-bane; [Ἀκόνιτον, which ſome derive of ἀκόνη, a Well-ſtone or Rock, becauſe it grows on bare rocky or ſtony Places; others of ἀ and κόνις, Duſt, becauſe it grows without Earth; others of ἄκων ἀκὴ, a Dart, becauſe the *Barbarians* uſed to daub their Darts therewith; others of ἀκωνίζωμαι, to accelerate, becauſe it haſtens Death.] The *Engliſh* call it Wolf's-bane, of the *Anglo-Saxon* Ƿulfeſ-bana.

The *Characters* are;

It hath circumſcrib'd roundiſh divided Leaves; the Flowers conſiſt of four Leaves, which are ſhaped like a Monk's Hood: Each of theſe Flowers are ſucceeded by three or more Pods, which contain ſeveral rough Seeds: The moſt Part of theſe Species are deadly Poiſon.

The *Species* are;

1. Aconitum *lycoctonum, luteum. C. B.* The yellow poiſonous Wolf's-bane.
2. Aconitum *luteum majus, ampliore caule, amplioribuſque foliis. Dod.* The largeſt yellow Wolf's-bane.
3. Aconitum *cæruleum, ſive napellus.* II. *C. B.* The large blue Wolf's-bane, *or* Monk's-hood.
4. Aconitum *ſalutiferum, ſive anthora. C. B.* The wholſome Wolf's-bane.
5. Aconitum *pyramidale multiflorum. H. R. Par.* Large blue pyramidal Wolf's-bane, *or* Monk's-hood.
6. Aconitum *lycoctonum, humili caule, ac minoribus foliis. Dod.* Dwarf Wolf's-bane with leſſer Leaves.
7. Aconitum *Pyrenaicum, ampliore folio tenuius laciniato. Tourn.* Wolf's-bane of the *Pyrenean* Mountains, with larger Leaves, cut into narrow Segments.
8. Aconitum *cæruleum, napelli flore. C. B. P.* 283. Autumnal Wolf's-bane with a blue Flower.
9. Aconitum *coma inflexa, foliis anguſtioribus. C. B. P.* 283. Narrow-leav'd Wolf's-bane with inflex'd Heads.
10. Aconitum *coma inflexa, foliis latioribus. Tourn.* Broad-leav'd Wolf's-bane, with inflex'd Heads.
11. Aconitum *inflexa coma, maximum. C. B. P.* Wolf's-bane, with the largeſt inflex'd Heads.
12. Aconitum *ſeu napellus* 1. *flore roſeo. C. B. P.* Wolf's-bane, with a Roſe-colour'd Flower.
13. Aconitum *ſeu napellus* 1. *flore albo. C. B. P.* Wolfſ-bane, with a white Flower.
14. Aconitum *ſeu napellus* 1. *flore ex cæruleo & albo variegato. C. B. P.* Wolf's-bane with a Flower variegated from blue to white.
15. Aconitum *violaceum ſeu napellus* 2. *C. B. P.* Wolf's-bane, with a Violet-colour'd Flower.
16. Aconitum *purpureum ſeu napellus* 3. *C. B. P.* Wolf's-bane, with a Purple Flower.
17. Aconitum *cæruleum minus, ſive napellus minor. C. B. P.* Leſſer blue Aconite or Wolf's-bane.
18. Aconitum *cæruleo-purpureum, flore maximo, ſive napellus* 4. *C. B. P.* Wolf's-bane, with a very large Purple-blue Flower.
19. Aconitum *lycoctonum orientale, flore magno albo. T. Cor.* Eaſtern Wolf's-bane, with a large white Flower.

Moſt of theſe Kinds of *Wolfſbane* are Natives of the *Alps* or *Pyrenean* Mountains, where (it is reported) the Huntſmen who hunt the Wolves, dip their Arrows into the Juice of theſe Plants, which renders the Wounds given with theſe Arrows, mortal. They are moſt of them too noxious to have a Place in Gardens which are much frequented by Children, tho' the fifth Sort is too commonly found in old Gardens, and the Flowers are frequently brought into the *London* Markets, and mixed with other Flowers to adorn Halls, &c. but we have had many Inſtances of Perſons who have loſt their Lives, and of others who have with great Difficulty been recovered, after having eaten of this Herb in Sallets, which by Miſtake has been put into Sallets inſtead of Celery, by very ignorant People. A late Inſtance of this hath been publiſhed in the *Philoſophical Tranſactions*, where there is an Account of an unſkilful Perſon gathering ſome Roots of this Wolfſbane (early in the Spring, when the Plant was newly riſen above Ground) inſtead of *Celery:* and putting of them into a Sallet, two Perſons were poiſoned therewith; one of whom was with great Difficulty ſaved.

The fifth Sort of Wolf's-bane is very common in almoſt all old Gardens, and is uſually known by the Name of Monk's-hood, the Flower reſembling a Frier's Cowl, from whence it had that Name: the Flowers of this Kind are commonly brought to Market in *May*, to furniſh Flower-pots for Chimnies. The Roots of this Plant increaſe abundantly, ſoon over-running a large Piece of Ground, therefore ſhould be confined in ſome abject Part of the Garden, or planted under Trees, it being very hardy, and growing in almoſt every Soil or Situation.

All theſe Kinds of Wolfſbane are great Ornaments to a large Garden, and many of them will thrive in the greateſt Shade, and on the pooreſt Soil, where few other Plants will grow, eſpecially the fifth, eighth, twelfth, fifteenth, ſixteenth, and ſeventeenth Sorts, which are extremely hardy, and multiply greatly by the Root, ſo that a few Plants of each Sort will, in a few Years, produce a great Stock. The beſt Time to tranſplant theſe Roots, is at *Michaelmas*, where the Roots remain in an unactive State; for ſoon after that Time, they begin to put out new Roots, and early in the Spring the Plants will appear above Ground; when it will be too late to tranſplant them; for although they will often grow if removed at that Seaſon, yet they rarely flower the ſame Year, and will make very little Increaſe at the Root.

Some of the Sorts with blue Flowers will grow to the Height of three or four Feet, but thoſe with yellow Flowers uſually grow much higher, and the Eaſtern Kind with white Flowers, I have ſeen upward of ſix Feet high; but this Sort is very rare in *Europe*, and only to be found in ſome curious Gardens at preſent.

The fifth Sort commonly begins to flower in *April*, and continues thro' *May*, and this is ſucceeded by ſome of the other Sorts, ſo that there is a continual Succeſſion of them, until *Auguſt*, and in a cool Seaſon ſometimes later.

The yellow Sorts are leſs common, and are only preſerved in the Gardens of the Curious; they flower in *June* and *July*, and are increaſed by parting the Roots in *Autumn*, but muſt have a more open Expoſure than the Blue.

The wholſome Kind is rarely to be met with in the *Engliſh* Gardens, altho' it is equally as hardy as any of the other Sorts: This is increaſed as the other Sorts, but requires a looſer Soil than they do: This is ſometimes uſed in Phyſick, and is ſuppoſed to be an Antidote to the Poiſon of the Wolf's-bane.

ACONITUM HYEMALE, *or* Winter Wolf's-bane.

The *Characters* are;

The Leaves are like thoſe of the Wolf's-bane; the Flowers (which are produced in the Center of the Leaves) are like thoſe of the Ranunculus; with many Stamina or Threads in the Center, and in all other reſpects agree with the Hellebore; to which the learned Dr. Boerhaave *hath made it a Congener.*

This is one of the earlieſt Flowers in the Spring, often appearing by the Middle of *January*, for which Reaſon it deſerves a Place in every curious Garden; it is very apt to increaſe by the Root, but ſhould not be too often tranſplanted: The beſt Time to remove the Roots is in *May* or *June*, juſt as the green Leaves are decayed, before they are quite gone off, it being very difficult afterwards to find the Roots: This Plant will thrive in almoſt any Soil or Situation.

ACRIVIOLA, [of *Acer*, ſharp, and *Viola*, Violet, *i. e.* ſharp Violet] commonly called *Naſturtium Indicum*, or *Indian Creſs.*

The *Characters* are;

The Leaves are round, umbilicated, and placed alternately; the Stalks are trailing; the Cup of the Flower is quinquifid; the Flowers conſiſt of five Leaves, which are in Form of a Violet; the Seeds are roundiſh, and rough, three of them ſucceeding each Flower.

There are five Varieties of this Plant in the *Engliſh* Gardens; *viz.*

1. ACRIVIOLA. *Frid. Cæſ. T.* 935. The leſſer *Indian* Creſs.
2. ACRIVIOLA, *flore ſulphureo. Boerh.* The leſſer yellow *Indian* Creſs.
3. ACRIVIOLA *maxima odorata. Boerh.* The great *Indian* Creſs.
4. ACRIVIOLA *maxima odorata, flore ſulphureo. Boerh.* The great yellow *Indian* Creſs.
5. ACRIVIOLA *maxima odorata, flore pleno.* The great double Naſturtium, or *Indian* Creſs.

The four firſt Sorts are commonly ſow'd in *March* or *April*, in a good Soil and warm Situation: they are great Climbers, and ſhould have a Hedge or Palliſado to run upon, to prevent their lying upon the Ground, which is apt to rot them: they begin to flower in *June* or *July*, and continue till the Froſt comes, which ſoon deſtroys the whole Plant, unleſs ſhelter'd therefrom. The Flowers are very good in Sallets, and are much in Uſe to garniſh Diſhes: The unripe Seeds afford a warm agreeable Pickle.

The double Sort producing no Seeds, is only increaſed by planting Cuttings in any of the Summer Months, and muſt be carefully preſerved in Winter, it being very ſubject to rot, if kept too cloſe, or if it hath too much Water in Winter, but muſt be intirely kept from Froſts.

This Plant, if confined in Pots fill'd with poor Soil, will be leſs ſubject to ramble, and much more productive of Flowers; whereas if it is planted in the full Ground, or potted in a rich Mould, it will extend its Branches to a great Diſtance, and the Flowers will be very thinly placed upon the Plant, ſo that the greateſt Beauty of the Plant, which conſiſts in the Number of its Flowers, is loſt. The Flowers of this Kind are much better to garniſh Diſhes than thoſe of the ſingle; but for Uſe, the ſingle is preferable to this in Sallads, being of a warmer Taſte; as is obſerved of all ſingle Flowers, that they are preferable to the double of the ſame Kinds for medicinal or other Uſes, as being much ſtronger in Smell and Taſte; for the Multiplicity of Petals deprive the Flowers of the Organs for Generation, in which are contained the Eſſence of the Flower.

ADHATODA, The Malabar Nut.

The *Characters* are;

The Leaves grow oppoſite; the Cup of the Flower is oblong, and conſiſts of one Leaf; the Flower is monopetalous, of an anomalous Figure, and conſiſts of two Lips; the uppermoſt is crooked, and is raiſed in Form of an Arch; the under Lip is divided into three Segments, and hangs downward; the Ovarium becomes the Fruit, which is in Form of a Club, and is divided into two Cells, in which are contained flat Heart-ſhaped Seeds.

There are but two *Species* of this Plant known at preſent, which are,

1. ADHATODA *Zeylaneuſium. H. L.* The common Malabar Nut.
2. ADHATODA *Indica, folio ſaligno, flore albo. Boerh.* The Willow-leav'd Malabar Nut, *commonly called*, The Snaptree.

Theſe Plants are both raiſed by Cuttings, planted in any of the Summer Months, which muſt be ſhaded and frequently water'd; about *Auguſt* they will have taken Root, and muſt then be tranſplanted into Pots, fill'd with light ſandy Earth, mix'd with rotten Dung: they muſt have a good Green-houſe in Winter, and require often but gentle Waterings: In the Summer they may be expoſed to the open Air, but ſhould be ſhelter'd by Hedges or Trees from ſtrong Winds. Theſe Trees do frequently flower in *England*, but have never, that I have heard of, produced any Fruit with us.

ADIANTHUM; *i. e.* Maiden-hair.

The *Species* are;

1. ADIANTHUM *foliis coriandri. C. B. P.* 355. Common *or* true Maiden-hair.
2. ADIANTHUM *Americanum Cornut.* 7. *American* Maiden-hair of Cornutus.
3. ADIANTHUM *nigrum officinarum. J. B.* Black Maiden-hair of the Shops.
4. ADIANTHUM *Scoticum majus, Coriandri folio. Tourn.* Greater *Scotch* Maidenhair, with a Coriander Leaf.
5. ADIANTHUM *Scoticum minus, folio obtuſo, altius inciſo. Tourn.* Leſſer *Scotch* Maiden-hair, with an obtuſe Leaf, deeply cut in.

The firſt Sort is a Native in the South Parts of *France*, and in the *Mediterranean*, where it grows on Rocks, and old Ruins, from whence it is brought into *England*, for medicinal Uſe; tho' the ſmaller Leaves of Fern are ſometimes impoſed on ignorant Perſons, by thoſe who ſupply the Markets with Herbs; but as the true Sort is not to be obtained freſh in *England*, ſo the ſurer Way is to get it from ſome knowing Druggiſt, who imports it from abroad.

The ſecond Sort is a Native of *America*, from whence it was originally brought into *Europe*, and is preſerved by curious Perſons in their Gardens. This has been formerly preſerved in the Stoves in *England*, as a very tender Plant, but it is found to be very hardy; and in *France* it is now become ſo common, as to be uſed inſtead of the common Sort, in the Shops at *Paris.*

The third Sort is common in ſeveral Parts of *England*; it grows on Buildings, Walls, and on the ſide of ſhady Banks.

The fourth and fifth Sorts have been found growing on the Rocks, in the North of *Scotland*, but as they are not commonly found, ſo they have not been introduced into the *London* Shops.

There are many other Sorts of this Plant in the *Eaſt* and *Weſt-Indies*, from whence we have received dried Samples of near thirty Sorts; but as they are Plants which are not cultivated in the *European* Gardens, ſo I ſhall not enumerate them here.

ADIANTHUM ALBUM; *vide* Ruta Muraria.

ADIANTHUM NIGRUM; *vide* Filicula.

ADNATA, ADNASCENTIA, are thoſe Off-ſets, which by a new Germination under the Earth proceed from the Lily, Narciſſus, Hyacinth, *&c.* which afterwards grow to true Roots, which the *French* call *Cayeux.*

ADONIDIS HORTI; *i. e.* the Gardens of *Adonis*, are Plants, Flowers, *&c.* in Pots or Caſes, ſet on the Outſides of Windows, in Balconies, *&c.*

ADONIS, or FLOS ADONIS, Bird's eye, or Pheaſant's-eye.

The *Characters* are;

The Leaves are like Fennel, or Chamomil; the Flowers conſiſt of many Leaves, which are expanded in Form of a Roſe; the Seeds are collected into oblong Heads.

There are but three Varieties of this Plant to be met with in the *Engliſh* Gardens; *viz.*

1. ADONIS *hortenſis, flore minore atrorubente. C. B.* The common red Bird's-eye.
2. ADONIS *ſylveſtris, flore luteo, foliis longioribus. C. B.* The long-leav'd yellow Bird's-eye.
3. ADONIS *hellebori radice, buphthalmi flore. H. L.* The Hellebore-rooted Pheaſant's-eye, *commonly called*, The Fennel-leav'd black Hellebore.

The firſt of theſe Sorts is very common in *England*, and is ſown in open Borders as an annual flowering Plant to adorn Gardens: The beſt Time to ſow it is in *Auguſt*, ſoon after the Seeds are ripe, when it rarely fails to grow, and is very hardy, ſeldom being hurt by Cold.

Theſe Plants will flower in *June* and *July*, and the Seeds will ripen ſoon after; but thoſe which are ſown in the Spring, very often fail to grow, or at leaſt remain till *June* or *July* before they appear, ſo that they ſeldom produce good Seeds the ſame Year, and rarely live over the Winter after flowering.

This Plant grows wild in ſome Parts of *England*, particularly near the River *Medway*, about three Miles above *Rocheſter* Bridge.

The yellow Sort is uncommon in *England*, and only to be found in ſome curious Gardens: This makes a pretty Diverſity with the former, and muſt have the ſame Culture.

The third Sort is ſtill more rare than any of them; it is an abiding Root, and is increaſed by parting the Roots in *Auguſt*, or by ſowing the Seeds, ſoon after they are ripe, in light ſandy Earth: The Seedlings will be two Years before they blow, but the Off-ſets will flower the ſucceeding Spring: This produces its Flowers in *March*, or early in *April*, and is not a deſpicable Plant in the moſt curious Gardens.

This Plant is uſed in Medicine by the *Germans*, as the true Hellebore.

ÆTHER, ['Αἰθὴρ, of αἴθειν, *Gr.* to burn or flame; ſome of the Antients having ſuppoſed it to be of the Nature of Fire:] It is uſually underſtood to be a thin ſubtile Matter or *Medium*, much finer and rarer than Air itſelf, which commences from the Limits of the Atmoſphere, and poſſeſſes the whole heavenly Space. See *Atmoſphere* and *Air*.

AGERATUM, ['Αγήρατον, of α Priv. and γῆρας, Old Age, becauſe it does not wither, nor eaſily grow old.] Maudlin.

The *Characters* are;

The Flowers are digeſted into looſe Umbels; but in other reſpects, it is very like the Coaſtmary.

There are ſeveral *Species* of this Plant preſerved in the Botanick Gardens; but as there are not above three Sorts which (either for Uſe or Beauty) deſerve to be cultivated, I ſhall only mention thoſe, and paſs over the reſt.

1. AGERATUM *foliis ſerratis. C. B.* The common Maudlin.

2. AGERATUM, *quæ ptarmica incana, pinnulis criſtatis. T. Voy.* The hoary Oriental Maudlin.

3. AGERATUM *Peruvianum, arboreum, folio lato, ſerrato. Boerh.* The Peruvian Tree Maudlin, *falſely called*, The Jeſuit's Bark Tree.

The firſt of theſe Plants is propagated in Gardens, for medicinal Uſe; it is increaſed by parting the Roots either in Spring or Autumn, and requires a light Soil and open Situation, where it will thrive abundantly.

The ſecond Sort is ſomewhat tender, and muſt have a dry Soil and warm Situation: This is increaſed by planting the Cuttings in any of the Summer Months. This Plant was ſuppoſed by the Antients to be what produced the Worm-ſeed; but this is confuted by all the Moderns: however, it deſerves a Place in a Garden, for its fine hoary Leaves, together with its Umbels of yellow Flowers, which continue moſt Part of the Summer.

The third Sort grows to a Shrub of eight and ten Feet in Height; it is increaſed by planting the Cuttings in any of the Summer Months, or by laying down the Branches: It requires frequent Waterings, and muſt be houſed in hard Winters, but will endure our common Winters in the open Air. This Tree, when it firſt came into *England*, was ſuppoſed to be the Tree from which the *Peruvian Bark* was taken; but this has been confuted long ſince: There is no great Beauty in it, but it may have a Place in a Collection for its Oddneſs.

The Plants before mentioned are by Dr. *Tournefort* referr'd to *Ptarmica*, of which they are Species according to his Method: but as the firſt Species ſtands in the *Diſpenſatory* under the Title of *Ageratum*, ſo I thought proper to continue it under that Name, and have here ſubjoined ſome Plants which agree with *Tournefort*'s Characters of *Ageratum*.

The *Characters* are;

It hath a perſonated Flower conſiſting of one Leaf, the under Part of which is tubulous, but the upper Part is divided into two Lips, the upper one being divided into two, and the under one into three Parts: The Piſtil which ariſes from the Flower-cup, afterwards becomes an oblong membranaceous Fruit, divided into two Cells, in which are contained many ſmall Seeds.

The *Species* are;

1. AGERATUM *ſerratum, Alpinum, glabrum, flore purpuraſcente. Tourn.* Smooth Ageratum of the *Alps*, with a Purpliſh Flower.

2. AGERATUM *Americanum, erectum, ſpicatum, flore purpureo. Houſt. American* Ageratum, with purple Flowers growing in a Spike.

3. AGERATUM *Americanum, procumbens, gnaphalii facie, floribus ad foliorum nodos. Houſt.* Creeping *American* Ageratum, having the Face of Cud-weed, and the Flowers coming out at the ſetting on of the Foot-ſtalks.

4. AGERATUM *Americanum, fruteſcens, chamædryos folio, floribus ex foliorum alis. Houſt.* Shrubby *American* Ageratum, with a Germander Leaf, and the Flowers growing from the ſetting on of the Leaves.

The firſt Sort being a Native of the *Alps*, is very hardy in reſpect to Cold, but muſt have a ſtrong Soil, and not too much expoſed to the Sun: This is propagated by parting of the Roots; the beſt Time for doing of this is in *September*. This Plant grows very cloſe to the Ground, and has been uſed in ſome Parts of *England* to make Edgings for Borders; but near *London*, where the Soil is hot, and has been dunged, it is very difficult to maintain this Plant. It flowers in *June*, but rarely produces ripe Seeds in *England*.

The other three Sorts were diſcovered in *America* by the late ingenious Dr. *William Houſtoun*, who ſent the Seeds of theſe Plants into *Europe*. The Seeds of theſe three Sorts muſt be ſown on a Hot-bed in the Spring; and when the Plants are fit to tranſplant, they ſhould be placed each into a ſmall Pot filled with light Earth, and placed into a moderate Hot-bed, obſerving to water and ſhade them until they have taken Root, after which they muſt have Air and Water in proportion to the Seaſon and the Warmth of the Bed in which they are placed. In Autumn theſe Plants will flower, and if they are placed in a Stove, will perfect their Seeds in Winter. They may alſo be continued thro' the Winter in a Stove, and will flower early the following Summer, ſo that good Seeds may be obtain'd by this Method; but they rarely continue longer than two Summers, ſo that they muſt be conſtantly raiſed from Seeds every Year.

AGNUS CASTUS: *vide* Vitex.

AGRIFOLIUM: *vide* Aquifolium.

AGRIMONIA, [of 'Αργεμώνη, becauſe it is good againſt the αργέματα, *i. e.* the Fault of the Eyes] Agrimony, Aȝꞃimonia, *Anglo-Saxon*.

The *Characters* are;

The Leaves are rough, hairy, pennated, and grow alternately on the Branches; the Calyx (or Flower-cup) conſiſts of one Leaf, which is divided into five Segments: the Flowers have five or ſix Leaves, and are form'd into a long Spike, which expand in Form of a Roſe: the Fruit is oblong, dry, and prickly, like the Burdock; *in each of which are contain'd two Kernels.*

The *Species* are;

1. AGRIMONIA *officinarum. Tourn.* The common *or* medicinal Agrimony.

2. AGRIMONIA *odorata. Camer.* The ſweet ſmelling Agrimony.

3. AGRIMONIA *minor, flore albo. Hort. Cath.* Leſſer Agrimony, with a white Flower.

4. AGRIMONIA *orientalis, humilis, radice craſſiſſima, repente, fructu in ſpicam brevem & denſam congeſtis. T. Cor.* Dwarf Eaſtern Agrimony, with thick creeping Roots, and the Fruit growing in ſhort thick Spikes.

The firſt of theſe Sorts is common in the Hedges in many Parts of *England*, and is the Sort commonly uſed in Medicine, but ſhould not be wanting in a Garden: It will grow in almoſt any Soil or Situation, and is increaſed by parting the Roots in Autumn, or by ſowing the Seeds ſoon after they are ripe.

The ſweet-ſmelling Agrimony is by ſome preferr'd to the common Sort for medicinal Uſes; but however it is certainly the moſt grateful to infuſe for pectoral Decoctions, and makes a pleaſant kind of Tea: It is propagated as the common Sort, but requires an opener Expoſure.

The third and fourth Sorts are preſerved in the Gardens of ſuch Perſons who are curious in botanical Inquiries; but as they are not uſed in Medicine, ſo they are ſeldom cultivated in other Gardens. They are both very hardy Plants, and may be propagated by ſowing of their Seeds on a Bed of light Earth, in the Spring, or by parting their Roots in Autumn, and when the Plants are come up, they will require no farther Care than only to keep 'em clear from Weeds, until they are large enough to tranſplant, when they may be planted in an open Bed of light Earth, where they will thrive, and endure the ſevereſt Cold of our Climate, as well as the common Sort.

AGRIMONOIDES; Baſtard Agrimony.

The *Characters* are;

It hath a roſaceous Flower, conſiſting of ſeveral Petals, which are placed in a circular Order, iſſuing out of the Diviſions of the Flower-cup; but the Flower and the Flower-cup are received into another Funnel-ſhaped Empalement, which is fringed. The

Flower-cup afterwards becomes a ſharp oval Fruit, which is infolded in the outer Empalement, and contains, for the moſt part, a ſingle Seed.

There is but one *Species* of this Plant at preſent known, which is;

AGRIMONOIDES; *Col. part* 1. 145.

This is a perennial Plant, which in its outward Appearance greatly reſembles Agrimony, but differs therefrom in its Flower; for which Reaſon Dr. *Tournefort* has ſeparated it from the Agrimonies. It may be propagated by Seeds, which ſhould be ſown in the Autumn, ſoon after they are ripe; for if they are kept out of the Ground till Spring, they are ſubject to miſcarry, or otherwiſe will remain in the Ground till the following Spring; whereas thoſe which are ſown in Autumn, do ſeldom fail to come up the next Spring. When the Plants appear, they will require no other Culture, but to keep them clear from Weeds until the following Autumn, when they ſhould be taken up and tranſplanted where they are to remain. Theſe Plants will grow in almoſt any Soil or Situation, provided they are not placed under the Drip of Trees.

The ſecond Year theſe Plants will produce Flowers and the Roots will abide ſeveral Years, and may be parted in Autumn, if you are willing to propagate them that Way.

AHOUAI.

The *Characters* are;

It hath a Funnel-ſhaped Flower, conſiſting of one Leaf, and is divided into ſeveral Parts at the Top; from whoſe Cup ariſes the Pointal, which is fixed like a Nail to the inner Part of the Flower, which afterwards becomes a fleſhy Fruit, almoſt of a Pear-ſhape, in which is incloſed a three-corner'd Nut.

The *Species* are,

1. AHOUAI. *Thev. Franc. Antarct.* 66.
2. AHOUAI *nerii folio, flore luteo. Plum.* Ahouai, with an Oleander Leaf, and a yellow Flower.

Theſe two Plants grow in great Plenty on the Continent in the Southern Parts of *America*, but are leſs common in the Iſlands of *America*. The firſt of them grows to the Height of our common Cherry-trees; the Leaves are three or four Inches long, and almoſt two Inches broad. The whole Tree is full of a milky Juice, which flows out on breaking or wounding any Part of it; the Wood of this Tree ſtinks moſt abominably; and the Kernel of the Nut is a moſt deadly Poiſon, ſo that the *Indians* always caution their Children againſt eating of it, for they know of no Antidote to expel this Poiſon, nor will they uſe the Wood of this Tree for Fuel; but they take the Kernel out of the Shell, into which they put ſmall Stones, and then bore a Hole thro' each Shell, and ſtring them; theſe they tye about their Legs, to dance with, as is the Cuſtom of our Morris-dancers with Bells.

The ſecond Sort is of much lower Growth than the firſt, and ſeldom riſes above ten or twelve Feet high. The Fruit of this Tree is of a beautiful red Colour when ripe, but the whole Plant abounds with a milky Juice as the former, and I believe is equally poiſonous. I received the Seeds of this Plant from *Panama*, which were collected by Mr. *Robert Millar* Surgeon, in the Year 1735; they came up in a Hot-bed very well, and ſome of the Plants produced Flowers the ſame Year.

Theſe Plants may be propagated from their Nuts, which ſhould be put into ſmall Pots fill'd with light Earth, and plunged into a Hot-bed of Tanners Bark, obſerving to water them frequently to promote their Vegetation. When the Plants are come up about two Inches high, they ſhould be tranſplanted each into a ſeparate Pot, filled with freſh light Earth, and plunged again into a Hot-bed of Tanners-bark, obſerving to ſhade the Glaſſes in the Heat of the Day, until the Plants have taken new Root; and they muſt be frequently refreſhed with Water. As the Summer advances, ſo theſe Plants ſhould have Air admitted to them, in proportion to the Warmth of the Seaſon; and when they have filled theſe ſmall Pots with their Roots, they ſhould be turned out, and tranſplanted into other Pots of a larger Size, which muſt alſo be filled with freſh light Earth, and then ſhould be plunged into the Hot-bed again, obſerving to water them frequently, as alſo to admit Air under the Glaſſes every Day, in proportion to the Warmth of the Seaſon. When the Plants are grown about a Foot high, they ſhould have a larger Share of Air, in order to harden them before the Winter; but they ſhould not be wholly expoſed to the open Air the firſt Year, becauſe it will ſtunt their Growth. In the Winter theſe Plants ſhould be placed in a warm Stove, and during that Seaſon they ſhould be frequently refreſhed with Water, but it muſt not be given to them in great Quantities in cold Weather, leſt it ſhould rot their Roots. In the following Spring theſe Plants ſhould be ſhifted again into other Pots, at which Time you ſhould take away as much as you conveniently can of the old Earth from their Roots, and afterwards cut off the decayed Fibres, then put them into Pots filled with light rich Earth, and if you have Conveniency to plunge them into a moderate Hot-bed of Tanners-bark, it will greatly promote their taking new Root. In *June* following theſe Plants ſhould be inured to bear the open Air by Degrees, into which they ſhould be removed toward the latter End of the ſame Month; but they ſhould be placed in a warm Situation, where they may be ſheltered from ſtrong Winds: In ſuch a Situation they will bear the open Air of our Climate very well until *September*, when they ſhould be again removed into the Stove, and muſt be managed during the Winter Seaſon, as was before directed. Theſe Plants produce their Flowers plentifully in *Auguſt*, but they have not as yet produced any Fruit in this Country. They retain their Leaves all the Year, which being thick, ſtrong, and of a ſhining green Colour, make a pretty Variety amongſt other tender Exotick Plants in the Winter Seaſon, for which they are chiefly eſteemed.

AIR, [Aer, *Lat.* Ἀῆρ, of τοῦ ἀεὶ εἶν, becauſe it always flows; or as others, of ἄημι, to breathe; or as others, of τοῦ αἴρειν, becauſe it bears the Earth.] By *Air* is meant all that fluid expanded Maſs of Matter which ſurrounds our Earth, in which we live and walk, and which we are continually receiving and caſting out again by Reſpiration.

The Subſtance whereof *Air* conſiſts, may be reduced to two Kinds; *viz.*

1. The Matter of Light or Fire, which is continually flowing into it from the heavenly Bodies.
2. Thoſe numberleſs Particles, which in Form either of Vapours or dry Exhalations, are raiſed from the *Earth*, *Water*, *Minerals*, *Vegetables*, *Animals*, &c. either by the *ſolar*, *ſubterraneous*, or *culinary* Fire.

Elementary Air, or *Air* properly ſo call'd, is a certain ſubtile, homogeneous, elaſtick Matter, the Baſis or fundamental Ingredient of the Atmoſpherical *Air*, and that which gives it the Denomination.

Air therefore may be conſider'd in two Reſpects, either as it is an univerſal Aſſemblage or *Chaos* of all kinds of Bodies; or as it is a Body endued with its own proper Qualities.

1. That there is Fire contain'd in all *Air* is demonſtrable, in that it is evident, that there is Fire exiſting in all Bodies; and to this Fire it is that *Air* ſeems to owe all its Fluidity; and were the *Air* totally diveſted of that Fire, it is more than probable that it would coaleſce into a ſolid Body; for it is found by many Experiments, that the *Air* condenſes, and contracts itſelf ſo much the more, the leſs Degree of Warmth it has; and, on the contrary, expands itſelf the more, according as the Heat is greater.

2. In reſpect of *Exhalations*, *Air* may be ſaid to be a general Collection of all kinds of Bodies; for there are no Bodies but what Fire will render volatile and diſperſe into *Air*; even Salts, Sulphurs, and Stones, nay and Gold itſelf, tho' the heavieſt and moſt fixed of all Bodies, are convertible into Vapours by a large Burning glaſs, and are carried on high.

Thoſe floating Particles thus raiſed from terreſtrial Bodies, are moved and agitated by the fiery Particles divers Ways, and are diffuſed thro' the whole Atmoſphere.

Of the Matters thus raiſed in the Atmoſphere, thoſe which come from fluid Bodies, are properly called *Vapours*, and thoſe from ſolid or dry ones, *Exhalations*.

The Cauſe of this Volatility and Aſcent is the Fire, without which all Things would fall immediately down towards the Center of the Earth, and remain in eternal Reſt.

Thus if the *Air* be full of Vapours, and the Cold ſucceeds, thoſe Vapours before diſperſed are congregated and condenſed into Clouds, and thus fall back again into the Form of *Water*, *Rain*, *Snow*, or *Hail*.

From the Time of the Entrance of the Spring till Autumn, the Evaporation is conſtant; but then it begins to fail, and in the Winter ceaſes, to lay up freſh Matter for the coming Seaſon.

And thus it is that froſty Winters, by congealing the Waters, and by covering the Earth with a Cruſt, and thus impriſoning the Exhalations, make a fruitful Summer.

And this ſeems to be the Reaſon why in ſome Countries, where the Winter is ſeverer than ordinary, the Spring is more than ordinary fruitful: For in ſuch Places the Exhalations being pent up a long time, are diſcharged in the greater Quantity, when the Sun makes them a Paſſage; whereas under a feebler Cold, the Flux would have been continual, and conſequently no great Stock reſerved for the next Occaſion.

This vaporous Matter then being at length received into the Atmoſphere, is return'd again in the Form of Rain, a Forerunner of a cheerful Crop.

As the Sun retires, the Cold ſucceeds; and thus the Diverſity of the Seaſons of the Year depends on a Change in the Face of the Cruſt of the Earth, the Preſence of the Air, and the Courſe of the Sun.

And hence we conceive the Nature of Meteors, which are all either Collections of ſuch Vapours, and Exhalations, or Diſperſions thereof.

Collections of Vapours make Clouds, which being farther and farther condenſed, turn to Snow, Rain, or Hail.

The ſubtiler Oils are always riſing into the Air: Now two Clouds, partly form'd of ſuch Oils, happening to meet and mix, by the Attrition the Oil frequently takes Fire, and hence proceed Thunder, Lightenings, and other Phænomena; which may be farther promoted by the Diſpoſition of the Clouds to favour the Excitation.

And hence ariſe great and ſudden Alterations in the Air; inſomuch that it ſhall now be intenſely hot, and raiſe the Spirits perhaps to 88 Degrees in a Thermometer; and yet, after a Clap of Thunder with a Shower, it ſhall fall again in a few Minutes no leſs than 20 or 30 Degrees.

Ice may be, and is form'd even in the Heavens, from the intenſe Cold that frequently prevails there; and the Sun's Rays paſſing duly thro' the Ice, have their Force conſiderably increaſed; as we ſee in Burning-glaſſes made of Ice.

And hence our Degree of Heat may be greatly heightened; as accordingly we obſerve, that when our Atmoſphere is replete with Clouds, provided they are not groſs enough to intercept the Rays, our Heat is then moſt intenſe and ſultry.

It is known that none of theſe Clouds are above an *Engliſh* Mile high; and even the white ones, in fair Weather, are rarely found to be more than three quarters of a Mile, and ſeldom above half a Mile from the Surface of the Earth, and on very high Mountains the Warmth is inconſiderable.

In effect, our Heat depends more on the Circumſtances of the Clouds, and the Bodies that are beneath them, than on all that is above them, taking Sun, Moon, Stars and all.

It is therefore impoſſible to pronounce what the Degree of Heat will be in any given Place at any Time, even tho' we know ever ſo well the Places and Poſition of the Sun and Planets with reſpect to us, ſince it depends ſo much upon other variable Things, no ways capable of being aſcertained.

The Height or Depth of the *Air* makes a yet farther conſiderable Alteration therein; for the Exhalations are few of them able to aſcend above the Tops of Mountains; and on ſome Mountains in *Bavaria* it is Winter, and on the other Side Summer at the ſame Time; ſo that while this Side is parched with Heat, that lies buried in Snow: And the Inhabitants on one Side of a Mountain have all periſhed with the Plague, while thoſe of the other Side have remained in perfect Health.

The lower the Place, the cloſer, denſer, and heavier is the *Air*, till at length you arrive at a Depth where the Fire goes out: ſo that Miners, who go deep, to remedy this Inconvenience, are forced to have Recourſe to an artificial Wind, raiſed by the Fall of Waters, to do the Office of the other *Air*.

The *Air* may likewiſe undergo ſome Alterations by Means of its Motion: Thus a briſk Wind leſſens the Preſſure of the incumbent Atmoſphere; by which means the ſubterraneous Air may be enabled to raiſe the Cruſt of the Earth, or occaſion a ſhuddering of it: And hence proceeds Mr. *Hawkſby*'s Obſervation, that the Barometer ſinks very notably when the Wind is raiſed, or the *Air* agitated about the ſame Time.

Now conſidering the *Air* as ſuch a *Chaos* or Aſſemblage of all Kinds of Bodies, and a *Chaos* ſo extremely liable to change, it muſt needs have a great Influence on vegetable Bodies.

In general, the *Air*, as it contains divers Kinds of Exhalations, has a wonderful Effect towards promoting, ſtopping or altering the Actions of all Bodies on each other: ſo if pure well-fermented Wine be carried into a Place where the Air is repleniſhed with the Fumes of new Wine next fermenting, it will begin to ferment afreſh: And from the *Air*, conſider'd as before, do ariſe many aſtoniſhing Effects.

The *Air* is every where in continual Motion; for in the ſtilleſt Seaſon, when no Wind is ſtirring, if a Perſon places himſelf in a darken'd Room, which only receives the Light in at a little Hole, capable of admitting a ſingle Ray; that Ray dividing itſelf, and illuminating the whole Length of the Room, he may perceive every Thing, all the external Objects, whoſe Species are brought in Motion, which is owing to the external Air, which inſinuating itſelf thro' the Chinks of the Edifice, moves that on the Outſide of the Chamber. And hence, The Mercury in a very large accurate *Barometer* is found to be continually vibrating or leaping up and down, without ever remaining a Moment quiet.

This perpetual Motion of the *Air* is owing to Fire, which acts there on the true, proper *Air*, by means of its native Elaſticity.

Others ſay, the Cauſe from whence the *Air*, which is compoſed of ſo many heterogeneous Particles, receives its ſudden and continual Motion, is properly the *Æther*, or the ſubtile and celeſtial Matter, and from it the *Corpuſcula* in the Air acquire their Force and Motion; and beſides, one Part moves another by the ſame Means; and by how much ſmaller the Bodies are, by ſo much is their Motion the more ſudden; and this is done inceſſantly, tho' we cannot perceive it.

Theſe Particles of *Air* are very light, yet nevertheleſs they have their Weight, according to their Proportion and Degree of Levity.

The Motion of the *Air*, and conſequently its Force and Effect, ariſe wholly from Fire, by moving all the various Kinds of Particles which are in the Air, and performs infinite Operations.

In the extremeſt Cold, the *Air* ſcarce acts at all, but is contracted within itſelf; but when warm, expands again, and agitates other Bodies; conſequently as the Degrees of Heat are infinite, ſo muſt the Actions and Effects of the *Air* be: Add, that as the Fire acts on all the Corpuſcles that are in the Air, and theſe are infinite, it is evident that all the Actions thereof are indefinite.

3. *Air* conſider'd in itſelf, or that properly call'd *Air*.

Beſides the Fire and Exhalations contain'd in the circumambient Atmoſphere, there is a third Matter, which is what we properly mean by *Air*.

To define the Nature of it would be extremely difficult, inaſmuch as its intimate Affections are unknown to us: All we know is,

1. That *Air* is naturally an homogeneous ſimilar Body.
2. That it is fluid.
3. That it is heavy.
4. That it is elaſtick.
5. That it rarefies by Fire, and contracts by Cold.
6. That it is compreſſible by a Weight laid thereon, and riſes, and reſtores itſelf upon a Removal of the ſame: All which Circumſtances ſhould incline it to coaleſce into a Solid, if Fire were wanting.

1. *Air* is divided into *real* and *permanent*, and *apparent* or *tranſient*.

Real Air is not reducible by any Compreſſion or Condenſation, or the like, into any Subſtance beſides *Air*.

Tranſient Air is the contrary of the former, and by Cold, &c. may be condenſed into original Water: The Difference between *permanent* and *tranſient Air* amounts to the ſame as that between Vapour and Exhalation; the one, *e. g.* being dry, and the other moiſt.

Hence, as Sir *Iſaac Newton* ſays, it is, that as the Particles of *permanent Air* are groſſer, and ariſe from denſer Bodies than thoſe of tranſient Air or Vapour, *true Air* is more pondrous than Vapour, and a moiſt Atmoſphere lighter than a dry one.

But this *real Air* no where conſiſts in its Purity; but that *Air* which concerns us, and the Properties and Effects of which are chiefly to be conſider'd, is that which has been before treated on and deſcribed, which Mr. *Boyle* acknowledges to be the moſt heterogeneous Body in the Univerſe; and Dr. *Boerhaave* ſhews to be an univerſal *Chaos* and Colluvies of all the Kinds of created Bodies in the Univerſe, and in which may be found whatever Fire can volatilize.

2. That the *Air* is *fluid*, appears from the eaſy Paſſage it affords to Bodies thro' it; as in the Propagation of Sounds, Smells, and other Effluvia: For theſe Things ſhew it a Body that gives way to any Force impreſſed; and in yielding are eaſily moved among themſelves, which are the Properties of a Fluid: ſo that ſcarce any Body will call in queſtion, whether *Air* be a *Fluid*, and thence being always in Motion, and always moving other Bodies; for no Surface of any Liquor that is contiguous to the *Air*, can be at reſt.

3. As to the *Gravity* or *Heavineſs* of the *Air*, that is likewiſe eaſily proved; for that the *Air* is heavy, follows from its being a Body, Weight being an eſſential Property of Matter.

Senſe and Experiment ſufficiently prove this; for, if a Perſon lay his Hand upon an open Veſſel placed on an Air Pump, and the *Air* be exhauſted, he will ſenſibly feel the Load of the incumbent Atmoſphere to increaſe, and preſs upon the upper Part of his Hand, as the *Air* is exhauſting.

In like manner, a hollow Sphere of five or ſix Inches diameter, divided into two Segments exactly fitting each other, after the *Air* is exhauſted out of them, are preſſed together with a Force equal to an hundred Pounds Weight, and require the Strength of two ſtrong Perſons to pull them aſunder; which, as ſoon as ever the *Air* is let into them again, will fall aſunder by the mere Weight of the under Hemiſphere.

The Elements of all Bodies are as heavy as the Elements of Gold, and Variety of Bodies, in point of Weight, ariſes only from the particular Surface which thoſe Particles acquire in the Contexture: Thus, if Gold be beaten into very thin Leaves, it will ſwim in Water, or be carried about by the Air; ſo that it does not appear, that the leaſt Particles of *Air* are more porous than thoſe of Gold.

Again, that the *Air* has Gravity, is demonſtrable, in that it may actually be weighed; and a Bladder blown full of Air, weighs more than when it was empty.

Mr. *Boyle* found that a Lamb's Bladder containing about Two-thirds of a Pint, and blown up, and well dried, loſt about a Grain and One-eighth, when it was prick'd, and the Air let out.

Mr. *Graveſende* found, that the Air in a Glaſs Ball of about 283 Inches Capacity, weigh'd an hundred Grains; and according to *Burcher de Volder*, a Cubit Foot of *Air* is in Weight one Ounce and twenty-ſeven Grains.

Mr. *Boyle* has computed, that the Weight of any Quantity of *Air*, near the Surface of the Earth, is to Water as 1 to 1000; and Dr. *Halley*, as 1 to 800; and Mr. *Hawkſby*, as 1 to 885, and the Gravity of the ſame Quantity of *Air* to the ſame Quantity of *Mercury*, as 1 to 10800.

As to the Uſe and Effects of this Preſſure of the *Air*, the Weight of the whole incumbent *Air* is ſuch as enables it to ſuſtain the Mercury in the *Torricellian* Tube to the Height of 28 Inches, and Water to that of 32 Feet: But the Weight or Gravity of the *Air* is continually varying, according to the different Degree of Heat and Cold; and Experiments made in different Places neceſſarily vary in regard of the different Heights of the Places, and the Differences of *Air* ariſing therefrom: And ſo the Mercury in a Barometer is found to deſcend a fourth-part of an Inch for every 100 Foot of Aſcent.

Air therefore may be conſider'd as an univerſal *Operculum* or Cover, which by its Weight keeps all terreſtrial Bodies down, and hinders them from flying off.

4. The *Air* is *elaſtick*. Elaſticity is a Quality whereby a Body yields to any external Impreſſion, by contracting itſelf into leſs Compaſs; and upon removing or diminiſhing the impreſſive Power, returns to its former Space or Figure: And by this Quality, the *Air* is diſtinguiſh'd from all other Bodies in the Atmoſphere; neither Fire nor Exhalations appearing to be elaſtick, at leaſt in any notable Degree.

That there is ſuch a Quality in the *Air*, is evident from innumerable Experiments; and this Property is inſeparable from it: A Bladder full blown being ſqueez'd in the Hand, the included Air may be ſenſibly perceived to reſiſt the Touch; ſo that upon ceaſing to compreſs it, the Cavities or Impreſſions which were made in its Surface are immediately expanded again and filled up.

Alſo thin Glaſs Bubbles, or Bladders full of *Air*, and exactly cloſed and put into the Receiver of an *Air Pump*, the *Air* being exhauſted out of the Receiver, the Glaſs Bubbles fly in Pieces by the Force of the *Air* included in them.

Again, if a Bladder quite flaccid, having but a very little Quantity of Air included in it, be put into a Receiver, and the Air exhauſted out of the Receiver, the Bladder will ſwell as the Air is exhauſted, till it be quite full.

This *Niſus*, or Endeavour to expand itſelf, is always exerted by every Particle of *Air*; and thus ſtrives againſt an equal Endeavour of the ambient Particles of *Air*: But as the Reſiſtance happens by any means to be weaken'd, it immediately diffuſes itſelf into a vaſt Extent.

This Power or Property of the *Air* does not ſeem to have any Limits aſſigned it. Mr. *Boyle*, by ſeveral Experiments, dilated it firſt into 9 times its Space, then into 31, then into 60, then into 150; afterwards it was brought to dilate into 8000 times its Space, then into 10000, and at laſt into 13679 times its Space; and all by its own expanſive Force, without any Help of Fire.

From theſe Experiments, and many others, it appears, that the *Air* we breathe near the Surface of the Earth is compreſs'd by its own Weight into at leaſt 13679 Parts of the Space it would poſſeſs *in Vacuo*: And if the ſame *Air* be condenſed by Art, the Space it will occupy, when moſt dilated, will be as 505000 to 1, to that which it poſſeſſes when condenſed: And Dr. *Wallis* ſuggeſts, that we are far from knowing the utmoſt it is capable of.

Nor does this Power appear capable by any Means to be deſtroy'd or diminiſh'd: For Mr. *Boyle* made ſeveral Experiments to diſcover how long *Air*, brought to the greateſt Degree of Expanſion he could reduce it to in his *Air Pump*, would retain its Spring, and could never obſerve any ſenſible Diminution; altho' the *Air* was clogg'd ſome Months with a Weight that one would admire how it ſhould ſupport one Moment.

It is, indeed, a wonderful Property in *Air*, that it ſhould be capable of being contracted and extended infinitely; but, as hath been ſaid, it does not appear, by all the Experiments yet tried, that there are any Limits of its Compreſſion or Expanſion; but ſtill by the Addition of a new Weight it will contract farther, and by taking the Weight away, will expand farther.

This wonderful Property has given Occaſion to ſeveral learned Perſons to examine into the Structure of the *Air*, or Figure of its Particles, and to form ſome Conception or Idea as to the Structure of it.

Mr. *Boyle* conceives the *Air* to be a Congeries of minute *Floſculi*, all ſpringy, expanſible, and contractible, and ſuppoſes it to derive its elaſtick Force from its Structure, or the Form of theſe *Floſculi*, which he reſembles to Fleeces of Wool: Which if ſeveral Fleeces be laid one upon another, and they be compreſs'd by the Hand, or any Weight, have an elaſtick Force, and upon the Removal of the Preſſure, will riſe again.

Others reſemble the Particles of the *Air* to the Springs of Watches coil'd up, and endeavouring to reſtore themſelves.

Others to very ſlender Wires of different Subſtances, Conſiſtences, Lengths, and Thickneſſes; in greater Curls, or leſs; nearer to, or remoter from each other, &c. yet all continuing ſpringy, expanſible, and compreſſible.

Others compare them to thin Shavings of different Kinds of Wood, various in their Length, Breadth, and Thickneſs.

Sir *Iſaac Newton* conſiders *Air*, as to the Effects alone, without concerning himſelf as to the Figure of its Particles, and obſerves, that theſe aerial Particles exert certain new Powers in approaching nearer each other, whereby they mutually endeavour to recede or fly from each other: ſo that the farther they are apart, this Force does act the leſs; and the ſtronger, the nearer: And thus he brings the Inſtance of *Air* and *Vapours*, which ſeem to diſcover ſome ſuch repelling Power, as an Argument of the ſame Power's being found in other Bodies.

Tho' either of theſe Hypotheſes may be ſufficient, yet the former aſſumes or takes the more for granted, ſince it ſuppoſes the *Air* to be fleecy; whereas, according to the latter, the Particles of the *Air* may be of any Figure at Pleaſure, provided they are but allow'd the *Vis recedendi*; but ſome who have moſt accurately and ingeniouſly conſider'd it, have confeſſed, that they do not know what the *Air* is.

5. *Air* rarefies by Fire, and contracts by Cold.

The colder the *Air* is, the leſs Space it takes up; and, on the contrary, the warmer the *Air* is it poſſeſſes, the larger the Space; and ſo Cooling and Compreſſion have the ſame Effects upon *Air*; and ſo Cold and Compreſſion keep Pace with one another.

The ſame holds of warming and diminiſhing of Weight, or Heat and Expanſion, which go Hand in Hand.

And to the ſame elaſtick Power before-mention'd, and its being expanded by Heat, it is owing, that *Air* incloſed in Glaſs Veſſels, at a time when it is much condenſed, when it afterwards comes to expand by a farther Degree of Heat, frequently burſts the Bottles.

All thoſe Perſons who have travelled the higheſt Mountains, agree, that the *Air* is colder in high Places than near the Surface of the Earth; and, of Conſequence, the *Air* there muſt contract itſelf more in Proportion; yet notwithſtanding the *Air* of the ſame Places conſider'd, as it is preſs'd with a leſs Load of incumbent *Air*, muſt expand itſelf more. And hence it is, that Barometrical Experiments, made on the Tops of the higheſt Mountains, are frequently very wavering and precarious.

6. *Air* is compreſſible by a Weight laid thereon, and riſes and reſtores itſelf upon a Removal of the ſame. This Property has been ſufficiently ſhewn by what has been ſaid before, and eſpecially under the Head of Elaſticity: Wherefore, having conſidered the Properties of *Air*, I ſhall take notice of ſome of its Operations and Effects as to the Buſineſs of Vegetation.

Air, by being heavy and fluid, inveſts the whole Earth, and preſſes all the Bodies thereon with a great Force, equal to what they would ſuſtain from the Preſſure of a Column of 29 Inches depth of Mercury, or 32 Feet of Water, and conſtringes and binds them down with a Force amounting, according to the Computation of Mr. *Paſchal*, to 2232 Pounds Weight upon every ſquare Foot, or upwards of 15 Pounds upon every ſquare Inch. Hence it prevents, *e. g.* the arterial Veſſels of Plants and Animals from being too much diſtended by the *Impetus* of the circulating Juices, or by the elaſtick Force of the *Air* ſo plentifully lodged in the Blood of one, and the Sap of the other. For,

The *Air* preſſes equally every Way, as is confirmed in what we obſerve of ſoft Bodies ſuſtaining this Preſſure without any Change of Figure, and brittle Bodies without their breaking.

Air is a principal Cauſe of the Vegetation of *Plants*, an Inſtance of which we have from Mr. *Ray*, in the *Philoſophical Tranſactions*, of Lettice-ſeed, that was ſown in the Glaſs Receiver of the *Air Pump*, which was exhauſted and clear'd from all *Air*, which grew not at all in eight Days time; whereas ſome of the ſame Seed that was ſown at the ſame time in the open *Air*, was riſen to the Height of an Inch and an half in that time; but the *Air* being let into the empty Receiver, the Seed grew up to the Height of two or three Inches in the ſpace of one Week.

Another Inſtance of the Uſefulneſs of the *Air* in Vegetation, is the *Sedum*, which will puſh out Roots without Earth and Water, and live for ſeveral Months: And ſome Sorts of Aloes, if hung up in a Room intirely ſecured from Froſts, will remain freſh for ſome Years, tho' they will ſenſibly loſe in their Weight.

Air is capable of penetrating the porous and ſpongy Parts of Plants, and being there contracted, and dilating itſelf again.

The *Air* operates alſo within the Bowels of the Earth, and by its Subtilty perſpiring thro' the Pores, aſſiſts in the Rarefaction of the Crudities of the Earth, and in the diſpelling all ſuperfluous Moiſture, entering into the very Pores and Veins of the Trees, Plants, Herbs, &c. carrying along with it thoſe Salts contain'd either in itſelf, or lodged in the Earth; which Salts or Juices are alter'd according to the ſeveral Figures or Dimenſions of the different Strainers or Veſſels of thoſe ſeveral Plants which grow upon the ſame Spot of Earth, which is ſo impregnated with theſe Salts: And thence thoſe Varieties in Taſte and Smell proceed, notwithſtanding they all receive their Nouriſhment from the ſame Stock that is lodg'd in the Earth.

The *Air* alſo affects the Branches, Leaves, and Flowers of Trees, Plants, and Herbs, entering and perſpiring thro' them, and even thro' the Bark and Body of the Tree; and by the ſame kind of Subtility it does, by its refreſhing Breezes, moderate the Intenſeneſs of the Sun-beams, cooling, chearing, blowing, opening, and extending all the Offspring of Nature.

The *Air* fixes and inſinuates its aerial Subſtance into the liquid Sap of Vegetables, and as all the Agitations in Nature proceed from the Contrariety of Parts inhabiting together, ſo in this aerial and liquid Subſtances being mix'd, cauſe this Agitation and Motion in Vegetables, or, more properly, ſet it all into a Ferment, (whether it be in the Roots or in the Stem) and riſes by Co-operation of the Sun (which is the third Agent in Vegetation) up to the Top of a Tree, &c. as Liquids riſe by Fire to the Top of the containing Veſſel.

This *Air*, we find, produces a vibratory Motion in ſeveral Bodies, and particularly in Plants; the Air Veſſels thereof do the Office of Lungs: For the *Air* contain'd in them, ſometimes contracting and ſometimes expanding, according as the Heat is increaſed or diminiſhed, preſſes the Veſſels, and eaſes them again by Turns, and thus promotes a Circulation of their Juices, which could ſcarce be otherwiſe effected.

Air ſays the learned Dr. *Hales*, is a fine elaſtick Fluid, with Particles of very different Natures floating in it, whereby it is admirably fitted by the great Author of Nature to be the Breath or Life of Vegetables as well as Animals, without which they can no more live nor thrive than Animals can.

As a Proof of the great Quantities of *Air* in Vegetables, he refers to the third Chapter of his excellent Treatiſe of *Vegetable Staticks*, where, he ſays, in the Experiments on *Vines*, the great Quantity of *Air* was viſible, which was continually aſcending thro' the *Sap* in the Tubes; which manifeſtly ſhews what Plenty of it is taken in by Vegetables, and is perſpired off with the Sap thro' the Leaves.

He adds ſeveral Experiments, as to an *Apple-Branch*, *Apricot-Branch*, *Birch*, and other Plants, to prove the ſame Thing.

And Dr. *Grew* has obſerved, that the Pores are ſo large in the Trunks of ſome Plants, as in the better ſort of thick walking Canes, that they are viſible to a good Eye without a Glaſs; but with a Glaſs, the Cane ſeems as if ſtuck at Top full of Holes with great Pins, ſo large as very well to reſemble the Pores of the Skin in the Ends of the Fingers, and Ball of the Hand.

In the Leaves of Pines, they are likewiſe thro' a Glaſs a very elegant Shew, ſtanding almoſt exactly in Rank and File thro' the Length of the Leaves.

Whence it may be thought probable, that the *Air* freely enters Plants, not only with the principal Fund of Nouriſhment by the Roots, but alſo thro' the Surface of their Trunks and Leaves, eſpecially at Night, when they are changed from a perſpiring, to a ſtrongly imbibing State.

Mr. *Hales* likewiſe tells us, that in all thoſe Experiments that he tried to this Purpoſe, he found that the *Air* enter'd very ſlowly at the Bark of young Shoots and Branches, but much more freely thro' old Bark; and that in different Kinds of Trees it had different Degrees of more or leſs free Entrance.

And likewiſe, that there is ſome *Air* both in an elaſtick and unelaſtick State, mix'd with the Earth, (which may well enter the Roots with the Nouriſhment) he found by ſeveral Experiments, which he gives in the before-mentioned Treatiſe.

The excellent Mr. *Boyle*, in making many Experiments on the *Air*, among other Diſcoveries found, that a good Quantity of *Air* was producible from Vegetables, by putting Grapes, Plums, Gooſberies, Peas, and ſeveral other Sorts of Fruits and Grains into exhauſted and unexhauſted Receivers, where they continued for ſeveral Days emitting great Quantities of *Air*.

This put the curious Dr. *Hales* upon farther Reſearches to find out what Proportion of *Air* he could obtain out of the different Vegetables in which it was lodged and incorporated, which he performed by divers *chimio-ſtatical* Experiments, which he gives in many Inſtances in his Treatiſe of Analyſis of the *Air*, plainly ſhewing in what Manner he performed them, and the Events of them.

That from half a Cubick Inch, or 135 Grains of *Heart of Oak*, freſh cut from a growing Tree, there were 108 Cubick Inches of *Air* generated, which is a Quantity equal to 216 times the Bulk of the Piece of Oak; that the Weight of it was above 30 Grains, one quarter Part of the Weight of 135 Grains.

And he adds, that he took the like Quantity of thin Shavings from the ſame Piece of Oak, and dried them at ſome Diſtance from a gentle Fire for 24 Hours; in which Time they evaporated 44 Grains of Moiſture; which 44 Grains deducted from 135 Grains, there remain 91 Grains for the ſolid Part of the Oak: Then 30 Grains will be One-third of the Weight of the ſolid Part of the Oak.

He gives another Experiment of *Indian* Wheat, which grew in his own Garden, that he took 388 Grains of it, when it was not come to its full Maturity, and that there were generated from it 270 Cubick Inches of *Air*; the Weight of which *Air* was 77 Grains, *viz.* One-fourth of the Weight of the Wheat.

And again, that a Cubick Inch, or 318 Grains of Peas generated 396 Cubick Inches of *Air*, or 113 Grains, *i. e.* ſomething more than One-third of the Weight of the Peas.

And again, that from one Ounce, or 437 Grains of Muſtard-ſeed, 270 Cubick Inches of *Air* were generated, or 77 Grains, which is more than One-ſixth Part of the Ounce Weight.

He likewiſe adds, that there is a great Plenty of *Air* incorporated into the Subſtance of *Vegetables*, which, by the Action of Fermentation, is rouz'd into an elaſtick State, as is evident from theſe Experiments following.

On the ſecond Day of *March*, he poured 42 Cubick Inches of Ale from the Ton, which had been there ſet to ferment 34 Hours before into a Bolt-head; and from that Time, to the 9th of *June*, it generated 639 Cubick Inches of *Air*, with a very unequal Progreſſion, more or leſs as the Weather was warm, cool, or cold, and ſometimes upon a Change from warm to cool, it reſorbed *Air*, in all 32 Cubick Inches.

From the 2d of *March* to the 16th of *April*, 12 Cubick Inches of *Malaga* Raiſins, with 18 Cubick Inches of Water, generated 411 Cubick Inches of *Air*; and then again, it reſorb'd 35 Cubick Inches in two or three cold Days: From the 21ſt of *April* to the 16th of *May*, it generated 78 Cubick Inches; after which, the 9th of *June*, it continued in a reſorbing State, ſo as to reſorb 13 Cubick Inches: That there were at that Seaſon many hot Days, with much Thunder and Lightning, which deſtroys the Elaſticity of the *Air*: ſo there were generated in all 489 Cubick Inches, of which 48 were abſorb'd. The Liquor was at laſt vapid.

On the 10th of *Auguſt*, 26 Cubick Inches of Apples being marſhed, they generated 986 Cubick Inches of *Air* in 13 Days time, which is a Quantity equal to 48 times their Bulk; after which they did reſorb a Quantity equal to their Bulk, in three or four Days, notwithſtanding the Weather was then very hot; after which Time they were ſtationary for many Days, neither generating nor abſorbing.

From which before-mention'd Experiments on *Raiſins* and *Ale*, the ingenious Author concludes, that Wine and Ale do not turn vapid in warm Weather by imbibing the *Air*, but by fermenting and generating too much; by which Means they are deprived of their enlivening Principle the *Air*: For which Reaſon theſe Liquors are beſt preſerved in cool Cellars, whereby this active invigorating Principle is kept within due Bounds, which when they exceed, Wines are upon the Fret, and are in Danger of being ſpoil'd.

Upon theſe and many other Experiments, which the learned Author has given in his aforeſaid Treatiſe, he obſerves, that this *Air* which ariſes in ſo great Quantities from fermenting and diſſolving Vegetables, is *true permanent Air*, which is certain, by its continuing in the ſame expanded and elaſtick State for many Weeks and Months, which expanded watery Vapours will not do, but ſoon condenſe when cold.

Upon the whole, he concludes, that *Air* abounds in Vegetable Subſtances, and bears a conſiderable Part in them: And if all the Parts of Matter were only endowed with a ſtrongly attracting Power, whole Nature would then immediately become one unactive cohering Lump.

Wherefore it was abſolutely neceſſary, in order to the actuating this vaſt Maſs of attracting Matter, that there ſhould be every where mix'd with it a due Proportion of ſtrongly repelling elaſtick Particles, which might enliven the whole Maſs, by the inceſſant Action between them and the attracting Particles.

And ſince theſe elaſtick Particles are continually in great abundance reduced by the Power of the ſtrong Attracters, from an elaſtick to a fix'd State; it was therefore neceſſary that theſe Particles ſhould be endued with a Property of reſuming their elaſtick State, whenever they were diſengaged from that Maſs in which they were fix'd, that thereby this beautiful Frame of Things might be maintain'd in a continual Round of the Production and Diſſolution of Vegetables as well as animal Bodies.

The *Air* is very inſtrumental in the Production and Growth of Vegetables, both by invigorating their ſeveral Juices, while in an elaſtick active State, and alſo by greatly contributing in a fix'd State, to the Union and firm Connexion of the ſeveral conſtituent Parts of thoſe Bodies, *viz.* their *Water*, *Fire*, *Salt*, and *Earth*.

To conclude, by reaſon of thoſe Properties of the *Air* beforementioned, it is very ſerviceable to Vegetables, in that it blows up and breaks open the Clouds, thoſe Treaſures of Rain, which fertilizes the Vegetable Kind.

The *Air* alſo helps to waft away or diſperſe thoſe foggy humid Vapours which ariſe from the Earth, and would otherwiſe ſtagnate, and poiſon the whole Face of the Earth.

The *Air*, by the Aſſiſtance of the *Sun*, aſſumes and ſublimates thoſe Vapours into the upper Regions; and theſe foggy humid Vapours are, by this Sublimation, and the coercive Power of the *Air* and *Sun*, rarefied and made of ſecond Uſe in Vegetation.

And, on the contrary, to the benign Quality of the *Air*, which is ſo many Ways ſubſervient to Vegetables; ſo it is alſo ſometimes, and upon ſome Accounts, injurious and pernicious to them; not only to the ligneous, herbaceous and flowery Parts above, but alſo to the Roots and Fibres below: for in that the *Air* penetrates into the Earth, it is eaſy to be concluded, that a dry, huſky, ſcorching *Air* may be very prejudicial to the tender Fibres of new-planted Trees.

It may be likewiſe ſuppoſed, that all Bodies of Earth are more or leſs capable of imbibing the *fluid Air*, and of attracting ſuch Salts as either the *Air* can give, or the *Earth* is capable of receiving.

ALA, is the Hollow of a Stalk, which either the Leaf, or the Pedicle of the Leaf, makes with the Stalk or Branches; or it is that hollow Turning or Sinus placed between the Stalk or Branch and Leaf, from whence a new Off-ſpring is wont to put forth, which the *French* call, *Aiſſelles des Plantes.* Sometimes it is taken for a little Branch; as when they ſay, a Stock or Stem, arm'd with many *Alæ*, becauſe Branches grow to the Stock as ſo many Wings.

ALÆ is alſo uſed to ſignify thoſe *Petalæ* of papilionaceous Flowers placed between the *Vexillum* and the *Carina*, which the *French* call, *Les Ailes des Fleurs legumineuſes.*

ALÆ is alſo uſed for thoſe extreme ſlender membranaceous Parts of certain Seeds; as in the *Bignonia*, *Plumeria*, the Fruit of the Maple, *&c.* which the *French* call *Semences aîlées.* Again,

ALÆ is uſed for thoſe foliaceous Membranes which run the whole Length of the Stem; whence it is called, *Caulis alatus*, a winged Stem; in *French*, *Tige aîlée.*

ALABASTRA, are thoſe green herbaceous Leaves that encompaſs Flowers. *Jungius* explains *Alabaſtrum* to be the Globe, or roundiſh Bud, that is but juſt peeping out.

ALATERNOIDES, [*Alaternus* and εἶδος, *Gr.* Form or Shape] a Sort of Alaternus.

The *Characters* are;

This differs from the Alaternus, *in having three Seeds joined together, in the manner of the* Tithymalus, *(or Spurge) whereas the* Alaternus *has three Seeds incloſed with one common Covering, and appears to be a ſingle Berry, till it is opened.*

There are, at preſent, but three *Species* of this Plant known in the *Engliſh* Gardens; *viz.*

1. ALATERNOIDES *Africana, lauri ſerratæ folio. Com. Præl.* The African *Alaternoides*, with ſerrated Bay-leaves.
2. ALATERNOIDES *Africana, Ericæ foliis, floribus albicantibus & muſcoſis. H. Amſt.* The African *Alaternoides*, with Leaves like the Heath, and white Flowers.
3. ALATERNOIDES *Africana, Telephii, legitimi Imperati folio, flore viridi. H. Amſt.* The African *Alaternoides*, with Leaves like the true Orpine of *Imperatus*, and green Flowers.

The firſt of theſe Sorts has been an old Inhabitant of the *Engliſh* Gardens, and is ſtill continued by Perſons that are curious in Collections of Plants; but it hath no very great Beauty, being with great Difficulty reducible to any tolerable Shape, and the Flowers (which but ſeldom appear with us) afford no great Proſpect, being very ſmall, and of a greeniſh yellow Colour.

This is eaſily increaſed by planting Cuttings, in any of the Summer Months, in a ſhady Border, which do readily take Root, but muſt be potted and houſed in Winter with Myrtles, *&c.*

The ſecond Sort has been lately introduced amongſt us, and is, at preſent, rare in *England*; this is a very beautiful Plant, producing large Tufts of fine white Flowers, in *November*, *December*, and *January*, which is a Seaſon that few Plants are in Flower in the Green-houſe.

This is thought pretty difficult to increaſe; but I planted only ſix Cuttings of it in a Pot of light freſh Earth, and plunged the Pot into a cool Bed of Tanners Bark, in *September*; and five of the ſix Cuttings grew, and made fine Plants.

And I believe that to be the beſt Seaſon to plant the Cuttings, it being the Time when the Plant begins to ſhoot, and prepare for flowering.

This muſt be houſed, and kept in the ſame Green-houſe with Oranges, *&c.*

The third Sort is yet more rare than the ſecond, and is in very few Gardens at preſent: This is increaſed by planting Cuttings in *June* or *July*, keeping them ſhaded and water'd till they have taken Root: at *Michaelmas* they muſt be potted, and houſed with the ſecond Sort, but this is not near ſo fine a Plant as that is.

ALATERNUS, [call'd 'Ελαιόπρινος, as tho' of ἐλαία, an Olive, and πρίνω, an Ilex] or ever-green Privet.

This Tree, Mr. *Bradley* ſays, is diſtinguiſh'd from the *Phillyrea*, only by the Leaves of this being placed alternately upon the Branches; whereas thoſe of the *Phillyrea* are produced by Pairs oppoſite to each other: But this is not the real Difference, as he might have known, had he but examined the Fruit of the two Trees, or look'd into any of the modern Botanick Writers, who have diſtinguiſh'd the *Alaternus* from the *Phillyrea*, becauſe it hath three Seeds incloſed in each Berry, whereas the *Phillyrea* has but one.

We have ſix or ſeven Varieties of this Tree in the *Engliſh* Gardens; *viz.*

1. ALATERNUS, 1. *Cluſ. Hiſp. This is commonly called,* The Broad-leav'd, *or* Common Phillyrea.
2. ALATERNUS, 1. *Cluſi foliis ex luteo variegatis.* The blotch'd Phillyrea. *Vulgo.*
3. ALATERNUS, *ſeu Phylica, foliis anguſtioribus & profundius ſerratis. H. L.* The Narrow-leav'd *Alaternus*, with ſaw'd Edges.
4. ALATERNUS, *ſeu Phylica aurea, ſive foliis ex luteo variegatis.* The Dutch Gold-edg'd *Alaternus. Vulgo.*
5. ALATERNUS, *ſeu Phylica argentea, ſive foliis ex albo variegatis.* The Siver Phillyrea. *Vulgo.*
6. ALATERNUS, *minori folio. Tourn.* The Small leav'd *Alaternus.*

The two firſt Sorts are very common in moſt old Gardens, and were formerly in much Requeſt to make ever-green Hedges, but are of late almoſt wholly diſuſed for that Purpoſe: The Branches are very apt to ſhoot ſtrong, and require often clipping in Summer, to keep them handſome; and their being ſubject to be diſplaced by ſtrong Winds, or great Snows, together with their being liable to ſuffer in hard Winters, have juſtly excluded them from fine Gardens.

However, theſe, with the third and ſixth Sorts, are very proper for Wilderneſſes of Ever-greens, or to plant in Clumps, where, by the Diverſity of their Leaves, and different Shades of Green, they very much add to the Beauty of ſuch Plantations.

The three firſt Sorts will grow to the Height of ſixteen or eighteen Feet, and, if ſuffer'd to grow without clipping, are very hardy, (eſpecially if they grow cloſe together, or amongſt other Trees) which will prevent the Froſt from piercing the Bark of the Stems, which is often the Cauſe of their Deſtruction.

The fourth and fifth Sorts are tenderer than any of the other, and require ſome Shelter in hard Weather, or are planted againſt warm Walls in Court-yards, *&c.* to cover them; where, if they are well kept, and not ſuffer'd to grow from the Walls, they afford an agreeable Proſpect.

Theſe Sorts are all increaſed, by laying down the young Branches in the Spring; which in one Year's time will have taken Root, and may be then tranſplanted out either into a Nurſery, or into the Places where they are to remain. Theſe Trees delight moſt in a light, dry, ſandy, ſtony Soil, in which, tho' they do not ſhoot ſo ſtrong as in a moiſt rich Earth, yet they are leſs ſubject to be hurt in Winter.

ALCEA, ['Αλκία, of ἀλκή, *Gr. Remedium*] Vervain Mallow.

The *Characters* are;

It hath the whole Habit of the Mallow, *or* Althæa; *but differs from both, in having its Leaves deeply divided.*

The *Species* are;

1. ALCEA *vulgaris major, flore ex rubro roſeo. C. B. P.* 316. Greater Vervain Mallow, with a Roſe-colour'd Flower.
2. ALCEA *vulgaris major, flore candidiore. C. B. P.* 316. Greater Vervain Mallow, with a white Flower.
3. ALCEA *folio rotundo laciniato. C. B. P.* 316. Vervain Mallow, with a round cut Leaf.
4. ALCEA *tenuifolia criſpa. J. B.* II. 1067. Narrow-curled-leav'd Vervain Mallow.
5. ALCEA *cannabina. C.B.P.* 316. Hemp-leav'd Vervain Mallow.
6. ALCEA *Afra, fruteſcens, groſſulariæ folio, flore parvo rubro. Boerh. Ind. Alt. African* ſhrubby Vervain Mallow, with Gooſberry Leaves and ſmall Red Flowers.
7. ALCEA *Africana, arboreſcens, malvæ folio hirſuto, flore parvo purpureo. Till. African* Tree-like Vervain Mallow, with hairy Mallow Leaves and ſmall Purple Flowers.
8. ALCEA *Afra, fruteſcens, groſſulariæ folio ampliore, unguibus florum atro-rubentibus. Act. Phil. African* ſhrubby Vervain Mallow, with larger Gooſbery Leaves, and dark red Spots at the Bottom of the Flowers.

The firſt and ſecond Sorts are common in *Germany*, *France*, and ſeveral Parts of *Europe*; but the fourth Sort is the moſt common in *England*. The firſt Sort is ordered for Medicinal Uſe; but as that is not ſo common in *England*, the third is ſubſtituted in its ſtead; and I believe either of the four firſt Sorts may be uſed indifferently. Theſe four Sorts are biennial Plants, and ſeldom continue after they have perfected Seeds: Theſe Plants may be propagated by ſowing their Seeds in the Spring, and when the Plants are come up, they ſhould be thinn'd, leaving them about a Foot aſunder, where they may remain till they flower and ſeed; for they do not bear tranſplanting well, their Roots running for the moſt part downright, to a conſiderable depth. Theſe Plants ſhould have a poor Soil; for in a rich Earth they grow too rank, and are ſubject to rot in Winter.

The fifth Sort is an abiding Plant, and is apt to creep at the Root. This may be propagated by Seeds as the former, and ſhould have a lean Soil.

The ſixth and ſeventh Sorts do riſe to the Height of eight or ten Feet, and do make handſome Shrubs: Theſe may be propagated by ſowing their Seeds in the Spring, on a Bed of light Earth, and when the Plants are come up four or five Inches high, they ſhould be each tranſplanted into a ſeparate ſmall Pot filled with freſh light Earth, obſerving to water and ſhade them until they have taken Root, after which they may be expoſed during the Summer to the open Air; but in Winter they muſt be placed in the Green-houſe with *Myrtles*, &c. obſerving to give them a large Share of Air in mild Weather, and frequently refreſh them with Water. With this Management, they will continue flowering moſt Part of the Year.

The eighth Sort is a ſeminal Variety from the ſixth Sort, from the Seeds of which I have ſeveral times had the eighth ariſe.

ALCHIMILLA, [ſo call'd, becauſe celebrated by Alchymiſts] Ladies Mantle.

The *Characters* are;

The Leaves are ſerrated; the Cup of the Flower is divided into eight Segments, which are expanded in Form of a Star; the Flowers are collected into Bunches upon the Tops of the Stalks; the Seed-veſſels contain, for the moſt part, two Seeds in each.

The *Species* are;

1. ALCHIMILLA *vulgaris. C. B.* Common Ladies Mantle.
2. ALCHIMILLA *Alpina, pubeſcens, minor. H. R. Par.* The leſſer woolly Ladies Mantle.
3. ALCHIMILLA *Alpina, quinquefolia, folio ſubtus argenteo. Tourn.* The Alpine five-leav'd Ladies Mantle, with the under Part of the Leaves white.
4. ALCHIMILLA *minor. Mor. Hort. Reg. Bleſ.* The leſſer Ladies Mantle.
5. ALCHIMILLA *Alpina pentaphyllea minima, lobis fimbriatis. Bocc. Muſ. Par.* 2. 18. Leaſt five-leav'd Ladies Mantle of the *Alps*, with fringed Leaves.
6. ALCHIMILLA *montana minima. Col. Par.* I. 146. Leaſt Mountain Ladies Mantle, *commonly called*, Parſley Breakſtone.
7. ALCHIMILLA *ſupina, gramineo folio, minore flore. Tourn.* Low Graſs-leav'd Ladies Mantle, with a ſmaller Flower.
8. ALCHIMILLA *erecta, gramineo folio, minore flore. Tourn.* Upright Graſs-leav'd Ladies Mantle with a ſmaller Flower.
9. ALCHIMILLA *gramineo folio, majori flore. Tourn.* Graſs-leav'd Ladies Mantle with a larger Flower.
10. ALCHIMILLA *linariæ folio, calyce florum albo. Tourn.* Ladies Mantle, with a Toad-flax Leaf, and a white Flower-cup.
11. ALCHIMILLA *linariæ folio, calyce florum ſubluteo. Tourn.* Ladies Mantle, with a Toadflax Leaf, and a yellowiſh Flower-cup.
12. ALCHIMILLA *orientalis, linariæ folio breviſſimo, calyce florum albo. Tourn. Cor.* Eaſtern Ladies Mantle, with a very ſhort Toadflax Leaf, and a white Flower-cup.
13. ALCHIMILLA *Græca, kali folio, calyce florum albido. Tourn. Cor. Greek* Ladies Mantle, with a Glaſſwort Leaf, and a whitiſh Flower-cup.

The firſt Sort is a Plant ſometimes uſed in Phyſick, and is gathered frequently in moiſt Meadows, and at ſome Diſtance from *London*. This may be kept in a Garden, if planted in a moiſt Soil, and is increaſed by parting the Roots.

The ſecond Sort is a much leſs Plant than the firſt, and is woolly or ſoft to the Touch; but this Plant, when cultivated in a good Soil, will grow to be almoſt as big as the firſt.

The third Sort is found wild in *Weſtmorland*, and other Northern Parts of *England*: This, with the two former, are preſerved in curious Botanick Gardens; but as there is little Beauty in them, they are ſeldom planted in Gardens for Pleaſure: They are all propagated by parting their Roots, or ſowing their Seeds ſoon after they are ripe.

Theſe Plants are many of them preſerved in Botanick Gardens for Variety; they all grow wild in *England*, *Holland*, and *Flanders*, except the two laſt mentioned, which Monſ. *Tournefort* found in his Voyage to the *Levant*. They are moſt of them annual Plants, ſo if they are permitted to ſhed their Seeds in the Autumn, the Plants will come up, and require no other Culture, but to keep them clear from Weeds. The ſixth Sort is an annual Plant which grows in great Plenty on Heaths, and other uncultivated Places in diverſe Parts of *England*, and if it is tranſplanted into a Garden, and permitted to ſhed its Seeds, will maintain itſelf without any farther Care. This Plant is often brought to the Markets in *London*, and ſold for *Rupture-wort*, which is a very different Plant from this, but doth not grow wild near *London*.

ALDER-TREE: *Vide* Alnus.

ALESANDER, *or* ALEXANDER: *Vide* Smyrnium.

ALKEKENGI, Winter Cherry.

The *Characters* are;

It hath a Flower, which conſiſts of one Leaf, and is expanded at the Top, but of a pentagonal Figure: The Fruit (which is about the Bigneſs of a Cherry) is incloſed in the Cup of the Flower, which ſwells over it in Form of a Bladder.

The *Species* are;

1. ALKEKENGI *officinarum. Tourn.* Common Winter Cherry of the Shops.
2. ALKEKENGI *officinarum, foliis variegatis. Tourn.* Common Winter Cherry, with variegated Leaves.

3. Alkekengi *fructu parvo, verticillato. Tourn.* Winter Cherry, with ſmall Fruit growing in Whorles round the Stalks.

4. Alkekengi *Virginianum, fructu luteo. Tourn. Virginian* Winter Cherry, with yellow Fruit.

5. Alkekengi *Indicum, majus. Tourn.* Greater *Indian* Winter Cherry.

6. Alkekengi *Americanum, annuum, ramoſiſſimum, fructu ex luteo-vireſcenti. Houſt. American* annual branching Winter Cherry, with a yellowiſh green Fruit.

7. Alkekengi *Americanum, annuum, maximum, viſcoſum. Houſt.* The largeſt annual *American* Winter Cherry.

8. Alkekengi *Barbadenſe, patulum, parvo flore, fructu amplo, mucrone productiori. Act. Phil.* N° 399. Dwarf *Barbadoes* Winter Cherry, with a ſmall Flower, and an ample pointed Fruit.

9. Alkekengi *Curaſſavicum, foliis organi incanis, flore viete ſulphureo, fundo purpureo. Boerh. Ind. Alt.* 11. 66. Hoary Winter Cherry from *Curaſſo*, with Origany Leaves, and Sulphur-colour'd Flowers with Purple Bottoms.

10. Alkekengi *Americanum, fruteſcens, fructu globoſo rubro, veſica atro-purpurea. Houſt.* Shrubby *American* Winter Cherry, with a round red Fruit, having a dark Purple Bladder.

The firſt Sort is very common in the *Engliſh* Gardens, where it is preſerved for the Appearance of its firſt Fruit, which is ripe in *October*, and continues often till the Middle of *December*; it is about the Size of a common Cherry, and of a fine red Colour. This Fruit is incloſed in a Bladder, which when ripe burſts, and expoſes the Fruit to Sight. It may be propagated by ſowing of the Seeds in the Spring, or by the Roots, which creep very much, ſo that if they are not confined, they will ſoon overſpread a large Tract of Ground; therefore to have them more beautiful, they ſhould be confined in Pots, which ſhould be placed in the Shade in Summer, and if conſtantly watered in dry Weather, will produce great Numbers of Fruit. This Sort is ordered for Medicinal Uſe by the College of Phyſicians. The ſecond Sort is a Variety of the firſt, differing only in having variegated Leaves. This may be managed as the former.

The third, ninth, and tenth Sorts are abiding Plants, which require to be ſheltered from the Cold in Winter. The third Sort grows to a Shrub of about three Feet high, and produces great Numbers of Fruit annually: This may be propagated by ſowing of the Seeds on a moderate Hot-bed in the Spring, and when the Plants are come up two Inches high, they ſhould be tranſplanted on another Hot-bed, obſerving to water and ſhade them until they have taken new Root, after which Time they muſt have a large Share of Air, otherwiſe they will draw up very weak. In *June* theſe Plants ſhould be potted, and placed in a ſhady Situation, until they have taken Root, after which they may be expoſed to the open Air in Summer; but in Winter they muſt be placed in a warm Green-houſe.

The ninth Sort creeps very much at the Root, ſo is eaſily propagated by parting the Roots in the Spring. This muſt be houſed in Winter as the former, but may be expoſed in Summer: It produces Flowers annually, but has not produced any Fruit in *England*.

The tenth Sort grows to the Height of ten or twelve Feet: This is propagated by ſowing of the Seeds on a Hot-bed in the Spring, and muſt be afterwards potted, as hath been directed for the third Sort; but this muſt be placed in a Stove in Winter, it being the tendereſt of all the Sorts here mentioned.

The fourth, fifth, ſixth, ſeventh, and eighth Sorts are annual Plants, and require to be raiſed on a Hot-bed in the Spring; and when the Plants are come up two Inches high, they ſhould be tranſplanted to another moderate Hot-bed, obſerving to water and ſhade them until they have taken Root, after which Time they muſt have a large Share of freſh Air; and in *June* they may be taken up with a Ball of Earth to their Roots, and tranſplanted either into Pots or Borders of light Earth, where they may remain to perfect their Fruit.

ALLELUJAH: *Vide* Oxys.

ALLIARIA, Sauce alone, *or* Jack by the Hedge: *Vide* Heſperis.

ALLIUM, [of ’Αλέω, *Gr.* to avoid or ſhun, becauſe many ſhun the Smell of it.] Garlick.

The *Characters* are;

It hath a bulbous Root conſiſting of many ſmall Tubercles included in the Coverings (or Coats) thereof; the Leaves are plain; the Flowers conſiſt of ſix Leaves, which are formed into a Corymbus upon the Top of the Stalks: the Flowers are ſucceeded by ſubrotund Fruit, which are divided into three Cells, in which are contained roundiſh Seeds.

There are ſeveral Varieties of this Plant, which differ in their Leaves, Manner of Flowering, Shape and Size of their Bulbs, &c. but there are not above two or three Sorts which are cultivated for Uſe; *viz.*

1. Allium *ſativum. C. B.* The Common *or* Manured Garlick.

2. Allium *ſativum, alterum, ſive Alliopraſum, caulis ſummo circumvoluto. C. B.* The Rocambole.

3. Allium *ſylveſtre, latifolium. C. B.* Ramſons. *Vulgo.*

4. Allium *ſylveſtre, amphicarpon, foliis porraceis, floribus & nucleis purpureis. Raii Syn.* Broad-leav'd Mountain Garlick, with purple Flowers.

5. Allium *ſylveſtre, bicorne, flore ex herbaceo albicante, cum triplici in ſingulis petalis ſtria atro-purpurea. Raii Syn. Ed.* 3. 370. Wild Garlick, with an herbaceous ſtriped Flower.

6. Allium *Holmenſe, ſphærico capite. Raii Syn. Ed.* 3. 370. Great round-headed Garlick of the *Holms-Iſland*.

7. Allium *bulbiferum Virginianum. Boerh. Ind. Alt. Virginian* Garlick.

The two firſt Species are eaſily propagated by planting the Cloves, or ſmall Bulbs, in *Auguſt* or *September*, in Beds about four or five Inches diſtance from each other, keeping them clean from Weeds. About the Beginning of *June* the Leaves ſhould be tied in Knots, to prevent their ſpindling, or running to Seed, which will greatly enlarge the Bulb: In the Middle of *July* the Leaves will begin to wither and decay, at which Time they ſhould be taken out of the Ground, and hang'd up in a dry Room, to prevent their rotting; and may be thus preſerved for Winter Uſe.

The third Sort was formerly in greater Eſteem than at preſent, it being rarely cultivated in Gardens, but is found wild in moiſt ſhady Places in many Parts of *England*; and may be cultivated by planting the Roots in a moiſt ſhady Border at almoſt any Time of the Year; but the beſt Seaſon is in *July*, juſt as the green Leaves are decaying.

The fourth, fifth, and ſixth Sorts, grow wild in diverſe Parts of *England*, but are by the Curious in Botany, preſerved in their Gardens for Variety. They are extreme hardy, and will thrive in almoſt any Soil or Situation, requiring no other Culture, but to keep them clear from Weeds. The beſt Seaſon to tranſplant them is in *Auguſt*, ſoon after their Leaves decay; for if they are ſuffered to remain long after, they will ſhoot out new Roots, after which time they do not bear tranſplanting ſo well.

The ſeventh Sort was brought from *Virginia* into *England*. This is alſo very hardy, and will thrive in any Soil or Situation. It produces a Cluſter of Roots on the Top of the Stalks, which, if permitted to fall on the Ground, will take Root, and thereby multiply exceedingly.

ALMOND-TREE: *Vide* Amygdalus.

ALMOND DWARF: *Vide* Perſica.

ALNUS, [ſo call'd, *quod alatur amne, Iſid. i. e.* becauſe nouriſh'd by a River.] The Alder-Tree.

The *Characters* are;

It hath Leaves reſembling thoſe of the Hazel: The Male Flowers (or Katkins) are produced at remote Diſtances from the Fruit, on the ſame Tree; the Fruit is ſquamoſe, and of a conical Figure.

There are three *Species* of this Tree in *England*; viz.

1. Alnus *rotundifolia, glutinoſa, viridis. C. B.* The Common *or* Round-leav'd Alder.

2. Alnus *folio oblongo, viridi. C. B.* The long-leav'd Alder.

3. Alnus *vulgaris, ſub-conis ligulis membranaceis rubris donata. Raii Syn. Ed.* 3. The Scarlet Alder.

This Sort was found in a Meadow near *Long-leet*, by Mr. *Brewer*, ſome Years ſince: but it is a Matter of Doubt, whether it is a diſtinct Species, or ſome accidental Variety.

Theſe Trees delight in a very moiſt Soil, where few other Trees will thrive, and are a great Improvement to ſuch Lands; They are propagated either by Layers, or planting of Truncheons about three Feet in Length, in *February*, or the Beginning of *March*, which ſhould be ſharpen'd at One End, and the Ground looſen'd with an Inſtrument before they are thruſt into it, leſt, by the Hardneſs of the Soil, the Bark ſhould be torn off, which may occaſion their Miſcarriage. They ſhould be thruſt into the Earth, at leaſt two Feet, to prevent their being blown out of the Ground by ſtrong Winds.

If you raiſe them by laying down the Branches, it muſt be perform'd in *February* or *March*; and by the *February* following, they will have taken Roots ſufficient to be tranſplanted out; which muſt be done, by digging a Hole, and looſening the Earth in the Place where each Plant is to ſtand, planting the young Tree at leaſt a Foot and a half deep, cutting off the Top to about nine Inches above the Surface, which will occaſion them to ſhoot out many Branches.

The Diſtance theſe Trees ſhould be placed, (if deſign'd for a Coppice) is ſix Feet ſquare; and if the ſmall lateral Shoots are taken off in the Spring, it will very much ſtrengthen your upright Poles, provided you leave a few ſmall Shoots at Diſtances upon the Body thereof, to detain the Sap for the Increaſe of its Bulk.

Theſe Trees may be alſo planted on the Sides of Brooks (as is uſual for Willows) where they will thrive exceedingly, and may be cut for Poles every third or fourth Year. This Wood is in great Requeſt with the Turners, and will endure a long Time under Ground, or to be laid in Water.

ALNUS, NIGRA BACCIFERA: *Vide* Frangula.

ALOE, [*Gr.* Ἀλοή.]

The *Characters* are;

The Leaves are thick and ſucculent, and for the moſt part, beſet with Spines on the Edges: The Flower conſiſts of one Leaf, is tubulous, and cut into ſix Segments at the Top, like the Hyacinth: *The Fruit is oblong and cylindrical, which is divided into three Cells, in which are contained flat, and, for the moſt part, ſemicircular Seeds.*

There is a great Variety of this Plant in the curious Gardens of Botany in *England*, which are Natives both of the *Eaſt* and *Weſt-Indies*; but moſt of the curious Sorts were brought from the Cape of *Good Hope*. I ſhall firſt enumerate their Kinds, and then proceed to their Culture.

1. ALOE *Americana muricata. J. B.* The common large *American* Aloe.

2. ALOE *Americana minor. Munt.* The leſſer *American* Aloe.

3. ALOE *Americana ex Vera Cruce, foliis anguſtioribus, minus glaucis. H. Beaum.* The Narrow-leav'd Aloe from *Vera Cruce.*

4. ALOE *Americana ex Vera Cruce, foliis latioribus & glaucis. H. H.* The broad-leav'd Aloe from *Vera Cruce.*

5. ALOE *Americana, folio viridi rigidiſſimo, fœtido, Piet dicta indigenis. H. Beaum.* The broad Green-leav'd Aloe from *Curaſſo*, with black Spines.

6. ALOE *Americana, folio viridi ſerrata,* Silk-Graſs *dicta.* The *American* Aloe, with green ſerrated Leaves, *called in the Weſt-Indies*, Silk-Graſs.

7. ALOE *Americana ſobolifera. H. L.* The *American* Aloe, which produces young Plants out of the Flower-ſtems.

8. ALOE *vulgaris. C. B.* The common *Barbadoes* Aloe.

9. ALOE *Africana, foliis glaucis, margine & dorſi parte ſuperiore ſpinoſis, flore rubro. Com. Præl.* The *African* ſtalky Aloe, with glaucous ſerrated Leaves and red Flowers.

10. ALOE *Africana cauleſcens, foliis ſpinoſis, maculis ab utraque parte albicantibus notatis. H. A.* The common large ſpotted *African* Aloe, *falſely called*, The *Carolina* Aloe.

11. ALOE *Africana cauleſcens, foliis ſpinoſis, maculis ab utraque parte albicantibus obſcurioribus, magis glaucis quam præcedens. Boerh.* The large ſpotted *African* Aloe, with Leaves more glaucous, *i. e.* bluer or grayer than the former.

12. ALOE *Africana arboreſcens, montana, non ſpinoſa, folio longiſſimo, plicatili, flore rubro. H. A.* The *African* Aloe-Tree, with flat long ſmooth Leaves without Spines.

13. ALOE *Africana cauleſcens, foliis glaucis caulem amplectentibus, dorſo integro ſpinoſo. Com. Rar.* The *African* ſtalk'd Aloe, with glaucous Leaves ſurrounding the Stalks, and Spines growing on the Back of the Leaves.

14. ALOE *Africana cauleſcens foliis glaucis, brevioribus, caulem amplectentibus foliorum parte interna & externa nonnihil ſpinoſa. Com. Rar.* The *African* Aloe, with ſhorter glaucous Leaves, ſurrounding the Stalks and Spines within and outſide of the Leaves.

15. ALOE *Africana cauleſcens, foliis glaucis breviſſimis, foliorum ſummitate interna & externa nonnihil ſpinoſa. Com. Rar.* The *African* Aloe, with the ſhorteſt glaucous Leaves, and Spines on both Sides of the Leaves at the Extremity.

16. ALOE *Africana humilis, ſpinis inermibus & verrucis obſita. Com. Rar.* The Dwarf *African* Aloe, with Leaves arm'd with Spines and Warts, *commonly called*, the Hedge-hog Aloe.

17. ALOE *Africana humilis, foliis ex albo & viridi variegatis. Com. Rar.* The Dwarf *African* Aloe, with green and white variegated Leaves, *commonly called*, the Partridge-Breaſt Aloe.

18. ALOE *Africana erecta, triangularis & triangulari folio viſcoſo. Com. Rar.* The upright triangular-leav'd viſcous Aloe.

19. ALOE *Africana erecta rotunda folio parvo, & in acumen rigidiſſimum exeunte. Com. Rar.* The upright *African* Aloe, with ſmall ſharp pointed Leaves.

20. ALOE *Africana flore rubro, folio triangulari verrucis & ab utraque parte albicantibus notato. H. A.* The triangular-leav'd *African* Aloe, with white Tubercles on every Part of the Leaf, and red Flowers.

21. ALOE *Africana margaritefera minor. H. A.* The ſmall Pearl Aloe.

22. ALOE *Africana folio in ſummitate triangulari margaratifera, flore ſubviridi. H. A.* The greater Pearl Aloe. *Vulgo.*

23. ALOE *Africana foliis planis conjugatis carinatis verrucoſis, caule & flore corallii colore. Boerh. Ind.* The *African* Aloe, with plain fleſhy Leaves growing oppoſite, and are full of Tubercles, with red Flowers.

24. ALOE *Africana minima, atro-viridis, ſpinis herbaceis numeroſis ornata. Boerh. Ind.* The leaſt *African* Aloe, with dark green Leaves, which are ſet very thick, with greeniſh Spines.

25. ALOE *Africana flore rubro, folio maculis albicantibus ab utraque parte notato. H. A.* The Tongue Aloe. *Vulgo.*

26. ALOE *Africana foliis planis latioribus minime ſerratis, carinatis, caule & flore corallii colore. Ind.* The Broad-leav'd Tongue Aloe. *Vulgo.*

27. ALOE *Africana foliis longis conjugatis, ſupra cavis margaritiferis, flore rubro elegantiſſima. Boerh. Ind.* The Pearl Tongue Aloe. *Vulgo.*

28. ALOE *Africana cauleſcens, folio craſſo obſcure viridi, ſpinis ad latera & in dorſo armato. Boerh. Ind.* The ſtalky *African* Aloe, with thick dark green Leaves arm'd with Spines on the Back-ſide of the Leaves.

29. ALOE *Africana cauleſcens, foliis glaucis caulem amplectentibus. H. A.* The ſtalky *African* Aloe, with glaucous Leaves ſurrounding the Stalks.

30. ALOE *Africana cauleſcens, foliis minus glaucis caulem amplectentibus, floribus rubris.* The Sword Aloe. *Vulgo.*

31. ALOE *Africana foliis ex albo & viridi eleganter variegatis. Hort. Beaum.* The ſtrip'd *African* Aloe.

32. ALOE *Africana, breviſſimo, craſſiſſimoque folio, flore ſubviridi. H. A.* The Cuſhion Aloe. *Vulgo.*

33. ALOE *Africana, folio triangulo longiſſimo & anguſtiſſimo, floribus luteis fœtidis. H. L.* The *African* Aloe, with long narrow triangular Leaves, and ſtinking yellow Flowers, *commonly called*, Iris Uvaria.

34. ALOE *Guineenſis, radice geniculata, foliis e viridi & atro undulatim variegatis. Com. Præl.* The *Guiney* Aloe, with knotted Roots, and undulated variegated Leaves.

35. ALOE *Zeylanica, pumila, foliis variegatis. Par. Bat.* The Dwarf *Zeylon* Aloe, with variegated Leaves.

36. ALOE *Africana cauleſcens, foliis minus glaucis caulem amplectentibus, dorſi parte ſuprema ſpinoſa. Com. Rar.* The ſtalky *African* Aloe, with leſs glaucous Leaves ſurrounding the Stalks, with Spines on the Back-ſide of the Leaves at the Extremity.

37. ALOE *Indiæ Orientalis, ſerrata, ſuccotrina vera, flore Phœnicio. H. Beaum.* The Succotrine Aloe.

38. ALOE *Africana arachnoidea. Com. Rar. Pl.* 78. *African* Cobweb Aloe. *Vulgo.*

The Soil in which theſe Plants thrive beſt, is, one half freſh light Earth from a Common, (and if the Turf is taken with it, and rotted, it is much better); the reſt ſhould be white Sea-Sand, and ſifted Lime-rubbiſh, of each an equal Part; mix theſe together ſix or eight Months at leaſt before it is uſed, obſerving to turn it over often in this Time.

The firſt of theſe *Aloes* is very hardy, in reſpect to Cold, and has, in mild Winters, endur'd abroad, being planted in a very dry Soil, and under a South Wall; but may be kept in Pots or Tubs in a common Green-houſe with Oranges, Myrtles, &c. but muſt have very little Moiſture in Winter. Moſt of the other Sorts are better preſerv'd in an airy Glaſs-Caſe, in which there is a Stove to make a little Fire in very bad Weather: to dry and warm the Air in foggy, cold, or wet Weather, and to prevent the Froſt from entering the Houſe.

The fifth, ſixth, ſeventh, eighteenth, thirty-fourth and thirty-fifth Sorts require a greater Share of Heat to preſerve them in Winter, and ſhould be ſet in a good Stove, and kept nearly to the Degree of Heat (mark'd upon Mr. *Fowler*'s Botanical Thermometers) ten Degrees above temperate. Indeed moſt of the other Sorts may be kept in the ſame Temperature of Heat in Winter, but then you muſt obſerve, that the greater the Heat is in Winter in which you keep them, the more Water they will require: And if they are well manag'd in this Heat, they will grow very much in Winter; therefore great Care muſt be taken in the ſevere Cold, that it doth not enter the Houſe, nor that the Heat be at that Time leſſen'd; as alſo how you begin to give them Air in the Spring, for the extreme Parts of the Plants will be rendered very tender, by their growing freely in Winter, and the leaſt Check to their Growth at that Seaſon, is very often their Deſtruction.

About the Beginning of *June*, moſt People (in *England*) ſet their Pots of *Aloes* out of the Houſe; but, if this be done, they ſhould be ſet under the Shelter of Hedges, or Trees, to ſcreen them from the Violence of the open Sun and Wind, which, in a few Days, will otherwiſe change their Colour, and very much diminiſh their Beauty, and very often the great Rains which fall in *June* or *July*, either rot, or fill them with ſo much Moiſture, as, in Winter, to be liable to Deſtruction with the leaſt Cold; therefore, upon the whole, it is much more adviſeable to keep them moſt Part of the Year in the Houſe, (as is the conſtant Practice in *Holland*) giving them, in good Weather, as much free open Air as is poſſible, and ſcreening them with Mats, Shutters, or Tarpawlins over the Glaſſes, from the great Heat of the Sun in the Middle of the Day.

In the Middle of *July* is a very proper Seaſon to ſhift theſe Plants; at which Time you may take them out of the Pots, and with your Fingers open the Roots, and ſhake out as much of the Earth as poſſible, taking off all dead or mouldy Roots, but do not wound or break the young freſh ones: Then fill the Pot about three Parts full of the above-mention'd Earth, putting a few Stones in the Bottom of the Pot, to drain off the Moiſture; and after placing the Roots of the Plant in ſuch a Manner as to prevent their interfering too much with each other, put in as much of the ſame Earth, as to fill the Pot almoſt to the Rim, and obſerve to ſhake the Plant, ſo as to let the Earth in between the Roots, and then with your Hand ſettle it cloſe to the Roots of the Plant, to keep it ſteady in the Pot; then water them gently, and ſet them abroad in a ſhady Place, where they may remain for three Weeks, giving them gentle Waterings, if the Weather ſhould prove hot and dry.

Toward the latter End of *Auguſt*, in a dry Day, remove them into the Houſe again, obſerving to give them as much free open Air as poſſible, while the Weather holds warm; but, if the Nights are cool, you muſt ſhut up the Glaſſes, and give them Air only in the Day; and, as the Cold increaſes, you muſt decreaſe opening the Glaſſes, but obſerve to give them gentle Waterings often, till the Middle of *October*, when you muſt abate them, according to the Heat of the Houſe in which they are kept.

The firſt Sort may be ſet abroad in the Beginning of *May*, and remain ſo till *October*; and, in dry Weather, muſt have frequent, but gentle Waterings, and ſhould be ſhifted every Year, taking off all the Suckers and rotten Roots, which, if ſuffer'd to remain on, will greatly retard the Growth of the Plant.

The thirty-third Sort is very hardy, and ſhould be planted abroad under a good South-wall, where it will thrive and increaſe much faſter than if kept in Pots, and will produce much ſtronger Flowers.

How increas'd.] Theſe *Aloes* are all increas'd by Off-ſets, which ſhould be taken from the Mother Plant, at the Time when they are ſhifted, and muſt be planted in very ſmall Pots, filled with the ſame Earth as was directed for the old Plants; but if, in taking the Suckers off, you obſerve that Part, which joined to the Mother Root, to be moiſt, you muſt let them lie out of the Ground in a ſhady dry Place two or three Days to dry before they are planted, otherwiſe they are very ſubject to rot.

After planting, let them remain in a ſhady Place (as was before directed in ſhifting the old Plants) for a Fortnight, when you ſhould remove them to a very moderate Hot-bed, plunging the Pots therein, which will greatly facilitate their taking new Roots; but obſerve to ſhade the Glaſſes in the Middle of the Day, and to give them a great deal of Air.

Toward the End of *Auguſt*, begin to harden theſe young Plants, by taking off the Glaſſes in good Weather, and by raiſing them at other times with Bricks, that the Air may freely enter the Bed, which is abſolutely neceſſary for their Growth, and to prepare them to be remov'd into the Houſe, which muſt be done toward the End of *September*, and manag'd as before directed for the old Plants.

Moſt of the *African* Sorts of *Aloes* do produce Flowers with us annually, when grown to a ſufficient Size, which is often the ſecond, and ſeldom more than the third or fourth Year, after planting from Off-ſets; but the *American Aloes* (which do, for the moſt Part, produce their Flower-ſtems immediately from the Center of the Plant) ſeldom flower till they are of a conſiderable Age, and this but once during the Life of the Plant; for when the Flower-ſtem begins to ſhoot from the Middle of the Plant, (which, for the moſt Part is of a large Size, and grows to a great Height) it draws all the Moiſture and Nouriſhment from the Leaves, ſo that, as that advances, the Leaves decay; and when the Flowers are fully blown, ſcarce any of the Leaves remain alive; but whenever this happens, the old Root ſends forth a numerous Quantity of Off-ſets for Increaſe; and it is not till this Time that ſome of theſe Sorts can be increas'd, eſpecially the ſeventh Sort, which never produces any young Plants until it flowers, at which Time the Flower-ſtem, is beſet with ſmall Heads from Bottom to Top, which being taken off, and planted, will grow as well as Suckers from the Roots.

This *Aloe*, which, with us, ſeldom makes a very large Plant, hath yet produced Flower-ſtems of a conſiderable Size, and fifteen Foot in Height. The Flowers are little leſs than thoſe of the large Sort. I can't here forbear taking Notice of a vulgar Error or two relating to the large *American Aloe*, which is, that it never flowers till it is an hundred Years old, which is a Miſtake; ſince we have had ſeveral of them flower in *England*, ſome of which were known not to exceed fifty Years old; and others, which flower'd many Years ago, cannot be ſuppoſed to have been in *England* ſo long as to arrive at that Age, ſince they were thought too tender for our Climate at that Time, when Green-houſes were not known; as may be ſeen by looking into *Gerard*'s and *Parkinſon*'s Herbals.

Another common Error is, that when the Flower opens, it makes a Report like that of firing a Gun: This is ſufficiently confuted by all thoſe who have been where theſe Plants have flower'd; but I ſuppoſe the Riſe of this Story might proceed from ſome Perſons ſaying, when one of theſe Plants flower'd, it made a great Noiſe; meaning thereby, that whenever one of them flower'd in *England*, it was ſpread abroad as an uncommon Thing, and occaſion'd a great Noiſe among the neighbouring Inhabitants, moſt of whom uſually repair to ſee it, as a Thing that rarely happens, and as a great Curioſity.

The *African Aloes* do, for the moſt part, afford Plenty of Suckers, by which they are increaſed; but thoſe few that do not, may be moſt of them propagated, by taking off ſome of the under Leaves, laying them to dry for three or four Days, as was directed for the Off-ſets; then plant them in the ſame Soil as was directed for them, putting that Part of the Leaf which did adhere to the old Plant, about an Inch, or an Inch and half (according to the Size of the Leaf) into the Earth, giving them a little Water to ſettle the Earth about them; then plunge the Pots into a moderate Hot-bed, obſerving to ſcreen them from the Violence of the Sun, and give them gentle Refreſhings with Water: The beſt Seaſon for this is in *June*, that they may puſh out Heads before Winter.

ALOIDES, [of 'Αλοὴ and εἶδος, Form] *Boerh. Ind.* Stratiotes foliis Aloes ſemine longo. *Gund. Raii Syn.* The Water *Aloe*, or Freſh-water *Soldier*.

This Plant is found in large ſtanding Waters in the Iſle of *Ely*, and in *Lincolnſhire*, but will not grow in a Garden: But if young Plants be put into an open Canal in the Spring, they will thrive and propagate therein.

ALOPECUROS, [*Gr.* 'Αλοπέκουρος] Fox-tail; a kind of Graſs.

ÆSCHYNOMENE, ['Αισχύνομος]. *Vide* Minoſa.

ALSINE, [*Gr.* 'Αλσίνη] Chick-weed.

There are ſeveral Species of this Plant, which are common in cultivated Places, and on Dunghills: Theſe being ſo well known to moſt Perſons, it will be needleſs to mention them in this Place.

ALTHÆA, ['Αλθαία of 'Αλθος, a Medicament; or 'Αλθαίνειν, *Gr.* to heal] Marſh-mallow.

The *Characters* are;

It is in all reſpects like the Mallow; *but the Leaves of theſe are generally more ſoft and woolly.*

There are ſeveral Kinds of this Plant, ſome of which riſe to the Height of eight or ten Feet, and become woody: Theſe are proper Ornaments for Quarters of Wilderneſs-work, to intermix with flowering Shrubs and Trees: They begin to flower toward the latter End of *May*, and continue till *October* (if the Weather proves good): Their long Continuance in Flower, together with their great Variety of ſoft woolly Leaves, renders them worthy of a Place in the beſt Gardens of Flowering-trees.

The different *Species* of theſe known in *England* are;

1. **ALTHÆA** *fruteſcens, folio acuto, parvo flore. C. B.* The ſhrubby Marſh-mallow, with ſharp-pointed Leaves, and ſmall Flowers.

2. **ALTHÆA** *fruteſcens, Luſitanica, folio ampliore, minus incano. Tourn.* The *Portugal* ſhrubby Marſh-mallow, with large, and leſs hoary Leaves.

3. **ALTHÆA** *fruteſcens, Luſitanica, folio ampliore, minus incano. Tourn.* The *Portugal* ſhrubby Marſh-mallow, with rounder and undulated Leaves.

4. **ALTHÆA** *fruteſcens, folio bryoniæ. C. B.* The ſhrubby Marſh-mallow, with Bryony Leaves.

5. **ALTHÆA** *flore majore. C. B.* The large flower'd Marſh-mallow.

6. **ALTHÆA** *Dioſcoridis & Plinii. C. B.* The common Marſh-mallow.

7. **ALTHÆA** *folio rotundiori, aut minus acuminato. Suther.* The rounder-leav'd Marſh-mallow.

Theſe Plants are all eaſily raiſed from Seeds which muſt be ſown in *March*, in a light dry Soil, and in two Months Time they will be fit to tranſplant in the Places where they are to remain for good, or put into Pots; that when they are remov'd, the Earth may be turn'd out of the Pots, without diſturbing the Roots, for theſe Shrubs will not bear a Remove (when grown to any conſiderable Stature); the Roots being for the moſt Part compos'd of ſtrong woody Parts, and have very few ſmall Fibres, ſo that the Earth is ſubject to fall intirely off, upon removing them; and if it ſo happen to grown Plants, they rarely are made to grow afterwards.

The ſecond Year theſe Shrubs begin to flower, and one ſingle Plant (if ſuffer'd to feed) will produce enough to raiſe many hundred Plants: They are impatient of wet in Winter, therefore ſhould be planted in a dry rubbiſhy or ſandy Soil, where they will ſtand much better than in a ſtrong rich Earth; but they are ſeldom longer-liv'd than five or ſix Years (with us), eſpecially if ſuffer'd to flower and ſeed plentifully every Year; therefore the beſt Way to preſerve them is, to cut off the extreme Parts of the Branches in *July*, that they may make freſh Shoots before Winter; this will alſo make their Heads more regular, than if they were ſuffer'd to grow rude.

They may be alſo raiſed by planting Cuttings in *May*, in a light Soil, keeping them ſhaded, and often refreſhing them with Water until they have taken root.

The five firſt-mention'd Sorts are all Strangers to our Country, and are only to be found in the Gardens of the Curious: The two laſt Sorts grow wild in many Parts of *England*, and are by ſome propagated in Gardens for phyſical Uſe: Theſe two Sorts are alſo raiſed from Seeds, or by parting the Roots early in the Spring, and will grow in almoſt any Soil or Situation. Theſe two die down to the Ground annually, and riſe again the ſucceeding Spring.

ALYSSOIDES.

The *Characters* are;

It hath a Flower in Form of a Croſs, conſiſting of four Leaves, out of whoſe Flower-cup riſes the Pointal, which afterward becomes an elliptical thick Fruit, divided into two Cells by an intermediate Partition, which is parallel to the demi-elliptical turgid Valves, and filled with round flat Seeds, having Borders round them.

The *Species* are;

1. **ALYSSOIDES** *fruticoſum, leucoii folio viridi. Tourn.* 218. Shrubby Alyſſoides, with a geen Stock-gilliflower Leaf.

2. **ALYSSOIDES** *incanum, foliis ſinuatis. Tourn.* 218. Hoary Alyſſoides, with ſinuated Leaves.

3. **ALYSSOIDES** *fruticoſum, Creticum, leucoii folio incano. Tourn. Cor.* Shrubby Alyſſoides of *Candy*, with a hoary Stockgillyflower Leaf.

4. **ALYSSOIDES** *orientalis, annua, myagri ſativi folio. Tourn. Cor.* Oriental annual Alyſſoides, with a Myagrum Leaf.

The firſt and third Sorts are perennial Plants, which riſe to the Height of two or three Feet; theſe may be propagated by ſowing their Seeds on a Border of light Earth in the Spring, and when the Plants are come up four Inches high, they may be tranſplanted into Pots filled with light freſh Earth, and placed in a ſhady Situation until they have taken new Root, when they may be expoſed to the open Air until the latter End of *October*, when they ſhould be placed under a common Hotbed Frame, where they may be ſheltered from ſevere Froſt in Winter, but they muſt have as much free Air as poſſible in mild Weather, and ſhould be frequently refreſhed with Water: The following Summer they will flower, and produce ripe Seeds, but the Plants may be continued four or five Years, by ſheltering of them in the Winter, as I have directed. They will often live thro' the Winter in the open Air, provided they are planted in a Situation where they are protected from the North and Eaſt Winds.

The ſecond Sort is a biennial Plant: This muſt be ſown on a Border of light Earth in the Spring, and when the Plants are come up three Inches high, ſome of them ſhould be potted, in order to ſhelter them in Winter; but there ſhould be ſome Plants left where they were ſown, which in a warm Seaſon will flower, and produce ripe Seeds the ſame Seaſon; but if theſe ſhould miſcarry, thoſe in the Pots may be preſerved thro' the Winter, under a common Frame; and in the ſucceeding Spring they ſhould be turned out of the Pots into the full Ground, where they will flower ſtrongly, and produce a large Quantity of Seeds.

The fourth Sort is an annual Plant: This muſt be ſown on a warm Border in the Spring, in the Place where the Plants are to remain, for it doth not bear tranſplanting well: Theſe Plants ſhould be thinned, if they come up too thick: In *Auguſt* they will flower, and in *September* they will perfect their Seeds.

ALYSSON, [᾿Αλύσσον, of ἀλύσσω, *Gr.* to be mad; ſo called, becauſe it was believ'd to have the Virtue of curing Madneſs or Rage by barely being look'd upon.] Madwort.

The *Characters* are;

The Flowers conſiſt of four Leaves, which are expanded in Form of a Croſs: The Fruit is ſhort and ſmooth, in which are contained many roundiſh Seeds.

The *Species* are;

1. **ALYSSON** *Creticum ſaxatile, foliis undulatis incanis. T. Cor.* The Alyſſon of *Candia*, with hoary undulated Leaves.

2. **ALYSSON** *halimi folio, ſemper-virens. Tourn.* The Alyſſon, with Sea Purſlane Leaves.

3. **ALYSSON** *Alpinum hirſutum luteum. Tourn.* The yellow *Alpine* Alyſſon, with hairy Leaves.

4. **ALYSSON** *perenne, montanum, incanum. Tourn.* 217. Hoary perennial Mountain Madwort.

5. **ALYSSON** *halimi folio, argenteo, anguſto. Tourn.* 217. Madwort, with a narrow Silver-colour'd Sea Purſlane Leaf.

6. **ALYSSON** *fruticoſum, incanum. Tourn.* 217. Hoary Shrub Madwort.

7. **ALYSSON** *fruticoſum, aculeatum. Tourn.* 217. Prickly Shrub Madwort.

8. **ALYSSON** *Creticum, foliis angulatis, flore violaceo. T. Cor.* *Candy* Madwort, with angular Leaves, and Violet-colour'd Flowers.

9. **ALYSSON** *Veronicæ folio. Tourn.* 217. Madwort, with a Speedwel Leaf.

10. **ALYSSON** *ſegetum, foliis auriculatis acutis. Tourn.* 217. Corn Madwort, with auriculated ſharp-pointed Leaves.

11. **ALYSSON** *ſegetum, foliis auriculatis acutis, fructu majori. Tourn.* 217. Corn Madwort, with auriculated ſharp-pointed Leaves, and a larger Fruit.

12. **ALYSSON** *incanum luteum, ſerpilli folio, majus. Tourn.* 217. Larger yellow hoary Madwort, with a Mother of Thyme Leaf.

13. **ALYSSON** *incanum, ſerpilli folio, minus. Tourn.* 217. Leſſer hoary Madwort, with a Mother of Thyme Leaf.

The firſt of theſe Sorts will grow to be near two Foot high, with a woody Stem, and may be form'd into a regular Head; and being planted in the middle of Borders, in a Flower-garden, is a very great Ornament thereto: It produces large Quantities of bright yellow Flowers in the Beginning of *April*, which continue till ſome Time in *May*, eſpecially if the Weather proves cool: When it is in Flower, the whole Plant appears, at a little Diſtance, to be nothing but Flowers, the Leaves and Stem being quite hid until you come near the Plant.

This Plant is hardy, and altho' brought from a more Southerly Climate, yet, if planted in a dry, lean, or rubbiſhy Soil, will endure our ſevereſt Winters abroad: It is increaſed by ſowing the Seeds in *March*, in a light ſandy Soil, or by planting Cuttings in *April* or *May*; which are very apt to take Root, if kept ſhaded in the Heat of the Day, and gently refreſhed with Water.

The ſecond Sort ſeldom continues above two or three Years with us, and muſt therefore be often ſown to preſerve it; or if the Seeds are ſuffered to fall, and remain upon the Ground, it will riſe again without any Trouble: This Plant ſpreads itſelf upon the Ground, and never riſes to any Height: It produces, at the Extremity of its Branches, very pretty Tufts of ſmall white Flowers; of which the Plant is ſeldom deſtitute for ſix or ſeven Months ſucceſſively; for which Reaſon it deſerves a Place in the Gardens of the Curious: This will alſo grow from Cuttings, if planted and managed as the former.

The third Sort is a very humble Plant, rarely riſing with us above two or three Inches high: It produces abundance of ſmall yellow Flowers early in the Spring, when few other Flowers appear, for which it is valuable: It is increas'd by parting the Roots in Autumn, and requires a light ſandy Earth, and to be expos'd only to the Morning Sun.

The fourth, fifth, ſixth, and ſeventh Sorts may be managed, as hath been directed for the third. Theſe will continue two or three Years, and if their Seeds are permitted to ſcatter, the Plants will come up and thrive without any further Care, than to keep them clear from Weeds.

The eighth Sort is an abiding Plant, which rarely produces Seeds in *England*, but multiplies greatly by Off-ſets, which may be planted into Pots filled with freſh light Earth, either in Spring or Autumn. Theſe Pots muſt be ſhelter'd from extreme Cold in Winter, but muſt have a great Share of Air in mild Weather. Some of the Plants may be planted on a warm Border, where they will endure the Cold of our ordinary Winters very well. This Plant produces great Quantities of Flowers early in the Spring.

The other ſix Sorts are annual Plants, which ſhould be ſown early in the Spring, on a Bed of light freſh Earth, where they are to remain, for they do not bear tranſplanting well, ſo that the Plants ſhould be thinned, and kept clear from Weeds, which is the only Culture they require. If the Seeds of theſe Sorts are ſuffered to ſcatter, the Plants will come up in Autumn, and ſtand thro' the Winter, ſo will more certainly produce good Seeds the following Summer.

AMARANTHOIDES, [of Ἀμάρανθος and εἶδος, *Gr.* Form.] Globe *Amaranthus*, or Everlaſting Flower; and by the *French*, *l'Immortal.*

The *Characters* are;

The Flowers are ſmall, and cut into four Segments, which are collected into ſquamoſe Heads; from each of theſe Scales is produced a ſingle Flower: The Ovary in the Bottom of the Flower becomes a roundiſh crooked Seed, which is contain'd in a thin Pellicule, or Skin.

There are, at preſent, four or five Varieties of this Plant in *England*, but there are but two of them valuable for a Garden of Pleaſure; the other Sorts produce ſmaller Flowers, and are much later, and require a great Heat to bring them to flower tolerably with us: The two beſt Sorts were brought from the *Eaſt-Indies* into *Europe*; but the other Sorts we have receiv'd from *Barbadoes*: I ſhall only mention the valuable Sorts, and paſs over the other, as fit only for the Curious in Botany.

1. AMARANTHOIDES, *Lychnidis folio, capitulis purpureis. Tourn.* The purple Globe Amaranthus, or Eternal Flower.
2. AMARANTHOIDES, *Lychnidis folio, capitulis argenteis.* The white (or Silver-colour'd) Globe Amaranthus, or Eternal Flower.

The firſt of theſe Plants is now become very common in every curious Garden near *London*, but the latter is, at preſent, a great Rarity: I receiv'd the Seeds of this Plant from *James Theobald*, Eſq; with ſeveral other curious Seeds which he procur'd from *China*; ſeveral of which ſucceeded very well in the Phyſick Garden at *Chelſea*.

Theſe Plants are ſome of the greateſt Beauties amongſt the whole annual Tribe: They muſt be ſown very early in a good Hot-bed, and treated as will be hereafter directed for the *Amaranths*, with this Difference only, that theſe muſt have a greater Share of Heat, and forwarded more in the Spring.

Theſe Flowers, if gathered before they decay on the Plant, and kept in a dry Place, will remain in Beauty for ſome Years, eſpecially if they are not too much expos'd to the Air: They are therefore very proper Ornaments for Ladies to wear in their Hair, and are far preferable to any artificial Flowers whatever: The Purple and White of theſe Flowers, together with ſome Varieties of the *Elichryſums* and *Xeranthemums*, will make a curious Variety of dry Flowers for Baſons to adorn Rooms in the Winter Seaſon, when few other Kinds are to be had.

The *Portugueſe* and *Spaniards* are very fond of theſe Flowers, and cultivate great Quantities of them in their Gardens, for adorning their Places of Worſhip in the Winter Time. The Seeds of this Plant being cloſely ſurrounded with a thin Skin, do appear to ſome Perſons, who are unacquainted therewith, to be only a chaffy Subſtance without any good Seeds; for the Seeds which are ſmall, and of a roundiſh Form, ſeldom quit this Covering, unleſs rubbed out; but if the Seeds are ſown with theſe Coverings over them, they will come up full as well as if taken out.

If the Autumn ſhould prove cold or wet, it will be very neceſſary to remove the Pots, with theſe Plants, into Shelter, otherwiſe they will not perfect their Seeds, eſpecially if they were not ſown very early in the Spring. If theſe Pots are preſerved in a good Green-houſe, their Flowers will make a very pretty Variety amongſt other Plants, and will continue until the Middle or latter End of *November*, provided the Weather proves not too cold: But what Flowers you intend to preſerve, ſhould be gathered ſoon after they arrive at their proper Bigneſs; for if they are ſuffer'd to remain very long after, the under Part of their Heads will change brown, and decay.

AMARANTHUS, [Ἀμάρανθος, of α Priv. and μαραίνω, *Gr.* to wither; ſo called, becauſe the Flower of this Plant being cropp'd, does not ſoon wither; but being dried, keeps the Beauty of its Colour a great while.] Amaranth.

The *Characters* are;

The Flowers have ſeemingly no Petals: the Cup of the Flower is dry and multifid; the Seeds are included in membranaceous Veſſels, which, when come to Maturity, burſt open either tranſverſly or horizontally, after the manner of Purſlane *and* Pimpernel, *in each of which are contained one or more roundiſh Seeds.*

There is a vaſt Variety of theſe Plants, both in the *Eaſt* and *Weſt Indies*; many of which are extremely beautiful, and as much deſerve our Care as any of the flowery Tribe. I ſhall here take Notice of the ſeveral Varieties which are cultivated in the *Engliſh* Gardens for their Beauty, omitting the other more common or leſs worthy Sorts, as more fit for a Botanical Diſquiſition.

1. AMARANTHUS *maximus. C. B.* The Tree Amaranth. *Vulgo.*
2. AMARANTHUS *maximus, panicula longa pendula, ſemine rubello. Raii Hiſt.* The long pendulous *Amaranth*, with reddiſh-coloured Seeds, *commonly called*, Love lies a bleeding.
3. AMARANTHUS *ſpica albeſcente habitiore. Martyn. Hiſt.* Amaranth with a thick whitiſh Spike.
4. AMARANTHUS *criſtatus, flore rubicundiſſimo. H.R.Par.* Cock's-comb Amaranth, with red Flowers.
5. AMARANTHUS *criſtatus, colore kermeſino. Boerh.* Carmine-coloured Cock's comb Amaranth.
6. AMARANTHUS *criſtatus, colore aureo. Boerh.* Gold-coloured Cock's-comb Amaranth.
7. AMARANTHUS *criſtatus, colore purpureo. Boerh.* Purple Cock's-comb Amaranth.
8. AMARANTHUS *criſtatus, colore luteo. Boerh.* Yellow Cock's-comb Amaranth.
9. AMARANTHUS *Sinenſis, foliis variis, panicula eleganter plumoſa. Martyn. Hiſt. Chineſe* Amaranth, with variegated Leaves, and a fine feather'd Panicle.
10. AMARANTHUS *tricolor. H. Eyſt.* The three-coloured Amaranth.
11. AMARANTHUS *bicolor.* The two-coloured Amaranth.

All theſe Sorts of *Amaranths* muſt be ſown on a good Hot-bed in *February*, or the Beginning of *March* at fartheſt; and in about a Fortnight's time (if the Bed is in good Temper) the Plants will riſe, when you muſt prepare another Hot-bed, covered with good rich light Earth, about four Inches thick; then raiſe up the young Plants with your Finger, ſo as not to break off the tender Roots, and prick them into your new Hot-bed about four Inches diſtance every Way, giving them a gentle Watering to ſettle the Earth to their Roots: but in doing this, be very cautious not to bear the young Plants down to the Ground by haſty Watering, which do rarely riſe again, or at leaſt ſo as to recover their former Strength, in a long Time, but very often rot in the Stems, and die quite away.

In the Heat of the Day keep them ſcreen'd with Mats from the great Heat of the Sun, and give them Air by raiſing up the Glaſſes with a ſmall Stone; and if the Glaſſes are wet, it will be proper to turn them every Day, (in good Weather) that they may dry; for the Moiſture, which is occaſioned by the Fermentation of the Dung, and Perſpiration of the Plants, is of a noxious Quality, and very unkindly to Plants, ſo that if the Weather happens to prove bad, that you can't turn your Glaſſes, it will be of great Service to your Plants, to wipe off all the Moiſture two or three times a Day with a Woollen Cloth, to prevent its dropping upon the Plants: When your Plants are firmly rooted, and begin to grow, you muſt obſerve to give them Air every Day (more or leſs, as the Weather is cold or hot) to prevent their drawing up too faſt, which greatly weakens their Stems.

In about three Weeks or a Month's time, theſe Plants will have grown ſo as to meet, and will ſtand in need of another Hot-bed, which ſhould be of a moderate Temper, and covered with the ſame rich Earth about ſix Inches thick, in which they ſhould be planted (obſerving to take them up with as much Earth about their Roots as poſſible) ſeven or eight Inches diſtance every Way, giving them ſome Water to ſettle the Earth about their Roots; but be very careful not to water them heavily, ſo as to bear down the Plants, (as was before directed) and keep them ſhaded in the Heat of the Day, until they have taken freſh Roots, and be ſure to refreſh them often (but gently) with Water, and give them Air in proportion to the Heat of the Weather, covering the Glaſſes with Mats every Night, leſt the Cold chill your Beds, and ſtop the Growth of the Plants.

In the Beginning of *May* you muſt provide another Hot-bed, which ſhould be covered with a deep Frame, that your Plants may have Room to grow: Upon this Hot-bed you muſt ſet as many three-penny Pots as can ſtand within the Compaſs of the Frame; theſe Pots muſt be filled with good rich Earth, and the Cavities between each Pot filled up with any common Earth, to prevent the Heat of the Bed from evaporating, and filling the Frame with noxious Steams; then with a Trowel, or ſome ſuch Inſtrument, take up your Plants (from the former Hot-bed) with as much Earth as poſſible to the Roots, and place each ſingle Plant in the Middle of one of the Pots, filling the Pot up with the Earth before deſcribed, and ſettle it cloſe to the Root of the Plant with your Hands; water them gently, as before, and ſhade them in the Heat of the Day from the Violence of the Sun, by covering the Glaſſes with Mats: refreſh them often with Water, and give them a good Quantity of Air in the Day-time.

In about three Weeks more, theſe Plants will have grown to a conſiderable Size and Strength, ſo that you muſt now raiſe the Glaſſes very much in the Day-time; and when the Air is ſoft, and the Sun is clouded, draw off the Glaſſes, and expoſe them to the open Air, and repeat this as often as the Weather will permit, which will harden them by degrees to be removed abroad into the Places where they are to remain the whole Seaſon: But it is not adviſeable to ſet theſe Plants out until a Week in *July*, obſerving to do it when the Air is perfectly ſoft, and, if poſſible, in a gentle Shower of Rain.

Let them at firſt be ſet near the Shelter of a Hedge for two or three Days, where they may be ſcreen'd from the Violence of the Sun, and ſtrong Winds, to which they muſt be inured by degrees: Theſe Plants, when grown to a good Stature, perſpire very freely, and muſt be every Day refreſhed with Water, if the Weather proves hot and dry, otherwiſe they will ſtunt, and never produce their Plumes ſo fine as they would do if taken Care of.

This is the proper Management, in order to have fine *Amaranths*; which, if rightly followed, and the Kinds are good, in a favourable Seaſon, will produce wonderful large fine Flowers, and are the greateſt Ornament to a good Garden for upwards of two Months: By this Method I have had Plants five or ſix Foot high, with Creſts near a Foot in Breadth; and I am perſuaded, if the Kind is good, (and there is no Want of Dung, or Conveniencies) in a kindly Seaſon, they will grow much larger.

In the Beginning of *September*, the *Amaranths* will have perfected their Seeds, ſo that you muſt make Choice of the largeſt, moſt beautiful, and leaſt branching Plants of each Kind for Seed; which you ſhould remove under Shelter, (eſpecially if the Weather proves wet, or the Nights froſty) that the Seeds may be maturely ripen'd; and in the Choice thereof, be ſure never to take any Seeds from Side-branches, nor from the Neck of the Plume, but ſuch only as are produced in the Middle thereof, which in many Plants, perhaps, may be but a ſmall Quantity; but I do aſſure you, it is thoſe only you can depend upon to have your Kinds good the ſucceeding Year.

The *Amaranthus tricolor* and *bicolor* muſt be kept longer under the Frames than the *Cock's-combs*; and in order to have them very beautiful, it will be proper to make a freſh Hot-bed in a Glaſs Caſe, or where ſuch a Conveniency is wanting, to erect ſome of the Lights which were placed over Cucumbers, round a Hot-bed, and cover thoſe with the ſame Lights on the Top, ſo as to reſemble a Glaſs Stove. On this Hot-bed you ſhould place your *Amaranths*, at ſuch a Diſtance from each other, as to allow them Room to ſpread, obſerving to refreſh them often with Water, and in warm Weather let them have plenty of freſh Air. With this Management, the Plants may be raiſed five or ſix Feet high, and their Leaves will come to the moſt beautiful Colours, after which they may be expoſed to the open Air, and removed to adorn the ſeveral Parts of the Garden.

AMBROSIA, [ſo call'd of Βρῶμα, Food, and Θεὸς, God, *q. d.* the Food of the Gods, as the Poets have feign'd.

The *Characters* are;

It hath Male floſculous Flowers, which are produced on ſeparate Parts of the ſame Plant from the Fruit, and have no viſible Petals: The Fruit which ſucceeds the Female Flowers, is ſhaped like a Club, and is prickly, containing one oblong Seed in each.

The *Species* are;

1. AMBROSIA *maritima. C. B.* The Maritime or Sea Ambroſia.
2. AMBROSIA *maritima, artemiſiæ foliis inodoris, elatior. H. L.* Taller unſavoury Sea Ambroſia.
3. AMBROSIA *Canadenſis, altiſſima, hirſuta, platani folio. Tourn.* The talleſt *Canada* Ambroſia, with rough Plane-tree Leaves.

The firſt of theſe Sorts may be ſown early in the Spring, in a Border under a warm Wall or Pale, where it will come up very well; and when the Plants are ſtrong enough to remove, they may be planted into the like warm Borders, where they will flower, and perfect their Seeds in Autumn; but if they have not a good Poſition, they ſeldom produce good Seeds in this Country.

The ſecond and third Sorts are brought from *America*, where they are very common Weeds, but with us ſhould be ſown upon a gentle Hot-bed in the Spring of the Year; and when the Plants are come up, ſhould be tranſplanted upon another moderate Bed, and expoſed to the open Air by degrees; and in *May* they ſhould be planted out into a warm Border, but, if poſſible, in a very poor Soil, which will check their luxuriant Growth, and cauſe them to flower and ſeed much ſooner than they would do if planted in a rich Soil. Theſe Plants have no great Beauty to recommend them, but for Variety they may be admitted into large Gardens.

AMENTACEOUS Flowers, [ſo called of *Amentatus*, faſtened with a String, &c. of *Amentum*, *Lat.* a String, Thong, or Latchet] are ſuch as have an Aggregate of Summits, hanging down in Form of a Rope or Cat's-Tail, which is alſo call'd an *Iulus*.

AMMI, [Ἄμμι, *Gr.*] Biſhops-weed.

The *Characters* are;

This is an umbelliferous Plant, with ſmall ſtriated Seeds: The Petals of the Flower are unequal, and ſhaped like a Heart.

The *Species* are;

1. AMMI *majus. C. B.* The greater Biſhops-weed.
2. AMMI *majus, foliis plurimum inciſis, & nonnihil criſpis. C. B.* The greater Biſhops-weed, with fine cut Leaves.
3. AMMI *perenne. M. Um.* Perennial Biſhops-weed.

The Seeds of the firſt and ſecond Kinds ſhould be ſown in an open Situation early in the Spring; and when the Plants are young, they may be prick'd out into Beds of ſandy Soil, at about ſix Inches diſtance from each other, obſerving to water them until they have taken freſh Root; after which time, they will require no more Care, but to keep them clear from Weeds, and if the Seaſon proves good, they will ripen their Seeds in Autumn. Or they may be ſown thin on a large Bed, and when the Plants are come up, where they are too thick, they may be houghed out, as is practiſed for *Carrots*, *Onions*, &c.

The Seeds of the firſt Sort are uſed in Medicine: The ſecond is a Variety of the firſt, which is accidental from the ſame Seeds: The third is an abiding Plant, which multiplies very faſt by its Root, which is very apt to ſpread far under Ground, for which Reaſon it ſhould never be planted in a good Garden. Theſe are all Varieties fitter for a Botanick, or Phyſick Garden, than for Gardens of Pleaſure.

AMOMUM PLINII: *Vide* Solanum.

AMORIS POMUM: *Vide* Lycoperſicon.

AMPHITHEATRE, [Ἀμφιθέατρον of ἀμφὶ, on both Sides, and θεάομαι, to view, *Gr.*] or Temples of View erected on a double Riſing, are great Ornaments to a large and noble Garden. If this Hill or riſing Ground is of a ſemi-circular Figure, it will ſtill be the better.

Theſe *Amphitheatres* are formed of Ever-greens, as *Hollies*, *Phillyrea's*, *Lauruſtinus's*, *Bays*, &c. obſerving to plant the ſhorteſt growing Trees in the Front, and the talleſt Trees behind, as *Pines*, *Firrs*, *Cedars* of *Lebanon*, &c.

They are alſo formed of Slopes on the Side of Hills, and covered with Turf, which, when well contrived, and kept, are a great Ornament to large Gardens.

AMYGDALUS, [Ἀμύγδαλος, *Gr.*] The Almond-Tree.

The *Characters* are;

It hath Leaves and Flowers very like thoſe of the Peach-Tree, *but the Fruit is longer, and more compreſſed; the outer green Coat is thinner and drier when ripe, and the Shell is not ſo rugged.*

The following Sorts are propagated for Sale in the Gardens near *London*.

1. Amygdalus *ſativa, fructu majore. C. B. P.* The common large *Almond*.
2. Amygdalus *dulcis, putamine molliori. C. B. P.* The Sweet *Almond*, with tender Shells.
3. Amygdalus *amara. C. B. P.* The Bitter *Almond*.
4. Amygdalus *ſativa, flore albo.* The white flowering *Almond*.

There is alſo another Tree, which is preſerved in ſome curious Gardens, that bears the Name of an *Almond*; but I have been inform'd by Perſons, who have ſeen the Flowers and Fruit of this Tree, that it is not of this Kind; yet as it hath not received any other Title that I know of, and as I never had an Opportunity to examine it myſelf, I ſhall mention it by its former Name, *viz.*

5. Amygdalus *Æthiopica, fructu holoſerico. Breyn. Cent.* The Æthiopian *Almond*, with Scarlet Fruit.

The firſt, ſecond, and third Sorts are chiefly cultivated in *England* for the Beauty of their Flowers, which are produced early in the Spring, when few other things appear, which renders them worthy of a Place in the beſt Gardens, where being intermixed with other flowering Trees, either in Wilderneſs Quarters, or in Walks, they afford a very agreeable Proſpect.

They are propagated by inoculating a Bud of theſe Trees into a Plum, Almond, or Peach-ſtock, in the Month of *July*: (The Manner of this Operation ſee under the Article of *Inoculation.*) The next Spring, when the Buds ſhoot, you may train them up either for Standards, or ſuffer them to grow for half Standards (according to your own Fancy;) and the ſecond Year, after budding, they may be removed to the Places where they are to remain. The beſt Seaſon for tranſplanting theſe Trees (if for dry Ground) is in *October*, as ſoon as the Leaves begin to decay; but for a wet Soil, *February* is much preferable, and obſerve always to bud upon Plumſtocks, for wet Ground, and Almonds or Peaches, for dry.

The *Almond* with white Flowers, is a greater Curioſity than either of the former, and being intermix'd with the other Sorts, and a few of the Cherry Plum-trees, which flower all together, add very much to the Beauty of theſe Plantations: This Sort with white Flowers, is more difficult to increaſe than either of the former, and will not take upon a Plumſtock, but muſt be either budded on a Peach or Almond.

The Sort with large Fruit, produces almoſt every Year large Quantities with us in *England*, which, if eaten before they are too dry, are little inferior to thoſe we receive from abroad; but if kept too long, they are very apt to ſhrivel up, and loſe their Plumpneſs; but in other reſpects are very good.

The *Æthiopian* Sort is tender, and requires a good Green-houſe to preſerve it in Winter; it is increaſed by planting Cuttings (that are tender, with a Joint of the laſt Year's Wood) in any of the Summer Months, in Pots of good light Earth, plunging them into a moderate Hot-bed, and keeping them ſhaded in the Heat of the Day, giving them frequent Refreſhings with Water: After they have taken Root, you muſt begin to harden them by degrees, to endure the open Air, a little before they are houſed, which will render them fitter to endure the Winter; for if they are too much drawn in Summer, they are very often deſtroyed in Winter.

Theſe Trees may be expoſed to the open Air, with Oranges, *&c.* (in a well ſhelter'd Place) during the Months of *June*, *July*, and *Auguſt*, but muſt be houſed before the hoary Froſts fall, which will very much prejudice them, if left abroad: They muſt have a very good Green-houſe in Winter, and gentle Waterings, as you obſerve the Leaves to curl; but be ſure not to over-wet them in Winter; which if once done, is ſeldom to be got dry again till Spring, and will be very prejudicial to the neighbouring Plants, by the great Damp it will occaſion in the Houſe.

ANACAMPSEROS, [Ἀνακάμψερος, of ἀνακάμπτω, to reflect or turn back, and ἔρως, Love; the *Magi* attributing to this Plant a Vertue of recalling Love:] *Telephium*, or *Rhodia Radix*; in *Engliſh*, Orpine, Live-ever, or Roſe-root.

The *Characters* are;

It hath a perennial Root: The Leaves, Stalks, Flowers, and Fruit, are like thoſe of the Houſe-leek; *but the Leaves of this Plant do not grow in a circumſcribed Order, as do thoſe of the* Houſe-leek, *but the Plant ariſes with a Stalk, upon which the Leaves are placed on every Side: the Flowers grow in Umbels, upon the Tops of the Stalks.*

The *Species* are,

1. Anacampseros *vulgo Faba craſſa. J. B.* III. 681. Common Orpine.
2. Anacampseros *purpurea. J. B.* III. 682. Purple Orpine.
3. Anacampseros *maxima. J. B.* III. 682. Greateſt Orpine.
4. Anacampseros *Luſitanica, hæmatodes, maxima. Tourn.* The greateſt red *Portugal* Orpine.
5. Anacampseros *radice roſam ſpirante, major. Tourn.* 264. Greater Roſe-root.
6. Anacampseros *radice roſam ſpirante, minor. Tourn.* 264. Leſſer Roſe-root.
7. Anacampseros *foliis eleganter variegatis.* Orpine with ſtriped Leaves.

Theſe Plants are ſeldom preſerved in Gardens of Pleaſure, therefore I ſhall paſs them over here, with only obſerving, that any of theſe Species may be cultivated by planting their Cuttings in any Part of the Summer, (except the *Rhodia Radix*, which is only propagated by parting the Roots, either in Spring or Autumn:) Theſe all love a dry Soil, and are very hardy.

The firſt Sort grows wild in many Parts of *England*; which is the Sort ſometimes uſed in Medicine, and which was ſome Years ſince in great eſteem to form green Chimney-pieces for the Summer Seaſon, which ſome People were very dexterous in making, by framing a Parcel of Laths together of the juſt Dimenſion of the Place where it was to ſtand; and then faſtening this Plant to the ſeveral Parts of it, ſo as to cover the whole with Green: And altho' this was only performed with Cuttings of the Plant, yet by giving the Whole a gentle Watering once a Week, the Plant would not only live, but ſhoot in Length, and continue freſh for two Months, and appear very handſome.

The other Sorts are preſerved by the Curious in Botany, for the ſake of Variety; theſe may be planted in Pots, filled with freſh undunged Earth, and ſhould have a ſhady Situation, where they will thrive better than if too much expoſed to the Sun. They are all very hardy (except the ſtriped Sort, which will require to be ſhelter'd in *Winter*) in reſpect to Cold, but they muſt not have too much Wet in *Winter*, which will ſometimes rot their Roots. They may be tranſplanted either in *Spring* or *Autumn*, at which times their Roots may be parted to propagate them; or they may be increaſed by planting Cuttings of either of the four firſt Sorts, in any of the *Summer* Months, which will eaſily take Root, and may afterwards be tranſplanted where they are to remain; but the two Kinds of Roſe-roots, are only propagated by parting their Roots. Theſe Plants ſhould not be placed near a Dove-houſe, for the Pigeons are ſo fond of them, that they will ſoon deſtroy them.

ANAGALLIS; Pimpernel.

The *Characters* are;

The Flower conſiſts of one Leaf, which is ſhaped like a Wheel, and cut into ſeveral Segments; the Pointal, which riſes out of the Flower-cup, is fixed like a Nail in the middle of the Flower; afterwards becomes a roundiſh Fruit, which when ripe opens tranſverſly into two Parts, one of which lies incumbent on the other, incloſing many angular Seeds which adhere to the Placenta.

The *Species* are;

1. Anagallis *phœniceo flore. C. B. P.* Male Pimpernel, with a red Flower.
2. Anagallis *cæruleo flore. C. B. P.* Female Pimpernel, with a blue Flower.
3. Anagallis *floribus obſolete purpureis. Park. Theat.* Pimpernel, with Flowers of a worn-out purple Colour.
4. Anagallis *flore albo. C. B. P.* Pimpernel, with a white Flower.
5. Anagallis *tenuifolia Monnelli. Cluſ.* Narrow-leav'd Pimpernel, with a blue Flower.

The firſt Sort is very common in the Cornfields, and other cultivated Places, in moſt Parts of *England*. The ſecond and third Sorts are ſometimes found wild in the Fields, but are leſs common than the firſt in *England*. The fourth is a Variety of the ſecond Sort, which ariſes accidentally from the Seed, ſo is not laſting. Theſe four Sorts are annual Plants, which ariſe from Seeds in the *Spring*, and are ſeldom preſerved in Gardens; but where-ever they do grow, if they are permitted to remain until they have ſcattered their Seeds, they will thrive faſt enough without any Care. The firſt and ſecond Sorts are placed amongſt the medicinal Plants in the College Diſpenſatory.

The fifth Sort is a very beautiful ſmall Plant, which ſpreads on the Ground, like the former Sorts, but produces a great Number of fine blue Flowers in *April*, *May*, and *June*, which makes a pretty Appearance: This may be propagated by ſowing of the Seeds ſoon after they are ripe, on a warm Border of light Earth, where the Plants will ariſe in the *Spring*, and ſome of them will produce Flowers the ſame Seaſon. Some of theſe Plants ſhould be planted into Pots, that they may be ſheltered in the *Winter*; for in very hard Froſts they are ſometimes deſtroyed. This Sort will abide two or three Years.

ANAGYRIS; Stinking Bean-Trefoil.

The *Characters* are;

It hath a papilionaceous (or Butterfly) Flower, whoſe Standard is ſhort when compared to the other Petals: the Pointal which riſes from the Flower-cup, afterwards becomes a Pod ſhaped like a Kidney-bean, containing many kidney-ſhaped Seeds. To which Notes ſhould be added, the Leaves grow by Trees on one common Foot-ſtalk.

The *Species* are;

1. ANAGYRIS *fœtida. C. B.* Stinking Bean-Trefoil.
2. ANAGYRIS *fœtida Cretica, oblongis foliis, luteis floribus. Barr. Icon.* Candy ſtinking Bean-Trefoil, with oblong Leaves, and yellow Flowers.

The firſt Sort grows wild in the South of *France*, as alſo in *Spain* and *Italy*: This is a Shrub which uſually ariſes to the Height of eight or ten Feet, and produces its Flowers in *April* and *May*, which are of a bright yellow Colour, growing in Spikes, ſomewhat like thoſe of the *Laburnum*, the Seeds are ſeldom perfected in this Country, which is the Reaſon of its preſent Scarcity in *England*.

The other Sort is a Native of *Candy*, and ſome of the Iſlands of the *Archipelago*; and at preſent is very rare in the *Engliſh* Gardens. This Sort hath longer Leaves than the former, and flowereth later in the *Summer*, ſo that it very rarely produces Seeds.

Theſe may be both propagated by laying down their tender Branches, in the *Spring*, obſerving in dry Weather to ſupply them with Water, which if duly performed, the Layers will have taken Root by the following *Spring*, when they ſhould be cut off from the old Plants, a little time before they begin to put out their Leaves, and planted in a warm Situation; for if they are too much expoſed to the cold Winds, they will be in danger of being deſtroyed in a hard *Winter*. This Method of propagating theſe Plants, is to ſupply their Defect in not producing ripe Seeds in this Country; for the Plants which are produced from Seeds, will be much handſomer, and will riſe to a much greater Height.

If you propagate theſe Plants from Seeds, you ſhould ſow them on a warm Border of light freſh Earth, toward the End of *March*, obſerving always to do it in dry Weather; for if much wet ſhould fall after the Seeds are in the Ground, they will rot. If the Seeds are good, and the Seaſon favourable, the Plants will appear in a Month after the Seeds were ſown; at which time you ſhould carefully clear them from Weeds, and in very dry Weather they ſhould be frequently refreſhed with Water; if theſe be duly obſerved, the Plants will be ſix or eight Inches high before *Winter*. While theſe Plants are young they will be in much greater danger of ſuffering by Froſt; therefore, if the *Winter* ſhould prove very ſevere, you ſhould ſhelter them with Mats during the Continuance of the Froſt, but in mild Weather they ſhould always be expoſed to the open Air. In *March* following you ſhould carefully take up theſe Plants, obſerving not to injure their Roots; then you muſt tranſplant them into a Nurſery-bed, placing them in Rows at a Foot diſtance, and the Plants at ſix Inches diſtance in the Rows; obſerving, if the Seaſon ſhould prove dry, to give them Water until they have taken new Root, after which time they will require no other Culture, but to keep them clear from Weeds, during the *Summer* Seaſon; but if the following *Winter* ſhould prove very ſevere, it will be proper to ſcreen them either with Mats or Peaſe-haulm, otherwiſe they may be deſtroyed. In this Bed they may remain two Years by which time they will be fit to tranſplant into the Places where they are deſigned to remain. The beſt Seaſon to remove them is in *March*, juſt before they begin to ſhoot, and obſerve not to injure their Roots, as alſo to Water them, if the Seaſon ſhould prove dry, until they have taken Root; as alſo to lay ſome Mulch on the Surface of the Ground about their Roots, to prevent the Air from penetrating to dry their Fibres, which will ſave much Trouble in watering. The fourth Year from Seeds, theſe Plants will begin to produce their Flowers, and will continue to produce Flowers every Year after, ſo will be very proper to intermix with other flowering Shrubs of the ſame Growth.

ANANAS, The Pine-Apple.

The *Characters* are;

It hath a Flower conſiſting of one Leaf, which is divided into three Parts, and is Funnel-ſhaped; the Embryo's are produced in the Tubercles; theſe afterwards become a fleſhy Fruit full of Juice; the Seeds which are lodged in the Tubercles are very ſmall, and almoſt Kidney-ſhaped.

The *Species* are;

1. ANANAS *aculeatus, fructu ovato, carne albida. Plum.* Oval-ſhaped Pine-Apple, with a whitiſh Fleſh.
2. ANANAS *aculeatus, fructu pyramidato, carne aurea. Plum.* Pyramidal Pine-Apple, with a yellow Fleſh.
3. ANANAS *folio vix ſerrato. Boerh. Ind. Alt.* 2. 83. Pine-Apple with ſmooth Leaves.
4. ANANAS *lucide virens, folio vix ſerrato. Hort. Elth.* Pine-Apple with ſhining green Leaves, and ſcarce any Spines on their Edges.
5. ANANAS *aculeatus, fructu pyramidato vireſcente, carne aurea.* The green Pine-apple, with a pyramidal Fruit, commonly called the Sugar-loaf Pine in *Barbadoes*.
6. ANANAS *fructu ovato ex luteo vireſcente, carne lutea.* The Olive-colour'd Pine.

There are ſeveral other Varieties of this Fruit, ſome of which may have been obtain'd from Seeds; and I doubt not but if the Seeds were ſown frequently, in the Countries where they are in Plenty, there may be as great Variety of theſe Fruit, as there are of Apples or Pears in *Europe*.

This Fruit (which is juſtly eſteemed for the Richneſs of its Flavour, as it ſurpaſſes all the known Fruits in the World) is produced from an herbaceous Plant, which hath Leaves ſomewhat reſembling thoſe of an *Aloe*, and are, for the moſt part, ſawed on their Edges, but are much thinner, and not ſo juicy as the *Aloe*: The Fruit reſembles the Cones of the *Pine-Tree*, from whence it is ſuppoſed to have its Name.

Where this Plant is a Native, I believe it is hard to determine; but it is probably an indigenous Plant in *Africa*, where, I have been informed, they grow in uncultivated Places in great Plenty. They have been long cultivated in the hotteſt Iſlands of the *Weſt Indies*, where they are in great Plenty and extraordinary Goodneſs; but it hath been very lately that it was introduced into the *European* Gardens, ſo as to produce Fruit: The firſt Perſon who ſucceeded in this Affair, was Monſieur *Le Cour* of *Leyden* in *Holland*, who, after a great many Trials with little or no Succeſs, did, at length, hit upon a proper Degree of Heat and Management, ſo as to produce Fruit equally as good (tho' not ſo large) as thoſe which are produced in the *Weſt Indies*, as hath been often affirm'd by Perſons who have lived many Years there: And it is to this worthy Cultivator of Gardening, who did not ſpare any Pains or Expence to accompliſh it, that all the Lovers thereof are obliged, for introducing this King of Fruits amongſt them; and it was from him that our Gardens in *England* were firſt ſupplied; tho' we have ſince had large Quantities brought from *America*. I can't here avoid taking Notice of a common Error which prevails amongſt many People, which is, that the Plants brought from *America* are not ſo good as thoſe which came from Mr. *Le Cour*; but it is a great Miſtake; for were the People who ſent over theſe Plants from *America* careful to ſend the beſt Kinds, there would be found many better Kinds than thoſe cultivated by Mr. *Le Cour*, who had his from thence at firſt, as his Gardener aſſured me; and I have ſeen as good Fruit produced from *American* Plants, as any I have yet ſeen, and ſome much larger than any I ſaw in Mr. *Le Cour*'s Garden.

The firſt Sort is the moſt common in *Europe*, but the ſecond Sort is much preferable to it, the Fruit of this being larger, and much better flavour'd; the Juice of this Sort is not ſo aſtringent as is that of the firſt, ſo that this Fruit may be eaten in greater Quantity, with leſs Danger. This Sort generally produces ſix or ſeven Suckers, immediately under the Fruit, whereby it may be increaſed much faſter than the common Sort; ſo that in a few Years it may be the moſt common Sort in *England*.

The third Sort is preſerved by ſome curious Perſons, for the ſake of Variety, but the Fruit is not near ſo good as either of the former. The fifth Sort is at preſent the moſt rare in *Europe*; there being very few of the Plants at preſent: This is eſteemed the beſt Sort yet known, by ſome of the moſt curious Perſons in *America*, who have thrown out all the other Sorts from their Gardens, and cultivate only this Kind. The Plants of this Sort may be procured from *Barbadoes* and *Mountſerrat*, in both which Places it is cultivated. The ſixth Sort was brought from *Jamaica*, this is not very common in *England* as yet; it is eſteemed a very good flavoured Fruit by thoſe Perſons who have taſted it; but it being a very backward Sort, will render it leſs valuable in our Climate; for this Sort will require a Month longer time to ripen, from the firſt Appearance of the Fruit to its Maturity, than moſt of the other Sorts. I have alſo heard of another Kind of Pine, whoſe Fleſh is very green, and the Outſide yellow; but having never ſeen the Sort, I cannot give any Account of it. There are many other Kinds to be found in the ſeveral Countries where they are cultivated, which have ariſen from Seeds, which differ in their Shape, Colour, and the Flavour of their Fruit; ſo that as theſe Fruits become common in *Europe*, all the bad Sorts ſhould be rejected, and ſuch only as produce fine Fruit ſhould be cultivated.

The Sort with very ſmooth Graſs-green Leaves, was raiſed from Seeds taken out of a rotten Fruit, which came from the *Weſt Indies*, to the late *Henry Heathcote*, Eſq; from whom I received one Plant, which hath produced large Fruit; this, I am told, is what the People of *America* call the *King-Pine*.

Theſe Plants are propagated by planting the Heads which grow upon each Fruit, or by Suckers produced from the old Stems, which muſt be planted in Pots about five or ſix Inches over at Top, fill'd with good freſh light Earth, mix'd with a very little rotten Dung, which muſt be often turn'd, to mix them the better together, giving them a little Water to ſettle the Earth to their Roots; then plunge them into a well-temper'd Bed of Tanners Bark. For the Manner of making theſe Beds, I ſhall refer to you to the Article of *Hot-beds*.

Take care to give them frequent but gentle Refreſhings with Water, and if your Bed ſhould decline its Heat, it will be very proper to add a little freſh Bark thereto, which muſt be mixed with the old, and will cauſe it to ferment again, and increaſe the Heat of your Bed.

Obſerve alſo, as the Nights grow cold in *Auguſt* and *September*, to increaſe your Covering over the Glaſſes, that by this means your young Plants may be furniſhed with ſtrong Roots before Winter: Toward the latter End of *October*, you muſt remove theſe Plants out of the Bark-bed into the Stove, (eſpecially thoſe Plants that are ſtrong enough to produce Fruit the next Year) diſpoſing them regularly on the Stands, ſo as not to crowd each other, nor their Leaves to interfere, if you have Room enough in your Stove to prevent it.

During the Winter Seaſon, you muſt obſerve to keep the Stove to a good Temper of Heat, (never ſuffering the Spirit in the Thermometer to fall below the Degree of Heat, which is aſſigned them on Mr. *Fowler*'s Botanical Thermometers;) nor ſhould the Spirit be ever raiſed much above five Degrees more; for too great a Heat would forward their Fruiting too much, and Cold would prevent it for that Seaſon, ſo that the middle Degree of Heat is beſt: Forget not to refreſh them with Water (which ſhould be placed in the ſame Stove at leaſt twenty-four Hours before uſed, that the Cold may be taken off) at leaſt once a Week, or oftener, according to the Temper of your Stove, or as you find the Earth in the Pots to require it.

Your Plants thus managed, will, by the Beginning of *February*, or ſoon after, ſhew their Bud for Fruit in the Center of the Plant, and muſt therefore be diligently kept forwarded by gently increaſing the Heat of the Stove, and often repeating your Watering: In the Middle of *February*, you muſt prepare your Tan for the Hot-bed, which ſhould be made at leaſt a Month before the Plants are ſet into it, that the great Heat of the Bed may be paſs'd, which would be ſubject to burn the extreme Parts of the Roots, and thereby give ſo great a Check to the Plants, as not to be recovered again in two Months; and this very often ſpoils the Fruit, by retarding the Growth of the Plant; ſo that whenever they begin to recover their Vigour, that Nouriſhment which ſhould have been employed to increaſe the Bulk of the Fruit, is all ſpent in furniſhing a large Top or Crown to a ſmall inſignificant Fruit.

Toward the Middle or latter End of *March* (according as you find the Bed in Temper, or the Weather favourable) you may remove your Plants into the Bark-bed, (plunging the Pots at firſt but half way into the Bark) that the ſudden Heat to their Roots may not be violent; but obſerve to keep your Glaſſes cover'd in bad Weather and in the Night, that you may preſerve a conſtant warm Air in the Bed; and if it ſhould happen to prove very hot in the Day, give them a little Air by raiſing the Glaſſes with a ſmall Stone; and if the Sun ſhould ſhine very hot upon the Glaſſes, it will be adviſable to ſhade them, in the Middle of the Day, from the Violence thereof, which (eſpecially at their firſt coming out of the Stove) would alter and change the Colour of the Plants, and be very prejudicial to them.

In about three Weeks, or a Month's time, after your Plants were ſet into the Bark, you may raiſe them up again, and ſtir the Surface of the Bark with a ſmall Dung-fork, and plunge the Pots down to their Rims therein; for by this time there will be no Danger of hurting their Roots with Heat; and obſerve to give them frequent Waterings, as they ſhall require it; and at this time you may ſhift ſuch of your Plants as do not fruit, into larger Pots (if they require it); and if you ſtir up the Earth on the Surface of the Pots where there is Fruit, and take it out with your Hands, filling them up again with good freſh Earth, it will be of great Service to your Fruit; but have a care, in this Operation, not to let any Earth in amongſt the Leaves of the Plant, nor to diſturb the Roots too much, both which will be hurtful to them.

During the Summer Seaſon, give them frequent Waterings, and ſhade them from the Violence of the Sun in very hot Days, and give them Air, by raiſing the Glaſſes in proportion to the Warmth of the Bed, and Heat of the Weather; and if you find your Bed grow cold, you muſt ſtir up the Bark with a Dung-fork almoſt to the Bottom, looſening and breaking the Lumps; and if you add a little freſh Bark to it, it will increaſe the Heat, and then plunge the Pots into it again: This may be repeated two or three times in a Summer, according to the Temper of the Bed, by which Means your Plants will be always kept in a growing State. Theſe few Rules, if rightly obſerved will, I doubt not, afford the Practitioner Succeſs. As for the Contrivance of *Stoves*, I ſhall refer the Reader to the Article on that Subject, where he will be furniſhed with their ſeveral Deſcriptions.

The Time of this Fruit's ripening is, from the Beginning of *July* till the End of *September*; after which Time, the Fruits that ripen are ſeldom well taſted, the Seaſon being ſo far ſpent, that we have not Heat enough to correct the Crudities, which are imbibed in the long Nights, from the Vapours of the Bed, and their own Perſpiration in the Day-time.

The manner of judging when they are mature, is, by the ſtrong Smell they emit like that of ripe Fruits, and by gently preſſing the Protuberances of the Fruit with your Thumb and Finger; and if they give Way, it is a certain Sign of Ripeneſs: nor will this Fruit keep above three or four Days at moſt, if ſuffer'd to remain on the Plant, before its high Flavour will be loſt; and if cut, it ſhould not be kept above twenty-four Hours at moſt, if you would eat it in Perfection; but if you would keep them back a little time, you ſhould do it before they are quite ripe, or ſoon after they begin to change the Colour; which may be effected by allowing them a greater Share of Air in the Day-time, and by ſcreening the Glaſſes with Mats in the Heat of the Day.

This Fruit ſhould be ſerved up to Table intire, (without breaking off the Crown, as is by ſome practiſed) which greatly ſpoils the high Flavour of the Fruit, by letting out a Part of its Juice, and by opening the Fruit to imbibe the moiſt Particles floating in the Air of the Place where it is kept, which greatly flattens that delicate Poignancy, which is always found in a freſh kindly Fruit of this Sort.

When the Fruit is to be eat, you may take the Stalk thereof in one Hand, and the Crown of the Fruit in the other, and by gently twiſting it, they will readily part, and the Crown will come out more intire, and fit for planting, than if cut off, and the Fruit will be leſs injured: Then you may cut it into tranſverſe Slices, in proportion to the Company that is to eat of it, laying them ſingly on a Plate; the outſide Coat muſt be pared off, as in many other Fruits, which would be troubleſome in eating; the Inſide of a good Fruit will cut almoſt as firm as a Nectarine, and is of a moſt delicious Flavour, and very full of Juice, and is juſtly termed the King of Fruits.

It hath been the Practice of moſt People who have cultivated this Fruit in *Europe*, to make their Hot-beds in Frames about three Feet deep; but it is a much better Method to have a Stove on purpoſe for this Fruit, with Bark Pits in it, for the Hot-bed: theſe Stoves need not be higher than to admit of a Perſon's walking upright on the Backſide; and in Front the Glaſſes may ſlope down within ſix Inches of the Bark. In ſuch a Stove as this, there will be a much greater Share of Air than in the low Frames, ſo that the Plants will thrive much better, and the Fruit will have a higher Flavour. The Manner of contriving theſe Stoves ſhall be fully explained under the Article *Stove.*

I have above given full Directions for the cultivating this excellent Fruit in *England*; I ſhall now add a few Inſtructions founded on later Obſervations; as alſo Directions how to manage ſuch as are infeſted with Inſects, which often totally deſtroy the Plants, or at leaſt weaken them ſo much, as not to be recovered in leſs than a Year, tho' managed with the greateſt Skill. And, Firſt,

As to the Earth in which theſe ſhould be planted, if you have a rich good Kitchen Garden Mould, not too heavy, ſo as to detain the Moiſture too long, nor over-light and ſandy, it will be very proper for them without any Mixture; but where this is wanting, you ſhould procure ſome freſh Earth from a good Paſture, which ſhould be mixed with about a third Part of rotten Neats-dung, or the Dung of an old Melon or Cucumber-bed, which is well conſumed. Theſe ſhould be mixed two or three Months at leaſt before they are uſed, and ſhould be often turned, that their Parts may be the better united, as alſo the Clods well broken. This Earth ſhould not be ſcreened very fine, for if you only clear it of the great Stones, it will be better for the Plants, than when it is made too fine. You ſhould always avoid mixing any Sand with the Earth, unleſs it be extremely ſtiff, and then it will be neceſſary to have it mixed at leaſt ſix Months before it is uſed, and it muſt be frequently turned, that the Sand may be incorporated in the Earth, ſo as to divide its Parts; but you ſhould not put more than a ſixth Part of Sand, for too much Sand is very injurious to theſe Plants.

In the *Summer* Seaſon, when the Weather is warm, theſe Plants muſt be frequently watered, but you ſhould not give to them large Quantities at each Time, you muſt alſo be very careful that the Moiſture is not detained in the Pots, by the Holes being ſtopp'd, for that will ſoon deſtroy the Plants. If the Seaſon is warm, they ſhould be watered every other Day, but in a cool Seaſon twice a Week will be often enough; and during the *Summer* Seaſon, you ſhould once a Week, water them gently all over their Leaves, which will waſh the Filth from off them, and thereby greatly promote the Growth of the Plants.

There are ſome Perſons who frequently ſhift theſe Plants out of the Pots, but this is by no means to be practiſed by thoſe who propoſe to have large well-flavoured Fruit; for unleſs the Pots be filled with the Roots, by the time the Plants begin to ſhew their Fruit, they commonly produce ſmall Fruit, which have generally large Crowns on them. So that the Plants will not require to be new potted oftener than twice in a Seaſon; the firſt Time ſhould be about the End of *April*, when the Suckers and Crowns of the former Years Fruit (which remained all the *Winter* in thoſe Pots in which they were firſt planted) ſhould be ſhifted into larger Pots, *i. e.* thoſe which were in half-penny or three-farthing Pots, ſhould be put into Penny or at moſt three-half-penny Pots, according to the Size of the Plants; for you muſt be very careful not to over-pot them, nothing being more prejudicial to theſe Plants. The ſecond Time for ſhifting of them is, toward the latter End of *Auguſt*, or the Beginning of *September*, when you ſhould ſhift thoſe Plants which are of a proper Size for fruiting the following *Spring*, into two-penny Pots, which are full large enough for any of theſe Plants. At each of theſe Times of ſhifting the Plants, the Bark-bed ſhould be ſtirred up, and ſome new Bark added, to raiſe the Bed up to the Height it was at firſt made; and when the Pots are plunged again into the Bark-bed, the Plants ſhould be watered gently all over their Leaves, to waſh off the Filth, and to ſettle the Earth to the Roots of the Plants. If the Bark-bed be well ſtirred, and a Quantity of good freſh Bark added to the Bed, at this latter ſhifting, it will be of great Service to the Plants, and they may remain in the Tan, until the Beginning of *November*, or ſometimes later, according to the Mildneſs of the Seaſon, and will not require any Fire before that time. During the *Winter* Seaſon theſe Plants will not require to be watered oftener than every third or fourth Day, according as you find the Earth in the Pots to dry; nor ſhould you give them too much at each time, for it is much better to give them a little Water often, than to over-water them, eſpecially at that Seaſon.

You muſt obſerve never to ſhift thoſe Plants which ſhew their Fruit, into other Pots, for if they are removed after the Fruit appears, it will ſtop the Growth, and thereby cauſe the Fruit to be ſmaller, and retard its ripening, ſo that many times it will be *October* or *November* before the Fruit is ripe. Therefore you ſhould be very careful to keep the Plants in a vigorous growing State, from the firſt Appearance of the Fruit, for upon this depends the Goodneſs, and Size of the Fruit; for if they receive a Check after this, the Fruit is generally ſmall, and ill-taſted.

When you have cut off the Fruit from the Plants, whoſe Kind you are deſirous to propagate, you ſhould trim the Leaves, and plunge the Pots into a moderate Hot-bed, obſerving to refreſh them frequently with Water, which will cauſe them to put out Suckers in Plenty, ſo that a Perſon may be ſoon ſupplied with Plants enough of any of the Kinds, who will but obſerve to keep their Plants in Health.

There is not any thing which can happen to theſe Plants, of a more dangerous Nature, than to have them attacked by ſmall white Inſects, which appear at firſt like a white Mildew, but ſoon after have the Appearance of Lice; theſe attack both Root and Leaves at the ſame time, and if they are not ſoon deſtroyed, will ſpread over a whole Stove in a ſhort time; and in a few Weeks will entirely ſtop the Growth of the Plants, by ſucking out the nutritious Juice, ſo that the Leaves will appear yellow and ſickly, and have generally a great Number of yellow tranſparent Spots all over them. Theſe Inſects, after they are fully grown, appear like Bugs; and adhere ſo cloſely to the Leaves, as not to be eaſily waſh'd off, and ſeem, as if they had no Life in them. They were originally brought from *America* upon the Plants which were brought from thence, and I believe they are the ſame Inſects which have deſtroyed the Sugar-Canes of late Years, in ſome of the *Leeward* Iſlands. Since they have been in *England*, they have ſpread greatly in ſuch Stoves, where there has not been more than ordinary Care taken to deſtroy them. They have alſo attacked the Orange Trees in many Gardens near *London*, and have done them incredible Damage, but I do not find they will endure the Cold of our Climate in Winter, ſo that they are never found on ſuch Plants as live in the open Air. The only Method I have yet been able to diſcover for deſtroying theſe Inſects, is, by waſhing the Leaves, Branches, and Stems, of ſuch Plants as they attack, frequently with Water, in which there has been a ſtrong Infuſion of Tobacco-ſtalks, which I find will deſtroy the Inſects, and not prejudice the Plants. But this Method cannot be practiſed on the *Ananas* Plants, becauſe the Inſects will faſten themſelves ſo low between the Leaves, that it is impoſſible to come at them with a Sponge to waſh them off; ſo that if all thoſe which appear to Sight are cleared off, they will ſoon be ſucceeded by a freſh Supply from below; and the Roots will be alſo equally infeſted at the ſame time. Therefore, where-ever theſe Inſects appear on the Plants, the ſafeſt Method will be, to take the Plants out of the Pots, and clear the Earth from the Roots; then prepare a large Tub, which ſhould be filled with Water, in which there has been a ſtrong Infuſion of Tobacco-ſtalks; into this Tub you ſhould put the Plants, placing ſome Sticks croſs the Tub, to keep the Plants immerſed in the Water. In this Water they ſhould remain twenty-four Hours, then take them out, and with a Sponge waſh off all the Inſects from the Leaves and Roots, which may be eaſily effected when the Inſects are killed by the Infuſion; then cut off all the ſmall Fibres of the Roots, and dip the Plants into a Tub of Fair Water, waſhing them therein, which is the moſt effectual way to clear them from the Inſects. Then you ſhould pot them in freſh Earth, and having ſtirred up the Bark-bed, and added ſome new Tan to give a freſh Heat to the Bed, the Pots ſhould be plunged again, obſerving to water them all over the Leaves, (as was before directed) and this ſhould be frequently repeated during the Summer Seaſon; for I obſerve theſe Inſects always multiply much faſter where the Plants are kept dry, than in ſuch Places where the Plants are duly watered, and kept in a growing State. And the ſame is alſo obſerved in *America*, for it is in long Droughts that the Inſects make ſuch Deſtruction of the Sugar Canes. And in thoſe Iſlands where they have had ſeveral very dry Seaſons of late, they have increaſed to ſuch a Degree, as to deſtroy the greateſt Part of the Canes in the Iſlands, rendering them not only unfit for Sugar, but ſo poiſon the Juice of the Plant, as to render it unfit to make *Rum.* So that many Planters have been ruined by theſe Inſects.

As theſe Inſects are frequently brought over from *America* on the *Ananas* Plants, which come from thence, ſo thoſe Perſons who procure their Plants from thence, ſhould look carefully over them when they receive them, to ſee they have none of theſe Inſects on them; for if they have, they will ſoon be propagated over all the Plants in the Stove where theſe are placed; therefore, whenever they are obſerved, the Plants ſhould be ſoaked as was before directed, before they are planted into Pots.

It hath been the common Practice of moſt Perſons, who have cultivated this Fruit in *Europe*, to build dry Stoves in which they keep their Plants in Winter, placing the Pots on Scaffolds, (after the Manner in which Orange-Trees are placed in a Green-houſe) and in the Summer to keep them in Hot-beds of Tanners Bark under Frames; but this is found by late

Experience a bad Method ; for the Glaſſes lying ſo near over the Plants, there is not a ſufficient Quantity of Air in the Bed to nouriſh the Fruit, and give it that vinous Flavour which good Fruit always abounds with ; and when theſe Glaſſes are cloſely ſhut down in the Night, the Vapours which ariſe from the Fermentation of the Tan, and the Perſpiration of the Plants, are cloſely pent in, and being condenſed againſt the Glaſſes, fall in Water on the Plants.

Therefore, to remedy this Inconvenience, it is now the Practice of thoſe Perſons who are deſirous to propagate this Fruit, to erect low Stoves, with Pits therein for the Hot-bed, (after the manner of the Bark-ſtove deſcribed) but much lower ; for as theſe Plants do not grow above two Feet and a half, or at moſt three Feet, above the Pot in Height, ſo there is no Neceſſity for having theſe Stoves very high. Some Perſons build them with upright Glaſſes in Front, about four Feet high, and ſloping Glaſſes over theſe, which riſe about ſix Feet high, ſo that there is juſt Height enough for Perſons to walk upright, on the Back-ſide of the Bark-bed. Others make but one Slope of Glaſſes, from the Top of the Stove, down to the Plate, which lies about ſix or eight Inches above the Bark-pit, in the Front of the Stove. So that in this Stove there is no Walk made in the Front between the Bark-pit and the Glaſſes ; nor is it very neceſſary, where the Bark-pit is not above ſix Feet and a half wide ; for it will be eaſy to reach from the Walk on the Back-ſide of the Pit, to water the Plants in Front, with a Watering-pot that has a long Spout ; and when the Plants are to be ſhifted, or the Bark renewed, which is not done but in the Spring, or Summer Months, the Glaſſes may be taken down, and the Plants removed with Safety. One of theſe Stoves about twenty Feet long in the Clear, with the Pit for the Tan reaching from end to end, and ſix Feet and a half wide, will contain about a hundred Plants, ſo that whoever is deſirous to have this Fruit, may eaſily proportion their Stove to the Quantity of Fruit which they are willing to have.

But it will be alſo neceſſary to have a Bark-pit under a deep Frame, in order to raiſe the young Plants ; for in this Bed you ſhould plunge the Suckers, when they are taken from the old Plants, as alſo the Crowns which come from the Fruit ; ſo that this Frame will be as a Nurſery to raiſe the young Plants to ſupply the Stove. But theſe Plants ſhould not remain in theſe Frames longer than till the Beginning of *November*, at which time they muſt be removed into the Stove, and being ſmall, may be crowded in amongſt the larger Plants ; for as they will not grow much during the Winter Seaſon, ſo they may be placed very cloſe together. The Beginning of *March* you muſt remove theſe Plants out into the Hot-bed again, which ſhould be prepared a Fortnight before, that the Tan may have acquired a proper Heat ; but you ſhould be careful that the Tan be not too hot, for that might ſcald the Fibres of the Plants, if they are ſuddenly plunged therein. Therefore, if you find the Bark too hot, you ſhould not plunge the Pots above two or three Inches into the Tan, letting them remain ſo until the Heat of the Tan is a little abated, when you ſhould plunge the Pots down to their Rims in the Bed. If the Nights ſhould continue cold after theſe Plants are removed into the Bed, you muſt carefully cover the Glaſſes with Mats, otherwiſe by coming out of a warm Stove, they may receive a ſudden Check, which will greatly retard their Growth, which muſt be carefully avoided, becauſe the ſooner the Plants are ſet growing in the Spring, the more time they will have to gain Strength, in order to produce large Fruit the following Seaſon.

You ſhould not plunge the Pots too cloſe together in this Frame, but allow them a proper Diſtance, that the lower part of the Plants may increaſe in Bulk, for it is on this that the Magnitude of the Fruit depends ; for when the Plants are placed too cloſe, they draw up very tall, but do not obtain Strength, ſo that when they are taken out of the Bed, the Leaves are not able to ſupport themſelves ; but all the outward long Leaves will fall away, leaving the ſmaller middle Leaves naked ; and this ſometimes will cauſe them to rot in the Centre. You muſt alſo obſerve, when the Sun is very warm, to raiſe the Glaſſes of the Hot-bed with Stones, in order to let out the Steam of the Bed, and to admit freſh Air ; for one Neglect of this kind in a very hot Day, may deſtroy all the Plants, or at leaſt ſo ſcald them, that they will not get over it in many Months. It will alſo be very proper, in extreme hot Weather to ſhade the Glaſſes in the middle of the Day with Mats ; for the Glaſſes lying ſo near to the Leaves of the Plants will occaſion a prodigious Heat at ſuch Times.

There are ſeveral Perſons who let their *Ananas* Plants remain plunged in the Bark-bed in the Stoves all the Winter Seaſon ; but where this is practiſed, the Plants muſt not be watered ſo often, as thoſe which are placed on Boards during that Seaſon ; for the Moiſture which ariſes from the Bark, will preſerve the Bottom of the Pots from drying, ſo that a ſmall Share of Water will be ſufficient for theſe Plants. Others, who do not permit their Plants to remain in the Tan all the Winter, and have no dry Stove, raiſe their Pots out of the Bed, and level the Bark, then lay ſome old Boards on the Bark, upon which they place their Pots, in this Situation they let them remain until the Beginning of *March*, at which time they renew the Bark-bed in the Stove, and plunge the Plants therein. In renewing of the Bark at this Seaſon, it is not neceſſary to take all the old Bark out, one half of it will be ſufficient ; for the remaining half ſhould be ſtirred to the Bottom, and mixed with the new Tan, which will prevent it from being too hot. The Pits in theſe Stoves need not be more than two Feet and a half, for that will contain a ſufficient Quantity of Tan, to preſerve a Heat.

ANAPODOPHYLLON, [of *Anas*, *Lat.* a Duck, ποῦς, a Foot, and φυλλον, *Gr.* a Leaf] Duck's-foot, or *Pomum Maiale*, *i. e.* May-Apple.

The *Characters* are ;

The Cup of the Flower conſiſts of one Leaf ; the Flowers are hexapetalous ; the Foot-ſtalk of the Flower comes out from the Stalk of the Leaf ; the Fruit is in Shape of an Urn, in which are contained many roundiſh fimbriated Seeds.

This Plant was brought from *America*, and is by ſome of the Inhabitants call'd, Black Snake-root, and by others, the May-Apple ; I ſuppoſe, becauſe in that Month the Fruit of this Plant is nearly ripe, and is of an Oval Shape, in ſome meaſure reſembling a ſmall Apple. We have but one *Species* of this Plant in *England*, that I know of, which is,

ANAPODOPHYLLON *Canadenſe Morini. Tourn.* The *Canada* Duck's-foot of *Morin.*

This Plant is very hardy, enduring our ſharpeſt Winters in the open Ground : It is increaſed by parting the Roots in *Auguſt*, after the green Leaves decay : It loves a moderate dry Soil, and for the Oddneſs of the Plant, may merit a Place in a good Garden, altho' it is of no great Beauty.

ANATOMY, ['Ανατομία, of 'Ανατέμνω, *Gr.* to diſſect] A Diſſection.

Anatomy of Plants is a cutting, dividing, or ſeparating the Parts or Members of Plants, in order to diſcover the Size, Form, Structure, and Uſes of their ſeveral Veſſels, for the better promoting their Culture.

Anatomiſts have obſerved a great Similitude betwixt the mechanick Frame of Plants and Animals : The Parts of Plants ſeeming to bear a conſtant Analogy to thoſe of Animals ; and the Oeconomy, both Vegetable and Animal, ſeem to be formed on the ſame Model.

The Parts of a Plant are the *Root*, the *Wood*, the *Bark*, and the *Pith*.

1. The *Roots* of the Plants are ſpongeous Bodies, whoſe Parts are diſpoſed for the eaſy Admittance of certain humid Particles, which are prepared in the Ground. The Quality of the Root is found much to depend upon the Size of its Veſſels and Pores.

Monſieur *Renaume* ſuppoſes the *Root* of a Plant to do the Office of all the Parts in the *Abdomen* of Animals, which ſerve to Nutrition, as the Stomach, Inteſtines, &c.

Dr. *Boerhaave* conſiders the *Roots* of Plants to be compoſed of a number of abſorbent Veſſels, which are analogous to the *Lacteals* in Animals.

The *Root*, according to Dr. *Van Royen*, is that Part of the Plant by which the Nutriment is taken in, or that by which the Aliment is attracted, as *Theophraſtus* has defined it : but it is not all that Part, which is committed to the Earth, to be nouriſhed by the Matter that is about it, which is properly to be call'd the Trunk of the Root ; this is to be referr'd rather to the Stalk or Stem, than to the Root, in that it conſiſts of the ſame implicated Kinds of Veſſels ; but that Part that is by its Surface contiguous to the exterior Matrix, which being perforated with infinite little Mouths, promotes the received Moiſtures, that they may be afterwards carried, by Veſſels not unlike to the Lacteal ones, into the very Body of the Plant ; this is properly to be called the *Root.*

Which Definition, altho' it may ſeem too ſtrict, is the moſt general and applicable to all Plants ; for it agrees as well with them which have no Root, as the vulgar Opinion is, as to thoſe which have a manifeſt Root : Of the former Kind, there are but very few Plants, but of the latter a great many.

As to thoſe that want a manifeſt Root, the Superficies of them is found to be perforated on all Sides with very ſmall

Holes, by which they take in their Nutriment, as in the *Pomo Aurantio*, call'd *Nepthuni*, or *Pila Marina* by Fiſhermen, and ſo in theſe the whole Superficies ſerves for Roots; as is plainly ſeen in ſome ſtony Plants that grow under the Sea, and may be in ſome ſort proved to be deduced from the Analogy of Animals; for theſe being become *ſui generis*, do take in Aliment, not only by the Mouth, but alſo the whole Skin expoſed to the moiſt Air, ſeems to ſerve to the ſame Deſign.

But thoſe Plants that are endued with a conſpicuous Root, and more obvious to the Senſes, differ among themſelves very much in this Part; for ſome are bulboſe, ſome are ſquamoſe, or tuberoſe, others grumoſe, others fibroſe, and laſtly, others nodoſe; which as it will be ſufficient to have taken Notice of the primary Differences of Roots, I ſhall omit their particular Definition in this Place, but refer them to their ſeveral Heads, where each of them ſhall be particularly deſcribed.

The firſt Part of the Root, which is call'd the *Epidermis* or *Cuticle*, is, for the moſt Part, of a brown or duſky Colour, is very thin, and is eaſily peel'd off from the under Skin, (if it be firſt ſoak'd in warm Water) which being viewed by a Microſcope, ſhews its moſt tender Structure much like a Net, pierced thro' with many ſmall Holes. And theſe little Orifices of the *Epidermis* being dilated, and filled with the received Moiſture, reſemble Veſicles, which being exhauſted yearly by the Mutation of the Air, become conſolidated and periſh; to wit, this being driven out by a new Cuticle growing under it, after the ſame manner as ſquammigerous Animals do annually caſt the old *Epidermis*, a new Cuticle coming under it, ſo that theſe little Veſſels, Fibrils, or by what Name ſoever they are call'd, may not unfitly be compared to the Veins of Animals.

But the other Part, which on the Outſide conſtitutes the *Cortex* or outer Bark, and on the Inſide the *Liber* or inner Bark is call'd *Cutis*; in which there are Parts to be conſidered of a four-fold Kind:

1. Certain ſtrong Fibres, cohering and elaſtick, ſtretched out vertically with the lateral Fibres communicating among themſelves, and compacting [or thruſting in] the former, they form a hollow Cylinder or Zone under the *Epidermis*; and this hath another under it, which alſo includes a third, and ſo of the reſt to the moſt inward of all, which luxuriates near the Wood, and is by a peculiar Name called *Liber*, or Inward Bark.

And theſe Zones or Girdles, altho' they are moſt innumerable, may all be peel'd off as the *Lamellæ* of Bulbs: and inaſmuch as thoſe Fibres in the harder Roots of Trees are almoſt of a bony Nature, they procure a Firmneſs to the Cortex or outward Bark: And theſe Fibres are in all Plants, and appear as well in Graſs as in the Cedar-tree, altho' they are more compact in Trees than in Plants of a tenderer Structure, which are more eaſily ſuſtained.

2. In the Areas [or Spaces] which are between the Fibres and their Anaſtomoſes, there are every where membranaceous Veſſels full of Moiſture, or little Utricles, which, in the *Areæ*, or intercepted Spaces that are of a different Figure, are found to be various, and accommodated to all the Spaces: But all theſe Utricles communicate among themſelves, as is beſt ſeen in the greater Celandine, when we ſqueeze out that golden-coloured Liquor with which it is filled; and the middle Spaces betwixt theſe Zones have like Utricles, and ſo all the Fibres conſtitute hollow Canals, but the Utricles have receptacles communicating among themſelves.

3. Aerial Veſſels, or *Tracheæ*, are open from the lower to the upper Part of the Plant, and are twiſted or curled after an admirable manner, and diſpoſed round about with Fibres and Utricles in Form almoſt of a ſpiral Line, which in their Cavities contain an elaſtick Air; which being affected by the external Air, firſt expanded and afterwards condenſed, will be changed after a like manner, and feel the ſame Viciſſitudes of Cold and Heat, and ſo will undergo a reciprocal Motion of Cold and Heat. This Action is exerted in the Veſſels fill'd with Moiſture, which, when they cannot be condenſed, give Place, and are driven to thoſe that are higher, and are moved forward.

4. Laſtly, beſides Fibres, Utricles, and *Tracheæ*, a peculiar Kind of Veſſels appear, containing the Moiſtures, as it ſeems, ſecreted by the organical Diſpoſition of the Plant itſelf, which water [or moiſten] not only the *Cortex*, but the Wood, and the reſt of the Parts of Vegetables, and are turgid with a concocted Juice, which ſeems far more elaborate than is the Moiſture contained in the Fibres or Utricles; and the Mouths of theſe Veſſels being of a different Figure, pour forth ſometimes a various Liquor according to its peculiar Nature, chiefly near the outward Region of the *Cortex*: So the *Tithymalus* and *Cichory* do commonly diſtil a milky Humour; and the Cypreſs, Firr, and Pine, a certain Species of Turpentine.

And by how much theſe Circles are more outwards, by ſo much the middle Spaces between the two Zones are greater, and ſo are leſſened always towards the more inward in a certain Proportion, which ſeems to depend on this; *viz.* the outward Air acting on all Sides with an equal Preſſure, and ſo by a certain Power, preſſes the firſt or outward Zone, which by the ſame Power preſſes the ſecond; and this alſo by this Means is preſſed by its own condenſed Air, and preſſes together thoſe which are more inward, becauſe it cannot exert its Force upon the external Air: Therefore the ſecond Circle is neceſſarily more compreſſed than the firſt; and again, the third more than the ſecond, and ſo of the reſt: And the Utricles placed between the Circles are preſſed by the ſame Proportion, which by degrees are more and more exhauſted; thence the inner Circle loſes moſt of all the compreſſed and condenſated Utricles, and by degrees grows ſolid.

And this is properly call'd *Liber*, [the inward Bark] and is that Circle, which being middlemoſt by Place, and by Nature between the *Cortex* [or outward Bark] and the Wood, comes neareſt to the Nature of the Wood, and in time paſſes into it: for the *Cortex* loſes every Year one ſuch Circle, and becomes Wood, which may be diſtinguiſhed from the former Circles of the Root, Stock, or Trunk; and if they are cut horizontally, will ſhew the Number of ſuch Circles, and ſo how many Years the Tree is old.

And this ſucceſſive Mutation of the *Cortex* into *Liber*, and of *Liber* into Wood, is like to that we obſerve in the human Body in the Beginning of a *Callus*; for a *Callus* conſiſts of Skin, but ſo compreſſed, that all the Veſſels are loſt, and that Skin being become ſolid, is increaſed and grows to a greater Bulk.

But beſides theſe hitherto deſcribed, there occur certain peculiar Veſſels (of which Mention has been made in deſcribing the *Cortex*) which are found full of Turpentine, Gum, or a certain concreted Juice proper to them, the conſtant Progreſs of which is not very conſpicuous in all of them, by reaſon of the Tranſparency of the Moiſture.

5. The fifth and laſt Part is the moſt inward; the *Medulla* or Pith, diſpoſed in the middle Center of the Root; and as it ſeems different from the former, ſeeing this is ſometimes waſted, and that never, this appears more fungous, that more durable.

As to the Manner of the Root's performing its Function, it may be obſerved, that the Root having imbibed the ſaline and aqueous Juices of the Earth, and ſaturated itſelf with them, for the Nouriſhment of the Tree, thoſe Juices are put into Motion by Heat; which having enter'd the Mouths of the arterial Veſſels from the Root, they mount to the Top with a Force anſwerable to what ſets them in Motion; and by this means they gradually open the minute Veſſels roll'd up, and expand them into Leaves.

2. The *Wood*: This is conſider'd as conſiſting of *capillary Tubes*, running parallel from the Root throughout the Stalk: Some call the *capillary Tubes*, *arterial Veſſels*, becauſe the Sap riſes from the Root thro' theſe. The Apertures of theſe Tubes are, for the moſt part, too minute to be perceived by the bare Eye, unleſs in a Piece of Charcoal, Cane, or the like.

Wood, ſays Dr. *Grew*, by Microſcopical Obſervations, appears to be only an Aſſemblage of infinitely minute Canals or hollow Fibres; ſome of which ariſe from the Root upwards, and are diſpoſed in Form of a Circle; and the others, which are call'd *Inſertions*, tend horizontally from the Surface to the Center, ſo that they croſs each other, and are interwoven like the Threads of a Weaver's Web.

Beſides the *capillary Tubes*, &c. before-mentioned, there are other larger Veſſels, which ſome call *venal Veſſels*, which are diſpoſed on the Outſide of the *arterial Veſſels*, between the Wood and the inner Bark, and lead down to the Covering of the inward Root: Theſe Veſſels are ſuppoſed to contain the liquid Sap found in Plants in the Spring, &c.

The Rev. Dr. *Hales* tells us, in his excellent Treatiſe of *Vegetable Staticks*, that in order to find whether there was any lateral Communication of the Sap and Sap Veſſels, as there is of the Blood in Animals, by Means of the Ramifications and lateral Communications of their Veſſels, he took a young Oak-Branch 7 or 8 Inches diameter, as its tranſverſe Cut, 6 Feet high and full of Leaves; and having cut a large Gap to the Pith 7 Inches from the Bottom, and of an equal Depth the whole Length, and alſo cut another Gap 4 Inches above that on the oppoſite Side, he ſet the End of the Stem in Water, and that in two Nights and two Days time it imbibed and perſpired 13 Ounces; while another like Oak-Branch, ſomewhat bigger than that, but with no Notches cut in its Stem, imbibed 25 Ounces.

From this, and many other Experiments he there mentions, he ſays, we ſee a moſt free lateral Communication of the Sap

and

ſo that you may have theſe Beauties continued for near two Months together, or ſometimes longer, if the Seaſon prove favourable.

Towards the Middle or latter End of *May*, the Leaves of your firſt blown Roots will decay; at which Time you muſt take them out of the Ground, clearing them from the decayed Stalks, and waſhing them, to take the Earth clean from the Roots, then ſpread them on a Mat in a dry ſhady Place, till they are perfectly dried, when you may put them up in Bags, and hang them out of the Reach of Mice or other Vermin, which will deſtroy many of the Roots, if they can come at them.

Obſerve alſo to take up the latter planted Roots ſo ſoon as their Leaves decay; for if they are ſuffered to remain long after in the Ground, and there ſhould fall ſome Showers of Rain, they would ſoon put forth freſh Fibres, and make new Shoots, when it would be too late to remove them: At the Time when you take up the Roots, is the proper Seaſon for breaking or parting them, which may be done by ſeparating thoſe that you would chuſe to make all poſſible Increaſe from, into as many Parts as you can conveniently, provided each one of them have a good Eye or Bud; but thoſe you intend to blow ſtrong, ſhould by no means be parted too ſmall, which greatly weakens their Flowering.

The principal Colours in *Anemonies* are, White, Red, Blue, and Purple, and theſe in ſome of them are curiouſly intermixed; but the moſt prevailing Colours amongſt our *Engliſh*-raiſed Anemonies, are White and Red; but of late we have received from *France* great Varieties of Blues and Purples, which are exceeding fine Flowers; we ſhould therefore obſerve, in planting the Roots, to diſtribute the different Colours, ſo as to make an agreeable Mixture of each in every Bed, which will greatly add to their Beauty.

But ſince all the fine Varieties of theſe Flowers were firſt obtained from Seeds, no good Floriſt, that hath Garden-Room, ſhould neglect to ſow their Seeds; in order to which, we ſhould provide ourſelves with a Quantity of good ſingle (or Poppy) Anemonies, as they are called, of the beſt Colours, and ſuch as have ſtrong Stems, large Flowers, and other good Properties; theſe ſhould be planted early, that they may have Strength to produce good Seeds, which will be ripe in three Weeks or a Month's time, after the Flowers are paſt, when you muſt carefully gather it, otherwiſe it will be blown away in a ſhort time, it being incloſed in a downy Subſtance; you muſt preſerve this Seed till the Beginning of *Auguſt*, when you may either ſow it in Pots, Tubs, or a well-prepared Bed of light Earth; in the doing of it you muſt be careful not to let your Seeds be in Heaps, to avoid which is a thing little underſtood, and is what I have been informed of by Mr. *Obadiah Lowe*, Gardener at *Batterſea*, who hath, for ſeveral Years, raiſed large Quantities of theſe Flowers from Seeds; his Manner is thus:

After having levelled his Bed of Earth, in which he intends to ſow his Seeds, he rubs the Seeds well between his Hands, with a little dry Sand, in order to make them ſeparate the better, then he ſows them as regularly as poſſible over the Bed; but as theſe Seeds will ſtill adhere cloſely together, he takes a ſtrong Hair-bruſh, and gently ſweeps over the whole Bed, obſerving not to bruſh off the Seeds; this Bruſh will ſo ſeparate the Seeds, if carefully managed, as not to leave any intire Lumps; then gently ſift ſome light Earth, about a quarter of an Inch thick, over the Seeds, and if it ſhould prove hot dry Weather, it will be adviſeable to lay ſome Mats hollow upon the Bed in the Heat of the Day, and now and then give them a little Water; but this muſt be given gently, leſt by haſtily watering you waſh the Seeds out of the Ground; but be ſure to uncover the Bed at all times when there are gentle Showers; and as the Heat of the Weather decreaſes, ſo may you begin to uncover your Bed.

In about two Months after ſowing, your Plants will begin to appear, if the Seaſon has proved favourable, or your Care in Management hath not been wanting, otherwiſe they many times remain a whole Year in the Ground. The firſt Winter after their appearing above Ground, they are ſubject to Injuries from hard Froſts, or too much Wet, againſt both of which you muſt equally defend them; for the Froſt is very apt to looſen the Earth, ſo that the young Plants are often turned out of the Ground, after which a ſmall Froſt will deſtroy them; and too much Wet often rots their tender Roots, ſo that all your former Trouble may be loſt in a ſhort time for want of Care in this Particular; nor do I know of any thing more deſtructive to theſe tender Plants, than the cold black Froſts and Winds of *February* and *March*, from which you muſt be careful to defend them, by placing a low Reed Fence on the *North* and *Eaſt* Sides of the Bed, which may be moveable, and only faſtened to a few Stakes to ſupport it for the preſent, and may be taken quite away as the Seaſon advances, or removed to the *South* and *Weſt* Sides of the Bed, to ſcreen it from the Violence of the Sun, which often impairs theſe tender Plants.

As the Spring advances, if the Weather ſhould prove dry, you muſt gently refreſh them with Water, which will greatly ſtrengthen your Roots; and when the green Leaves are decayed, if your Roots are not too thick to remain in the ſame Bed another Year, you muſt clear off all the Weeds and decayed Leaves from the Bed, and ſift a little more of the ſame prepared good Earth, about a quarter of an Inch thick over the Surface, and obſerve to keep them clear from Weeds during the Summer Seaſon, and at *Michaelmas* repeat the ſame Earthing; and if your Roots ſucceed well, many of them will flower the ſecond Year, when you may ſelect all ſuch as you like, by marking them with a Stick; but I would not have you deſtroy any of them until after the third Year, when you have ſeen them blow ſtrong, at which Time you will be capable to judge of their Goodneſs.

But if your Roots are too thick in the Seed-bed to remain, you muſt, ſo ſoon as their green Leaves are decayed, ſift the Earth of your Bed thro' a very fine Sieve, in order to get out the Roots, which can be no otherways found, as being ſmall, and ſo nearly the Colour of the Ground; but in doing of this, obſerve not to diſturb the Ground too deep, ſo as to endanger the burying any of the Roots; for notwithſtanding all your Care, many ſmall Roots will be left behind; therefore, ſo ſoon as you have ſifted your whole Bed, and taken out all the Roots you can find, you muſt level the Earth of your Bed again, and let it remain till next Year, when you will find a plentiful Crop of Roots come up again: The young Roots which you take up muſt be dried, as was directed for the old ones, but ſhould be planted again three Weeks before them, that they may increaſe in Strength, ſo as to flower ſtrongly the ſucceeding Year.

ANEMONOIDES, [of 'Ανεμώνη and εἶδος, *Gr. i. e.* the Form or Image of Anemone] Wood Anemony: *vulgo.*

The *Characters* are;

The Root is perennial, and for the moſt part grumoſe and creeping; the Leaves are finely cut, three of which, for the moſt part, ſurround the Stalk; it hath a ſingle Flower upon each Stalk, which conſiſts of many Leaves, and are expanded in Form of an Anemone, *having many* Stamina *or Threads in the Middle; the Seeds are collected into an oblong Head, and are in Shape like thoſe of the* Ranunculus, *having no Down adhering to them.*

The *Species* are;

1. ANEMONOIDES *flore albo. Boerh. Ind.* Wood Anemony with white Flowers.
2. ANEMONOIDES *flore ex purpura rubente. Boerh. Ind.* Wood Anemone with purpliſh red Flowers.
3. ANEMONOIDES *flore majore, intenſiore, cæruleo. Boerh. Ind.* Wood Anemone with large deep blue Flowers.
4. ANEMONOIDES *flore albo pleno. Boerh. Ind.* Wood Anemone with double white Flowers.
5. ANEMONOIDES *flore pleno purpureo. Boerh. Ind.* Wood Anemone with double purple Flowers.
6. ANEMONOIDES *flore pleno cæruleo majore.* Wood Anemone with large double blue Flowers.

The firſt of theſe Plants is found wild in the Woods in moſt Parts of *England*, the other Varieties I have gathered in great plenty, in the Wilderneſſes belonging to the Gardens at *Wimbleton* in *Surrey*, which were, probably, at firſt taken from ſome Woods in *England*; in this Place they increaſe ſo faſt, that the Surface of the Ground is covered with them in the Spring; and what is more remarkable, that there the large blue and double Sorts are the moſt common: Theſe Plants are very pretty Ornaments to Wilderneſs Quarters or ſhady Walks in the Spring of the Year, continuing a long Time in Flower, and by their agreeable wild Appearance, have a very pleaſing Effect to the Eye.

The beſt Seaſon for tranſplanting theſe Flowers is in *May*, when the Leaves are decaying; for if they are ſuffered to remain until the Leaves are quite gone, it will be very difficult to find their Roots, which are nearly the Colour of the Earth: If theſe Roots are permitted to remain in a Garden undiſturbed they will multiply exceedingly, and produce great Quantities of Flowers; but if they are often removed, it will deſtroy them; therefore they ſhould be planted in ſuch ſhady Parts of Wilderneſſes as are ſeldom digged.

ANEMONOSPERMOS, [of 'Ανεμώνη and σπέρμα, *Gr.* Seed, becauſe the Wind eaſily bears away the Seed.]

The *Characters* are;

It hath an hemiſpherical ſcaly Cup; the Flower is radiated like the Ragwort; *but the Seeds are copiouſly ſurrounded with a pappous Down, as are thoſe of* Anemone.

The *Species* are;

1. ANEMONOSPERMOS *Africana, folio Jacobææ, flore luteo, extus puniceo. Boerh. Ind.* The *African* Anemonoſpermos, with Leaves like Ragwort, and Flowers which are yellow within, and red on the Outſides.

2. ANEMONOSPERMOS *Africana, folio cardui benedicti, florum radiis intus albicantibus. H. A.* The *African* Anemonoſpermos, with Leaves like the Bleſſed Thiſtle, and the Rays of the Flower are white on the Inſide.

3. ANEMONOSPERMOS *Africana, folio Jacobææ tenuiter laciniato, flore aurantio pulcherrimo. Boerh. Ind.* The *African* Anemonoſpermos, with ſlender divided Ragwort Leaves, and fair Orange-colour'd Flowers.

4. ANEMONOSPERMOS *Africana, folio & facie Taraxaci incanis. Par. Bat. App.* The *African* Anemonoſpermos, with Leaves like Dandelion, but are hoary.

Theſe Plants were originally brought from about the *Cape of Good Hope*, into the curious Gardens in *Holland*, where they have been propagated, and from whence they have been diſtributed into the ſeveral Parts of *Europe*, where they are now growing.

They are propagated by planting Cuttings of them in a Bed of light freſh Earth, in any of the Summer Months, obſerving to ſhade them from the Heat of the Sun until they have taken Root, as alſo to refreſh them often with Water, and in ſix Weeks or two Months after planting, they will be rooted ſufficiently; at which Time you ſhould tranſplant them into Pots filled with the like freſh Earth, ſetting the Pots in a ſhady Place until the Plants are ſettled in their new Earth; after which Time you ſhould expoſe them to the open Air until the latter End of *October*, or later, according as you find the Weather is favourable, when you muſt remove the Pots into the Green-houſe, where they ſhould be placed as near the Window as poſſible, that they may have a good Quantity of free Air at all Times when the Weather is mild; nor ſhould they be over-hung by other Plants, which would occaſion them to take a Mouldineſs, and rot; you muſt alſo frequently refreſh them with Water, but give them but a little at each time during the Winter Seaſon; but in Summer they will require a greater Plenty, as alſo to be often repeated.

Theſe Plants being pretty hardy, are only hurt by great Froſts; they may therefore be kept in the ſame Houſe with *Myrtles*, and alſo expoſed in the Summer with them; they will require to be ſhifted out of their Pots twice every Year, *viz.* in the Beginning of *June*, and again in *Auguſt*: at which Time you ſhould cut off a good Quantity of the Roots round the Outſide of their Balls; (but be very careful not to ſhake the Earth intirely from their Roots) and at theſe Times you ſhould prune off the ſtraggling Branches, the better to form their Heads into a regular Figure, but do not ſhorten their Branches, for that would cut off their Flower-Buds.

The fourth Sort is annual, and therefore only to be propagated by Seeds, (which Way alſo the other Sorts may be increaſed, if we have good Seeds, which are but rarely obtain'd in *England*:) The Seeds ſhould be ſown on a moderate Hot-bed in the Spring; and when the Plants are come up, they ſhould be tranſplanted into Pots of freſh Earth, and plunged into another very moderate Hot-bed to bring them forward, and afterwards expoſed to the open Air by degrees: But the fourth Sort is very ſubject to be deſtroyed by ſmall Inſects, which prey upon the Plants; you ſhould therefore carefully waſh them off whenever they appear thereon.

The three firſt Sorts ſhould be frequently renewed from Cuttings; for when they grow old, they are very ſubject to decay in Winter, by which the Species are ſometimes loſt, where it hath been neglected to raiſe young Plants.

They are all very pretty Ornaments to a Green-houſe; for their Flowers are produced in almoſt every Month of the Year, which, together with the Diverſity of their Leaves, greatly adds to the Variety, when intermixed with other Plants.

ANETHUM, Dill: [Ἄνηθον, which ſome will have call'd ἀνίκητον, *i. e.* Invincible, , becauſe it excites an Appetite to Food; others of παρὰ τὸ ἀνωθέειν, from its quick Growth.]

The *Characters* are;

It hath a ſlender fibroſe annual Root: the Leaves are like thoſe of Fennel; the Seeds are oval, plain, ſtreaked, and bordered.

The *Species* are;

1. ANETHUM *hortenſe. C. B.* Common *or* Garden Dill.

2. ANETHUM *verum Pernambucenſe. Zan.* The true Dill of *Pernambucq*.

3. ANETHUM *ſegetum, ſemine minori. Virid. Luſit.* Corn Dill with leſſer Seeds.

The firſt of theſe Sorts is that which is cultivated for Uſe; the other two are Varieties, which are preſerved as Curioſities in Botanick Gardens.

Theſe Plants are propagated by ſowing their Seeds early in the Spring in light rich Earth, where they will come up and grow very ſtrong in a ſhort time, provided they have Room; therefore the better Way is, when the Plants are come up, to hough them out, as is practiſed for Onions, Carrots, *&c.* leaving the Plants about eight or ten Inches aſunder every Way, obſerving to keep them clear from Weeds; and when the Seeds begin to be formed, you ſhould cut up thoſe that are intended to be put into the Pickle for Cucumbers, leaving thoſe that are intended for the Uſe of the Seeds, until they are ripe; at which Time it ſhould be cut, and ſpread upon a Cloth to dry, and then beat out for Uſe: and if you let the Seeds fall upon the Ground, they will ariſe the next Spring without any Care, ſo that the Trouble of ſowing their Seeds may be ſpared.

ANGELICA, [of *Angelus*, ſo called, as ſome Quacks, *&c.* pretend, from the Angels, on account of its excellent Qualities; for it is pretended, when the Army of a certain Emperor was miſerably afflicted with the Plague, an Angel admoniſhed him in a Dream to make uſe of this Plant, by which means he ſaved his Army.]

The *Characters* are;

It hath winged Leaves, which are divided into large Segments: the Stalks are hollow and jointed; the Flowers (which grow in an Umbel upon the Tops of the Stalks) conſiſt of five Leaves, and are ſucceeded by two large channelled Seeds.

The *Species* are;

1. ANGELICA *ſativa. C. B.* Common *or* manured Angelica.

2. ANGELICA *ſylveſtris, major. C. B.* Greater wild Angelica.

3. ANGELICA *lucida, Canadenſis. Cornut.* Shining *Canada* Angelica.

4. ANGELICA *montana perennis, aquilegiæ folio. Tourn.* Mountain Perennial Angelica, with Columbine Leaves.

There are ſeveral other Species of this Plant, which are preſerved in the curious Botanick Gardens; but as there are at preſent no particular Uſes which theſe are applied to, ſo it would be needleſs to enumerate them here.

The Common Angelica delights to grow in a very moiſt Soil: The Seeds of this Plant ſhould be ſown ſoon after it is ripe; for if it is kept until the Spring, ſeldom one Seed in forty of it will grow. When the Plants are come up about ſix Inches high, they ſhould be tranſplanted at a large Diſtance; for their Leaves extend very wide: The beſt Place for this Plant is upon the Sides of Ditches, or Pools of Water, where being planted about two Feet aſunder, they will thrive exceedingly. The ſecond Year after ſowing, they will ſhoot up to flower; therefore if you have a mind to continue their Roots, you ſhould cut down theſe Stems in *May*, which will occaſion their putting out Heads from the Sides of the Roots, whereby they may be continued for many Years; whereas if they had been permitted to ſeed, their Roots would periſh ſoon after.

The Gardeners near *London* propagate great Quantities of this Plant, for which they have a great Demand from the Confectioners, who make a Sweet-meat with the tender Stalks of it, cut in *May*.

This Plant is alſo uſed in Medicine, as are alſo the Seeds; therefore where it is cultivated for the Seeds, there ſhould be new Plantations annually made to ſupply the Places of thoſe which die.

The ſecond Sort grows wild by the Ditches Sides in many Parts of *England*, and is rarely propagated in a Garden.

The other two Sorts may be propagated by ſowing their Seeds in the Manner as was directed for the common Sort, but ſhould be planted in a drier Soil.

ANGURIA; the Water-Melon.

The *Characters* are;

It hath trailing Branches, as the Cucumber or Melon, and is *chiefly*

chiefly diſtinguiſhed from the other cucurbitaceous Plants by its Leaf, which is deeply cut and jagged, and by its producing an eatable Fruit.

The *Species* are;

1. ANGURIA *citrullus dicta. C. B. P.* Common Water-Melon, called Citrul.
2. ANGURIA *Indica maxima. C. B. P.* The largeſt *Indian* Water-Melon.
3. ANGURIA *carne rubente, ſemine nigro majori. Inſt. R. H.* Water-Melon, with a red Fleſh, and large black Seeds.
4. ANGURIA *carne rubente, ſemine nigro minori. Inſt. R. H.* Water-Melon, with a red Fleſh, and ſmaller black Seeds.
5. ANGURIA *carne flaveſcente, ſemine nigro. Inſt. R. H.* Water-Melon, with a yellowiſh Fleſh, and black Seeds.
6. ANGURIA *fructu rotundo, carne rubente, ſemine rubro.* Water-Melon, with a round Fruit, having a red Fleſh, and red Seeds.
7. ANGURIA *triphyllos Americana, parvo fructu. Inſt. R. H.* Three-leav'd *American* Water Melon, with a ſmall Fruit.
8. ANGURIA *Americana, fructu echinato eduli. Inſt. R. H.* *American* Water-Melon, with a prickly eatable Fruit.

The ſix firſt-mentioned Sorts are cultivated in *Spain*, *Portugal*, *Italy*, and moſt other warm Countries in *Europe*; as alſo in *Africa*, *Aſia*, and *America*; and are by the Inhabitants of thoſe Countries greatly eſteemed for their wholeſome cooling Quality; but in *England* they are not ſo univerſally eſteemed, tho' ſome few Perſons are very fond of them. I ſhall therefore give Directions for the raiſing of theſe Fruits, ſo that ſuch Perſons as are willing to be at the Expence and Trouble of raiſing them, may not be at a Loſs for Inſtructions.

You muſt firſt provide yourſelf with ſome Seeds, which ſhould be two or three Years old; for new Seeds are apt to produce vigorous Plants, which are ſeldom ſo fruitful as thoſe of a moderate Strength. The beſt Sorts to cultivate in *England*, are the fourth and ſixth Sorts; and next to theſe are the firſt and fifth Sorts; for the ſecond and third Sorts produce very large Fruit, which ſeldom ripen in this Climate. Having provided yourſelf with good Seed, you ſhould prepare a Heap of new Dung the Beginning of *February*, which ſhould be thrown in a Heap for about eight Days to heat; then you ſhould make a Hot-bed for one ſingle Light, for which one good Load of Dung will be ſufficient; this Dung ſhould be well wrought in making of the Bed, and muſt be beaten down pretty cloſe with a Dung-fork, that the Heat may not be too violent, and of longer Continuance: When the Dung is thus laid, you ſhould cover it about four Inches thick, with good light Earth, and having ſpread it very even, you ſhould put the Frame and Glaſs over it, leaving it to warm, two Days before you put the Seeds into it, obſerving, if the Steam riſes pretty much, to raiſe up the Glaſs with a Stone, to let it paſs off. Then, if you find your Bed in proper Temper, you may ſow your Seeds therein in Drills, covering them over with Earth, about half an Inch. After this, if you find your Bed very warm, you muſt give Air in the Day-time by raiſing of the Glaſſes; but if the Bed is cool, you muſt cover it well with Mats every Night, as alſo in bad Weather. In four or five Days after, you muſt prepare another Hot-bed to receive theſe Plants, which will be fit to tranſplant in ten Days, or a Fortnight at moſt, after the Seeds are ſown; this Bed need not be very large, for a few of theſe Plants will fill a large Quantity of Frames, when they are planted out for good; and while the Plants are young, there may be a great Quantity kept in one Light; ſo that thoſe Perſons who raiſe early Cucumbers, and Muſk-Melons, may alſo raiſe theſe Plants in the ſame Bed; for two or three Lights will be ſufficient to raiſe Plants enough of all three Kinds, to ſupply the largeſt Families, until they are planted out for good. In the Management of theſe Plants while young, there is little Difference from the Directions given for raiſing Muſk-Melons, therefore I need not repeat it here. The chief Thing to be obſerved, is, to let them have a large Share of Air whenever the Weather will permit, otherwiſe the Plants will draw up weak, and be good for little. As theſe Plants will require two or three Hot-beds, to bring the Fruit to Perfection, ſo it will be the better way to put the Plants into Baſkets, as was directed for the raiſing of early Cucumbers; but you ſhould not plant more than two Plants in each Baſket, for if one of them lives, it will be ſufficient; therefore when both the Plants do ſucceed, you ſhould draw out the weakeſt and moſt unpromiſing of them, before they begin to put out their Side-ſhoots, otherwiſe they will entangle and render it difficult to be performed, without greatly injuring the remaining Plant.

The Baſkets in which theſe Plants are to be planted, need not be more than a Foot diameter, ſo that one Light will contain twelve of them; which will be ſufficient for thirty-ſix Lights, when they are planted out for good; for where the Plants are vigorous, one ſingle Plant will ſpread ſo far as to fill three Lights, and if they have not room, they ſeldom ſet their Fruit well.

Theſe Baſkets may remain in the Nurſery-beds, until the Plants have ſpread, and put out many Runners; for when the Heat of this Bed declines, it is ſoon revived by adding a proper Lining of warm Dung to the Sides of the Bed quite round; ſo that when they are taken out of this Bed, and placed in the Ridges where they are to remain, the Heat of theſe Beds will laſt ſo long as to ſet their Fruit, which is of great Conſequence; for when the Plants are ridged out very young, the Beds are generally made of a great Thickneſs in Dung, in order to continue their Heat, ſo that for ſome time after they are made, they are ſo extreme hot, as to endanger the ſcalding of the Plants: and by the time the Fruit begins to appear, there is little Heat left in the Beds, which often occaſions the Fruit to drop off and come to nothing.

After theſe Plants are placed in the Beds where they are to remain, you muſt carefully lead the Shoots as they are produced, ſo as to fill each Part of the Frame, but not to crowd each other; and be careful to keep them clear from Weeds, as alſo to admit freſh Air whenever the Weather will permit; they muſt alſo be frequently watered, but do not give it them in great Quantities. In ſhort, there is little Difference to be obſerved in the Management of theſe, from that of Muſk-Melons, but only to give them more room, and to keep the Beds to a good Temperature of Heat, without which theſe Fruit will ſeldom come to good in this Country.

ANIL; [is ſo called by the Inhabitants of all the different Countries where it grows] The Indigo Plant.

The *Characters* are;

It hath pennated (or winged) Leaves, which are terminated by a ſingle Lobe at the Extremity; the Flowers (which are for the moſt part diſpos'd in a Spike) conſiſt of five Leaves, and are of the Papilionaceous *Kind, the uppermoſt Petal (or Standard) being larger than the others, and is rounder and lightly furrow'd on the Side; the lower Leaves (or Petals) are ſhort, and terminate in a Point: In the Middle of the Flower is ſituated the Style, which afterwards becomes a jointed Pod, containing one Cylindrical Seed in each Partition.*

The *Species* are;

1. ANIL, *ſive Indigo Americana, ſiliquis in falculæ modum contortis. D. Merchand. Mem. Ac. Reg. Scien. Anno* 1718. The true Indigo, with Pods, ſhap'd like a Sickle.
2. ANIL, *ſive Indigo Americana, fruticoſa, argentea, floribus e viridi purpureis, ſiliquis falcatis. Coluteæ affinis, fruticoſa argentea floribus ſpicatis e viridi purpureis, ſiliquis falcatis. Sloan. Cat. Jam.* The wild Indigo. *Vulgo.*
3. ANIL, *ſive Indigo, ſiliquis latis aliquantulum incurvis. Emerus, Indicus, ſiliqua aliquantulum incurva, ex quo Indigo. Breyn.* Indigo, with broad Pods a little crooked.

The firſt and third of theſe Species are Annuals with us; the Seeds of theſe muſt be ſown on a Hot-bed in the Spring of the Year; and when the Plants are come up two Inches high, they ſhould be tranſplanted into ſmall Pots filled with good freſh Earth, and the Pots plung'd into a Hot-bed of Tanners-bark; and when the Plants have obtain'd ſome Strength, they muſt have a great deal of free Air, by raiſing the Glaſſes in the Day-time, and in *June* they may be expos'd to the open Air, by which time they will produce their Flowers, which will be ſucceeded by Pods in a very ſhort Time after; and in *Auguſt* their Seeds will be perfected.

The ſecond Sort grows to the Height of five or ſix Feet, and will abide two or three Years, if it is preſerv'd in a very warm Stove in Winter: This produces Spikes of Flowers from the Wings of the Leaves on the Sides of the Stems of the Plant, and doth ſometimes perfect its Seeds in *England*. This muſt be raiſed in a Hot-bed, as was directed for the two former, but muſt not be expos'd to the open Air, even in the hotteſt Weather.

The firſt and third Sorts are ſuppos'd to be promiſcuouſly uſed to make the Indigo; but the firſt is the common Sort, which is cultivated in the *Engliſh* Plantations in *America*: But I have been aſſur'd by a Perſon of great Credit, that he has made as good Indigo from the ſecond Sort, as any that was produced in our Plantations; and this being a much larger Plant, will afford a greater Quantity from the ſame Compaſs of Ground, than any one of the other two Species; and this Sort is alſo much hardier, and may be cultivated in ſuch Places where the firſt Sort will not grow, by which Means great Improvements may be made with this Plant in our *American* Plantations.

The whole Proceſs in making the Indigo being exactly deſcrib'd by *Pere Labat*, in his Voyages, I thought it would not be unacceptable to the *Engliſh* Reader, to tranſlate his Account in this Place, which is as follows:

There was formerly a great deal of Indigo made in the Pariſh of *Macauba*; there is not a Stream nor River in it, where one does not meet with Indigo-works, that is, Backs or Vats of Stone-work, well cemented, in which the Plant that yields the Dye is put to digeſt: There are uſually three of theſe Vats one above another, in the Manner of a Caſcade, ſo that the ſecond, which is lower than the Bottom of the firſt, may receive the Liquor contain'd in the firſt, when the Holes, which are made in the Bottom of the firſt, are unſtopp'd; and that the third may in its Turn receive what was in the ſecond.

The firſt, largeſt, and higheſt of theſe Vats is called the Steeper or Rot; it is uſually made twenty Feet long, twelve or fifteen Feet wide, and three or four Feet deep: The ſecond is call'd the Battery; it is almoſt half as ſmall again as the firſt: And the third, which is much leſs than the ſecond, is call'd the Deviling.

The Names of the two firſt perfectly agree with their Uſes; for the Plant is laid to ſteep in the firſt, where it ferments, is macerated, and becomes like rotten Dung, after that the Salts and Subſtance of the Leaf and Rind are diffus'd in the Water by the Fermentation, which the Heat and Ripeneſs of the Plant has excited in it. It is in the ſecond that they agitate and beat this Water, impregnated and loaded with the Salts of the Plant, till having collected, reunited, and as it were, coagulated them with one another, they form the Particles which compoſe the Dye.

As for the Name of the third, I do not ſee how it agrees with it; unleſs it be becauſe this Vat is deeper colour'd than the others; for the Indigo already form'd remaining in it, conſequently dyes and colours it much deeper than the others.

To which I ſhould add, that 'tis only at St. *Domingo* that they make uſe of this Name. In the Windward Iſlands, they call this laſt Vat the Settler; and this Name ſuits it perfectly well; becauſe it is in this, that the Indigo begun in the Steeper, and perfected in the Battery, unites, grows into a Maſs, ſeparates itſelf from the Particles of Water which remain'd in it, leaves them at Top, and ſettles at the Bottom of the Vat, whence it is taken out to be put into little Bags, and then into the Boxes, as I ſhall mention hereafter.

Nothing ought to be omitted in the building and making theſe Vats ſubſtantial; the Strength of the Fermentation is ſo great, that unleſs the Stone-work and Plaiſter be very well done, and the Mortar carefully choſen and wrought, they crack; and a very moderate Crack is ſufficient to let out a Vat of Indigo, and cauſe a conſiderable Loſs to the Owner.

When this Misfortune happens, the following is an eaſy and infallible Remedy, which I can anſwer for, as having experienced it. Take ſome Sea-ſhells, of any Kind whatever, pound them without burning them, powder them, and ſift them thro' a fine Sieve. Take an equal Quantity of Quicklime, and ſift it, mix theſe together with Water enough to make a Stiff-mortar, and as quick as you can, ſtop the Cracks of your Vats with it. This Mixture incorporates, ſticks, and dries in a Moment, and immediately prevents the Matter's running out of the Vat.

Every-body does, or ſhould know, that Indigo is a Dye uſed to dye Wool, Silk, Cloaths and Stuffs blue; the *Spaniards* call it Anilo: The fineſt they make, *i. e.* in *New-Spain*, comes from *Guatimala*; which makes a great many People call it barely *Guatimalo*. It is made alſo in the *Eaſt-Indies*, particularly in the Dominions of the *Great Mogul*, the Kingdom of *Golconda*, and other Places thereabouts, as Mr. *Tavernier* relates in his Voyages. This Sort is in *Europe* oftener called India than Indigo or Anil, People taking for its proper Name, the Name of the Place it was made at.

Some Authors, and among others, Father *Du Tertre* of our Order, have fancied, that the Indigo which comes from the *Eaſt-Indies*, is more beautiful, finer and dearer, than that which comes from the *Weſt-Indies*, which they call flat Indigo, while they call that from the *Eaſt* barely India. They would have ſpoke more properly, if they had called the latter Round India; for, by their Leave, all the Difference between the two India's, or Indigo's, is, that that made in the *Eaſt-Indies*, is ſhap'd like half Eggs, and that of the *Weſt* like Cakes; for as for Goodneſs and Beauty, the one will not be a whit ſuperior to the other, if both are wrought with equal Care and Fidelity.

The Shape of the Oriental Indigo, obliges the Merchants, who would carry it into *Europe*, to pound it, that they may put the more into the Cheſts, or Barrels they put it up in. It is certain, that being thus pounded, its Grain having been broke under the Peſtle, ground, and reduc'd to Powder, makes it finer than the *Weſt-Indian* Indigo, which coming in Cakes, juſt as it was dried, ſhews its Grain intire, and conſequently muſt appear coarſer; but what is that to the intrinſick Goodneſs of the Commodity? I maintain, 'tis the ſame in both, tho' there ſeems to be a Difference.

To be convinc'd of this Truth, take a Lump of Sugar equally white throughout, break it in two, pound one Part of it, and reduce it to Powder; this will look finer and whiter than that which is whole; which proceeds only from this, that the Grain of the one has been ſeparated and divided into a greater Number of Parts, which, tho' very ſmall, and almoſt inſenſible, yet have a greater Number of Surfaces, and conſequently reflect more Light; whereas the other remaining intire, preſenting to the Sight only a large Grain, which has but little Surface, of courſe reflects leſs Light, and by a neceſſary Conſequence muſt appear leſs white; which is the ſame as appearing leſs beautiful, ſince the Beauty of Sugar conſiſts in its Whiteneſs. Methinks we may reaſon in the ſame Manner upon Indigo, and ſay, that, *cæteris paribus*, the *Weſt-Indian* Indigo is as beautiful as the *Eaſt-Indian*, when they are both wrought alike.

I think I ſhould add, that the *American* Indigo is better for Uſe than the other; for who does not ſee, that there is no pounding this Dye, without the moſt ſubtile Parts being diſſipated in the Air, as Mr. *Tavernier* allows; and who can doubt that theſe Parts are the beſt, and thoſe that go fartheſt, when it is us'd?

I grant, that the Indigo which comes from the *Eaſt-Indies*, is dearer than that which is made in the *Weſt-Indies*; the Reaſon is plain, it comes farther, runs greater Riſks; and thoſe who bring it, would not find their Account in ſelling it, at the ſame Price with that which comes from a much nearer Place; but that does not at all prove it to be more beautiful, or better.

Indigo is compos'd of the Salt and Subſtance of the Leaves and Rind of a Plant of the ſame Name; ſo that one may ſay, it is a Diſſolution, or Digeſtion of the Plant, caus'd by the Fermentation it has excited in the Water it was laid to ſteep in. I know ſome Writers pretend, that the Subſtance of the Leaves does not produce the Indigo, which (as they would have it) is only a viſcous Tincture, or Colour, which the Fermentation of the Plant diffuſes in the Water; but before I take their Words for it, I deſire they would tell me what becomes of the Subſtance of the Plant; for when it is taken out of the Steeper, it is certain, that it has no longer the ſame Weight, Conſiſtence, nor Colour it had before. The Leaves, which were very plump, and very full of Juice, are light, flabby and wither'd, and look more like Dung than any thing elſe; which makes them frequently give the Name of Rot to the Steeper. If then we no longer find in the Leaves, and the reſt of the Plant, the ſame Subſtance that was obſervable in it before it was laid to ſteep, is it not moſt natural to believe, that 'tis the ſame Subſtance and Salts, which, being freed from their Incloſures, and diffus'd in the Water, have thicken'd it, and by their Union or Coagulation have form'd that blue Maſs, which they call Indigo, ſo uſeful in Painting and Dying?

The Culture.] This Plant requires a good rich level Soil, not too dry; it greatly robs and impoveriſhes the Ground where it grows, and muſt be alone. There cannot be too much Care taken to keep it clean, and to hinder the Herbs of any Kind whatever from growing near it. They weed and cleanſe the Ground where they intend to plant the Indigo Seed, five times over. I ſhould think they ſhould call it ſowing; but the Term of Planting is conſecrated in our Iſles, and I do not think I ought for the Sake of a Word to fall out with our Planters, who deſerve our Eſteem upon a thouſand Accounts, though they have got a Habit of murdering the *French* Language. They ſometimes carry their Neatneſs to ſuch a Pitch, that they ſweep the Piece of Ground, as they do a Room. After that, they make the Holes or Pits, wherein the Seeds are to be put; for this Purpoſe, the Slaves, or others, who are to work at it, range themſelves in the ſame Line, at the Top of the Piece of Ground, and going backwards, they make little Pits of the Breadth of their Hough, of the Depth of three or four Inches, at about a Foot Diſtance every way, and as much as poſſible in a ſtrait Line. When they are come to the End of the Ground, each furniſhes himſelf with a little Bag of Seeds, and returning that way they came, they put eleven or thirteen Seeds into each of the Holes they have made. A Relick of Superſtition has taught them, that the Number muſt be odd. I by no means approve of this Practice, but I ſhall take care not to endeavour to ſhew them the Uſeleſneſs and Folly of it, being ſatisfy'd I ſhould only loſe my Time and Labour.

This Work is the moſt Toilſome of any in the Manufacture of Indigo; for thoſe who plant it, muſt be always ſtooping, without riſing up, till the planting of the whole Length of the Piece is ended; ſo that when that is large, which almoſt always happens, they are obliged to remain two Hours, and often more, in this Poſture.

When they come to the Top of the Piece, they go back again, and cover the Holes they have put the Seed in, by thruſting in with their Feet, the Earth they had taken out of them, and ſo the Seed is cover'd with about two Inches of Earth.

Tho' all Seaſons are good for the planting of Indigo, yet Care muſt be taken not to put it in the Ground in a dry Time; 'tis true, the Seed may keep a whole Month in the Ground, without being ſpoiled; but when it is planted ſo, one runs the Riſk of having it eaten up by Vermin, or carried away by the Wind, or choak'd by the Weeds, that ſpring up with it; ſo that the prudent Planters never run the Riſk of planting it dry, *i. e.* at a Time when they do not probably expect Rain in two or three Days after the planting is ended: They chuſe therefore, uſually, a moiſt Seaſon, which promiſes Rain, and then they are ſure of ſeeing the Plant ſpring up in three or four Days after its being planted.

Notwithſtanding all the Care that has been taken in clearing the Ground, where the Seeds have been planted, the Planter muſt not be careleſs, when the Indigo is got above Ground; becauſe the Goodneſs of the Soil, join'd to the Moiſture and Warmth of the Climate, and the plentiful Dews that fall every Night, makes a prodigious Quantity of Weeds ſpring up, which would choak, and abſolutely ſpoil the Indigo, if extreme Care was not taken to weed them up as ſoon as they appear, and to keep the Plant extraordinary neat; and very often the Weeds are partly the Cauſe of the Breeding of a Kind of Caterpillars, which devour all the Leaves in a trice.

From the Time of the Plant's riſing above Ground, to its perfect Maturity, is but two Months, and then it is fit to cut; if one was to ſtay longer, it would bloſſom, its Leaves would grow drier and harder, and conſequently they would yield leſs Subſtance, and the Colour would not be near ſo beautiful.

After this firſt Cutting, the new Branches and Leaves, which the Plant produces, may be cut about every ſix Weeks, provided the Seaſon be rainy, and that Care be taken, not to cut it in a Time of Drought, becauſe then we ſhould infallibly loſe the Plant, or, as they call it there, the Choupues, and be obliged to plant again; but all Things being rightly managed, the Plant may laſt two Years, after which it muſt be plucked up, and new ones planted.

When the Plant is ripe, which is known by the Leaves, which grow brittler and leſs ſupple, they cut it ſome Inches from the Ground. They uſe for the Cutting of it, great crooked knives made like Sickles. Some Planters make it into Bundles like double Bottles of Hay, that a Negro may eaſily carry them to the Steeper; but moſt People put it into large Pieces of coarſe Cloth, which they tie by the four Corners; and this is more convenient, the Plant is leſs handled and ſqueezed, and the ſmall are carried away as ſafely as the great; and beſides, the Work goes on quicker this way, than in making Bottles; and as Time is precious every where, and eſpecially in *America*, there can't be too much Care taken not to loſe any.

Eighteen or twenty Packets of Plants, each about the Size of two Bottles of Hay, are ſufficient to fill a Steeper of the aforementioned Size. When it is fill'd with Water, ſo that it covers the Plants, they put Pieces of Wood on the Top, that the Plants may not riſe above the Water, (much as they do upon the Grapes that are put into the Preſs) and let all ferment. According as the Heat is greater or leſs, or the Plant more or leſs ripe, the Fermentation is raiſed ſooner or later, ſometimes in ſix, eight, or ten Hours, and ſometimes one is obliged to wait eighteen or twenty Hours,but very ſeldom longer. Then the Effect of the Fermentation viſibly appears, the Water heats and boils up on all Sides, as the Grapes do in the Vat, and the Water, which at firſt was clear, inſenſibly grows thick, and becomes of a blue, inclining to a violet Colour. Then, without meddling at all with the Plants, they open the Cocks, which are at the Bottom of the Steeper, and let all this Water, loaded with the Salts and Subſtance of the Plant, which were freed by the Fermentation, run into the Battery; and while they throw away, as uſeleſs and almoſt rotten, the Plants that were in the Steeper, and clean it, that it may be filled with freſh, they beat the Water, which they have let out of the Steeper, into the Battery.

They formerly uſed for this Purpoſe, a battle-door Wheel, whoſe Axle was placed upon the middle of the Vat, and which they turn'd by two Handles, that were at the End of the ſame Axle. Since that in the room of Battle-doors, they have put little bottomleſs Boxes, and afterwards others, whoſe Bottoms were bored full of Holes: At preſent they uſe a Kind of pretty large Pails, faſten'd to ſtrong Poles, plac'd upon Chandeliers, by Means of which, the Negroes violently and continually raiſe, beat, and ſtir the Water, till the Salts and other Parts of the Subſtance of the Plant are united, and ſufficiently, as it were, coagulated to incorporate.

The hitting this Minute exactly ſhews the Skill of him, who overſees the making of the Indigo: For if he makes them leave off beating a little too ſoon, the Grain, not yet form'd, remains diſpers'd in the Water, without ſinking and gathering together at the Bottom of the Vat, and is loſt with the Water, when they are obliged to let it out; which is a great Loſs to the Owner: Or if, when it is form'd, they continue to beat, they diſſolve it, and the ſame Inconvenience follows. This Minute then muſt be nick'd, and when it is found, they muſt leave off beating, and let the Matter reſt.

To find this Minute, they make uſe of a little ſilver Cup, deſign'd for this Uſe alone: They fill it with this Water, while the Negroes beat it, and according as they obſerve that the *Fæces* ſink to the Bottom of the Cup, or remain diſpers'd in the Water, they ceaſe, or continue beating.

The General Dictionary printed at *Trevoux* relates very ſeriouſly, upon the Credit of Father *Plumier* a *Minim*, that the Indigo-maker, having taken up ſome of the Water of this Battery in his Cup, ſpits in it, and that if the Indigo be form'd, the *Fæces* immediately ſink to the Bottom of the Cup, and that then he makes them leave off beating, if not, he makes them continue it. This is not the only Incident in which People have impos'd upon Father *Plumier*'s Credulity and Simplicity. I have been a Witneſs of it upon other Occaſions and perhaps ſhall relate ſome of them in the Sequel of theſe Memoirs.

This is what Men expoſe themſelves to, who will pretend to give an Account of a Country, which they ſee only *en paſſant*, and, as it were, in running thro' it. They often apply to People who know very little of what they want to be inform'd of, and who had rather tell them a fooliſh Story than ſeem ignorant; and ſtill oftener they fall into the Hands of ſome profeſs'd Banterers, which the Iſlands are pretty well ſtor'd with, who take a Pleaſure in impoſing upon them, that they may afterwards ridicule them, when an Opportunity offers. I ſcarce ever knew a Man more eaſily deceiv'd than this honeſt Frier. He had a wonderful Talent at deſigning Plants, and he was capable of producing finiſh'd Pieces in that way, if he had ſtuck to that alone; but he has fallen into a vaſt Number of Blunders, by having endeavour'd to go out of his own Sphere, of which that I have juſt taken Notice of is not one of the moſt conſiderable.

When they have left off beating, they let the Matter reſt, the *Fæces* ſink to the Bottom of the Vat, and gather together like a kind of Mud, and the Water, freed from all the Salts it was impregnated with, ſwims above it, and grows clear. Then they open the Cocks, which are plac'd in the Battery at different Diſtances from the Bottom, and let this Water run away, and when they come to the Surface of the *Fæces*, they open the Cocks of the Bottom, that the *Fæces* may all fall into the Deviling or Settler. There they let it ſettle a little while longer, after which they put it into little linnen Bags, fifteen or eighteen Inches long, made with a Point, where it perfectly purges itſelf from the reſt of the Water, which remain'd among its Particles. When that is done, they ſpread it in little Boxes, three or four Feet long, two Feet broad, and about three Inches deep, and expoſe it to the Air to dry it perfectly. They obſerve not to expoſe it to the Sun, becauſe it would ſtarve the Colour in drying it, and they take a great deal of Care to keep from the Rain, becauſe that would diſſolve and utterly ſpoil it.

It ſometimes happens, that the Caterpillars get among the Indigo, and, if they are let alone ever ſo little a while, they eat all the Leaves, and often the very Rind and Ends of the Branches, and kill the Stocks; 'tis but loſt time to endeavour to deſtroy them, or hinder them from ravaging a whole Piece, by ſtopping them with a Ditch. The ſureſt Way is to cut down the Indigo with all Speed, let its Age be what it will, and to throw both Plants and Caterpillars pell-mell together into the Steeper; they there burſt, and part with what they had devour'd, and the Indigo is not the leſs beautiful for it. 'Tis true, when the Plant is not come to its perfect Maturity, it yields much leſs; but many Experiments have taught us, that the Colour it yields is much more beautiful; ſo that what is loſt one Way, is gain'd another.

I would not wait for ſo perfect a Ripeneſs, before I cut the Plant. Perhaps all the Secret of thoſe, whoſe Indigo is ſo much extoll'd beyond ours, lies only in cutting the Plant, when it yields the livelieſt Colour. I have experienced, that in leaving ſome Cochineal-flies upon ſome *Indian* Figs, which were too ripe, inſtead of being red, they grew of a fillemot Colour, like the Fruit they fed upon. The ſame thing might happen in Indigo, and what I here propoſe, is not a groundleſs Doubt, ſince it is back'd by the certain Experiment I have juſt related, which plainly proves, that the ſame Plant cut at different Ages, produces Colours different in Beauty. I would not venture to give this Advice to Men wedded to their Intereſt, who valued the Quantity rather than the Quality of their Commodity; but I believe I have nothing to fear from our Iſlanders, who are generous and magnificent, ſometimes even beyond their Abilities: I adviſe them therefore to make different Trials, as to the Soil, the Seaſon, the Age of the Plant, the Water they ſteep it in, the Point of Diſſolution, *&c.* And I am ſure, that with a little Time, Labour, and Patience, they will make Indigo, that will equal and even excel the moſt boaſted Indigo of foreign Countries. The Planters of St. *Domingo*, know, that in 1701, their coarſe Sugar was very bad, and was not made without infinite Trouble; and at preſent every-body allows, that by their Labour, Aſſiduity, and Enquiries, it is grown much more eſteem'd than that of the Windward Iſlands: Why may not the ſame be hop'd for in Indigo?

Mr. *Pomet*, Author of the Gen. Hiſt. of Drugs, ſays in his firſt Part, Chap. 10. that the *Indians* of the Village of *Sarqueſſe*, near *Amadabat*, uſe only the Leaves of the Indigo, and throw away the Plant and Branches; and that 'tis from thence the moſt eſteem'd Indigo comes.

I am pretty much of his Opinion; for we ſee, that thoſe who take the Pains to ſtrip off the Grapes from the Strigs, before they put them into the Vat, and throw away the Strigs intirely, make much the beſt Wine, becauſe the Strigs always contain an Acid, which mixes with the Juice of the Grape in the treading and preſſing them both together; and for the ſame Reaſon, the Indigo-plant muſt contain a Liquid much leſs perfect in Colour than that of the Leaves: But one ought to have the Leiſure and Patience of the *Indians*, to undertake ſuch a Work, and have Workmen as cheap as they are in that Country, ſuppoſing the Fact true, as Mr. *Pomet* delivers it from the Relation of Mr. *Tavernier*.

Tho' I am a great Friend to thoſe Experiments, which may carry our Manufactures to a greater Perfection, yet I dare not propoſe this, becauſe of the Expence they muſt be at, who would try it, and becauſe the Profit ariſing from it would not perhaps quit Coſt: However, I have here given the Method of the *Indians* of *Sarqueſſe*, that I may have no Reaſon to reproach myſelf with having omitted a Thing, which may be of ſome Uſe to my Country.

Good Indigo ought to be ſo light as to ſwim upon Water; the more it ſinks, the more it is to be ſuſpected of being mix'd with Earth, Aſhes, or powder'd Slate. Its Colour ought to be a deep Blue, inclining to a Violet, brilliant, lively, and bright; it ought to be more beautiful within than without, and look ſhining, and as it were ſilver'd.

If 'tis too heavy in proportion to its Bulk, it ought to be ſuſpected, and its Quality examin'd into; for as it often bears a conſiderable Price, it is fit that thoſe who buy it, ſhould be acquainted with the Frauds that may be committed in it.

The firſt is the beating the Plant too much in the Steeper, that the Leaves and Rind of it may be intirely conſum'd. 'Tis certain, that the Quantity of the Matter is very conſiderably increas'd by this Diſſolution, but the Indigo is a great deal the leſs beautiful for it; it is blackiſh, thick, heavy, and fitter to be thrown away than us'd.

The ſecond is the mixing Aſhes, Earth, or a certain brown ſhining Sand (which is pretty commonly found in the Bays by the Sea-ſide) and eſpecially powder'd Slate, with the *Fæces*, as they fall into the Deviling, and ſtirring all well together, that it may incorporate, and the Fraud not appear: And this Fraud is much more eaſily committed in the powder'd Indigo, than in that which is in Cakes, becauſe it is very difficult for thoſe heterogeneous Bodies to unite ſo well together, as not to make in many Places, as it were, Beds of a different Matter; and then by breaking the Piece of Indigo, they are eaſily perceiv'd.

The two following Expedients may be made uſe of, in order to know the Goodneſs or Badneſs of Indigo.

The firſt is to diſſolve a Bit of it in a Glaſs of Water. If it is pure and well made, it will intirely diſſolve; but if it is adulterated, the foreign Matter will ſink to the Bottom of the Glaſs.

The ſecond is to burn it. The good Indigo will burn all away, whereas the Aſhes, Earth, Sand, and Slate, remain after the true Indigo is conſum'd.

In 1694, Indigo was ſold at the Windward Iſlands, from three Livres ten Sols, to four Livres *per* Pound, according to its Beauty, and the Number of Veſſels to be freighted with it. I have known it ſince at a much lower Price; however, the Planter would not fail of making a very conſiderable Profit of it, tho' he ſhould ſell it for no more than forty Sols *per* Pound, becauſe this Commodity requires fewer Utenſils and leſs Charges than a Sugar-Work.

ANISUM *or* ANISE. *Vide* Apium.

ANONA.

The *Characters* are;

It is a Tree growing to the Height of an Apple-tree; the Leaves are, for the moſt part, ſingle and oblong; the Flowers do, for the moſt part, conſiſt of three thick, narrow Petals, or Flower-leaves, and are produced ſingle upon their Foot-ſtalks; theſe Flowers are ſucceeded by conical, ſquamous, or netted Fruit, which have a pulpy Subſtance ſurrounding the Cells, in which are contained oblong hard Seeds.

The *Species* are;

1. ANONA *maxima, foliis latis ſplendentibus, fructu maximo, viridi, conoide, tuberculis ſeu ſpinulis innocentibus aſpero. Sloan. Cat. Pl. Jam.* The Sour-ſop: *Vulgo.*
2. ANONA *maxima, foliis oblongis anguſtis, fructu maximo luteo, conoide, cortice glabro, in areolas diſtincto. Sloan. Cat. Pl. Jam.* The Cuſtard-apple: *Vulgo.*
3. ANONA *foliis odoratis minoribus, fructu conoide ſquamoſo parvo dulci. Sloan. Cat. Pl. Jam.* The Sweet-ſop: *Vulgo.*
4. ANONA *aquatica, foliis laurinis atro-virentibus, fructu minore conoide luteo, cortice glabro in areolas diſtincto. Sloan. Cat. Pl. Jam.* The Water *or* Sweet-apple: *Vulgo.*
5. ANONA *foliis ſubtus ferrugineis, fructu rotundo majore lævi purpureo, ſemine nigro, partim rugoſo, partim glabro. Sloan. Cat. Pl. Jam.* The Star-apple: *Vulgo.*
6. ANONA *foliis laurinis, glabris, viridi-fuſcis, fructu minore rotundo viridi-flavo, ſcabro, ſeminibus fuſcis, ſplendentibus, fiſſura alba notatis. Sloan. Cat. Pl. Jam.* The Sappadilla *or* Naſeberry-tree: *Vulgo.*
7. ANONA *maxima, foliis laurinis, glabris, viridi-fuſcis, fructu minimo, rotundo, viridi-flavo, ſeminibus fuſcis, ſplendentibus, fiſſura alba notatis. Sloan. Cat. Pl. Jam.* The Bully-tree: *Vulgo.*

Theſe Trees are the Produce of the warmeſt Parts of the *Weſt Indies*, as in *Jamaica*, *Barbadoes*, &c. where they are cultivated for their Fruits, which are in thoſe Countries in very great Eſteem, eſpecially the *Sappadilla*, which they value more than any of the other Sorts, and hath been but lately introduced into ſome of thoſe Iſlands. It is very probable that none of theſe Trees were originally Natives of theſe Countries, but have been tranſplanted from ſome other Parts of the World; but being there planted, they thrive equally as well as if it were their native Soil, the *Sappadilla* only excepted, which is of a tenderer Nature than the others.

The Seeds of theſe Trees are frequently brought over from the *Weſt Indies* to *England*; but there are, at preſent, but few of the Plants in Being amongſt us, they being of ſo nice a Nature as not to endure our open Air in Summer; nor will they live thro' the Winter, unleſs preſerved in the warmeſt Stoves.

Theſe Seeds ſhould be ſown in ſmall Pots, filled with rich light Earth, early in the Spring, and the Pots muſt be plunged into a warm Bed of Tanners Bark, obſerving frequently to refreſh the Earth in the Pots with Water, but give them little each Time, leſt by too much Moiſture the Earth ſhould be chill'd, and the Seeds be thereby ſtarved. If the Seeds were freſh, and the Bed in a kindly Temper for Heat, the Plants will come up in about three Weeks or a Month's time, and will make a conſiderable Progreſs in a ſhort time after; therefore they ſhould be tranſplanted, each Plant into a ſingle Pot, being careful in doing it not to ſhake the Earth clean from the Roots; then plunge the Pots into the ſame Hot-bed, (provided the Bark hath not loſt its Heat, which if it has, it ſhould be ſtirred up with a Dung-fork, mixing therewith ſome freſh Tan) and give the Plants a little Water to ſettle the Earth to their Roots, obſerving to ſhade them from the Sun, during the Heat of the Day, until they have taken freſh Root; after which you muſt conſtantly refreſh them with Water, as you will ſee Occaſion, and give them Air, by tilting up the Glaſſes in Proportion to the Heat of the Weather, and the Bed in which they are plunged.

In about two Months after this, the Plants will have made a conſiderable Advance, and the Pots will be filled with their Roots; you muſt therefore remove them into Pots of a little larger Size; in doing of which you ſhould take the Plant out of the ſmall Pot, with all the Earth about its Root, then with a Knife gently trim off all the Roots which are on the Outſide of the Ball of Earth, and after having put ſome freſh Earth into the Bottom of the new Pot, place the Plant exactly in the Middle, filling the Vacancies round the Root with the ſame freſh Earth; then plunge theſe Pots again into the Hot-bed, giving them Water and Air as you ſhall judge neceſſary; but obſerve in *Auguſt* to give them a great deal of freſh Air, whenever the Weather will permit, that they may be harden'd to go thro' the Approaching Winter.

Towards the latter End of *September* you ſhould be provided with a freſh Bark-bed in a Stove, (erected on purpoſe for theſe and other the like tender Plants) into which you muſt remove the Pots, when the Bark has lain about ten Days to ſettle and heat; but if upon opening the Bark, to plunge in the Pots, you find the Heat very great, you ſhould ſet the Pots but half way into the Bark at firſt, until the Heat is a little more abated, when you may ſink them down to the Rims: During the Winter Seaſon you muſt be very moderate in watering them, and alſo obſerve to keep the Stove in a due Temper of Heat: The Warmth in which they have beſt ſucceeded in Winter, is about ten Degrees above the Temperate Point, as mark'd on Mr. *Fowler*'s Thermometers.

In the Spring, *viz.* about the Middle of *March*, you ſhould be provided with a freſh Parcel of Tan, which ſhould be laid up in a Heap, in ſome dry Place, about ten Days before it is uſed: This Tan ſhould be mixed with the old Tan, already in the Stove, which ſhould be ſtirred up, and well mixed with the new. This will add a freſh Heat to the Bed, whereby the Plants will be put into Motion, and begin to grow; which muſt be ſhifted into bigger Pots as they advance, and in the Summer ſhould have a good Quantity of Air, when the Weather is warm. With this Management I have ſeveral of theſe Plants in good Health, which are ſeven or eight Feet high; ſome of which have produced Flowers with me; but I have not had any Fruit form'd as yet.

ANONIS, Cammock Petty Whin, or Reſt-harrow; [Ἄνωνις, or ὀνωνὶς, of ὄνος, an Aſs, becauſe Aſſes are ſaid to rub themſelves againſt this Plant.]

The *Characters* are;

It hath a papilionaceous Flower, which is ſucceeded by a ſwelling Pod, which is ſometimes long, and at other times ſhort, is bivalve, and filled with Kidney-ſhaped Seeds.

The *Species* are,

1. Anonis *ſpinoſa, flore purpureo. C. B.* Anonis or prickly Reſt-harrow, with purple Flowers.
2. Anonis *ſpinoſa, flore albo. C. B.* Prickly Reſt-harrow, with white Flowers.
3. Anonis *ſpinis carens, purpurea. C. B.* Purple Reſt-harrow, without Prickles.
4. Anonis *ſpinis carens, candidis floribus. C. B.* Reſt-harrow without Prickles, and white Flowers.
5. Anonis *ſpicata, ſive alopecuroides, Luſitanica. Hoſm. Cat.* *Portugal* Reſt-harrow, with Spikes of purple Flowers.
6. Anonis *purpurea, verna, ſeu præcox, perennis, fruteſcens, flore rubro amplo. Mor. Hiſt.* Early ſhrubby purple Reſt-harrow, with ample red Flowers.
7. Anonis *lutea, anguſtifolia, perennis. Boerh. Ind.* Yellow narrow-leav'd perennial Reſt-harrow.
8. Anonis *ſiliquis ornithopodii. Boerh. Ind.* Reſt-harrow, with Pods like the Bird's-foot.
9. Anonis *Americana, folio latiori ſubrotundo. Tourn.* *American* Anonis, with broad roundiſh Leaves.
10. Anonis *Caroliniana perennis non ſpinoſa, foliorum marginibus integris, floribus in thyrſo candidis.* Smooth perennial *Carolina* Reſt-Harrow, with intire Leaves, and white Flowers growing, in a looſe Spike.
11. Anonis *Hiſpanica fruteſcens, folio tridentato carnoſo. Inſt. R. H.* Shrubby *Spaniſh* Reſt-Harrow, with a tridented fleſhy Leaf.
12. Anonis *Alpina humilior, radice ampla et dulci. Inſt. R. H.* Dwarf Reſt-Harrow of the *Alps*, with a large ſweet Root.
13. Anonis *Alpina pumila glabra non ſpinoſa purpurea. Inſt. R. H.* Dwarf ſmooth purple Reſt-Harrow of the *Alps*.
14. Anonis *Hiſpanica fruteſcens, folio rotundiori. Inſt. R. H.* Shrubby *Spaniſh* Reſt-Harrow, with a rounder Leaf.
15. Anonis *fruteſcens Americana, flore purpurea. Inſt. R. H.* Shrubby *American* Reſt-Harrow, with a purple Flower.
16. Anonis *Aſiatica fruteſcens, floribus luteis amplis. Inſt. R. H.* *Aſiatic* ſhrubby Reſt-Harrow, with large yellow Flowers.
17. Anonis *Americana anguſtifolia humilior, & minus hirſuta. Houſt.* Dwarf narrow-leav'd *American* Reſt-Harrow.
18. Anonis *non ſpinoſa, foliis ciſti inſtar, glutinoſis & odoratis. Sloan. Cat. Jam.* Shrubby glutinous and ſweet-ſmelling *American* Reſt-Harrow, without Thorns, and Leaves like the Dwarf *Ciſtus*.
19. Anonis *Americana erectior non ſpinoſa, foliis rotundioribus, floribus amplis luteis.* Upright *American* Reſt-Harrow, without Spines, having round Leaves, and large yellow Flowers.
20. Anonis *viſcoſa, ſpinis carens, lutea major. C. B. P.* Large yellow Reſt-Harrow, without Spines.
21. Anonis *ſpinis carens, lutra minor. C. B. P.* Smaller yellow Reſt-Harrow, without Spines.
22. Anonis *flore luteo parvo. H. R. Par.* Reſt-Harrow, with a ſmall yellow Flower.
23. Anonis *puſilla glabra anguſtifolia lutea. Inſt. R. H.* Smooth narrow-leav'd Dwarf Reſt-Harrow, with a yellow Flower.
24. Anonis *non ſpinoſa, flore luteo variegato. C. B. P.* Smooth Reſt-Harrow, with a yellow variegated Flower.
25. Anonis *non ſpinoſa hirſuta viſcoſa, odore theriacæ. Hort. Cath. Sup.* Hairy viſcous Reſt-Harrow, without Spines, and ſmelling like Venice-treacle.
26. Anonis *non ſpinoſa minor glabra procumbens, flore luteo. Sloan. Cat.* 75. Leſſer trailing ſmooth *American* Reſt-Harrow, without Spines, and having yellow Flowers.

The four firſt Sorts grow wild in divers Parts of *England*, and are ſeldom propagated in Gardens: the firſt Sort is uſed in Medicine; the Roots of this Plant ſpread very far under the Surface of the Ground, and are ſo tough, that in ploughing the Land it often ſtops the Oxen; from whence it had its Name, *viz. Reſta Bovis.* The ſecond Sort is but a Variety of the firſt, differing only in the Colour of the Flower. The two others, without Spines, are often met with near the firſt.

The fifth, ſixth, and ſeventh Sorts are beautiful Garden Plants; theſe are propagated by ſowing their Seeds in the Spring of the Year, in an open ſituated Bed of light Earth; and when the Plants are come up, they ſhould be tranſplanted carefully, either into Pots (filled with good freſh Earth) or into warm-ſituated Borders, for they are ſubject to be deſtroyed by hard Froſts; therefore it is that I would adviſe the preſerving ſome Plants of each Kind in Pots, which may be ſheltered in the Winter under a common Hot-bed Frame, and the Spring following may be turned out of the Pots (preſerving all the Earth to their Roots) and planted in a warm Border, where they may remain to flower; and if the Seaſon is good, they will perfect their Seeds in *Auguſt*, or ſooner.

The eighth and ninth Sorts are Annuals, and muſt therefore be ſown every Spring: The eighth will do very well, if ſown on a Bed of freſh Earth in the open Air, where it may remain to flower and ſeed; but the ninth ſhould be ſown on a moderate Hot-bed, and managed as is directed for the *Balſamina*; this will produce its Flowers in *July*, and the Seeds will ripen in *September*.

The tenth Sort is a perennial Plant, which dies to the Root every Winter, but riſes again the ſucceeding Spring. This Plant produces long Spikes of white Flowers in *June*, and the Seeds ripen in *September*. It is propagated from Seeds, which ſhould be ſown in the Spring upon a gentle Hot-bed; and when the Plants are come up, they ſhould be tranſplanted each into a ſeparate Half-penny Pot, filled with freſh Earth, and plunged on another very moderate Hot-bed, obſerving to water and ſhade 'em until they have taken Root, after which time they ſhould be inured to the open Air; and in the latter End of *June* the Pots ſhould be placed Abroad, where they may remain until the Middle of *October*, when they muſt be placed under a Hot-bed Frame, to ſhelter them in ſevere Froſt, but in mild Weather they ſhould have as much free Air as poſſible. The Spring following theſe Plants ſhould be taken out of the Pots, and planted in warm Borders, where they are to remain; for they ſhoot their Roots a great Depth into the Earth, ſo do not bear tranſplanting well after they have made ſtrong Roots. Theſe Plants will continue ſeveral Years, and as their Roots increaſe, ſo they will produce a greater Number of Flowers.

The eleventh, twelfth, thirteenth and fourteenth Sorts, are abiding Plants, which may be propagated by ſowing of their Seeds in the ſame manner as hath been directed for the tenth, and the young Plants ſhould alſo be treated the firſt Year as was directed for that Sort. The following Spring you muſt plant out the twelfth and thirteenth Sorts, into the full Ground, where they will thrive much better than if kept in Pots, and being both very hardy, they will endure the ſevereſt Cold of our Climate without Shelter. Theſe produce their Flowers in *April* and *May*, and in good Seaſons will ſometimes perfect their Seeds in *England*.

The eleventh and fourteenth Sorts become ſhrubby; theſe are more tender than the former Sorts, ſo that ſome of theſe Plants ſhould be kept in Pots, that they may be ſheltered from the Froſt in Winter, and the others may be planted in a warm Border, where they will endure the Cold of our ordinary Winters very well; but in very ſharp Winters, theſe Plants which are expoſed, will be deſtroyed. Theſe two Sorts flower in the Spring, (at which time they make a handſome Appearance amongſt other hardy Exotick Plants) and ſometimes they will produce ripe Seeds in *England*. They may alſo be propagated by Cuttings, which ſhould be planted in Pots filled with light rich Earth, and plunged into a very moderate Hot-bed, obſerving to water and ſhade them, until they have taken Root; after which time they ſhould be removed into the open Air, and ſhould remain Abroad until the End of *October*, or the Beginning of *November*, when they ſhould either be removed under a Hot-bed Frame, where they may be covered in froſty Weather, or elſe placed in the Greenhouſe, near the Windows; for they ſhould have as much Air as poſſible in mild Weather, otherwiſe they will produce weak Shoots, and ſeldom flower near ſo well as thoſe which are treated hardily.

The fifteenth, ſixteenth, ſeventeenth and eighteenth Sorts, are Natives of *America*. Theſe are alſo abiding Plants, which may be propagated by ſowing of their Seeds in ſmall Pots, filled with light freſh Earth, in the Spring of the Year; theſe Pots ſhould be plunged into a moderate Hot-bed of Tanners-bark, obſerving to water the Earth gently when you perceive it dry; but you muſt not give them too much Water, leſt it burſt the Seeds, and cauſe them to rot. In about three Weeks or a Month after ſowing, the Plants will appear, when they ſhould be frequently refreſhed with Water, to promote their Growth; and when they are two Inches high, they ſhould be ſhaken out of the Pots, and carefully parted, planting each Plant into a ſeparate ſmall Pot, filled with the ſame rich Earth as the Seeds were ſown in. Then the Pots ſhould be plunged again into a moderate Hot-bed of Tanners-bark, obſerving to water and ſhade them until they have taken Root; after which time they ſhould be conſtantly refreſhed with Water, as the Seaſon may require, and in warm Weather the Glaſſes of the Hot-bed ſhould be raiſed with Stones, to admit Air to the Plants in proportion to the Heat of the Weather. When the Plants have grown ſo as to fill theſe ſmall Pots with their Roots, they ſhould be ſhaken out of them, and tranſplanted into Pots a ſize larger, and then plunged into the Hot-bed again; for theſe Plants being Natives of warm Countries, they muſt be treated after the manner of other tender Exotick Plants. In Winter theſe Plants muſt be placed in the Bark-ſtove, but in Summer they ſhould have a large Share of freſh Air, otherwiſe they will not flower very ſtrong, nor will they ever produce good Seeds, if they have not Air and Moiſture in warm Weather.

The nineteenth and twenty-ſixth Sorts are alſo very tender Plants. Theſe are propagated by Seeds, which ſhould be treated exactly in the ſame manner as the former Sorts; but theſe are not laſting Plants, for they ſeldom continue longer than two Years; the ſecond Year they produce Flowers, and perfect their Seeds, after which they generally decay.

The twentieth, twenty-firſt, twenty-ſecond, twenty-third, twenty-fourth and twenty-fifth Sorts, are all annual Plants, which are hardy. The Seeds of theſe ſhould be ſown about the Middle of *March*, on a warm Border, where they are deſigned to remain; for they do not bear tranſplanting very well; ſo the beſt Method is, to ſow the Seeds in Drills, about two Feet aſunder, and when the Plants are come up, they ſhould be thinned ſo as to leave the Plants about five or ſix Inches apart in the Rows. This is all the Culture which theſe Plants require, unleſs it be to keep them clear from Weeds; which ſhould be conſtantly obſerved. In *July* theſe Plants will produce their Flowers, and in *September* they will perfect their Seeds, which ſhould be carefully gathered to preſerve their Species.

ANTHERÆ, [of Ἄνθος, a Flower, and ῥόδȣ, of a Roſe, *Gr.*] are the Summits or little Tops in the Middle of the Flower, ſupported by the *Stamina*. The *Chives*.

ANTHOLOGY, [of Ἄνθος and λόγος, *Gr.* a Word] a Diſcourſe or Treatiſe of Flowers.

ANTIRRHINUM, [Ἀντίῤῥινον, of ἀντὶ, againſt, and ῥὶν, the Noſtrils, as tho' it repreſented a Noſe: It is alſo call'd *Cynocephalus*, of κυνὸς, a Dog, and κεφαλὴ, a Head, becauſe its Fruit reſembles the Head of a Dog] Snap-dragon *or* Calves-ſnout.

The *Characters* are;

It is a Plant with an anomalous Flower, conſiſting of one Leaf, which is divided, as it were, into two Lips; the upper of which is cut into two Parts, and the under into three Parts: Out of the Flower-cup ariſes the Pointal, faſten'd like a Nail in the hinder Part of the Flower, which afterwards turns to a Fruit reſembling a Calf's-head, which is divided in the Middle by a Partition into two Cells, in which are contained many ſmall Seeds.

There are ſeveral Varieties of this Plant, which are worthy of a Place in large Gardens, for the Oddneſs of their Flowers, which continue blowing moſt Part of the Summer, and are very uſeful to compoſe Flower-pots to adorn Chimnies or Halls. The Sorts are;

1. ANTIRRHINUM *latifolium, flore rubro, rictu luteo. Boerh.* The Broad-leav'd Snap-dragon, with red Flowers.
2. ANTIRRHINUM *latifolium, flore albo, rictu luteo. Boerh.* The broad-leav'd Snap-dragon, with white Flowers.
3. ANTIRRHINUM *anguſtifolium majus, peregrinum, flore ruberrimo. H. R. Par.* The large narrow-leav'd Snap-dragon, with deep red Flowers.
4. ANTIRRINUM *anguſto folio linariæ, eleganter variegato, flore rubro, rictu luteo. Boerh.* The ſtriped Snap-dragon.
5. ANTIRRHINUM *luteo flore. C. B. P.* Snap-Dragon, with a yellow Flower.
6. ANTIRRHINUM *latifolium, pallido amplo flore. Bocc. Muſ.* Broad-leav'd Snap-Dragon, with a large pale Flower.
7. ANTIRRHINUM *Luſitanicum, flore rubro elegantiſſimo. Par. Bat.* *Portugal* Snap-Dragon, with a moſt elegant red Flower.
8. ANTIRRHINUM *Hiſpanicum villoſum, origani folio. Inſt. R. H.* *Spaniſh* hairy Snap-Dragon, with a wild Marjoram Leaf.
9. ANTIRRHINUM *Hiſpanicum altiſſimum, anguſtiſſimo folio. Inſt. R. H.* Tall *Spaniſh* Snap-Dragon, with a very narrow Leaf.
10. ANTIRRHINUM *medium, flore albo patulo. Virid. Luſit.* Middle Snap-Dragon, with a white ſpreading Flower.
11. ANTIRRHINUM *majus ſaxatile, anguſtiſſimis foliis, flore purpuraſcente minori. Bar. Icon.* Greater Rock Snap-Dragon, with very narrow Leaves, and a leſſer purple Flower.
12. ANTIRRHINUM *Creticum anguſtifolium, flore maximo purpureo. Tourn. Cor.* Narrow-leav'd Snap-Dragon of *Crete*, with the largeſt purple Flower.

The four firſt Sorts are raiſed from Seeds, which ſhould be ſown in a dry Soil, which is not too rich, in *April* or *May*; and in *July* may be planted out into large Borders, where they will flower the Spring following; or they may be ſown early in the Spring, for flowering the ſame Autumn; but then they are not ſo likely to endure the Winter; and if the Autumn prove bad, they will not perfect their Seeds.

Theſe Plants grow extremely well upon old Walls or Buildings, in which Places they will endure for ſeveral Years; whereas thoſe planted in Gardens ſeldom laſt longer than two Years, unleſs they are planted in a very poor Soil, and the Flowers often cropp'd, and not ſuffer'd to feed: but any of theſe Sorts may be continued, by planting Cuttings in any of the Summer Months, which will eaſily take Root. The fourth Sort is tenderer than any of the former, and ſhould therefore be planted in Pots fill'd with rubbiſhing dry ſandy Soil, and ſhelter'd in Winter under a common Hot-bed Frame, obſerving to give them free open Air, by taking off the Glaſſes in mild Weather, and only covering them in very wet, or froſty Weather.

All the Sorts of Snap-Dragons are pretty Ornaments in a Garden, and requiring very little Culture, renders them more acceptable. They are all hardy Plants, and will reſiſt the Cold of our Winters extremely well, eſpecially if they are planted on a dry, gravelly or ſandy Soil; for when they are planted in a rich moiſt Soil, they will grow very luxuriant for a time, but are very ſubject to rot in Autumn or Winter, and are much more ſuſceptible of Cold, than when they are in a dry hungry, rocky Soil: So that theſe Plants may be placed amongſt Stones, or they will grow in the Joints of old Walls, where they may be placed ſo as to render ſome abject Parts of a Garden very agreeable, for they will continue in Flower ſeveral Months; and if the Seeds are permitted to ſhed, there will be a continual Supply of young Plants, without any Trouble.

Where-ever theſe Plants are deſigned to grow on Walls, or on a rocky barren Soil, the Seeds ſhould be ſown the Beginning of *March*, where they are deſigned to remain; (for if the Plants are firſt raiſed in a better Soil, and afterward tranſplanted into thoſe Places, they ſeldom ſucceed well). When the

Plants are come up, they will require no other Culture but to keep them clear from Weeds, and where they come up too thick, to pull ſome of them out, ſo as to give them room to grow. In *July* theſe Plants will begin to flower, and will continue flowering till the Froſt prevents them. Theſe Plants which grow on Walls, will be ſtrong, and have woody Stems, which will continue two or three Years.

APARINE, [this Plant is ſo called, becauſe it is very rough: It is called *Philadelphos* and *Philanthropon* of φιλέω, I love, and ἄνθρωπος, a Man; becauſe if a Perſon walks in uncultivated Places, the Plant not only applies itſelf to his Garments, but it holds them, as if it had a mind to bind a Man with an amiable Band: It is alſo called *Omphalocarpon*, of ὀμφαλὸς, a Navel, and καρπὸς, Fruit, becauſe the Seeds reſemble a Navel] Gooſe-graſs *or* Clivers.

This Plant grows wild almoſt every where, the Seeds ſticking to the Cloaths of People that paſs by where they grow: It is ſometimes uſed in Medicine, but is too common a Weed to be admitted into a Garden.

APETALOUS Plants, [of α Priv. and πέταλον, a Flower-leaf, *Gr.*] are ſuch as have no Flower-leaves.

APHACA; Vetchling.

The *Characters* are;

It hath a Butterfly Flower, out of whoſe Empalement riſes the Pointal, which afterwards becomes a Pod, full of roundiſh Seeds. To theſe Notes muſt be added, that two Leaves only grow at the Joints of the Stalks, out of whoſe Wings proceed the Tendrils.

We have but one *Species* of this Plant, (*viz.*)

APHACA. *Lob. Icon.* Yellow Vetchling.

This Plant is found wild in divers Parts of *England*, on arable Land, but is ſeldom preſerved in Gardens. It is an annual Plant, which periſhes ſoon after the Seeds are perfected. The ſureſt Method to cultivate this Plant, is to ſow the Seeds on a Bed of light Earth in Autumn, ſoon after they are ripe; for if they are kept out of the Ground until Spring, they ſeldom grow; and if ſome of the Plants do come up at that Seaſon, they ſeldom perfect their Seeds ſo well as thoſe which were ſown in Autumn. Theſe Seeds ſhould be ſown where the Plants are deſigned to remain; for they ſeldom ſucceed well, if they are tranſplanted. All the Culture theſe Plants require, is to keep them clear from Weeds, and to thin them where they come up too cloſe, leaving them about ten Inches or a Foot aſunder.

APICES, [of *Apex*, *Lat.* a Top or Point] are thoſe little Knobs that grow on the *Stamina* in the Middle of the Flower: they are commonly of a dark purpliſh Colour; they have been diſcovered, by the help of Microſcopes, to be, as it were, a ſort of Seed-veſſels, containing in them ſmall globular or oval Particles of various Colours, and exquiſitely formed: they are by ſome ſuppoſed to be a kind of Male Sperm, which falling down into the Flower, fecundates and ripens the Seed.

APIOS, [is ſo called of Ἄπιος, a Pear, becauſe its Root reſembles a Pear] the knobbed-rooted *Virginian* Liquorice Vetch.

The *Characters* are;

It hath a climbing Stalk; the Leaves grow almoſt oppoſite, and faſtened, as it were, to the Mid-rib; the Root is tuberous.

There is, at preſent, but one *Specie* of this Plant known to us; which is,

APIOS *Americana, Cornuti.* The American Apios of *Cornutus.*

This Plant hath large knobbed Roots, which part as they grow old, by which means the Plant is increaſed; for it rarely produces ripe Seeds with us: It is hardy, and will endure the Cold in the open Ground, if planted in a dry Soil; but is ſubject to rot with too much wet in Winter: It dies to the Root every Autumn, and riſes again the ſucceeding Spring, and will twiſt itſelf round a Pole, and grow to the Height of eight or ten Feet, and produce in *July* fine Spikes of Flowers: It hath alſo been planted near Arbours, where it hath covered them very well towards the latter End of Summer, but is cut down with the firſt Cold of Autumn.

APIUM, [*Apium* is ſo called, as ſome ſay, of *Apes*, Bees, becauſe Bees are ſaid to be delighted very much with it; or of *Apex*, becauſe the Ancients made Crowns of it to adorn the Head: It is called *Eleoſelinum*, of ἕλος, a Marſh, and σέλινον; and *Paludapium*, of *Palus* and *Apium*] Parſley.

The *Characters* are;

The Leaves are divided into Wings, or grow upon a branched Rib, and are, for the moſt part, cut into ſmall Segments: the Petals of the Flower are whole, and equal; each Flower being ſucceeded by two gibbous channell'd Seeds.

The *Species* are;

1. APIUM *hortenſe ſeu petroſelinum, vulgo. C. B. P.* Common Garden Parſley.
2. APIUM *vel petroſelinum criſpum. C. B. P.* Curled Parſley.
3. APIUM *hortenſe latifolium. C. B. P.* Broad-leav'd Garden Parſley.
4. APIUM *Luſitanicum rotundifolium. Inſt. R. H.* Round-leav'd *Portugal* Parſley.
5. APIUM *hortenſe latifolium, maxima craſſiſſima ſuavi et eduli radice. Boerh.* Broad-leav'd Garden Parſley, with a large ſweet eatable Root.
6. APIUM *paluſtre, & Apium officinarum. C. B. P.* Smallage.
7. APIUM *dulce*, CELERI *Italorum. H. R. Par.* Celeri.
8. APIUM *dulce degener, radice rapacea. Jeſſieu.* Turnep-rooted Celeri, commonly call'd *Celeriac*.
9. APIUM *Macedonicum. C. B. P.* The *Macedonian* Parſley.
10. APIUM *Luſitanicum maximum, folio trilobato, flore luteolo. Boerh. Ind.* Great *Portugal* Parſley, with a trilobated Leaf, and a yellowiſh Flower.
11. APIUM *Pyrenaicum, thapſiæ facie. Inſt. R. H.* Pyrenean Parſley, with the Face of the Deadly Carrot.
12. APIUM *montanum, ſive petræum album. J. B. Raii* White Mountain Parſley.
13. APIUM *montanum, ſive petræum album elatius.* Taller white Mountain Parſley.
14. APIUM *Aniſum dictum, ſemire ſuaveolenti majore. Tourn.* Parſley with large ſweet-ſcented Seeds, *commonly called* Aniſe.

The common Parſley muſt be ſown early in the Spring, for the Seeds remain a long time in the Earth, the Plants ſeldom appearing in leſs than ſix Weeks after ſowing the Seeds. This Sort is generally ſown in Drills by the Edges of Borders in the Kitchen-garden, becauſe it is much eaſier to keep it clear from Weeds, than if the Seeds are ſown promiſcuouſly on a Border, and the Parſley is ſoon cut. But if the Roots are deſired for Uſe, then the Seeds muſt be ſown thin, and when the Plants are come up, they ſhould be houghed out ſingle, as is practiſed for Carrots, Onions, *&c.* obſerving alſo to cut up the Weeds; if this be obſerved, the Roots will become fit for Uſe by *Auguſt*.

All the Sorts of Parſley are biennial Plants, ſeldom continuing longer than two Years, ſo that there ſhould be a freſh Supply ſown every Year; for that which comes up one Year, will be fit to cut by *June* the ſame Seaſon, and will continue all the following Winter and Spring fit for Uſe; but in *June* it will run up to Seed, after which time it is not ſo good for Kitchen Uſe; but by that Seaſon the young Parſley which was ſown in the Spring, will be fit to cut. The beſt Time to cut the common Parſley to diſtil, is in *July*, when it will be full in Flower.

The curled Parſley is ſown in ſome curious Gardens, for garniſhing Diſhes; the Leaves being curiouſly furbelowed, anſwer this Purpoſe very well, and the Herb is equally as good for Uſe as the Common, it being only a Variety thereof. In order to have this large and fine, it ſhould be ſown very thin, or when it firſt comes up, hough it out to the Diſtance of four Inches ſquare; by which Management your Leaves will be extremely large and fair, and, if you do not ſuffer it to ſeed, will endure three Years very well; but if it ſeeds, it will ſeldom continue good after.

The great Garden Parſley is, at preſent, little known to us in *England*; but in *Holland* it is very common in all their Markets: they bring theſe Roots in Bunches, as we do young Carrots, to Market, in Summer; and the Roots are much of the ſame Size: It is call'd *Petroſeline Wortle* by the *Dutch*, who are very fond of it.

It may be cultivated by ſowing the Seeds in good Ground early in the Spring, and in *April*, when the Plants are up, cut them out with a Hough, (as is practiſed for young Carrots) to above five or ſix Inches ſquare, and keep them conſtantly clean from Weeds, and in *July* the Roots will be fit to draw for Uſe, and may be boiled and eaten as young Carrots, and are very palatable and wholeſome, eſpecially for thoſe who are troubled with the Gravel.

But if theſe Plants are cut out, to allow them more Room, if the Soil is good, the Roots will grow to the Size of a middling Parſnip by *September*: The Roots are much uſed to make a *Dutch* Diſh called *Water Souche*.

The *Macedonian* Parſley is a Stranger in our Country, and not to be found except in curious Botanick Gardens: This Plant is propagated by ſowing the Seed, in the Spring of the Year, in an open well-expoſed Bed of freſh Earth; and in the Summer, when the Plants are come up, they ſhould be tranſplanted, ſome of them into Pots, filled with freſh light Earth, and others into a well-ſhelter'd dry Border, where they may remain until they flower, which is not before the ſecond, and ſometimes the third Year; but thoſe that were planted in Pots, ſhould be ſheltered, during the Winter Seaſon, under a Hot-bed Frame, giving them free open Air whenever the Weather is mild. Theſe Plants, in the Spring following, may be turned out of the Pots into the full Ground, that their Seeds may be the better maturated.

The Aniſe is a very difficult Plant to make grow with us; for although we have freſh Seeds from Abroad, which will often come up very well, yet if there happens but a little wet or cold Weather in the Summer-time, the Plants will rot off and die away. The beſt Method is to raiſe the Plants upon a moderate Hot-bed early in the Spring; and when they are come up, prick them out again upon another Bed that hath a little Warmth, obſerving to expoſe them to the open Air by degrees, by which means they will have more Strength, and conſequently be in leſs danger of being hurt by bad Weather: but this Plant is not worth propagating for Uſe in *England*, ſince we can have the Seeds much better, and at a cheaper Rate, from *Italy*, than they can be produced here.

Smallage is a common Weed, by the Side of Ditches and Brooks of Water, in moſt parts of *England*, ſo that it is ſeldom cultivated in Gardens; but if any Perſon is willing to propagate it, the Seeds ſhould be ſown ſoon after they are ripe, on a moiſt Spot of Ground; and when the Plants are come up, they may be either tranſplanted into a moiſt Soil, or houghed out, and left ſix or eight Inches aſunder, where they may remain for good. The Seed of this Plant is one of the leſſer warm Seeds, and both that and the Herb is uſed in Medicine.

The two Sorts of *Celery* are treated under that Article, they being better known by their common Names uſed in the Kitchen, than by their Botanical Names.

The other Sorts of Parſley are preſerved in curious botanick Gardens, but as they are Plants of no Uſe, ſo they are ſeldom propagated in other Gardens. Theſe may be propagated as the common Sort, but the Plants growing much larger, ſhould be left at a greater Diſtance.

APOCYNUM, ['Απόκυνον, of ἀπὸ and κυνὸς, of a Dog, becauſe the Antients believed this Plant would kill Dogs. The *Egyptians* call this Plant *Oſſar*, whence comes the Name of the Fruit *Bideſſar*, as tho' *Bordes Oſſar*, which in the *Arabic* Tongue ſignifies the Egg *Oſſar*.] Dogs-bane.

The *Characters* are;

The Leaves are produced oppoſite, by Pairs, upon the Branches; the Flower conſiſts of one Leaf, which is cut into ſeveral Segments; from its Flower-cup ariſes the Pointal, which is fixed like a Nail in the back Part of the Flower, and is afterwards changed into a Fruit, which is, for the moſt part, compoſed of two Capſules, or Pods, which open from the Baſe to the Top, incloſing many Seeds, which have a long pappous Down adhering to them: to this may be added, that the whole Plant abounds with a milky Juice.

There are ſeveral Sorts of this Plant cultivated in the curious Gardens of Plants, ſome of which are very beautiful, and deſerve a Place in every good Garden. I ſhall mention the different Species of this Plant, which are cultivated in the *Engliſh* Gardens, and ſhall leave the Reader to ſelect ſuch of them as he ſhall fancy to cultivate.

1. APOCYNUM *erectum, latifolium, incanum, Syriacum, floribus parvis obſolete purpuraſcentibus. Par. Bat.* The upright broad-leav'd hoary *Syrian* Dogs-bane, with purpliſh colour'd Flowers.

2. APOCYNUM *erectum Canadenſe, anguſtifolium. Par. Bat.* The upright narrow-leav'd *Canada* Dogs-bane.

3. APOCYNUM *erectum Canadenſe, latifolium. Par. Bat.* The broad-leav'd upright *Canada* Dogs-bane.

4. APOCYNUM *Americanum, foliis androſæmi majoris, flore lilii convallium ſuave-rubentis. H. R. P.* The *American* Dogs-bane, with Tutſan Leaves, and red Flowers, like the Lily of the Valley.

5. APOCYNUM *erectum, fruticoſum, folio ſubrotundo viridante. Par. Bat.* The ſhrubby upright Dogs-bane, with roundiſh green Leaves.

6. APOCYNUM *erectum, Africanum, folio ſalicis anguſto glabro, fructu villoſo. Par. Bat.* The upright Willow-leav'd *African* Dogs-bane, with hairy Fruit.

7. APOCYNUM *Afrum, ſcandens, folio rotundo, ſubincano, nummulariæ. Boerh.* The *African* creeping Dogs-bane, with Leaves like *Monywort*.

8. APOCYNUM *erectum, folio oblongo, flore umbellato, petalis coccineis reflexis. Sloan. Cat.* The upright Dogs-bane, with oblong Leaves, and Scarlet Flowers, called by ſome *Baſtard Ipecacuana*.

9. APOCYNUM *Canadenſe, anguſtifolium, flore aurantii. Mor. Præl.* The narrow leav'd *Canada* Apocynum, with Orange-colour'd Flowers.

10. APOCYNUM *Marylandicum, erectum, folio ſubrotundo, flore ruberrimo.* The upright *Maryland* Dogs-bane, with roundiſh Leaves, and deep red Flowers.

The firſt of theſe *Dogs-banes* is a prodigious Creeper at the Root, and will in a ſhort Time overſpread a large Compaſs of Ground, and muſt never be planted too near other Plants or Flowers, which would be over-run by this Plant, and deſtroyed; but it may have a place in ſome obſcure Part of the Garden; for it is extremely hardy, and will thrive in almoſt any Soil or Situation: It grows to be ſix or ſeven Feet high, and produces large Umbels of Flowers, which have a ſtrong ſweet Smell, but are of a poiſonous Nature, as are all the true *Apocynums*, and therefore ſhould not be planted in the Way of Children, who may receive Damage by breaking any part of the Plant, and letting the milky Juice, with which they abound, run upon the tender Part of their Fleſh, which will be apt to bliſter it; theſe Flowers are ſometimes ſucceeded by large oblong Pods, which contain a great Quantity of a ſoft Cottony Subſtance, that adheres to the Seeds, and are of Service to tranſport them to a Diſtance when ripe. This Plant dies to the Root in Winter, and riſes again the ſucceeding Spring.

The ſecond, third, fourth, and tenth Sorts are all of them very hardy, and may be planted in the open Ground, but muſt have a dry Soil; theſe all of them produce large fine Flowers, and are propagated by parting their Roots in *March*, after the cold Weather is paſt; for they ſeldom produce ripe Seeds with us.

The fifth, ſixth, ſeventh, and eighth Sorts are tender, and muſt be preſerved in Pots, and houſed in Winter.

The fifth and ſixth Sorts will grow very ſhrubby, and ſometimes to the Height of eight or nine Feet, and do produce Bunches of Flowers, which in the ſixth Sort are of a whitiſh green, and the fifth of a worn-out purple Colour, but are of no great Beauty or Smell. Theſe are increaſed by planting Cuttings in any of the Summer Months, in Pots of light ſandy Earth, plunging them into a moderate Hot-bed, and ſhading them from the great Heat of the Sun, giving them gentle Refreſhings of Water. Theſe muſt have a good Green-houſe in Winter, and muſt not have too much Water in that Seaſon.

The ſeventh Sort is a climbing Plant, and will twiſt itſelf round a Stake, and grow to the Height of ſeven or eight Feet, and in Summer will produce from the Joints ſmall Umbels of worn-out purple-colour'd Flowers, which are extremely ſweet. This is propagated by laying down the young Shoots, which do eaſily take Root, or by parting the Roots of the old Plants.

The eighth Sort is the moſt tender of them all, and requires a moderate Stove to preſerve it in Winter; this produces extreme beautiful Orange-colour'd Flowers, which often are ſucceeded by ripe Seeds: This Plant may be increaſed by planting the Cuttings in *June*, in a moderate Hot-bed, but muſt have little Water, and be ſecured from the violent Heat of the Sun, and the Cold of the Nights: but the beſt way to propagate them, is by ſowing the Seeds in a Hot-bed in *March*; and when the Plants are come up, prick them into ſmall Pots, and plunge them into another Hot-bed, to bring them forward; and in *June* you may begin to expoſe them to the open Air, at which Time they will begin to flower; but it will be adviſeable to preſerve one or two of the ſtrongeſt in the Hot-bed, in order to procure good Seeds.

The ninth Sort is tolerably hardy, and only requires to be ſcreen'd from the extreme Cold in Winter; and I believe, if it were planted into the full Ground, under a warm Wall, it would do very well; but as I have not yet tried it, ſo I can't affirm it will do: This Plant produces beautiful Umbels of Orange-colour'd Flowers, which abide moſt part of the Month of *Auguſt*, and deſerve a Place in the moſt curious Garden. This is propagated by parting the Roots in *March*, or ſowing the Seeds, which in a good Seaſon do ripen tolerably well with us.

APPLE-Tree, by the *Latins* called *Malus*.

The *Characters* are;

The Fruit of this Tree is, for the moſt part, hollowed about the Foot-ſtalk; the Cells in which the Seeds are lodged, are ſeparated by cartilaginous Partitions; the Juice of the Fruit is ſowerish; and the Tree is large and ſpreading: to this may be added, the Flowers conſiſt of five Leaves, which expand in Form of a Roſe.

There are a great Variety of theſe Fruits propagated in *England*, either for the Kitchen, the Deſert, or to make Cyder: I ſhall mention the moſt curious Sorts for each Purpoſe, omitting the ordinary Kinds, as not worth naming, and ſhall then proceed to their Culture and Management.

A Liſt of ſuch Apples as are proper for a *Deſert*; placed according to their Times of Ripening.

White Juneating.
Margaret Apple.
Summer Pearmain.
Summer Queening.
Embroidered Apple.
Golden Reinette.
La Calville d'Eſté Blanche; or, *Summer White Calville.*
La Calville d'Eſté Rouge; or, *Summer Red Calville.*
Silver Pippin.
Aromatick Pippin.
La Reinette Griſe.
La Haute-bonté.
Royal Ruſſetting.
Wheeler's Ruſſett.
Sharp's Ruſſett.
La Fonouillet, ou Pome d'Anis; or *Spice Apple.*
Golden Pippin.
Nonpareil.
L'Api; or, *Pome d'Api.*

A Liſt of ſuch *Apples* as are preferred for *Kitchen* Uſe; placed nearly according to their Times of Ripening.

Codling.
Summer Marygold.
Summer Red Pearmain.
Holland Pippin.
Kentiſh Pippin.
Le Courpendu, ou Pome de Bardin; *The Hanging Body.*
Loan's Pearmain.
French Reinette.
French Pippin.
Royal Ruſſett.
Monſtrous Reinette.
Winter Pearmain.
Pome Violette.
Spencer's Pippin.
Stone Pippin.
Oaken Pin.

A Liſt of ſuch *Cyder* Fruits as are moſt in Eſteem for that Purpoſe.

Devonſhire Royal Wilding.
Red-ſtreaked Apple.
The Whitſour.
Herefordſhire Underleaf.
John Apple; or, *Deux-Annes.*

The ſeveral Sorts of *Apples* are planted, either as Standards, in Orchards or Gardens, or Dwarfs, or in Eſpaliers, and ſometimes againſt Walls: Thoſe that are deſigned for Standards, ſhould be grafted on Crab-ſtocks, which are much hardier, and of longer Duration than any other Sort of *Apple*; but thoſe that are deſigned for Dwarfs, or Eſpaliers, may be grafted either on the Paradiſe-ſtock, Codling, or any other Sort of Apple-ſtock, that doth not ſhoot too freely. The Manner of *Grafting* will be deſcribed under its proper Article; and the Manner of raiſing and managing the Stocks, will be explained in the Article of *Nurſeries*, to which I refer the Reader, and proceed to the Manner of planting them out for good.

If you intend to make a new Orchard, the Soil ſhould be plough'd; if a Green-ſward, at leaſt twice before planting, that the Earth may be mellowed, and imbibe the nitrous Particles of the Air, and that the Turf may be well rotted and mixed with the Earth; but if it hath been plough'd Ground, one good Ploughing will be ſufficient.

The beſt Seaſon for planting theſe Trees, if the Soil is dry, is in *October*, as ſoon as the Leaves begin to decay; but in a wet Soil, it is beſt to defer it till *February*.

The Diſtance theſe Trees ought to be planted, is at leaſt forty Feet ſquare, that the Sun and Air may freely paſs to every Part of the Tree, to diſſipate all crude and unhealthy Vapours, which are either exhaled from the Earth, or produced from the Perſpiration of the Trees, and are, many Times, the Cauſe of Blights; or are, at leaſt, abſorbed again by the Trees, when in a State of Reſpiration, and muſt occaſion the Fruit to be crude and ill-taſted, which is too often attributed to the Soil, when the only Cauſe of it may be their being too cloſely planted. This Diſtance many People will, perhaps, think too much; but I dare ſay, it would be ſtill better, could they be allowed eighty Feet Diſtance, Row from Row, and forty Feet in the Rows; nor would I adviſe the planting of Cherries, or any other Sort of Fruit-Trees between them, till they are arrived to an Age of Maturity; but rather, that the Ground between them ſhould be ploughed and tilled with Corn, or any other Crop, as if it were intirely open; and it hath been experienced by ſeveral People in *Herefordſhire*, and other Counties in *England*, that their Crops have been exceeding good, and their Trees much improved by the turning of the Soil; for want of which Culture, together with their cloſe ſtanding, we find vaſt Numbers of Orchards that have ſcarcely a healthy Tree in them, the greateſt Part of them being either cankered, or covered over with Moſs; and how can we ſuppoſe to eat kindly Fruit from diſtemper'd Trees? We may with as much Juſtice affirm, that a diſtemper'd Woman will give healthy Milk; which I believe no one will dare to affirm, tho' there is equally the ſame Probability in both.

And ſince I am upon this Article of cloſe Planting, ſuffer me to make a little Digreſſion, not altogether foreign to our preſent Purpoſe; which is, to take Notice of a prevailing Error, in planting of Fruit-Gardens, like Wilderneſs Trees or Flowering Shrubs, cloſe together, and mixing the different Sorts of Fruits in each Diviſion, in ſuch a Manner, that no two Trees of the ſame Kind ſhall ſtand near each other, ſuppoſing each Tree to draw different Particles from the Ground for their Nouriſhment, and ſuffering them to grow, as they are naturally diſpoſed, without ever pruning them, hereby hoping to have great Quantities of Fruit, with very little Trouble after the firſt planting.

Now granting this laſt Suppoſition to be true, (tho' I am fully convinced of the contrary) yet how abſurd is it to think, that what little Fruit may be produced in this Way, can be equally ſo good or wholſome, as thoſe which are the Product of healthy Trees, and have the Advantages of a free Air, and the Benefit of the kindly Sun, to correct and diſſipate the Crudities of the Earth round the Roots, as alſo thoſe moiſt Vapours which are almoſt continually perſpiring from the Trunks, Branches, and Leaves of theſe Trees, which, for want of the Air's free Admittance, are conſtantly hovering about the Trees in theſe Plantations; and in cold Weather, or the Night-time, when the Trees are in a State of Reſpiration, theſe rancid Vapours are imbibed thro' the Pores of the Leaves, and mixed with the Juices, and are protruded thro' the Veſſels, and enter the Fruits, whereby they muſt be render'd ill-taſted and unwholſome.

But as this Practice was introduced by ſome Perſons who were intirely ignorant of what they undertook, and ſet out upon wrong Principles of Philoſophy, ſo I hope, the Gentlemen to whom this Method may be propoſed, will be ſo kind to themſelves, as to wait a little, and ſee the Effect of thoſe Plantations already made, before they ſet on foot ſo wild a Project.

Indeed, I am aware how many Enemies I ſhall raiſe, by retrenching the great Demand for Fruit-trees, which muſt of Neceſſity be made in the ſeveral Nurſeries in *England*, if this Practice be continued; but as I ſhall, thro' the whole Book, deliver my Sentiments freely, on every Article here treated of, aiming at nothing more than the Information of my Readers, ſo I hope there will be found none of my Profeſſion of ſuch mercenary Tempers, as to condemn me for telling Truth, tho' it may not always exactly agree with their preſent Intereſts: But enough of this at preſent; let us now return to our Planting.

When the Seaſon for Planting is come, as was before directed, we muſt make Choice of good thriving Trees, of about three Years grafting, but by no means chuſe old Trees, as is the Practice of ſome, thinking thereby to ſave time; whereas a young thriving Tree will, in three or four Years after planting, overtake one of theſe old ones, and make far better

Trees in a few Years, than they ever will do: nor ſhould you take Trees from a rich Soil, to plant into a poor one; or from a wet Soil, for a dry one; but endeavour, if poſſible, to have your Trees from a Soil as near in Quality to your own as poſſible, or rather, from one that is not quite ſo good as yours.

In preparing theſe Trees for planting, cut off all broken or bruiſed Roots, or ſuch as croſs and gall each other; as alſo all ſmall Fibres, which rarely ſurvive a Remove, (unleſs the Trees are planted immediately after taking up, before the Wind has dried them) and are very ſubject to mould and rot, and are often prejudicial to the new Roots, by obſtructing their Progreſs, and many times deſtroy them ſoon after they are produced, by the ſpreading of the Mouldineſs which they had taken quite round the older Roots: You muſt alſo at the ſame time take off ſome of the moſt luxuriant Branches, and ſhorten others, ſo as to reduce the Head to a handſome Figure, and moderate Size; but by no means cut and lop the Head in ſuch an unmerciful manner as ſome do; for a moderate Proportion of Head is abſolutely neceſſary to furniſh Nouriſhment to the Roots, until new ones are produced to ſupply the Heads, and the making large Wounds at both Parts of the Tree at the ſame Time, muſt be very hurtful. Your Trees being thus prepared, make a Hole with a Spade where each Tree is to ſtand, about two Feet deep, more or leſs, according to the Size of their Roots; and ſo likewiſe in Width, according to the ſame Proportion, making it level in the Bottom, and breaking all hard Clods; then place the Tree in the Center of the Hole, as upright as poſſible; and while one Perſon keeps the Tree in its right Poſition, another ſhould, with a Spade, break the Earth, and lay it in between the Roots, ſhaking the Tree, the better to let the Earth fall between every Root, that there may be no Cavity left: then with your Feet gently preſs the Earth down, to faſten and ſettle the Tree; and if the Weather prove dry, it will not be amiſs to give each Tree a good Watering, which will fix the Earth to them, and greatly forward their Production of new Roots: You ſhould alſo, if the Heads of the Trees are large, fix a Stake to each Tree, to prevent their being ſhaken with the Winds, which would diſturb and greatly injure the new Roots: and if the Seaſon after planting ſhould prove very dry, you muſt repeat your Waterings; but do not over-water them, which is a Fault many People are guilty of; for too much Wet rots all the new Roots, which are very tender for the firſt and ſecond Years, and very ſubject to Damages during that Time; but if you can conveniently procure a Quantity of Green-ſward, pared from a Common, &c. and lay a little of it round the Foot of each Tree, ſo as to cover the Surface about three Feet round the Stem, with the Graſs downwards; this will preſerve the Ground from drying too faſt, and render one Watering of more Service than three or four would otherwiſe be. The next Winter, after planting, this Turf will be rooted; you ſhould therefore, early in *February*, when the great Froſts are over, gently dig up the Ground about each Tree, burying this rotten Turf in the Bottom, which will keep the Ground looſe, and greatly promote the Growth of the Trees. An Orchard or Garden thus planted, and manag'd, will afford the Owner no ſmall Pleaſure, by the Advance the Trees will make, and muſt as greatly redound to his Profit.

I ſhall now proceed to give Directions for planting *Dwarfs*, either for Standards or Eſpaliers; tho' I muſt own, Dwarf Standard-trees are what I ſhould never adviſe any Perſon to plant; for their Heads do, in time, grow ſo large, that there is no getting near their Stems, ſo that the Ground between them is wholly uſeleſs for any Purpoſe; nor can the Sun reach to warm the Ground, and diſſipate crude Vapours, ſo that the Fruit can never be ſo well-taſted as thoſe produc'd from Eſpaliers, which enjoy all the Advantages of Sun and free Air; but if you are determin'd to have Dwarf-trees, you muſt allow them a large Diſtance from each other; twenty-four Feet ſquare is the leaſt they ſhould be planted; and when the Trees begin to make Shoots, they muſt be faſten'd down to Stakes, drove into the Ground all round the Tree, as horizontally as poſſible; for if you ſuffer the Branches at firſt to grow upright, you can never after reduce them to a proper Figure, without either quite cutting down the Branches, or plaſhing and mangling them ſo much as often to canker and decay the Tree. In pruning theſe Trees, great Care ſhould be taken to keep their middle Part as free from Wood as poſſible, and not ſuffer their Branches to croſs each other: The farther Particulars I ſhall refer to the pruning of *Eſpaliers*, which will alſo agree for *Dwarfs*, excepting what I have already mention'd.

Eſpaliers are commonly planted to ſurround the Quarters of a Kitchen-Garden, in which Place they have a very good Effect, if rightly planted and manag'd, rendring it not in the leaſt inferior to the fineſt *Parterre*, or moſt finiſh'd Pleaſure Garden: For what can be more agreeable than to walk between regular Hedges of Fruit-trees, which early in the Spring are cover'd with beautiful Flowers, and in Summer and Autumn, are charg'd with noble Fruits of different Kinds; and the Kitchen Stuff in the Quarters are intirely hid from Sight, and alſo ſcreen'd from the Injuries of Weather?

In the Diſtribution of the Quarters, I would adviſe that they are not too ſmall, which renders them unfit for many Sorts of Kitchen Stuff, and alſo occaſions your Eſpaliers to be too near each other, which ſhould always be avoided: The Extent of theſe Quarters ought to be in Proportion to the Bigneſs of the Garden; in a large Ground they may be two hundred and fifty Feet ſquare, or three hundred Feet long, and one hundred Feet broad, according to the Figure of the Garden; and in ſmall Gardens one hundred Feet ſquare is as much as can be allowed, and the Walks between the Eſpaliers ſhould alſo be in breadth according to the ſame Proportion. When your Ground is prepar'd for Planting, you ſhould endeavour to make Choice of Trees which ſhoot nearly alike, to plant in each Eſpalier, by which means you may the better proportion their Diſtances, in order to have the Eſpaliers of an equal Height, and not to intermix weak-ſhooting Trees amongſt the moſt luxuriant, which would occaſion a very unſightly Hedge.

The Diſtance theſe Trees ſhould be planted, if on Crab or Free Stocks, ſhould be, for large ſhooting Trees, twenty Feet, and for the weaker, ſixteen; but if they are on Paradiſe Stocks, ten or twelve Feet will be ſufficient: The Manner of preparing and planting theſe Trees being the ſame with thoſe before-mention'd, I ſhall not repeat it, but refer the Reader thereto; but only ſhall obſerve here, that it will be proper to head theſe Trees to about four Eyes above the Graft, and never to chuſe Trees more than two Years old from the Time of Grafting; for older Trees are not ſo ſubject to break out when headed, their Bark being for the moſt part hard and the Wounds given to old Trees are not ſo ſoon healed as in young ones.

The Summer following, you muſt provide a Parcel of ſmall Stakes, of about three Feet long, to drive into the Ground on each Side of your Trees; four to each Tree will be ſufficient; to theſe Stakes you muſt faſten the new Shoots, as they are produced, as horizontally as poſſible, and not ſuffer them to grow upright, as is the too common Practice of many; for the Branches being thus train'd in Summer, will want no Force or Violence to be uſed in Winter to bring them to their proper Places, nor will their Shoots be ſo groſs and ſtubborn.

If the Trees have taken kindly, it is very probable that all the four Eyes have produced Shoots; if ſo, at *Michaelmas* (which I would fix for the Time of Pruning) cut the two uppermoſt Shoots to four Eyes each, in order to furniſh your Tree with Branches, but the two undermoſt may be left ſix or eight Joints in Length, in Proportion to their Strength; but let me lay it down for a Rule, never to ſhorten any Shoots in Summer, unleſs it be to furniſh Branches to fill up a Vacancy in the Eſpalier, and this ſhould never be done after *May*; for Shoots which are produced after *Midſummer*, are never duly ripened and prepared, ſo can never be proper, either for the Production of Wood or Fruit.

But if your Trees have made but three Shoots the firſt Summer, then at *Michaelmas* ſhorten the uppermoſt to three Eyes, leaving it upright in the Middle of the Tree, and ſhorten the two Side-Branches to five or ſix Eyes, in Proportion to their Strength, training them as horizontally as poſſible; and if they ſhould have produced but two Shoots the firſt Year, then it would be adviſeable to ſhorten both of theſe to four Eyes each, for Reaſons before given.

The ſecond Year you muſt obſerve to train in all new Shoots horizontally, as in the firſt, and to diſplace all fore-right Shoots, which will not come handſomely into the Eſpalier, as faſt as they are produced, that they may not exhauſt the Nouriſhment of the Tree: At *Michaelmas* ſhorten the Shoots in the middle Parts of the Tree, or where Branches are wanted to fill up Vacancies; but for ever after be cautious of unmerciful lopping or ſhortning of Branches; for the more you cut, the more they ſhoot, and there is no Way ſo ſure in the Management of all Fruits, which bear on old Wood, as to leave their Branches at full Length, where the Tree is fully ſupply'd with Wood, training them as horizontally as may be, which will prevent their luxuriant ſhooting; beſides, in many Sorts of Fruits, the Bloſſom-buds are firſt produced at the Extremity of the laſt Year's Shoots, ſo that if they are cut off, you deſtroy the greateſt Part of your Crop.

Theſe few Rules, with diligent Obſervation, will be ſufficient for the well-regulating and managing your Eſpaliers, ſo as to reap both Profit and Pleaſure.

APPLES of LOVE; *vide* Lycoperſicon & Solanum.

MAD APPLES; *vide* Melongena.

APRICOCK *or* ABRICOT; *or*, in *Latin*, *Malus Armeniaca*.

We have in the *Engliſh* Gardens about eight Sorts of this Fruit cultivated; which are,

1. The *Maſculine Apricock*.
2. The *Orange Apricock*.
3. The *Algier Apricock*.
4. The *Roman Apricock*.
5. The *Turkey Apricock*.
6. The *Tranſparent Apricock*.
7. The *Breda Apricock*.
8. The *Bruxelles Apricock*.

Theſe Fruits are all propagated by budding them on Plum-ſtocks, and will readily take upon almoſt any Sort of Plum, provided the Stock be free and thriving, (except the *Bruxelles* Kind, which is uſually budded on a Sort of Stock commonly call'd the *St. Julian*, which better ſuits this Tree, as being generally planted for Standards, than any other Sort of Plum will do:) The manner of raiſing the Stocks, and budding theſe Trees, ſhall be treated of under their particular Articles, to which I refer the Reader, and ſhall proceed to their Planting and Management.

Theſe Trees are all (except the two laſt Sorts) planted againſt Walls, and ſhould have an *Eaſt* or *Weſt* Aſpect; for if they are planted full *South*, the great Heat cauſes them to be mealy before they are well eatable.

The Borders under theſe Walls ſhould be four Feet wide, at leaſt, and if it were more, the better; but I would never adviſe the making of them ſo deep as is the general Cuſtom; for if the Earth be two Feet deep, it is enough.

If your Ground is a wet, cold Loam or Clay, you ſhould raiſe your Borders as much above the Level of the Surface as it will admit, laying ſome Stones or Rubbiſh in the Bottom, to prevent the Roots from running downward; but if you plant upon a Chalk or Gravel, you muſt remove it to a conſiderable Width to make Room for a good Soil to be put in; but you need not go above two Feet deep at moſt.

The Soil, I would in general adviſe to be uſed for theſe and all other Sorts of Fruit-Trees, is freſh untry'd Earth from a Paſture Ground, taken about ten Inches deep, with the Turf, and laid to rot and mellow at leaſt twelve Months before it is uſed; and this muſt be kept often turn'd to ſweeten and imbibe the nitrous Particles of the Air.

Your Borders being thus prepared, make Choice of ſuch Trees as are but one Year's Growth from budding, and, if your Soil is dry, or of a middling Temper, you ſhould prefer *October* as the beſt Seaſon for Planting, eſpecially having at that Time a greater Choice of Trees from the Nurſeries, before they have been pick'd and drawn over by other People. The Manner of preparing theſe Trees for Planting being the ſame in common with other Fruit-Trees, I ſhall refer the Reader to the Article of *Apple-Trees*, where he'll find it largely treated of: But do not cut off any Part of the Head at that Time, unleſs there are any ſtrong fore-right Shoots, which will not come to the Wall, which may be taken quite away.

Your Trees being thus prepared, you muſt mark out the Diſtances they are to ſtand, which, in a good ſtrong Soil, or againſt a low Wall, ſhould be eighteen Feet or more; but in a moderate one, ſixteen Feet is a good reaſonable Diſtance; then make a Hole where each Tree is to ſtand, and place its Stem about four Inches from the Wall, inclining the Head thereto; and after having fix'd the Tree in the Ground, nail the Branches to the Wall, to prevent their ſhaking, and cover the Surface of the Ground round the Root with rotten Dung to keep out the Froſt; in this State let it remain till *February*, when, if the Weather is good, you muſt un-nail the Branches of your Trees, ſo as not to diſturb their Roots, and being provided with a ſharp Knife, put your Foot cloſe to the Stem of the Tree; and having plac'd your Left-hand to the Bottom of the Tree, to prevent its being diſturb'd, with your Right-hand, cut off the Head of the Tree, to about four or five Eyes above the Bud, ſo that the ſloping Side may be toward the Wall.

In the Spring, if the Weather proves dry, you muſt now and then give your Trees a gentle Refreſhing with Water; in the doing of which, if you obſerve to water them, with a Roſe to the Watering Pot, all over their Heads, it will greatly help them, and alſo lay ſome Turf, in the Manner directed for Apples, or ſome other Mulſh, round the Roots, to prevent their drying during the Summer Seaſon: As new Branches are produc'd, obſerve to nail them to the Wall in an horizontal Poſition; and ſuch Shoots as are produc'd fore-right, muſt be intirely diſplac'd. This muſt be repeated as often as is neceſſary to prevent their hanging from the Wall, but by no means ſtop any of the Shoots in Summer.

At *Michaelmas*, when the Trees have done growing, you muſt un-nail their Branches, and ſhorten them in proportion to their Strength; a vigorous Branch may be left eight or nine Inches long, but a weak one ſhould not be left above five or ſix. I ſuppoſe many People will wonder at this Direction, eſpecially having allow'd ſuch a Diſtance between the Trees, as believing by this Management the Wall will never be fill'd; but my Reaſon for it is, that I would have no Part of the Wall left unfurniſh'd with bearing Wood, which muſt conſequently be the Caſe, if the Branches are left to a great Length at firſt; for it ſeldom happens, that more Buds than two or three ſhoot for Branches, and theſe are for the moſt part ſuch as are the extreme Part of the laſt Year's Wood; ſo that all the lower Part of the Shoots becomes naked, nor will they ever after produce Shoots; and this is the Reaſon we ſee ſo many Trees which have their bearing Wood ſituated only in the extreme Part of the Tree.

When you have ſhorten'd the Shoots, be ſure to nail them as horizontally as poſſible; for upon this it is, that the future Good of the Tree chiefly depends.

The ſecond Summer obſerve, as in the firſt, to diſplace all fore-right Shoots, as they are produc'd, nailing in the other cloſe to the Wall horizontally, ſo that the Middle of the Tree may be kept open; and never ſhorten any of the Shoots in Summer, unleſs to furniſh Branches to fill vacant Places on the Wall, and never do this later than *April*, for Reaſons before given in the Article of *Apples*. At *Michaelmas* ſhorten theſe Shoots, as was directed for the firſt Year; the ſtrong ones may be left nine or ten Inches, and the weak ones ſix or ſeven at moſt.

The following Year's Management will be nearly the ſame with this; but only obſerve, that *Apricocks* produce their Bloſſom Buds, not only upon the laſt Year's Wood, but alſo upon Curſons or Spurs, which are produc'd from the two Years Wood; a great Care ſhould therefore be had in the Summer Management, not to hurt or diſplace theſe: Obſerve alſo, to ſhorten your Branches, at the Winter pruning, ſo as to furniſh freſh Wood in every Part of the Tree, and be ſure to cut out intirely all luxuriant Branches, or diſplace them as ſoon as they are produced, which would exhauſt the Nouriſhment from the bearing Branches, which, in my Opinion, can't be too ſtrong, provided they are kindly; for the more vigorous your Tree is, the more likely it is to reſiſt the Injuries of the Weather: And I have often ſeen Trees brought to ſo weak a Condition, as to be able only faintly to blow their Bloſſoms, and then moſt, or all of the bearing Branches have died; which has given Occaſion to the Owner to imagine it was the Effect of a Blight, when in reality, it was only for want of right Management. And I am fully perſuaded, half the Blights we hear complain'd of, proceed from nothing elſe but this.

Theſe few Rules, well executed, together with a little Obſervation and Care, will be ſufficient; and to pretend to preſcribe particular Directions for all the different Accidents, or manner of treating Fruits, would be impoſſible; but I believe the Reader will find what has been ſaid, if duly attended to, will anſwer his Deſign; for, without diligent Obſervation, there can be no ſuch thing as a ſkilful Manager, let him have never ſo many or good Inſtructions laid down to him.

The *Bruxelles* and *Breda Apricocks*, being for the moſt part planted for Standards, will require very little Pruning or Management, only obſerve to take out all dead Wood, or ſuch Branches as croſs each other; this muſt be done early in *Autumn*, or in the *Spring*, after the cold Weather is paſt, that the Part may not canker where the Inciſion is made.

The *Bruxelles* is by far the moſt delicious Fruit of all the *Apricocks*, and is greatly mended by growing on a Standard: It is ripe about the Beginning of *Auguſt*, and is of a middling Size.

APRIL.

Work to be done in the Kitchen-Garden.

In the Beginning of this Month make Ridges for Melons and Cucumbers, to be cover'd with Bell or Hand-glaſſes; which Work may be continu'd to the End of the Month, where large Quantities are requir'd: but thoſe made late, need not have ſo much Dung in them as the early ones. You ſhould, the middle of this Month, plant out the Melons which are to be rais'd under Paper.

You may ſtill ſow Sweet Marjoram, Thyme, Summer Savory, and other Aromatick Plants; which do not ſucceed, if they are ſown too early, eſpecially if the Spring be cold and wet.

Plant Kidney-Beans the Beginning of the Month in a warm Situation, and in dry Weather, for wet will deſtroy the Seeds in the Ground; and ſow Purſlain upon warm Borders, to come after that on the Hot-bed is gone.

Continue to hough your Crops of Radiſhes, Carrots, Parſnips, Onions, Leeks, *&c.* thinning them out to proper Diſtances; and cut down all the Weeds among them: This ſhould always be done in dry Weather, that the Weeds may be deſtroy'd. This ſtirring of the Ground between your Plants will be of great Service to promote their Growth and the Ground will be preſerv'd clear from Weeds.

In moiſt Weather plant Slips or Cuttings of Sage, Roſemary, Rue, Savory, Maſtick, Lavender, Stœchas, and other Aromatick Plants; for at this Seaſon they take Root very freely, eſpecially if they are ſhaded from the Sun, and duly water'd.

Plant Garden-Beans for a latter Crop, and continue ſowing the Marrow-fat and other large Kinds of Peaſe, to ſucceed thoſe which were ſown the former Month.

You may yet ſlip and plant Artichoaks upon a moiſt Soil; but if the Soil be dry, they will not do ſo well as thoſe which were planted the laſt Month. And now you ſhould plant out your Cauliflower-plants, which were rais'd in *February*, for a latter Crop.

Continue to ſow all Sorts of young Sallet-herbs, as Radiſh, Rape, Turnip, Muſtard, *&c.* every Week; for at this Seaſon they will ſoon be too large for uſe: But you ſhould obſerve, as the Heat of the Seaſon increaſes, to ſow them in a more ſhady Situation; for in Summer they thrive beſt on a North Border.

Sow ſome Cos, Sileſia, and other Kinds of large Lettuces, to ſucceed thoſe which were ſown the former Month: But theſe ſhould have a moiſt Soil, otherwiſe (if the Summer ſhould prove dry) they will not cabbage.

Tranſplant your young Celery-plants into Beds of rich Earth at about three Inches Diſtance, obſerving to water them duly until they have taken Root; but in doing of this, you ſhould not draw up all the Plants clean out of the Seed-bed, but only thin them, taking out the large ones, and leave the ſmaller Plants to get Strength.

Hough the Ground between your Rows of Beans and Peaſe, and draw the Earth up to their Stems, which will ſtrengthen them, and, by clearing the Ground from Weeds, the Plants will thrive the better.

After a Shower of Rain, draw the Earth up to the Stems of your Cabbage and Cauliflower-plants, which were planted either in Autumn, or early in the Spring. This is abſolutely neceſſary, to guard their Stems from the Sun and Wind, which dry and harden them but you muſt be careful in doing of this, not to draw the Earth up into their Hearts, which will deſtroy them.

Be careful to deſtroy Snails and Slugs, which at this Seaſon are invited abroad by gentle Showers of Rain, when they may be eaſily taken; for if they are ſuffer'd to remain, they will increaſe greatly, and become very troubleſome, and deſtructive to many of your Crops.

If the Nights prove cold, you muſt be careful to cover the Glaſſes over your early Cucumbers and Melons; for the young Fruit is very ſubject to drop off where the Beds are grown cool, or proper Coverings are wanting.

Sow Turnips on a moiſt Spot of Ground, to ſucceed thoſe which were ſown the laſt Month; and thoſe then ſow'd ſhould now be hough'd out to a proper Diſtance, and the Weeds between them deſtroy'd.

Your Beds of Mint, Tarragon, Parſley, *&c.* ſhould now be carefully weeded: for if the Weeds are permitted to get above the Plants at this Seaſon, they will draw them up weak, and ſpoil them. And if the Seaſon ſhould prove dry, they ſhould be water'd, which will greatly promote their Growth.

You may now plant Cuttings of Mint, Tarragon, *&c.* to make new Beds, the old ones often decaying, after they have ſtood two or three Years.

Tranſplant ſome of your Sileſia, Cos, and other large Kinds of Lettuces, which were ſown the former Month, obſerving to water them till they have taken Root.

The Cabbages and Savoys which were ſown the laſt Month ſhould now be thinn'd, and prick'd out into Beds, that they may acquire Strength before they are tranſplanted out for good; and the Seed-beds muſt be weeded, otherwiſe the Plants will draw up tall and weak.

The latter End of this Month you ſhould look over your Artichokes, and draw out all the young Plants which have been produced ſince the Stocks were ſlipp'd; for if theſe are permitted to grow, they will rob the Plants which were left for Fruit, and cauſe the Fruit to be ſmall. Some of the beſt of theſe Plants may be trimm'd and planted where there are any wanted to repair a young Plantation; but as theſe Plants do rarely produce Fruit the firſt Year, ſo they are ſeldom planted, except there be great want of them.

Products of the KITCHEN-GARDEN.

Sprout of Broccoli, Cabbages and Savoys are now very good, if they are gather'd before they run up to Seed. All Sorts of young Sallet-herbs, Spinach, Radiſhes, Aſparagus, Coleworts, ſome Parſnips and Carrots, where they have been preſerv'd in Sand; for where they have remain'd in the Ground, they will have ſprouted, after which their Roots will become ſticky and tough. Young Carrots, which were ſown in Autumn, are now in prime: Upon the Hot-beds Cucumbers, Peaſe, Kidney-Beans, and Purſlain: And toward the End of the Month you have Peaſe on warm Borders, and ſome Cabbage-Lettuces.

Work to be done in the FRUIT-GARDEN.

The Beginning of this Month you may graft ſome late Kinds of Fruit, provided the Seaſon be backward; but if the Spring is early, it will be too late for this Work.

Look carefully to your young Fruit-trees, obſerving to water them in dry Weather; and if you obſerve their Leaves beginning to curl up, you ſhould water them gently all over: This may be practis'd to great Advantage on old Trees, when you find their Leaves curling; but you muſt not do it in the Heat of the Day, leſt the Sun ſhould ſcorch their Leaves; nor too late in the Evening, eſpecially if the Nights are cold.

Thoſe Fruit-trees which were inoculated the laſt Summer, and have ſucceeded, ſhould have the Stocks cut down to three or four Inches above the Bud, (if it was not done the former Month) for now the Buds will begin to ſhoot.

Toward the End of this Month, you muſt begin to look over your Walls and Eſpaliers of Fruit-trees, training in the regular kindly Shoots, and diſplacing all fore-right and luxuriant ones, where they are produc'd. You may now thin your Apricocks, where they are too thick; for the ſooner this is done, the better thoſe will thrive which are left on.

Plant Cuttings of Vines in the Places where they are to remain, obſerving always to have a Knot of the old Wood to the Bottom of each, and bury them in the Ground, that the uppermoſt Eye may be even with the Surface of the Gound; if this be rightly obſerv'd, there will be no Danger of their ſucceeding.

Look over your Vines againſt the Walls, rubbing off all ſmall dangling Shoots, which are now beginning to puſh out; and at this Time a great Quantity of Vines may be look'd over in a very ſhort time, and much Labour ſav'd, which would be occaſion'd, were theſe Shoots permitted to remain on a Month longer.

Your Beds of Strawberries muſt now be carefully weeded; and if the Seaſon proves very dry, it will be proper to water them, otherwiſe they will produce but little Fruit.

Keep the Borders near your Fruit-trees clean from Weeds and large growing Plants, for theſe rob your Trees of their Nouriſhment. You ſhould alſo keep the Ground clean between your Rows of Vines in the Vineyard; and now the Stakes ſhould be fix'd to them, and the Branches faſten'd thereto; which is better than to let the Stakes remain to them all the Winter, becauſe they would decay more in the Winter than the Summer; and the Vines do not require to be ſtak'd in that Seaſon.

In the middle of this Month you muſt intirely uncover thoſe Fig-trees which were ſkreen'd from the Froſt in Winter; but this ſhould be done by Degrees; for the young Fruit will be in Danger, if they are ſuddenly expos'd to the open Air.

Your Fruits in the Forcing-frame muſt now have a large Share of freſh Air in proportion to the Heat of the Weather; and their Branches ſhould frequently be ſprinkled over with Water, which will be ſerviceable to the Trees, and cauſe the Fruit to be fairer; and if their Roots are now and then water'd, it will be very ſerviceable to them, eſpecially if they are on a dry Soil.

Fruits in prime, or yet laſting.

Pears; Franc-real, Bergamot Bugi, St. Martial, Lord Cheney's Winter Green, Beſſey de Chaumontelle, Carmelite; and for baking, the Cadillac, Parkinſon's Warden, and the *Engliſh* Warden.

Apples; Golden Ruſſet, Pile's Ruſſet, Wheeler's Ruſſet, John Apple, Stone Pippin, with ſome others.

In the Forcing-frame, Cherries, Maſculine Apricock, ſome Plums, and on the Hot-bed Strawberries.

Work to be done in the NURSERY.

The Beginning of this Month you may ſafely tranſplant moſt Sorts of Evergreens, as Hollies, Yews, Laurels, Alaternus's, Phillyrea, Box, Evergreen Oaks, Firs, Pines, Cedars, Junipers, *&c.* obſerving, if poſſible, to do it in a cloudy Day, or when there are Showers of Rain, becauſe the Sun and Wind are apt to dry the Fibres of their Roots, while they are above Ground, which is very injurious to them. You ſhould obſerve to water them well to ſettle the Earth to their Roots, and cover the Surface of the Ground with Mulch, to prevent the Sun and Wind from penetrating to the Roots of your Plants.

You may now ſow Evergreen Oak Acorns, and the Seeds of Firs, Pines, Cedars; as alſo Seeds of moſt Exotick Trees, which are brought from *Carolina*, *Virginia*, and moſt Northern Parts of *America*. The particular Directions for doing this are exhibited under their proper Articles.

The Beginning of this Month you may graft Hollies, and about the middle you may inarch Firs, Pines, Junipers, *&c.* by which Method you may propagate ſome of the ſcarce Sorts; but the Trees thus rais'd will never grow ſo large as thoſe rais'd from Seeds.

You ſhould now look over your Grafts, and obſerve, where the Loam is much crack'd, to renew it, leſt the drying Winds penetrate to the Grafts, and deſtroy them. And look over your Buds which are now ſhooting, and where you obſerve their Tops infeſted with Inſects, and their Leaves curl'd, you ſhould pull them off before the Inſects ſpread too far.

Keep your Ground clean between your Rows of Trees in the Nurſery, for if Weeds are permitted to grow this Month, they will ſoon over-top young Trees, and greatly weaken them; for there is nothing more prejudicial to Trees, than ſuffering the Weeds to grow amongſt them.

If this Month ſhould prove dry, you muſt diligently water your Seed-beds of Evergreens, Foreſt-trees, and Shrubs; as alſo the young Plantations which were drawn out of the Seed-bed; as alſo the Stocks for Fruit-trees, which have been lately planted; for theſe being ſmall, the Sun and Wind will ſoon penetrate to their Roots, and dry them up.

The Beds wherein you ſowed Seeds either in Autumn, or the laſt Month, ſhould now be carefully weeded; for the young Trees will many of them begin to appear, ſo that if the Weeds are permitted to grow, they will greatly endanger them. The Tubs or Pots of Cedars which are beginning to come up, muſt now be removed to a ſhady Situation; for too much Sun will ſoon deſtroy theſe young Plants.

Work to be done in the PLEASURE-GARDEN.

Your Gravel-Walks which were broken up and turn'd the laſt Month, ſhould now be rak'd level, and roll'd, that they may be ready for uſe; and your Graſs-Walks muſt now be duly mow'd; for this is a Seaſon when moſt People delight to walk out, ſo that the Walks of the Garden ought to be well kept.

Clean the Borders of your Pleaſure-Garden from Weeds, and tie up all your tall growing Plants to Sticks, to prevent their being broken or blown down by Wind.

You may now ſow ſuch annual Flowers in your Borders, as do not require any artificial Heat to bring them forward, as Candy-tuft, Venus Looking-glaſs, Lupines of ſeveral Sorts, Sweet Peaſe, Tangier Peaſe, Dwarf Lychnis, Lobel's Catchfly, Venus Navelwort, Convolvulus Minor, Naſturtium Indicum, Flos Adonis, Lavatera, Oriental Mallow, Carthamus or Baſtard Saffron, Hieraciums of ſeveral Sorts, Jacea's, with ſeveral other hardy Kinds of Annuals, which thrive better if ſown where they are to remain, than if they are tranſplanted; therefore they ſhould be ſown thin in Patches upon the Borders of the Pleaſure-Garden, and when they are come up, they ſhould be thinn'd, leaving but few Plants in each Patch to flower, that they may be the ſtronger.

In this Month you ſhould ſow moſt Sorts of hardy Perennial and Biennial Plants in your Flower Nurſery, which were not ſown the former Month, as Canterbury Bells, Columbines, Sweet Williams, Pinks, Carnations, Hollihock, French Honeyſuckles, Stock Gilliflowers, Wall Flowers, with many other Sorts, which are rais'd to ſupply the Borders of the Pleaſure-Garden.

The Beginning of this Month you may make ſome ſlender Hot-beds to ſow ſuch of the Annuals, as require a little Warmth to bring them forward; but will do better, if rais'd under Mats, than under Glaſſes, which draw them too much; and though they are ſomewhat later in this Management, yet there is no Inconvenience in that, becauſe they are deſign'd to come in Autumn, when there is a Scarcity of other Flowers, which renders them the more acceptable: Of theſe are the African, French Marygold, Convolvulus Major, Balſamines, Marvel of Peru, Sweet Sultan, Indian Pink, with ſome others.

You muſt now make freſh Hot-beds for tranſplanting your tender Annuals, as Amaranthus's, Amaranthoides's, Double-ſtrip'd Balſamines, *&c.* which muſt be brought forward at this Seaſon, otherwiſe they will not arrive to any Degree of Beauty, which chiefly conſiſts in their Strength.

Put ſome more Roots of Tuberoſes into a moderate Hot-bed to ſucceed thoſe which were planted the former Month, that there may be a Continuance of their Flowers through the Seaſon.

Your Tubs of Seedling Auricula's and Polyanthus's muſt be carefully ſkreen'd from the Sun; for if they are expos'd to its full Heat but one Day, it will deſtroy them while they are young; you muſt alſo frequently refreſh them with Water.

Set Sticks to your Carnations, which now begin to ſhoot their Spindles for flowering, and faſten them to prevent their being broken by the Wind.

Your fine Auricula's will now begin to ſhew their beautiful Flowers; therefore the Pots ſhould be remov'd under ſome Covert, to preſerve them from Wet, which would waſh the Mealineſs from off their Flowers, in which great Part of their Beauty conſiſts: They ſhould alſo be defended from the Heat of the Sun, which would haſten their Decay; but they muſt have as much free Air as poſſible, otherwiſe they will draw up very weak; and thoſe of them, from which you would ſave Seeds, ſhould be removed into the open Air as ſoon as they are fully blown, and placed where they may have the Morning Sun and a free Air, without which they will not produce good Seeds.

The Beds of fine Ranunculus's, Anemonies, Tulips and Hyacinths which are now in Flower, ſhould be covered either with Mats or Cloths, to defend them from Wet, and the Heat of the Sun, by which Method they may be preſerved a much longer Time in Beauty: but you muſt obſerve to open them every Morning and Evening, that they may enjoy as much free Air as poſſible, without which they will not do well.

Toward the latter End of this Month you may take up the Roots of Saffron, Colchicums, and ſuch other bulbous-rooted Flowers as blow at *Michaelmas*, whoſe Leaves are now decay'd, ſo that the ſooner they are taken up, they will be the better. Theſe may be kept out of the Ground until *July*, when they muſt be planted again.

You may now tranſplant moſt Sorts of Evergreens with great Safety, provided the Air is clouded, and there is a Proſpect of Rain in a ſhort Time; but if the Ground is very dry where they are to be planted, you ſhould open large Holes, where the Trees are to be placed, and pour a large Quantity of Water into each, ſo as to render the Ground like Pap, or Mud; then place the Trees therein, and after the Earth is filled in about the Roots, make it hollow like a Baſon to contain Water, and cover the Surface with Mulch, to prevent the Sun and Air from penetrating the Ground to dry their Roots, and repeat watering the Trees twice a Week, provided the Weather ſhould prove dry.

Where Phillyrea's, Alaternus's, Laurels, or other hardy Evergreen-trees are grown rude, they may now be reduced to the Figure you intend, by cutting their Branches in cloſe to the Stems, and when they ſhoot, they may be train'd to the Order they are deſired.

Plants now in Flower in the Pleaſure-Garden.

Anemonies, Ranunculus's of various Kinds, Polyanthus's, Auricula's, Tulips, Crown Imperials, Hepatica's, Hyacinths of various Sorts, Narciſſus's, Daffodils, Jonquils, Violets, Muſcaria's, Dwarff-flag Iris, Great Snow-Drop, Spring Cyclamens, Spring Colchicums, Pulſatilla's, Bulbous Fumitary, Double Ladies Smock, Linaria's, Double Pilewort, Starry Hyacinths, Dents Canis, Double Daizies, Fritillaria's of various Kinds, Gentianella, Double Caltha Paluſtris, Columbines, large Green-flower'd Ornithogalum, Perſian Lily, Double Saxifrage, Venetian Vetch, Lychnis's, Alyſſon Creticum, Borrage-leav'd Verbaſcum, Blue-flower'd Perennial Moth-Mullain, with ſome others.

Hardy Trees and Shrubs now in Flower.

Lilac, with white, purple, and blue Flowers, Perſian Lilac with Privet-leaves, commonly called the Perſian Jaſmine, Perſian Lilac with cut Leaves, Laburnums, Double-flowering Pear-tree, Cherry Plum, Almond with white and peach-colour'd Bloſſoms, Amelanchier, Aria Theophraſti, Viburnum, Bird Cherry, Corniſh Cherry, Arbor Judæ, Double-flowering Cherry, Cockſpur-Hawthorn, Dwarf-Almond with ſingle and double Flowers, Hypericum Frutex, Early white and Italian Honeyſuckles, Yellow Jaſmine, Lauruſtinus, Scorpion Senna, with ſome others.

Work to be done in the Green-houſe and Stove.

Your Bays, Lauruſtinus's, Myrtles, and other hardy Plants muſt now be taken out of the Green-houſe, that the Orange-trees, and other leſs hardy Plants, may be placed thinner, that they may have a greater Share of Air; but thoſe Plants which are taken out, ſhould be placed where they may be defended from cold Winds, otherwiſe they will ſuffer, being made ſomewhat tender by ſtanding in the Houſe.

Such of your Orange-trees or other Exotick Plants as want ſhifting, ſhould now be removed, and thoſe which require larger Pots or Tubs, muſt be placed therein, obſerving, when you take them out of the Tubs or Pots, to pare off all mouldy or decay'd Roots, and waſh their Stems and Heads, to cleanſe them from the Filth they have contracted by remaining in the Houſe; and when they are new planted, they ſhould be duly watered, and ſhaded in the Heat of the Day from the Violence of the Sun. By removing them early in this Month, they will have Time to make new Roots before they are ſet abroad, and will have Strength to produce their Flowers in Plenty.

Thoſe Trees which are not removed this Seaſon, ſhould have the Earth taken out of the Top and Sides of the Tubs or Pots, and fill'd up again with freſh rich Earth, and their Stems and Heads cleaned as before, this will ſtrengthen them greatly for flowering; but you ſhould never apply any hot Kinds of Dung to the Surface of the Earth, as is by ſome unſkilfully done, to the Deſtruction of their Trees: If therefore you would lay any Dung upon the Surface of the Earth, it ſhould be rotten neats Dung; but this ſhould not be done in too great Quantities.

Open the Windows of your Green-Houſe moſt part of the Day, when the Air is mild; for at this Seaſon the Plants require a large Share of freſh Air, otherwiſe they will draw up weak, and produce but few Flowers, and will be leſs able to bear the open Air, when they are removed out of the Houſe.

You may now graft Oranges, Jaſmines, and other tender Plants by approach; but ſuch as will take Buds, are better if propagated that way; for Trees inarch'd ſeldom unite ſo well with the Graft, and rarely grow to ſo large a Subſtance.

The Bark-beds in the Stoves, which have declined their Heat, and were not renewed the former Month, ſhould now be ſtirred up with a Fork almoſt to the Bottom, and ſome freſh Bark added thereto, which will renew their Heat; at the ſame Time you ſhould ſhift ſuch of your Plants as require it, into larger Pots, giving them freſh Earth, and then plunge them down into the Bark again immediately; but this muſt be done when the Air is warm, becauſe there will be a neceſſity to open the Glaſſes pretty often, and if the Air be ſharp, it will injure the Plants.

Your Anana's or Pine-Apples muſt now be carefully tended, obſerving to refreſh them often with Water, as alſo to preſerve a kindly Heat in the Beds, and cover the Glaſſes every Night to keep them warm; but when the Sun is very hot, they ſhould have Air admitted by raiſing the Glaſſes a little, otherwiſe they will be in Danger of Scorching.

Shift ſuch of your ſeedling Exotick Plants as require it, into larger Pots, and ſtir up the Bark of the Beds to renew their Heat, and then plunge the Pots down again, obſerving to water and ſhade them until they have taken Root.

The Coffee-trees will now begin to ſhew their Flower-buds; therefore you ſhould keep their Leaves and Stems free from Filth by waſhing it off, whenever it appears; and refreſh the Trees often with Water, which will cauſe them to flower ſtrong.

Plants now in Flower in the GREEN-HOUSE *and* STOVE.

Geraniums of ſeveral Sorts, Ilex-leav'd Jaſmine, Candy Tuft-tree, African Aſphodel with Onion-leaves, ditto with Aloe-leaves, Tree Scabious, Ciſtus's, Anemonoſpermos's, Ficoides's of ſeveral Sorts, Aloes of ſeveral Kinds, Coronilla argentea Cretica, Cytiſſus Canarienſis, Medicago fruteſcens, Aleppo Ceclamens, Hermannia's two Sorts, Colutea Æthiopica, Polygala Africana, Myrto-ciſtus, African Shrubby Tanſy, Three-leav'd African Sumach, Melianthus Minor fœtidus, Cotyledons, Turnera, Malpighia, Humble-plant, Ciſtus Halimi folio, with ſome others.

AQUIFOLIUM *ſeu* AGRIFOLIUM; [of 'Ακὶς, a Prickle, and *folium*, *Lat.* a Leaf; ſo call'd, becauſe the Leaves are arm'd with many Prickles.] The Holly-Tree.

The *Characters* are;

The Leaves are ſet about the Edges with long ſharp ſtiff Prickles; the Berries are ſmall, round, and for the moſt Part of a red Colour, containing four Triangular ſtriated Seeds in each.

The *Species* are;

1. AQUIFOLIUM *baccis rubris. H. L.* The Common Holly, with red Berries.
2. AQUIFOLIUM *baccis luteis. H. L.* Yellow berried Holly.
3. AQUIFOLIUM *baccis albis.* White berried Holly.
4. AQUIFOLIUM *foliis ex luteo variegatis. H. R. Par. Aquifolium aureum. Munt. H.* 163. Yellow blotch'd Holly.
5. AQUIFOLIUM *foliis ex albo variegatis. H. L.* White blotch'd Holly.
6. AQUIFOLIUM *echinatâ folii Superficie. Corn.* 180. Hedge-hog Holly.
7. AQUIFOLIUM *echinatâ folii Superficie, foliis ex luteo variegatis.* Yellow blotch'd Hedge-hog Holly.
8. AQUIFOLIUM *echinatâ folii Superficie, limbis aureis.* Gold-edged Hedge-hog Holly.
9. AQUIFOLIUM *echinatâ folii Superficie, limbis argenteis.* Silver-edg'd Hedge-hog Holly.
10. AQUIFOLIUM *foliis longioribus, limbis & ſpinis ex unico tantum latere per totum argenteo pictis. Pluk. Alm.* 38. *Broderick*'s Holly; *vulgo.*
11. AQUIFOLIUM *foliis ſubrotundis, limbis & ſpinis utrinque argentatis, Aquifolium elegans. D. Doct. Eales. Pluk. Alm.* 38. *Eales*'s Holly; *vulgo.*
12. AQUIFOLIUM *foliis oblongis lucidis, ſpinis & limbis argenteis.* Sir *Thomas Franklin*'s Holly; *vulgo.*
13. AQUIFOLIUM *foliis oblongis, ſpinis & limbis argenteis. Hertfordſhire* white Holly.
14. AQUIFOLIUM *foliis ſubrotundis, limbis argenteis, ſpinulis & marginalibus purpuraſcentibus. Bridgman*'s Holly; *vulgo.*
15. AQUIFOLIUM *foliis oblongis, ſpinis & limbis flaveſcentibus. Longſtaff*'s beſt Holly; *vulgo.*
16. AQUIFOLIUM *foliis oblongis lucidis, ſpinis & limbis aureis. Bradley*'s beſt Holly; *vulgo.*
17. AQUIFOLIUM *foliis oblongis, ſpinis & limbis aureis. Wiſe*'s Holly; *vulgo.*
18. AQUIFOLIUM *foliis ſubrotundis, ſpinis minoribus, foliis ex luteo elegantiſſimè variegatis.* The *Britiſh* Holly; *vulgo.*
19. AQUIFOLIUM *foliis oblongis atro-virentibus, ſpinis & limbis aureis. Bagſhot* Holly; *vulgo.*
20. AQUIFOLIUM *foliis latiſſimis, ſpinis & limbis flaveſcentibus.* Glory of the Eaſt Holly; *vulgo.*
21. AQUIFOLIUM *foliis oblongis, ſpinis majoribus, foliis ex aureo variegatis.* Glory of the Weſt Holly; *vulgo.*
22. AQUIFOLIUM *foliis ſubrotundis, ſpinis & limbis aureis. Aſlet*'s Holly; *vulgo.*
23. AQUIFOLIUM *foliis longioribus, ſpinis & limbis argenteis.* The Union Holly; *vulgo.*
24. AQUIFOLIUM *foliis & ſpinis majoribus, limbis flaveſcentibus.* Fine *Phyllis* Holly: *vulgo.*
25. AQUIFOLIUM *foliis minoribus, ſpinis & limbis argenteis.* Painted Lady Holly; *vulgo.*
26. AQUIFOLIUM *foliis anguſtioribus, ſpinis & limbis flaveſcentibus. Fuller*'s Cream Holly; *vulgo.*
27. AQUIFOLIUM *foliis oblongis, ex luteo & aureo elegantiſſimè variegato.* Milk Maid Holly; *vulgo.*
28. AQUIFOLIUM *foliis oblongis viridibus, maculis argenteis notatis. Capel*'s mottled Holly; *vulgo.*
29. AQUIFOLIUM *foliis oblongis, ſpinis & limbis luteis. Partridge*'s Holly; *vulgo.*
30. AQUIFOLIUM *foliis oblongis, ſpinis & limbis ocro-luteis. Maſon*'s Copper-colour'd Holly; *vulgo.*
31. AQUIFOLIUM *foliis parvis, interdum vix ſpinoſis.* Box-leav'd Holly; *vulgo.*
32. AQUIFOLIUM *foliis parvis, interdum vix ſpinoſis, limbis foliorum argentatis. Whitmill*'s Holly; *vulgo.*
33. AQUIFOLIUM *Carolinianum, anguſtifolium, ſpinis raris breviſſimis. Carolina* Holly, with ſmooth Leaves; *vulgo.*

This Tree, tho' wild in many Parts of *England*, deſerves a Place in large Gardens, as being very ornamental to the Wilderneſs and ever-green Garden; but eſpecially when we take in the large Variety of beautiful variegated Sorts, of which we have a much greater Number than is to be found in any Part of *Europe*: Theſe are all diſtinguiſh'd by the different Names of the Perſons who firſt obſerv'd them, or from the Places where they grew.

I have ſeen in one Garden, *viz.* Mr. *Chriſtopher Gray*'s, near *Fulham*, above thirty different Varieties, which are either ſtrip'd or blotch'd, with White, Yellow, or Copper Colour.

Theſe Trees were formerly in much greater Requeſt than at preſent, and there was ſcarcely a ſmall Garden of any Worth, but was fill'd with theſe Trees, which were clipp'd either into Pyramids, Balls, or ſome other Figures; but as this was crowding a Garden too much with one Sort of Plant, and the Faſhion of clipp'd Greens going off, ſo now they are almoſt wholly neglected: Such are the Changes in Mens Tempers and Fancies, that what is one Year eſteem'd, is the next deſpis'd.

I would not here be thought to be an Advocate for clipp'd Trees; no, I am infinitely more delighted with a Tree in all its Luxuriancy of Branches, waving about with every Guſt of Wind; but yet I think there is a great Beauty in theſe Trees, if rightly diſpos'd in a Garden, but more eſpecially in ſuch as are of a large Extent, by being intermix'd with other Sorts of Ever-greens, to form regular Clumps, or plac'd in Quarters of Ever-greens, or to form Columns at the Entrances of Wilderneſs Quarters, or to plant in Niches of Ever-green Hedges; in all which Places they have an agreeable Effect.

All the variegated Sorts are propagated by budding or grafting them on the *Plain Holly* Stocks; the beſt Time for budding them, is in *July*, and for graſting them, in *March*.

The Manner of raiſing the common *Hollies*, is by ſowing the Berries, which, if ſown as ſoon as ripe, will lie two Years in the Ground; you may therefore mix the Berries with dry Sand, and put them in a large Garden Pot, burying it in the Ground till the next *Auguſt* or *September*; and take them out and ſow them on a Bed of common Earth, covering the Seeds about a quarter of an Inch with light Mould, and the Spring following the Plants will appear above Ground: But as this is a tedious Method, and the young Plants making but ſmall Progreſs for the two or three firſt Years, ſo I would rather adviſe the purchaſing of young Stocks, of about three or four Years Growth, of ſome Nurſery Men, who raiſe them for Sale, and theſe will be fit to bud or graft the ſecond Year after they are planted; or you may purchaſe young Plants, of the ſeveral Kinds, as have been budded or grafted two Years, which are generally ſold very reaſonably in the Nurſeries, than to hazard the Budding them yourſelf, eſpecially if you are not ſure of being provided with Cuttings very near you.

Hollies are alſo planted for Hedges, and have been by ſome very much eſteem'd for that Purpoſe; but the Leaves being very large, when theſe Hedges are clipp'd, they are generally cut in Pieces, and appear very ragged, otherwiſe they make a very durable ſtrong Hedge, and very proper for an outſide Fence of a Green Garden.

The beſt time for tranſplanting this Tree is in *April*, in moiſt Weather; and if the Seaſon is good, and they are carefully remov'd, there will be little Danger of their growing; they may alſo be tranſplanted in *Auguſt*, if the Seaſon proves moiſt, and they will put out new Roots before Winter; but if you do it at this Seaſon, you muſt be careful to mulch the Ground about the Roots, to keep the Froſt from reaching them in Winter, which would be apt to deſtroy your new-planted Trees.

If the Trees are large you intend to remove, and have been growing ſome time in the Places where they ſtand, you ſhould dig about them, and cut their Roots the Year before, that they may produce young Fibres, to keep the Earth from falling away from the Roots; and if you remove them to any Diſtance, it will be adviſeable to put them into Baſkets; and when you plant them, you may either cut off the Sides of the Baſket, or if they are but looſely made, ſuffer them to remain intire, for they will ſoon rot in the Ground.

You muſt alſo be very careful to ſupply your new-planted *Hollies* with Water, for the two firſt Years, if the Seaſons prove dry; after this Time there will be little Danger of their miſcarrying.

AQUILEGIA; [is called alſo *Aquilina*, of *Aquila*, L. an Eagle, becauſe the Flower reſembles an Eagle: *Fabius Columna* ſays, it is the *Iſopynus of Dioſcorides*, and demonſtrates it to be ſo call'd, becauſe the little Sheaths riſe after that Manner.] Columbine.

The *Characters* are;

It hath Leaves like the Meadow Rue; the Flowers are pendulous, and of an anomalous Figure; the Piſtil of the Flower becomes a membraneous Fruit, conſiſting of many Huſks or Pods; each of which contains many ſhining black Seeds.

The *Species* are;

1. AQUILEGIA *ſylveſtris. C. B.* The Common wild Columbine.

2. AQUILEGIA *ſtellata, flore violaceo. Hort. Eyſt.* The ſtarry Columbine, with violet-colour'd Flowers.

3. AQUILEGIA *hortenſis ſimplex. C. B.* The ſingle Garden Columbine.

4. AQUILEGIA *montana magno flore. C. B.* Mountain Columbine, with large Flowers.

5. AQUILEGIA *Canadenſis, præcox, procerior. H. R. Par.* Early-flowering *Canada* Columbine.

6. AQUILEGIA *pumila præcox, Canadenſis. Cornut.* Dwarf early-flowering *Canada* Columbine.

7. AQUILEGIA *hortenſis, multiplex, flore magno cæruleo, C. B.* Double Garden Columbine, with large blue Flowers.

8. AQUILEGIA *flore variegato duplici. Suvert.* Double variegated Columbine.

9. AQUILEGIA *flore roſeo multiplici. C. B. P.* 145. The Roſe Columbine.

There are great Varieties of this Plant, which are preſerv'd in curious Gardens; the Flowers of which are very double, and beautifully variegated with Blue, Purple, Red, and White. Theſe are very ornamental Plants in Borders of large Gardens, producing their beautiful Flowers in *May* and *June*; and are very proper to mix with other Flowers, for Pots to adorn Chimnies or Halls, at that Seaſon.

They are all rais'd by ſowing the Seeds, or parting the old Roots, but the former Method is chiefly practis'd; for the old Roots are very apt to degenerate after they have blown two Years, and become quite plain.

The Seeds ſhould be ſown in a nurſery Bed in *Auguſt* or *September*; for the Seeds kept till Spring do ſeldom grow well; in the *March* following your young Plants will appear above Ground; you muſt therefore clear them from Weeds, and if the Seaſon ſhould be dry, refreſh them with Water, that they may gather Strength.

In the Beginning of *May* theſe Plants will be ſtrong enough to tranſplant; you muſt therefore prepare ſome Beds of good freſh undung'd Earth, planting them therein at eight or nine Inches Diſtance every way, keeping them clear from Weeds, and refreſhing them with a little Water, as they may require it.

At *Michaelmas* you may remove them into the Borders of your Flower Garden, and the *May* following they will produce Flowers; but if you intend to maintain their Roots, you ſhould not ſuffer them to ſeed, but crop off all their Flower-Stems ſo ſoon as the Flowers are paſt.

But in order to be ſure of having no ſingle or bad Flowers in your Borders, you may ſuffer them to remain in the nurſery Beds until they have blown, at which time you may ſtick a Stake by each Root you fancy to preſerve, and pull out all the ſingle or bad colour'd ones, and throw them away, cutting off all the Flowers from your beſt Roots ſo ſoon as they have ſhewn themſelves, which will greatly add to the preſerving them fair in their Colours; and theſe Roots will be ſtrong enough to divide at *Michaelmas*, when you may tranſplant them into your Borders, but do not divide them too ſmall, which will weaken their Bloom the ſucceeding Year.

In order to keep up a Succeſſion of good Flowers, you ſhould ſow freſh Seeds every Year; and if you can meet with a Friend, at ſome Diſtance, who is furniſh'd with good Flowers of this Kind, it will be very advantageous to both Parties, to exchange Seeds once in two Years, by which Means they will not be apt to degenerate into plain Colours.

ARALIA, Berry-bearing *Angelica.*

The *Characters* are;

The Flower conſiſts of many Leaves, which expand in Form of a Roſe, which are naked, growing on the Top of the Ovary: Theſe Flowers are ſucceeded by globular Fruit, which are ſoft and ſucculent, and are full of oblong Seeds.

The *Species* are;

1. ARALIA *Canadenſis. Tourn.* *Canada* Berry-bearing Angelica.

2. ARALIA *caule aphyllo, radice repente. D. Sarrazin. Tourn.* Berry-bearing Angelica, with a naked Stalk and a creeping Root.

3. ARALIA *arboreſcens, ſpinoſa. Vaill.* Angelica-Tree: *vulgo.*

The two firſt *Species* die to the Surface every Year, and riſe again the ſucceeding Spring, and in *July* and *Auguſt* produce their Flowers; and, if the Seaſon is warm, do perfect their Fruit in *September*.

Theſe are propagated either by ſowing their Seeds, or by parting of their Roots; which laſt being the moſt expeditious Method, is commonly practiſ'd in *England*; for the Seeds often abide in the Ground until the ſecond Year before they ariſe, and are two Years more before they flower.

They love a good freſh Soil, not too wet, and ſhould be planted early in the Spring, and are very hardy in reſpect to Cold.

The third Sort grows with us to the Height of ſeven or eight Feet: It has produc'd Flowers in the *Phyſick-Garden* at *Chelſea* two or three times, but has not perfected its Seeds in *England* that I have yet heard.

This Shrub requires a dry Soil, and a warm Situation, otherwiſe it is ſubject to be injur'd by Froſts in the Winter: This is only propagated by Seeds, which are frequently brought from *America*.

ARBOR, a Tree; is defin'd to be a woody Plant, the biggeſt of all in Thickneſs and Height, whoſe Stock is perennial and ſingle by Nature, which is divided into many larger Branches, which the *Greeks* call 'Αρκέμονας and ὄζȣς, and afterwards into many ſmall Branches, [Sprigs] which the *Greeks* call κλάδȣς, and the *Latins Surculos*.

ARBOR CAMPHORIFERA. *Vide* Camphorifera.

ARBOR CORAL. *Vide* Corallodendron.

ARBOR JUDÆ. *Vide* Siliquaſtrum.

ARBOR VIRGINIANA, *Citriæ vel Limoniæ folio, Benzoinum fundens. H. A.* The Benjamin-Tree: *vulgo*.

This Tree is found in great Plenty in moſt Parts of *Virginia* and *Carolina*, from whence it is brought to *England*, and was for ſeveral Years preſerv'd in Pots, and hous'd in Winter, but hath been ſince found to be hardy enough to reſiſt the ſevereſt Cold of our Winters in the open Ground.

This Plant may be propagated by laying down the young Branches in the Spring of the Year, which, if they are ſupply'd with Water in a dry Seaſon, will be rooted enough by the next Spring to tranſplant.

Theſe Trees produce ſmall yellowiſh Flowers out of the young Wood, at two Seaſons, *viz.* in *March* and *October*, but I never ſaw any Fruit ſucceed them. This Tree is kept in curious Gardens of Trees amongſt many other of the ſame Country, but I don't know any extraordinary Beauty or Uſe that belongs to it: Indeed, when it was firſt introduc'd, it was generally believ'd, that the Gum *Benjamin* of the Shops was an Exudation from this Tree, but it is now thought to proceed from a very different Tree.

An. **ARBOR** *Zeylanica, Cotini foliis, ſubtus lanugine villoſis, floribus albis, cuculi modo laciniatis. Pluk. Phyt.* The Snowdrop Tree: *vulgo*.

This Tree is very hardy in reſpect to Cold, ſtanding abroad in the open Air, without ſuffering from our ſevereſt Froſts, but is difficult to increaſe, the Layers being commonly two Years before they ſtrike Root, nor will they root at all, unleſs the Branches are very young, and they are ſlit at a Joint, as is practiſ'd in laying of Carnations. When theſe Layers are rooted, they may be tranſplanted into ſmall Quarters of flowering Shrubs, where, among thoſe of a middling Growth, this Tree will add to the Variety.

ARBOREOUS, [*Arboreus*, *Lat.* of or belonging to, or of the Nature of Trees.] An Epithet which Botaniſts apply to thoſe *Fungus's* or *Moſſes* which grow on Trees, in Diſtinction from thoſe that grow on the Ground, as *Agaric*, *Jews-Ear*, &c.

ARBOURS, [*Arboreta*, of *Arbor*, *Lat.*] Theſe were formerly in greater Eſteem with us than at preſent; few Gardens were without cover'd Arbours and ſhady Seats; but of late they have been much rejected, and that not without good Reaſon; for beſides the great Expence in their firſt erecting, they were a continual Charge in keeping them repair'd; for the Wet ſoaking thro' the Leaves of the Trees to the Woodwork, was, by the continual Shade, and for want of free Air, detain'd ſo long as to rot the Wood (which if wholly expos'd to the Weather, would have laſted ſeven or eight Years) in two or three; beſide, the Seats are continually damp, and unhealthy; for which Reaſon, cover'd Seats or Alcoves are every where at this Time preferr'd to them.

Arbours are generally made of Lattice-work, either in Wood or Iron, and cover'd with *Elms*, *Limes*, *Horn-beam*, or with *Creepers*, as *Honey-ſuckles*, *Jaſmines*, or *Paſſion-flowers*, either of which will anſwer the Purpoſe very well, if rightly manag'd.

ARBUTUS. The Strawberry-Tree.

The *Characters* are;

It is ever-green; the Leaves are roundiſh, and ſerrated on the Edges; the Flowers conſiſt of one Leaf, and are ſhap'd like a Pitcher; the Fruit is of a fleſhy Subſtance, and, in its outward Appearance, very like a Strawberry, but is divided into five Cells, in which are contain'd many ſmall Seeds.

The *Species* are;

1. ARBUTUS *folio ſerrato. C. B.* The common Strawberry-Tree.
2. ARBUTUS *folio ſerrato, flore oblongo, fructu ovato. Michel. Hort. Piſ.* Strawberry-Tree, with longer Flowers and Egg-ſhap'd Fruit.
3. ARBUTUS *folio ſerrato, flore duplici.* Strawberry-Tree, with double Flowers.

This Tree has its Name from the Reſemblance the Fruit bears to that of a *Strawberry*, but it is of an auſtere ſour Taſte; tho' I have been inform'd, that in *Ireland*, where this Tree abounds, the Fruit is ſold, and eaten. In *England* they are chiefly brought to the Markets with ſmall Branches of the Tree, having ſmall Bunches of Flowers upon them, and made up into Noſegays with other Flowers, and ſome Sprigs of the *Amomum Plinii*, or *Winter Cherry*, which at that Seaſon is very acceptable, when there are few Flowers to be had.

The Time of this Fruit being ripe, is in *November*, at which Seaſon the Flowers are blown for the next Year's Fruit; ſo that from the Time of flowering to the ripening of the Fruit, is one whole Year.

The beſt Method of propagating theſe Trees is, by ſowing their Seeds, which ſhould be preſerv'd in dry Sand till *March*; at which Time you ſhould ſow them upon a very moderate Hot-bed (which greatly promotes its Vegetation) covering it about a quarter of an Inch with light Earth, and ſcreening it from Froſts or great Rains: Toward the Middle or latter End of *March* your young Plants will begin to appear; you muſt therefore keep them clear from Weeds, and give them frequent Waterings, as the Seaſon may require; and if your Plants have done well, they will be, by *Autumn*, about five or ſix Inches high: But as theſe Trees are ſubject to receive Damage from Froſts, eſpecially while they are young, therefore you muſt hoop the Bed over, that when bad Weather comes, you may cover it with Mats and Straw to keep out the Froſt.

The Beginning of *April* following, you may tranſplant theſe Trees, each into a ſmall Pot; but in doing of this, be very careful to take them up with as much Earth to their Roots as poſſible, for they are bad rooting Plants, and very ſubject to miſcarry on being remov'd; and 'tis for this Reaſon that I adviſe their being put into ſmall Pots; for when they have fill'd the Pot with Roots, they may be turn'd out into large Pots, or the open Ground, without any Hazard of their dying.

When you have put your young Plants into the ſmall Pots, you ſhould plunge them into another very moderate Hot-bed, to encourage their taking new Root, ſhading them from the Sun in the middle of the Day, and giving them Water as they may require: In this Bed it will be proper to let the Pots remain moſt part of the Summer; for if the Pots are taken out, and ſet upon the Ground, the Smallneſs of their Size will occaſion the Earth in them to dry ſo faſt, that watering will ſcarcely preſerve your Trees alive; but if they are kept growing all the Summer, they will be near a Foot high by the next Autumn; but it will be adviſeable to ſcreen them from the Froſt during their Continuance in Pots, by plunging them into the Ground in a warm Place, and covering them with Mats in bad Weather.

When your Trees are grown to be three or four Foot high, you may ſhake them out of the Pots into the open Ground in the Places where they are to remain; but this ſhould be done in *April*, that they may have taken good Root before the Winter, which would be apt to manage them if newly planted.

Theſe Trees are tolerably hardy, and are ſeldom hurt, except in extreme hard Winters, which many times kills the young and tender Branches, but rarely deſtroys the whole Trees; therefore however dead your Trees may appear after a hard Winter, yet I would adviſe you to let them remain till the ſucceeding Summer has ſufficiently demonſtrated what are living, and what are dead; for the Winter *Anno* 1728-9, gave us great Reaſon to believe moſt of the Trees of this Kind were deſtroy'd, and many People were ſo haſty, as to dig up, or cut down many of their Trees; whereas all thoſe People who had Patience to let their Trees remain, found, that ſcarce one in five hundred fail'd to come out again the next Summer, and made handſome Plants that Seaſon.

ARCUATION; [of *Arcus* a Bow; of *Arcuo*, *Lat.* to bend or bow like an Arch.] The Raiſing of Trees by Layers.

The firſt Thing that is to be done, is, to procure large ſtrong Mother Plants, which are uſually call'd *Stools*. It is no matter whether the Trees be crooked, or otherwiſe deform'd; and the larger they are, the better they are to be cut down cloſe to the Ground. They are to be planted in a Border ſix Feet wide, and in a ſtrait Line ſix Feet aſunder.

The Border muſt be well trench'd, or dug clear from all *Roots*, *Clods*, *Stones*, or any other Obſtructions. Theſe Trunks or Stools being planted in this Trench, will throw out twenty, thirty, forty, or fifty Plants, which may be begun to be laid about the *Michaelmas* following; at which Time, if the Stools have been carefully manag'd, they will have ſhot five, ſix, or more main Branches out of the Root, and on every one of theſe, as many Side or Collateral Branches.

Theſe main Branches muſt be bent down to the Ground; and ſome cut them half through, that they may bend the eaſier.

When the main Branches are thus laid round the Stool, and pegg'd faſt down, then the ſmall ones may be pegg'd down too, if you pleaſe; and thus the *main Branches* or *Shoots* will be cover'd all over, except the very Top, and all the *ſmall* and *ſide Branches* muſt be cover'd two or three Inches thick upon the Joints: Some Perſons give the Branches a Twiſt, in order to make them take Root the ſooner. If they be mulch'd, or ſome ſtrawy Dung be laid over them, it will be of Uſe to keep them moiſt: They ought alſo to have a large Baſon of Earth made round them to hold the Water, in order to water them the enſuing Summer, which they will require at leaſt two or three times a Week, if the Weather be hot and dry.

About the Middle of *September* following, they may be open'd and examin'd, to ſee if they have taken Root or not, which it is very probable they will have done; but if not, they muſt be let alone to lie till the next Spring, and then they are to be taken up and planted in the Nurſery.

This may be done to the *Dutch*, *Witch* and *Engliſh Elm*, the *Abeal*, *Lime*, *Alder*, *Platanus*, and all Sorts of *Sallows* and *Willows*.

AREA, is the internal Capacity, or Content of any given Boundary or Limits, of what Figure or Shape ſoever it be.

ARGEMONE [of Ἄργεμα, becauſe it purges away the Miſtineſs of the Eyes: It is call'd the *Infernal Fig*, becauſe the *Capſule* pretty much reſembles a Fig; and *Infernal*, from its Aſperity.] Prickly Poppy.

The *Characters* are;

It hath an annual Root: The Leaves are laciniated, or jagged; which are terminated with Spines: The Flower conſiſts of many Leaves, which expand in Form of a Roſe: The Pointal of the Flower becomes a large trigonical Veſſel, which is divided into three Cells, wherein are contain'd many globular black Seeds.

There is but one *Species* of this Plant known, which is;

ARGEMONE *Mexicana*. *Tourn.* The Prickly Poppy.

This is an annual Plant, which is very common in moſt Parts of the *Weſt-Indies*, and is by the *Spaniards* call'd *Fico del Inferno*, or the *Devil's Fig*; there is no great Beauty nor Uſe of this Plant amongſt us, that I know of; but whoever hath a mind to cultivate it, ſhould, at firſt, ſow it on a Hot-bed, and in *June* tranſplant it out into the natural Borders, where, when once it has ſhed its Seed, there will not want a Supply of Plants for ſeveral Years after. I have been informed that Gumbouge is made from the Juice of this Plant.

ARGIL; [*Argilla*, *Lat.* a Sort of white Earth like Chalk, but more brittle.] Potters Clay.

ARA THEOPHRASTI; *vide* Cratægus.

ARISARUM. The Herb Friers Cowl.

The *Characters* are;

It agrees with the Dragon *and* Arum, *from both which this Plant differs, in having a Flower reſembling a Cowl.*

The *Species* are;

1. ARISARUM *latifolium, majus.* *C. B. P.* 196. Broad-leav'd Friers Cowl.

2. ARISARUM *anguſtifolium, Dioſcoridis, forte.* *C. B. P.* Narrow-leav'd Friers Cowl.

There are ſome other *Species* of this Plant, but thoſe two here-mention'd, are what I have obſerved in the *Engliſh* Gardens. They are both propagated by Off-ſets, which they ſend forth in Plenty; theſe ſhould be taken off from the old Roots, about the middle of *September*, which is the proper Seaſon for tranſplanting of them, their Leaves being at that Time almoſt decayed. Theſe Plants never riſe very high, ſo ſhould be placed amongſt others of low Growth, otherwiſe they may be overborn by their neighbouring Plants and deſtroyed. They ſhould have a freſh undunged Soil, and a Situation not too much expoſed to the Sun. They flower in *May*, but rarely produce any Seeds in our Climate.

ARISTA, of Corn, is that ſharp-pointed Needle that ſtands out from the Huſk or Hoſe of the Grain; the Beard or Awn of Corn, which the *French* call, *La Barbe du Blé*.

ARISTOLOCHIA; ['Αριϛολοχία, of ἄριϛος, beſt, and λοχεῖα, Purgations, which come forth after the Birth; as tho' it was the beſt Herb to expel the After-birth.] Birthwort.

The *Characters* are;

The Stalks are flexible; the Leaves are plac'd alternately on the Branches; the Flowers conſiſt of one Leaf, and are of an anomalous Figure, hollow'd like a Pipe, and ſhap'd like a Tongue, generally hooked: The Flower-cup turns to a membraneous, and, for the moſt part, oval-ſhap'd Fruit, which is divided into five Cells, and full of flat Seeds.

The *Species* are;

1. ARISTOLOCHIA *flore ex purpurâ nigro.* *C. B. P.* The round-rooted Birthwort.

2. ARISTOLOCHIA *longa vera.* *C. B. P.* True long-rooted Birthwort.

3. ARISTOLOCHIA *clematitis recta.* *C. B. P.* The climbing Birthwort.

4. ARISTOLOCHIA *Piſtolochia dicta.* *C. B. P.* *Spaniſh* Birthwort.

5. ARISTOLOCHIA *Piſtolochia dicta, Cretica, folio ſmilacis ſemper-virens.* *H. L.* The ever-green Birthwort from *Crete*.

6. ARISTOLOCHIA *polyrrhizos, auriculatis foliis, Virginiana.* *Pluk. Phyt.* *Virginian* Snake-root.

7. ARISTOLOCHIA *erecta, flore atro-purpureo, foliis anguſtis, radice repente.* *Plum. Cat.* Narrow-leav'd upright Birthwort with creeping Roots, commonly called *Contrayerva* in *Jamaica*.

8. ARISTOLOCHIA *folio cordiformi, flore longiſſimo auro-purpureo, radice repente.* *Plum. Cat.* Creeping rooted Birthwort, with long yellowiſh purple Flowers, and a heart-ſhap'd Leaf.

9. ARISTOLOCHIA *ſcandens, foliis laurinis, fructu maximo.* Climbing Birthwort with laurel Leaves, and the largeſt Fruit.

The firſt and ſecond Sorts are uſed in Medicine; but as they are very rare in *England*, their Roots are brought from the Southern Parts of *France*, (where they are very common) and are ſold in the Shops. Theſe Plants are both tolerably hardy, and will endure the Cold of our ordinary Winters very well, in the full Ground. Theſe Roots ſhould be planted early in the Spring, before they begin to ſhoot, in a warm Situation, and ſhould have a freſh light Soil, rather dry than moiſt. They ſhould be planted ſix Inches deep in the Earth, that they may be leſs expoſed to the Froſt, and in Summer the Drought will not ſo ſoon affect them. They will ſhoot up about two Feet high, and produce their Flowers in *June*, and in a kindly Seaſon they will perfect their Seeds in this Country. It will be very proper to have ſome Roots of each Sort in Pots, which may be ſhelter'd under a Frame in very ſevere Froſt, ſo that the Kinds may be preſerved, if thoſe in the full Ground ſhould be deſtroyed.

The third Sort is ſometimes uſed in Medicine. This is a terrible Plant for creeping at the Root, ſo that if once it has taken in a Garden, it will be difficult to extirpate again, and will deſtroy whatever Plants grow near it; therefore it ſhould be planted in ſome abject Part of the Garden by itſelf; for it will thrive in almoſt any Soil or Situation.

The fourth and fifth Sorts do grow wild in *Spain*, *Italy*, and the South of *France*; but in *England* they are preſerved for

Variety in Botanick Gardens. Theſe muſt be planted in Pots filled with light rich Earth, and ſhelter'd from ſevere Cold in Winter; otherwiſe they will be deſtroyed thereby; but they ſhould have as much free Air as poſſible in mild Weather. Theſe produce Flowers every Year; but never perfect their Seeds in this Country.

The ſixth Sort is the *Snakeroot*, which is greatly uſed in Medicine; but theſe Roots are brought over from *Virginia* and *Carolina*, where there are two or three *Species* of this Plant. In *England*, it is preſerved as a Curioſity, in Pots filled with light freſh Earth, and requires to be ſhelter'd from ſevere Cold in Winter; in Summer they muſt be frequently watered, and ſhould be placed in a well ſhelter'd Situation, where, in a good Seaſon, they will perfect their Seeds, by which new Plants may be obtain'd. Theſe Seeds ſhould be ſown on a Hot-bed early in the Spring, and when the Plants are come up, they muſt be tranſplanted into Pots, and managed as hath been directed for the old Plants.

The ſeventh, eighth, and ninth Sorts, are Natives of the warmeſt Parts of *America*, ſo muſt be preſerved with great Care in this Climate. Theſe may be propagated by ſowing their Seeds in the Spring; the beſt Method to raiſe them, is, to ſow the Seeds in Pots filled with light freſh Earth, and plunge them into a Hot-bed of Tanners-bark, obſerving to refreſh the Earth frequently with Water, as alſo to raiſe the Glaſſes, when the Sun is very hot, to let the Steam of the Bed paſs off; in about a Month or five Weeks after the Seeds are ſown, the Plants will begin to appear; when they ſhould be gently refreſhed with Water every other Day, and a proper Share of Air admitted to them, when the Weather is warm. When the Plants are advanced to be about two Inches high, they ſhould be carefully tranſplanted, each into a ſeparate Pot filled with freſh light Earth, and ſhould then be plunged into the Hot-bed again, obſerving to water and ſhade them until they have taken Root; after which Time they ſhould have Air admitted to them every Day in proportion to the Warmth of the Seaſon, and they muſt be frequently watered.

About the Beginning of *Auguſt* theſe Plants will have filled the Pots with their Roots, when they ſhould be ſhaken carefully out of the Pots, and their Roots trimmed; then they ſhould be planted into larger Pots filled with the ſame freſh Earth as before; and thoſe which are of low Growth ſhould be plunged into the Hot-bed again, but the taller Sorts ſhould be plunged into the Bark-ſtove, eſpecially the ninth Sort, which will riſe to a great Height.

The ſeventh Sort is known in *Jamaica* by the Name of *Contrayerva*, and is greatly uſed as an *Alexipharmic*, by the Inhabitants of that Iſland.

All theſe three Sorts will require to be kept in the Bark-ſtove, otherwiſe they will not thrive in this Climate.

ARMENIACA. Apricock.

ARMERIUS; Sweet William; *vide* Caryophyllus Barbatus.

ARTEMISIA, [Ἀρτεμισία, *Gr.* ſo call'd, according to ſome, of *Artemiſia* Wife of *Mauſolus* King of *Caria*, who brought this Plant into Uſe, and adopted it as hers; when before it was call'd *Parthenis*, the Virgin Goddeſs being feign'd to have given that Name to it; others derive it of Ἄρτεμις *Diana*, becauſe good for Diſeaſes of Women.] Mugwort.

The *Characters* are;

The Flowers and Fruit of this Plant are very like thoſe of the Wormwood, but grow erect upon the Branches: The Flowrets are of a purpliſh Colour; and the Leaves, for the moſt part, terminate in a ſharp Point, are cut into many Segments, and are of a dark Green on the upper Side, and hoary on the under Side.

The *Species* are;

1. ARTEMISIA *vulgaris, major, caule & flore purpuraſcentibus. C. B.* Common great *Mugwort*, with purpliſh Stalks and Flowers.

2. ARTEMISIA *vulgaris, major, caule ex viridi albicante. Tourn.* Common great *Mugwort*, with whitiſh green Stalks.

3. ARTEMISIA *foliis ex luteo variegatis. H. R. P.* The yellow ſtrip'd *Mugwort*.

4. ARTEMISIA *foliis ex albo variegatis.* The white ſtrip'd *Mugwort*.

The firſt of theſe *Species* is very common upon dry Banks and Dunghils in divers Parts of *England*, and is rarely admitted into a Garden. The ſecond Sort is a Variety of the firſt, which is rarely found in *England*: But the third and fourth Sorts are only preſerv'd in Gardens for the Beauty of their variegated Leaves. Theſe Sorts may all be propagated by parting of their Roots either in Spring or Autumn, and will grow in almoſt any Soil or Situation; but as they are ſubject to ſpread very far, and ſoon over-run a large Spot of Ground, ſo they ſhould be confin'd by cutting off their ſide Shoots to keep them within Compaſs; nor ſhould they be planted too near to other Plants, leſt, by their ſpreading Roots, they ſhould overbear and deſtroy them.

The firſt *Species* of this plant is uſed in Medicine: The Plant is commonly gather'd by the Herb-women in the Fields, and brought to the Markets: It is from one Species of *Mugwort* (and not improbably the firſt) that the famous *Moxa*, which is uſed to burn for curing the Gout, is taken, it being the *Lanugo* or downy Subſtance which adheres to the under Part of the Leaf.

ARTICHOKE, is call'd by the *Latins* Cinara.

The *Characters* are;

It is very like the Thiſtle, *but hath large ſcaly Heads, which are ſhap'd ſomewhat like the Cone of the* Pine-tree; *the Bottom of each Scale, as alſo at the Bottom of the Florets, is a thick fleſhy eatable Subſtance.*

The *Species* are;

1. CINARA *hortenſis, foliis aculeatis & non aculeatis. C. B.* The Garden Artichoke, with prickly and ſmooth Leaves.

2. CINARA *hortenſis, non aculeata, capite ſubrubente. H. R. P.* The Garden Artichoke, without Prickles, and reddiſh Heads.

3. CINARA *ſylveſtris, Bætica. Cluſ. Cur. Poſt.* The wild Artichoke of *Bætia*.

4. CINARA *ſpinoſa, cujus pediculi eſitantur. C. B. P.* The Chardon or Cardoon, *vulgô*.

I thought proper to introduce this Claſs under the Name *Artichoke*, which being the generally receiv'd Name of the only valuable Species, it might be better here plac'd than under the *Latin* Name.

ARTICHOKE.

There is at preſent but one Sort of *Artichoke* cultivated in the Gardens near *London*, which is that commonly known by the Name of the *Red Artichoke*; formerly the green Sort was the moſt common, but ſince the red Sort hath been introduc'd, the other has been rejected, as being vaſtly inferior in Goodneſs thereto.

The Manner of propagating this Plant, is from Slips or Suckers taken from the old Roots, in *February* or *March*, which, if planted in a good Soil, will produce large fair Fruit the *Autumn* following: But as this is a Plant which few Gardeners, that have not been inſtructed in the Kitchen Gardens near *London*, underſtand to manage well, ſo I ſhall be the more particular in my Directions about it.

At the latter End of *February*, or in *March*, according to the Goodneſs of the Seaſon, or Forwardneſs of the old *Artichoke* Stocks, will be proper time for dreſſing them, which muſt be thus perform'd: With your Spade remove all the Earth from about your Stock, down below the Part from whence the young Shoots are produced, clearing the Earth from between the Shoots, ſo as to be able to judge of the Goodneſs of each, with their proper Poſition upon the Stock; then make Choice of two of the cleareſt, ſtraiteſt, and moſt promiſing Plants that are produc'd from the under-part of the Stock, which you are to let remain for a Crop; then with your Thumb, force off all the other Plants and Buds, cloſe to the Head of the Stock from whence they are produc'd, and with your Spade draw the Earth about the two Plants which are left, and with your Hands cloſe it faſt to each of them, ſeparating them as far aſunder as they can conveniently be plac'd without breaking them, obſerving to crop off the Tops of the Leaves which hang down, with your Hands: Your Ground being levell'd between the Stocks, you may ſow thereon a ſmall Crop of ſpinage, which will be taken off before the *Artichokes* will cover the Ground; and be ſure to keep them clear from Weeds; and toward the latter End of *April*, or the Beginning of *May*, when your Plants begin to ſhew their Fruit, you muſt carefully look over your Stocks, and draw up all young Plants from them, which may have been produc'd ſince their Dreſſing, and cut off all Suckers which are produc'd from the Stems of the *Artichokes*, leaving only the principal Head, by which means your Fruit will be the larger; when your *Artichokes* are fit to gather, you muſt break, or cut them down cloſe to the Surface of the Ground, that your Stocks may make ſtrong freſh Shoots before *October*, which is the Seaſon for Earthing, or, as the Gardeners term it, Landing them up: which is thus done;

Cut off all the young Shoots quite cloſe to the Surface of the Ground, then dig between every Stock, raiſing all the Earth between each Row of Stocks into a Ridge, as is done in the common Method of trenching Ground, ſo as that the Row of *Artichokes* may be exactly in the Middle of each Ridge; this will be ſufficient to guard them againſt Froſt: and I would here recommend it to the Publick, as infinitely preferable to long Dung, which is by the Unſkilful often uſed, and is the Occaſion of their Fruit being ſmall, and almoſt without any Bottoms to them; for there is not any thing ſo hurtful to theſe, as new Dung being either buried near, or laid about them. Obſerve, that altho' I have mention'd *October* as the Seaſon for Earthing them, yet if the Weather proves mild, it may be deferred till any time in *November*.

When you have thus Earth'd them up, you have nothing more to do till *February* or *March*, by which time they will have grown thro' the Ridge of the Earth; and when the Weather is proper, muſt be dreſſed as was before directed.

When you have a mind to make a new Plantation, after having digged and buried ſome very rotten Dung in the Ground you have allotted for that Purpoſe, make choice of ſuch of your Plants as were taken from your old Stocks, which are clear, ſound, and not woody, having ſome Fibres to their Bottom; then with your Knife cut off that knobbed woody Part, which joined them to the Stock, and if that cuts criſp and tender, it is a Sign of its Goodneſs, but if tough and ſtringy, throw it away as good for nothing, and cut off the large outſide Leaves pretty low, that the Middle, or Heart Leaves, may be above them; your Plants being thus prepar'd, (if the Weather is very dry, or the Plants have been any time taken from the Stocks, it will be convenient to ſet them upright into a Tub of Water for three or four Hours before they are planted, which will greatly refreſh them) you muſt then proceed to Planting, which muſt be done by ranging a Line acroſs the Ground, in order to their being plac'd exactly in a Row, and with a meaſure Stick plant them at two Feet Diſtance from each other in the Rows; and if deſign'd for a full Crop, five Feet Diſtance Row from Row; your Plants muſt be ſet about four Inches deep, and the Earth cloſed very faſt to their Roots, obſerving, if the Seaſon proves dry, to keep them water'd two or three times a Week, until they are growing, after which they ſeldom require any.

N. B. You may ſow a thin Crop of Spinage upon the Ground before you plant your Plants, obſerving to clear it from about them after it is come up.

Theſe Plants, in a kindly Seaſon, or a moiſt Soil, will produce the largeſt and beſt *Artichokes*, ſome time in *Auguſt* and *September*, after all thoſe from the old Stocks are paſt; ſo that if you intend to continue you *Artichokes* thro' the whole Seaſon, you muſt plant freſh every Year, otherwiſe you can't poſſibly have Fruit longer than two Months, or ten Weeks.

If any of the Plants which you planted in the *Spring*, ſhould not Fruit in the *Autumn*, you may, at the Seaſon of Earthing your Roots, tie up the Leaves with a ſmall Willow Twig, *&c.* and lay the Earth up cloſe to it, ſo that the Top of the Plant may be above Ground; and when the Froſt comes on, if you will cover the Top with a little Straw, or Peaſe Haulm, theſe Plants will produce Fruit in *Winter*, or early in the *Spring*.

But if you intend to plant other Things between your *Artichokes*, you muſt allow nine or ten Feet between the Rows, as is often practis'd by the Kitchen Gardeners near *London*, who ſow the Ground between with Radiſhes or Spinage, and plant two Rows of Cauliflowers, at four Feet Diſtance Row from Row, and two Feet and a half Diſtance in the Rows between them; ſo that there are always five Feet allow'd for the *Artichokes* to grow; and in *May*, when the Radiſhes or Spinage are taken off, they ſow a Row of Cucumbers for Pickling, exactly between the two Rows of Cauliflowers, and at three Feet Diſtance from each other; and between the Rows of Cauliflowers and the *Artichokes*, plant a Row of Cabbages or Savoys for Winter Uſe, which, when the Cauliflowers are drawn off, and the *Artichokes* gather'd, will have full Liberty to grow; and by this means the Ground is fully employ'd thro' the whole Seaſon.

In thoſe which are planted at five Feet Diſtance Row from Row, you may plant in every other Row, a Line of Cabbages or Savoys, for Winter Uſe, which will be gone by the Time of landing them up; in the doing of which, you muſt lay the whole five Feet of Earth into one Ridge, except the Ground be extreme ſtiff, or the Plants young, in both which Caſes you may lay only three Feet and a half; the ſame Compaſs of Ground muſt alſo be allow'd where they are planted at a wider Diſtance.

And, if in the Spring, you find your Stocks ſhoot very weak, which may have been occaſion'd either by hard Froſts, or too much Wet, you muſt then uncover them, and with your Spade looſen and break the Earth about them, raiſing a ſmall Hill about each Stock, levelling the reſt between the Rows, which will greatly help them, and in three Weeks time after are commonly fit to ſlip.

Thoſe *Artichokes*, which are planted in a moiſt rich Soil, will always produce the largeſt and beſt Fruit; ſo that where ſuch a Soil can be obtain'd, it will be proper to make a freſh Plantation every Spring, to ſucceed the old Stocks, and ſupply the Table in Autumn. But the Roots will not live thro' the Winter in a very moiſt Soil, ſo that your Stocks which you intend ſhould remain, to ſupply the Table early, and to furniſh Plants, ſhould be in a drier Situation. You ſhould always obſerve to plant theſe in an open Situation, and not under the Drip of Trees, where they will draw up very tall, and produce ſmall inſignificant Fruit.

The third Sort is only preſerved in Botanick Gardens for Variety. This, and the fourth Sort, are particularly treated under the Article *Cinara*.

ARTICHOKES of *Jeruſalem*; *vide* Corona Solis.

ARTICULATION, is the Connection of Parts that conſiſt of Joints, or Knees; ſuch as are the *Siliquæ* [the Huſks] of many Plants, as of the *Ornithopodium*, *Coronilla*, which are joined together by a ſoluble Knot; whence thoſe Parts are call'd *Articuloſæ*, and are ſaid to be connected *Articulatim* or *Geniculatim*: And alſo thoſe Parts of Plants which have the ſame Form, are call'd *Articuloſæ*, altho' they have no Joints; ſo the Root of *Polygonatum* is ſaid to be *Articuloſe* or *Geniculated*.

ARUM; Wake Robin, *or* Cuckow Pint.

The *Characters* are;

The Leaves, which are intire, are long and triangular, and ear'd or darted at the Baſe; the Flower conſiſts of one Leaf, is of an Anomalous Figure, or ſhap'd like an Aſs's Ear; from the Bottom of the Flower riſes the Pointal, accompanied with a great many Embryo's, each of which becomes a roundiſh Berry, containing one or two roundiſh Seeds.

This Plant is call'd *Wake Robin*, from the ſharp acrid Taſte, which, if eaten, will occaſion a violent Pain in every Part of the Mouth and Throat, attended commonly with a great Defluxion of Water.

The *Species* are;

1. ARUM *vulgare, non maculatum. C. B. P.* Common Arum or Wake Robin.

2. ARUM *maculatum, maculis candidis. C. B. P. Arum* whoſe Leaves are mark'd with white.

3. ARUM *maculatum, maculis nigris. C. B. P. Arum* with black ſpotted Leaves.

4. ARUM *venis albis, Italicum maximum. C.B.P.* Greateſt *Italian Arum*, whoſe Leaves have white Veins.

5. ARUM *Africanum, flore albo, odorato. Par. Bat.* The *African Arum*, with white ſweet-ſmelling Flowers.

6. ARUM *eſculentum, Sagittariæ foliis viridinigricantibus. Sloan. Cat. Jam.* The *American* eatable *Arum*, with Leaves like Spearwort.

7. ARUM *maximum, Ægyptiacum, quod vulgo Colocaſia. C. B.* The *Egyptian Arum*, vulgarly call'd *Colocaſia*.

8. ARUM *maximum, Ægyptiacum, quod vulgo Colocaſia, cauliculis nigricantibus Zeylanica, H. L.* Greateſt *Egyptian Arum* or *Colocaſia*, with blackiſh Stalks.

The firſt Sort is very common under Hedges, and by the Sides of Banks, in moſt Parts of *England*. This is directed by the College of Phyſicians for medicinal Uſe; but the ſecond and third Sorts, which are Varieties of the firſt, and are often found interſperſed with it, I believe, may be either of them uſed indifferently. Theſe Plants are ſeldom kept in Gardens, being ſo common in the Fields, where they are uſually gathered for the Markets. The beſt Seaſon for taking up theſe Roots for uſe, is in *Auguſt*, after their Leaves are decayed; for when they are taken up while their Leaves are green, the Roots do ſhrink, and loſe moſt of their Virtue.

The fourth Sort is equally hardy with our common Sort, and will endure the Cold of Winters very well. This is preſerved in Botanick Gardens for Variety; but is ſeldom planted in Gardens of Pleaſure. All theſe Plants ſhould have a light dry Soil, and require no other Culture but to keep 'em clear from Weeds.

The fifth Sort produces, in the Spring, large white Flowers, upon a Pedicle four or five Feet long, making a handſome Shew in a Collection of Plants. The Flowers have a faint ſweet Scent, but continue a long time blowing.

This is propagated by parting the Roots, (which are knobbed) in *Auguſt*, when the Leaves are decay'd, and muſt be planted in Pots fill'd with good rich Earth, and hous'd in Winter with Oranges, *&c.*

The ſixth, ſeventh and eighth Sorts are tenderer, and will not live thro' the Winter without a Stove; theſe produce large fair Leaves, but have not produc'd any Flowers in *England* that I know of; the Roots of theſe three Sorts are quite of a different Nature from the other *Arums*, having a ſoft ſweet Taſte, ſomewhat reſembling that of a *Hazel Nut*, and are very much eaten in *America*, as is alſo the laſt in *Egypt*.

Theſe are propagated in the ſame manner as the firſt, but muſt be never expos'd to the open Air with us, which will ſoon deface their Leaves.

ARUNDO; the Reed.

This is diſtinguiſhed from the Graſſes by its Magnitude, and by its having a firm Stem.

The *Species* are;

1. ARUNDO *vulgaris paluſtris. J. B.* 2. 485. The common Reed.
2. ARUNDO *ſativa, quæ donax Dioſcoridis & Theophraſti. C. B. P.* The large manured Reed.
3. ARUNDO *Indica variegata, ſeu Laconica Theophraſti Cornut.* 55. The variegated Reed.
4. ARUNDO *Indica arborea*, MAMBU *vel* BAMBU *dicta.* The Bambu Cane.
5. ARUNDO *Indica arborea, amplo pediculato folio*, BAMBU SPECIES ALTERA. *Raii Hiſt.* 1316. The other Bambu Cane.
6. ARUNDO *ſaccharifera. C. B.* The Sugar Cane.
7. ARUNDO *ſcriptoria atrorubens. C.B.P.* Dark red Reed, which is uſed as a Pen for writing.
8. ARUNDO *repens vel chamæcalamus. C. B. P.* Dwarf creeping Reed.

The firſt Sort is ſo very common by the Sides of Rivers and large ſtanding Waters in divers Parts of *England*, that it is needleſs for me to ſay any thing of it's Culture. This is cut in *Autumn*, when the Leaves begin to fall, and the Stems are changed brown, for making Hedges in Kitchen Gardens, and for many other Uſes.

The ſecond Sort, altho' Native of a warm Country, yet will bear the Cold of our ſevereſt Winters in the open Ground; it dies to the Surface in *Autumn*, and riſes again the ſucceeding *Spring*; and if kept ſupplied with Water in dry Weather, will grow ten or twelve Feet high the ſame ſummer, and is very proper to intermix with ſmall Trees and Shrubs, or tall Plants and Flowers in *Boſquettes*, where, by the Oddneſs of its Appearance, it will have a good Effect, in adding to the Variety: This is propagated by parting the Roots early in the Spring, before they begin to ſhoot, and will, in a Year or two, if your Ground be good, make very large Stools; ſo that from each Clump, you may have twenty or thirty large Canes produced.

This Sort is brought from *Portugal* and *Spain*, and is uſed by the Weavers, as alſo to make fiſhing Rods.

The third Sort is a Variety of the ſecond, differing therefrom, in having variegated Leaves. This being weaken'd by the Variegation, is of much lower Growth, and is more in Danger of being deſtroyed by Froſt ſo ſhould be ſhelter'd in Winter.

The two Sorts of *Bambu* are of great Service to the Inhabitants of *India*, who make moſt of their common Utenſils of the Stems of theſe Canes, which grow to a prodigious Magnitude in thoſe Countries. In *England* they are preſerved as Curioſities, and require a Stove to preſerve them in Winter; they require a rich light Earth, and ſhould be frequently watered; their Roots ſpread very far, ſo they ſhould have a large Share of Room: I have known one of theſe Plants, when put into a large Tub, and placed in a Bark-bed in the Stove, by being often watered, produce one Stem from the Root upwards of ſixteen Feet high, in the Space of four Months. Theſe two Sorts may be propagated by Off-ſets, which they are very apt to ſet off, when they are allowed a large Share of Room for their Roots to ſpread; but if their Roots are confined, they will not thrive; when theſe Plants ſtrike their Roots thro' the Sides of their Tubs, and are permitted to run into the Bark-bed, they will thrive prodigiouſly; I have had one of theſe Plants, which was permitted to root into the Tan, which produced four Stems from the Root, each as large as a common Broom-ſtaff, and in four Months grew to be twenty Feet high.

The ſeventh Sort is what the *Turks* make their writing Pens withal; this grows in a Valley near Mount *Athos*, as alſo on the Banks of the River *Jordan*, but there are none of the Plants in *England*. This Sort may be managed as the *Bambu*, as may alſo the eighth Sort, which grows in *Arabia*.

The *Sugar Cane* is very tender, and cannot be preſerv'd without a Stove; it is kept as a great Curioſity in the Gardens of ſuch as love a Variety of Plants, as being the Plant from whence the Sugar is produc'd.

It will grow with us to the Height of eight or nine Feet, if carefully look'd after, and may be propagated by taking off the Side Shoots in the Spring, planting them in Pots of good rich Earth, plunging the Pots into a Hot-bed of Tanners-Bark, to promote their taking freſh Roots, and muſt be often watered: The main Stem is very ſubject to decay with us in Winter, but the Root commonly puſhes out many new Shoots; if this happens, you muſt mind to clear the young Shoots from the dead Leaves of the old Stem, which will greatly ſtrengthen them.

ASARUM; [of α Privative, and σαίρω, *Gr.* to adorn, as much as to ſay, a Plant fit for no Ornament.] Aſarabacca.

The *Characters* are;

The Calyx (or Flower Cup) is divided into four Parts; the Fruit is divided into ſix Cells, which are fill'd with oblong Seeds; to which may be added, the Leaves are roundiſh, thick, and almoſt of the Colour of thoſe of the Ivy Tree.

There are two *Species* of this Plant in the *Engliſh* Gardens; *viz.*

1. ASARUM. *C. B.* The common Aſarabacca.
2. ASARUM *Canadenſe. Cornut.* The *Canada* Aſarabacca.

The firſt of theſe Sorts is very common, and hath been found wild in ſome Parts of *England*, tho' but rarely; it delights in a moiſt ſhady Place, and is increas'd by parting the Roots in *Autumn*: This is the Sort which is uſed in Medicine.

The *Canada* Sort is tolerably hardy, and will endure our common Winters in the open Ground, being rarely hurt but by great Froſts, or planting it in a wet Soil. This is propagated as the other.

Both theſe Sorts preſerve their green Leaves in Winter, which decay as their new ones are produc'd: Their Flowers appear in *April*, which grow ſo cloſe to the Ground as not to be ſeen, unleſs you put away the Leaves with your Hand: The firſt Sort produces ripe Seeds, but it is not worth the Trouble of ſowing, it being two Years before theſe Plants will have any Strength, and they are much eaſier rais'd by Slips. The ſecond very rarely produces good Seeds in *England*.

ASCLEPIAS, [is ſo call'd of *Æſculapius* the firſt Founder of Phyſick; and the Plant deſervedly bears that Name, becauſe of its excellent Virtues; It is alſo call'd *Vincetoxicum* of *Vincere*, to overcome, and τοξικὰ Poiſons, *q. d.* a Plant overcoming Poiſons.] Hirundinaria *or* Swallow-wort.

The *Characters* are;

It hath a Flower conſiſting of one Leaf, which is divided into five Parts, expanded in Form of a Star: The Ovary becomes a Fruit, which is for the moſt part compos'd of two membraneous Huſks, which open from the Bottom to the Top, incloſing many Seeds, which are cover'd with a fine Down, and are fix'd to the Membrane, like as Scales are diſpos'd upon the Skins of Fiſhes: This Plant hath no milky Juice, wherein it differs from the Dogsbane.

The *Species* are;

1. ASCLEPIAS *albo flore. C. B.* The common Swallow-wort, with white Flowers.
2. ASCLEPIAS *nigro flore. C. B.* The common Swallow-wort, with black Flowers.
3. ASCLEPIAS *anguſtifolia, flore flaveſcente. H. R. Par.* The narrow-leav'd Swallow-wort, with yellow Flowers.
4. ASCLEPIAS *Africana, aizoides. Tourn.* The *African* Swallow-wort, *commonly called*, Fritillaria Craſſa.
5. ASCLEPIAS *Africana, aizoides, flore pulchrè fimbriato. Com. Rar.* The *African* Swallow-wort, with fair hairy Flowers, *commonly called*, Fritillaria Craſſa major.
6. ASCLEPIAS *Africana, aizoides, folio compreſſo digitato & criſtato. Boerh. Ind.* The *African* Swallow-wort, with creſted Leaves, *commonly called*, The Cockſcomb Fritillaria.

The three firſt Sorts are very hardy, and will endure the Winter's Cold in the open Ground; the firſt Sort is ſometimes uſed in Medicine, and is for that Purpoſe preſerv'd in the Phyſick Gardens; they are all three of them propagated by parting their Roots, either in *Spring* or *Autumn*, and will grow in almoſt any ſort of Soil; they may be alſo rais'd from Seeds, which muſt be ſown early in the *Spring*, in a Bed of common Earth, and the ſecond Year the young Plants will produce Flowers, but theſe rarely produce any good Seeds in *England*.

The fourth, fifth, and ſixth Sorts, are Natives of the *Cape of Good Hope*, and were firſt brought from thence into the *Dutch* Gardens, and were afterwards brought into *England*; theſe Plants are propagated by planting Cuttings in any of the Summer Months, which Cuttings ſhould be taken from the Plants, at leaſt a Week before they are planted, and laid in a dry Place, that the Wound may be heal'd, and the Moiſture evaporated, otherwiſe they are very ſubject to rot: theſe Cuttings muſt be planted in ſmall Pots fill'd with a ſandy Soil; and after having ſtood about a Week abroad in a ſhady Place, you may plunge the Pots into a very moderate Hot-bed, which will greatly forward their making new Roots; in about a Month's Time after planting, you muſt begin to harden them, by expoſing them to the open Air, but do not let them receive much Wet, which is a great Enemy to theſe Plants; and in the Beginning of *September*, you muſt houſe them with the ſmaller Sorts of *Aloes*, giving them very little Water in the Winter Seaſon.

The fifth Sort is very ſubject to flower every Year, but the fourth and ſixth Sorts flower but ſeldom; but neither of them is ſo apt to flower, if expos'd to the open Air in Summer; therefore it is the better way to let them remain in the Houſe moſt part of the Year, giving them as much free Air as poſſible, when the Weather will permit, and never letting them have much Water: With this Management all the Sorts will thrive much better, and oftener produce Flowers.

Altho' there is no great Beauty in theſe Flowers when blown, yet for their extreme Oddneſs they well deſerve a Place in every curious Collection of Plants.

Theſe Flowers ſo much reſemble in Smell ſtinking Fleſh, that the Flies will cover them with their Eggs, which come ſo far as juſt to have Life; but not finding proper Nutriment, they ſoon periſh.

ASCYRUM; [Ἄσκυρον, of *α* Privative, and σκύρον, Roughneſs, *q. d.* the ſmooth or bald Plant.] St. Peter's-wort.

The *Character* is;

This Plant differs from St. John's-wort, *only in having a Pyramidal Seed Veſſel, which is divided into five Cells.*

We have only two Sorts of this Plant in *England*; *viz.*

1. ASCYRUM *magno flore. C. B. P.* The large flowering St. Peter's-wort.
2. ASCYRUM *Balearicum, fruteſcens, maximo flore luteo, foliis minoribus, ſubtus verrucoſis. Salvador. Boerh. Ind. Myrto-Ciſtus Penæi. Cluſ. H.* The large flowering St. Peter's-wort from *Majorca*, with ſmall warted Leaves.

The firſt of theſe Plants was ſent into *England* by Sir *George Wheeler*, to the Phyſick Garden at *Oxford* from *Conſtantinople*, where he found it wild; this Plant produces very large Flowers, with a great Number of Stamina or Threads in the Middle, and makes a very agreeable Shew in the Wilderneſs Quarters, or in ſhady Borders, where it chiefly delights to grow: It is very hardy, and increaſes greatly by its creeping Roots, which will ſoon overſpread a Border; it is beſt when kept in ſmall Tufts, and not ſuffer'd to run too much, which often prevents its flowering, by having too great a Quantity of Branches; the Flowers are produc'd in *June* and *July*, but it ſeldom perfects its Seeds with us. This will grow in almoſt any Soil.

The ſecond Sort was firſt mention'd by Dr. *Lobel*, who receiv'd a dried Sample of this Plant from Dr. *Pennæ*, who found it in *Majorca* when on his Travels, and was by *Lobel* call'd *Myrto-Ciſtus*; the Flowers, as he thought, reſembling the *Ciſtus* or *Rock Roſe*, and the Leaves thoſe of the *Myrtle*.

But this Plant was not known to any of the modern Botaniſts, until one *Salvadore*, an Apothecary, who liv'd at *Barcelona*, went into thoſe Iſlands in ſearch of Simples, where he found this Plant, and ſending ſome Specimens thereof into *England* and *Holland*, which had ſome ripe Seeds in their Veſſels, they were ſown, and grew, from whence this Plant hath been ſpread into many curious Gardens.

This Plant is propagated, either from Seeds ſown on a moderate Hot-bed in the Spring, or by planting Cuttings in the Summer Months in Pots of good Earth, which ſhould be plung'd into an old Hot-bed, and kept water'd and ſhaded in the Heat of the Day, until they have taken Root, when you may by degrees expoſe it to the open Air, but it muſt be hous'd in Winter with *Myrtles*, *Amomum Plinii's*, &c. being too tender to endure the Cold of our Winters in the open Ground, but may, with a ſlight Shelter, be eaſily preſerv'd. It requires frequent, but gentle Waterings, and loves a looſe ſandy Soil, with a ſmall Mixture of very rotten Dung.

This is worthy of a Place in every curious Collection of Plants, for the Beauty of its red Shoots, ſmall criſp'd Leaves, and its continuing to flower moſt part of the Year.

ASH-TREE. *Vide* Fraxinus.

ASHES are eſteem'd by ſome a good ſuperficial Dreſſing of Corn and Meadow Land, as they give a new Ferment to ſuch Lands as are in any Degree ſluggiſh and unactive, and inrich thoſe which are jejune and ſlow, being endow'd with ſingular Qualities to make them prolifick.

All Sorts of *Aſhes* do, indeed, contain in them a very rich fertile Salt, and are the beſt Manure of any to lay upon cold, wet Land, but then they ought to be kept dry, that the Rain may not waſh away their Salt. Experience has ſhewn, that the *Aſhes* of any Sort of Vegetable are very advantageous to Land, by the Improvement that has been made in moſt Places in *England*, by burning Bean Stalks, Fern, Furze, Heath, Sedge, Straw, Stubble, *&c.*

Coal-Aſhes, or ſuch as are made of *New-caſtle*, *Scotch*, and other Pit-Coal, are much recommended by ſome; but the firſt are moſt approv'd of, becauſe they contain a greater Quantity of nitrous and ſulphureous Matter than the others do, tho' the reſt are good.

But theſe ought to be apply'd ſuperficially, and not ſo near the Roots of Plants; and if ſo, there are few Plants but will receive Benefit by them, by their nitrous and ſulphureous Qualities, being waſh'd down by the Rain, which will open by the Strength of Water, and cauſe it to heave in ſome Degree, as Lime will do when Water is thrown upon it.

Wood-Aſhes are commended as the Principal of ſuperficial Dreſſings for Land, in that they contain a vegetative kind of Salt.

Kiln-Aſhes, *i. e.* ſuch as are made of Straw, Furze, *&c.* are by ſome accounted as good as any of the ſpirituous Improvements of Lands that are lightiſh; but for ſuch as are heavy, they are look'd upon as ſcarce ſolid and ponderous enough. Theſe *Aſhes*, the Maltſters in the *Weſt-Country* ſift over their Corn and Graſs. Theſe are ſuppos'd, by their Heat, to cauſe a Fermentation, a Hollowneſs and Looſeneſs in the Mould, by which means the Rains enter it the more eaſily, and diſpoſe the Earth for giving up an Aſſumption of its vegetative Augment.

But theſe being light, ought never to be ſtrew'd nor ſifted in windy Weather, becauſe they would be blown away; and if it can be ſo order'd as to be done juſt before Snow or Rain, it would be the better.

Soap-Aſhes, (*i. e.* after the Soap-Boilers have done with them) are very proper for Lands that are very cold and ſour, and to kill Weeds of all Sorts: And Sir *Hugh Plat* mentions one at *Ware*, who having a Piece of Land over-run with Broom and Furze, manur'd it with *Soap-aſhes*, and had an incredible Crop of Wheat for ſix Years ſucceſſively.

Pot-Aſhes, after the Pot-aſh Men have done with them, are eſteem'd good for moſt Sorts of Land; but as they have been wet, and ſo moſt of the Salt drawn off by the Lee, they ought to be laid on much thicker than other Aſhes.

Turf-Aſhes are very good for all Sorts of Land, but eſpecially for Clay-Lands; but will be much better if mix'd with Lime.

But all theſe *Aſhes* ought to be kept dry from the Time they are made till they are uſed, for elſe the Rains will both waſh away their Goodneſs, and alſo make them clod, eſpecially ſome of the laſt-mention'd, ſo that they will not ſpread.

And beſides, one Load of *Aſhes* that have been kept dry, will go as far as two that have been expos'd to the Rain: And *Coal-Aſhes*, if moiſten'd with Chamber-lye or Soap-ſuds, will greatly add to their Strength.

All calcin'd Vegetables cauſe a fiery Heat and Vegetation, and when Wet comes, ſet the Ground to work, by a ſubtle Inſinuation, unlocking the Clods, and quickening the Sluggiſhneſs of the Earth; according to that eſtabliſh'd Maxim among Naturaliſts, *That all Fermentation is caus'd by the Interpoſition or Mixture of different Qualities one from the other.*

It is after this manner that *Coal-aſhes* operate ſo admirably in looſening and mouldering ſtiff, clayey Grounds, and as it is uſually term'd, making it rough, aſhy or ſandy-like: And, after the ſame manner, Sand mix'd with Clay does well, eſpecially when it is impregnated with ſaline Qualities.

ASPARAGUS, the firſt Sprigs of Herbs before unfolded into Leaves; and the youngeſt and tendereſt Branches that are eatable, are call'd *Aſparagus*.

ASPARAGUS: ['Ασπαραγὸς, *Gr.* ſignifies a young Shoot putting forth.] *Aſparagus*, Sparagus or Sperage, corruptly call'd Sparrow-graſs.

The *Characters* are;

It hath a roſaceous Flower, conſiſting of ſix Leaves, placed orbicularly, out of whoſe Centre riſes the Pointal, which afterwards turns to a ſoft Fruit, or almoſt globular Berry, and full of Seeds, which are commonly hard. To theſe Marks may be added, that the Leaves are finely cut.

The *Species* are;

1. Asparagus *ſativa. C. B. P.* 489. Garden Aſparagus.
2. Asparagus *ſylveſtris, tenuiſſimo folio. C. B. P.* 489. Wild Aſparagus with narrow Leaves.
3. Asparagus *maritimus, craſſiore folio. C. B. P.* 489. Sea Aſparagus with a thick Leaf.
4. Asparagus *aculeatus, ſpinis horridus. C. B. P.* 490. Prickly Aſparagus
5. Asparagus *foliis acutis. C. B. P.* Sharp leav'd Aſparagus.
6. Asparagus *aculeatus alter, tribus aut quatuor ſpinis ad eundem exortum. C. B. P.* Another prickly Aſparagus with three or four Spines riſing at the ſame Place.
7. Asparagus *aculeatus Africanus. H. L.* Prickly *African* Aparagus.
8. Asparagus *aculeatus maximus ſarmentoſus Zeylanicus. H. L.* The largeſt prickly buſhy Aſparagus of *Ceylon.*
9. Asparagus *Hiſpanicus, aculeis craſſioribus horridus. Inſt. R. H.* Spaniſh Aſparagus with terrible thick Prickles.
10. Asparagus *Creticus fruticoſus, craſſioribus & brevioribus aculeis, magna fructu. Tourn. Cor.* Shrubby Aſparagus of *Candy*, with thick and ſhort Prickles, and large Fruit.
11. Asparagus *orientalis, foliis gallii. Tourn. Cor.* Oriental Aſparagus with Ladies-Bed-ſtraw Leaves.
12. Asparagus *Africanus ſcandens, myrti folio anguſtiore. Hort. Piſſ.* Climbing *African* Aſparagus with a narrow Myrtle-leaf.

The firſt Sort here mentioned is that which is generally cultivated in Gardens for the Uſe of the Table, whoſe tender Shoots are eaten in the Spring, and are much eſteemed by all delicate Palates.

It is propagated by ſowing of the Seeds; in the procuring of which, you ſhould be particularly careful, ſince the Goodneſs of your future Crop, in a great meaſure, depends thereon: You ſhould therefore get it from ſome Perſon of Integrity, or if you have an Opportunity of ſaving it yourſelf, or in ſome other neighbouring Garden: You muſt look over the *Aſparagus* Beds in the Beginning of the Seaſon, and mark ſome of the largeſt and faireſt Buds with a Piece of Stick; which Buds, when they have branched out, may be faſten'd to Stakes thruſt into the Ground to preſerve them from breaking: Theſe Buds will many of them produce great Numbers of red Berries, which ſhould be ſuffer'd to remain upon the Branches until the latter End of *September*, when the Haulm will begin to decay; then cut off the Branches, and ſtrip the Berries into a Tub, where they may lie in a Heap to ſweat for three Weeks, by which means the outer Huſks will be rotten; then fill the Tub with Water, and with your Hands break all the Huſks by ſqueezing them between your Hands: Theſe Huſks will all ſwim upon the Water, but the Seeds will ſink to the Bottom, ſo that by pouring off the Water gently, the Huſks will be carry'd along with it, and by putting freſh Water two or three times, and ſtirring your Seed about, you will make it intirely clean; then ſpread your Seed upon a Mat, and expoſe it to the Sun and Air in dry Weather, until it is perfectly dry; when you may put it into a Bag, and hang it up in a dry Place till the Beginning of *February*; at which Time you muſt prepare a Bed of good rich Earth, whereon you muſt ſow your Seeds, (but not too thick, which will cauſe your Plants to be ſmall) and having trod your Seed into the Ground, rake it over ſmooth.

In the following Summer, keep it diligently clear'd from Weeds, which will greatly add to the Strength of your Plants; and toward the latter End of *October*, when the Haulm is quite wither'd, you may ſpread a little rotten Dung over the Surface of the Ground, about half an Inch thick, which will preſerve the young Buds from being hurt with the Froſts, *&c.*

The Spring following, your Plants will be fit to plant out for good, (for I would never chuſe Plants of more than one Year's Growth, having very often experienc'd them to take much better than older, and to produce finer Roots); you muſt therefore prepare your Ground by trenching it well, burying therein a good Quantity of rotten Dung at the Bottom of each Trench, ſo that it may lie at leaſt ſix Inches below the Surface of the Ground; then level your whole Plot very exactly, taking out all large Stones; but this ſhould not be done long before you intend to plant you *Aſparagus*, in which you muſt be govern'd according to the Nature of your Soil or the Seaſon; for if your Soil is dry, and the Seaſon forward, you may plant early in *March*; but in a wet Soil, it is better to wait till the End of that Month, or the Beginning of *April*, which is about the Seaſon that the Plants are beginning to ſhoot. I know many People have adviſ'd the planting of *Aſparagus* at *Michaelmas*; but this I have experienc'd to be very wrong, for in two different Years I was obliged to tranſplant large Quantities at that Seaſon, but I had better thrown away the Plants, for upon Examination, in the Spring, I found moſt of the Roots were grown mouldy and decaying, and I am ſure not one in five of them ſucceeded, and thoſe which did, were ſo weak as not to be worth their ſtanding.

The Seaſon being now come, you muſt, with a narrow-prong'd Dung-fork, carefully fork up your Roots, ſhaking them out of the Earth, and ſeparating them from each other, obſerving to lay their Heads even for the more convenient planting them, which muſt be perform'd in this manner.

Your Plot of Ground being levell'd, you muſt begin at one Side thereof, ranging a Line very tight croſs the Piece, by which you muſt throw out a Trench exactly ſtrait, and about ſix Inches deep, into which you muſt lay your Roots, ſpreading them with your Fingers, and placing them upright againſt the back of your Trench, ſo that the Buds may ſtand forward, and be about two Inches below the Surface of the Ground, and at twelve Inches Diſtance from each other; then with a Rake draw the Earth into the Trench again, laying it very level, which will preſerve the Roots in their right Poſition: Then remove your Line a Foot farther back, and make another Trench in the like manner, laying therein your Plants, as before directed, and continuing the ſame Diſtance Row from Row, only obſerving between every four Rows to leave a Diſtance of two Feet four Inches for an Alley to go between the Beds to cut the *Aſparagus*, &c.

Your Plot of Ground being finiſh'd and levell'd, you may ſow thereon a ſmall Crop of Onions, which will not hurt your *Aſparagus*, and tread in your Seeds, raking your Ground level.

When your *Aſparagus* is come up, (which will be in three Weeks or a Month after planting) you muſt with a ſmall Hough cut up all the Weeds, and thin your Crop of *Onions* where they may have come up in Bunches: But this muſt be done carefully, and in dry Weather, that the Weeds may die as faſt as they are cut up. This Work muſt be repeated about three times; which if well done, and the Seaſon not too wet, will keep the Ground clear from Weeds until the *Onions* are fit to be pull'd up, which is commonly *Auguſt*, and is known when their Greens fall down: when you have drawn off your *Onions*, you muſt clean your Ground well from Weeds, which will keep it clean till you earth the Beds; which muſt be done in *October*, when the Haulm begins to decay, for if you cut off the Haulm while green, the Roots will ſhoot freſh again, which will greatly weaken them: This young Haulm ſhould be cut off with a Knife, leaving the Stems two or three Inches above Ground, which will be a Guide for you to diſtinguiſh the Beds from the Allies; then with a Hough clear off all the Weeds into the Allies, and dig up the Allies, burying the Weeds in the Bottom, and throw the Earth upon the Beds, levelling it even, ſo that the Beds may be about five Inches above the Level of the Allies; then you may plant a Row of *Colworts* in the Middle of the Allies, but do not ſow or plant any thing upon the Beds, which would greatly weaken your Roots; nor would I ever adviſe the planting of *Beans* in the Allies, (as is the Practice of many) for it greatly damages the two out-ſide Rows of *Aſparagus*. In this manner it muſt remain till Spring, when you muſt hough over the Beds to deſtroy all young Weeds, and rake them ſmooth, and obſerve all the ſucceeding Summer to keep them clear from Weeds; and in *October* dig up the Allies again, as was before directed, earthing the Beds, *&c.*

The ſecond Spring after planting, you may begin to cut ſome of your *Aſparagus*; therefore now you muſt fork up your Beds with a flat prong'd Fork made on purpoſe, which is commonly call'd an *Aſparagus*-fork: This muſt be done before the Buds ſhoot in the Spring, and with Care, not to fork too deep, ſo as to bruiſe the Head of the Root; then rake the Beds over ſmooth, juſt before the Buds appear above Ground, which will deſtroy all young Weeds, and keep your Beds clean a great while longer than if left unrak'd, or done ſo ſoon as fork'd; and when your Buds appear about four or five Inches above Ground, you may then cut them; but it ſhould be done ſparingly, only taking the large Buds, and ſuffering the ſmall to run up to ſtrengthen the Roots; for the more you cut, the more the Roots will produce, but they will be the ſmaller, and ſooner decay. When you cut a Bud, you muſt open the Ground with your Knife, (which ſhould be very narrow and long in the Blade, and filed with Teeth like a Saw) to ſee whether there are any more young Buds coming up cloſe by it, which might be either broken or bruis'd in cutting the other; then with your Knife ſaw it off about two Inches under-ground. This may appear a very troubleſome Affair to People unacquainted with the practical Part; but thoſe who are employ'd in cutting *Aſparagus*, will perform a great deal of this Work in a ſhort Time; but the Care in doing it is abſolutely neceſſary to be obſerv'd by all who cut *Aſparagus.*

The manner of dreſſing your *Aſparagus* Beds is every Year the ſame as directed for the ſecond, *viz.* keeping them clear from Weeds, digging the Allies in *October*, and forking the Beds towards the End of *March*, *&c.* only obſerve every other Year to lay a little rotten Dung (from a *Melon* or *Cucumber* Bed) all over your Beds, burying ſome in the Allies alſo, at the Time for digging them up: This will preſerve the Ground in Heart to maintain your Roots in Vigour; and by which Management a Plot of good *Aſparagus* may be continued for ten or twelve Years in Cutting, and will produce good Buds.

The Quantity of Ground neceſſary to be planted with *Aſparagus*, to ſupply a ſmall Family, ſhould be at leaſt eight Rods; leſs than that will not do; for if you cannot cut one hundred at a time, it will ſcarcely be worth while; for you muſt be oblig'd to keep it after it is cut, two or three Days to furniſh enough for one Meſs; but for a larger Family, ſixteen Rods of Ground ſhould be planted, which, if a good Crop, will furniſh two or three hundred each Day in the Height of the Seaſon.

But as there are ſeveral People who delight in having early *Aſparagus*, which is become a very great Trade in the Kitchen Gardens near *London*, ſo I ſhall give proper Directions for the obtaining it any time in Winter.

You muſt firſt be provided with a Quantity of good Roots, (either of your own raiſing, or purchas'd from ſuch Gardeners as plant for Sale) that have been two Years planted out from the Seed-bed; and having fix'd upon the Time when you would willingly have your *Aſparagus* fit to cut, about ſix Weeks before, you ſhould prepare a Quantity of new Stable Horſe-dung, which ſhou'd be thrown in a Heap for a Week or more, to ferment; then dig out a Trench in the Ground where you intend to make the Bed, the Width of the Frames that are deſign'd to cover it, and the Length in proportion to the Quantity you intend to have, (which if deſign'd only to ſupply a ſmall Family, three Lights at a time will be ſufficient): Then lay down your Dung into the Trench, working it very regularly, and beat it down very tight with a Fork, laying it at leaſt three Feet in Thickneſs; then put your Earth thereon about ſix Inches thick, breaking the Clods, and laying it level, and at one End begin laying your Roots againſt a little Ridge of Earth, rais'd about four Inches high: Your Roots muſt be laid as cloſe as poſſible one to the other in Rows with their Buds ſtanding upright: and between every Row lay a ſmall Quantity of fine Mould, obſerving to keep the Crown of the Roots exactly level: When you have finiſh'd laying your Bed with Roots, you muſt lay ſome ſtiff Earth up to the Roots on the Out-ſides of the Bed, which are bare, to keep them from drying, and thruſt two or three ſharp-pointed Sticks, about two Feet long, down between the Roots in the Middle of the Bed at a Diſtance from each other. The Uſe of theſe Sticks is to let you know what Temper of Heat your Bed is in, which you may find by drawing up the Sticks, and feeling the lower Part; and if, after the Bed has been made a Week, you find it doth not heat, you may lay a little Straw or Litter round the Sides, or upon the Top, which will greatly help it; and if you find it very hot, it will be adviſeable to let it remain wholly uncover'd, and to thruſt a large Stick into the Dung on each Side of the Bed in ſeveral Places, to make Holes for the great Steam of the Bed to paſs off, which in a ſhort time will reduce the Bed to a moderate Heat.

After your bed has been made a Fortnight, you muſt cover the Crowns of the Roots with fine Earth about two Inches thick; and when the Buds appear above Ground through that Earth, you muſt again lay on a freſh Parcel about three Inches thick; ſo that in the Whole it may be five Inches above the Crowns of the Roots, which will be ſufficient.

Then you muſt make a Band of Straw (or long Litter) about four Inches thick, which you muſt faſten round the Sides of the Bed, ſo that the upper Part may be level with the Surface of the Ground; This muſt be faſten'd with ſtrait Sticks about two Feet long, ſharpen'd at the Points to run into the Bed, and upon this Band you muſt ſet your Frames, and put your Glaſſes thereon; but if after your Bed hath been made three Weeks, you find the Heat decline, you muſt lay a good Lining of freſh hot Dung round the Sides of the Bed, which will add a freſh Heat thereto; and in bad Weather, as alſo every Night, keep the Glaſſes cover'd with Mats and Straw, but in the Day-time let it be all taken off, eſpecially whenever the Sun appears, which ſhining through the Glaſſes, will give a good Colour to the *Aſparagus.*

A Bed thus made, if it works kindly, will begin to produce Buds for cutting in about five Weeks, and will hold about three Weeks in cutting, which, if rightly planted with good Roots, will produce in that time about three hundred Buds in each Light; ſo that if you would continue your *Aſparagus* until the Seaſon of the Natural being produc'd, you muſt make a freſh Bed every three Weeks, until the Beginning of *March*, from the Seaſon of your firſt Bed being made; for if your laſt Bed is made about a Week in *March*, it will laſt till the Seaſon of natural *Aſparagus*, and the laſt Beds will come a Fortnight ſooner to cut than thoſe made about *Chriſtmas*, and the Buds will be larger and better coloured, as they enjoy a greater Share of the Sun.

If you intend to follow this Method of forcing early *Aſparagus*, you muſt keep planting every Year a Quantity which you ſhall judge neceſſary, (unleſs you intend to buy it from ſome other Garden): The Quantity of Roots neceſſary to plant one Light, is commonly known by the Meaſure of the Ground where they grew; for in a good Crop, where few Roots are miſſing, one Rod of Ground will furniſh enough for a Light: but thoſe who plant *Aſparagus*, with a Deſign to take it up for Forcing at two Years end, plant ſix Rows in each Bed, at ten Inches diſtance only, and lay the Plants in the Rows about eight Inches aſunder, which will be a ſufficient Diſtance, as they are deſigned to remain but two Years. The beſt Ground for planting *Aſparagus* to have large Roots for Hot-beds, is a low, moiſt, rich Soil; but for thoſe that are to remain for a natural Produce, a middling Soil, neither too wet nor too dry: but a freſh ſandy Loam, when well dunged, is preferable to any other.

The ſecond Sort grows wild in the Fens of *Lincolnſhire*, and ſome other Parts of *England*; but this producing very ſlender Shoots, is rarely cultivated in Gardens. Tho' a Friend of mine, who had cultivated this Sort for ſome Years, aſſured me, it was ſweeter, and would come earlier in the Spring (without artificial Heat) than the Garden Kind.

All the other Sorts are preſerved in the Gardens of thoſe Perſons who are Lovers of Botany for Variety. Theſe may be all propagated by Seeds, which ſhould be ſown in Pots filled with light freſh Earth early in the Spring; theſe Pots may be placed on a moderate Hot-bed, which will greatly forward the Vegetation of the Seed: when the Plants begin to appear, they ſhould be inured to the open Air by Degrees, and muſt be kept clear from Weeds, as alſo in dry Weather muſt be frequently refreſhed with Water. In the Autumn theſe Pots muſt be either removed into the Green-houſe, or placed under a Hot-bed Frame, where they may be protected from Froſt; for as they are Natives of warm Countries, ſo they will not endure the Cold of our Climate in Winter: the Spring following, juſt before the Plants begin to ſhoot, the Roots ſhould be turned out of the Pots, and the Earth gently ſeparated from them; then they ſhould be parted, and as many of the beſt Roots as are intended to be preſerved, ſhould be planted each into a ſeparate Pot filled with light freſh Earth, and then placed on a very moderate Hot-bed, covered only with Mats, juſt to promote their new Roots, and when the Weather is mild, they may be expoſed to the open Air; theſe Plants may be placed abroad during the Summer Seaſon, but in Winter they muſt be protected from hard Froſt, which will otherwiſe deſtroy them. The only Culture which theſe Sorts require, is, to ſhift them every Spring into freſh Earth juſt before they begin to ſhoot; and as their Roots increaſe in Magnitude, ſo they ſhould be allowed larger Pots. In Summer they muſt be frequently watered, but in Winter, when their Green is decayed, they ſhould not have too much Water, leſt it rot them.

The laſt Sort never produces ripe Fruit in this Country, but it increaſes plentifully by Off-ſets, which ſhould be taken off in the Spring, before they ſhoot, otherwiſe they do not ſucceed ſo well. The Roots of this Sort are very ſubject to rot, where they have too much Wet in Winter.

ASPEN-Tree. *Vide* Populus.

ASPERIFOLIOUS *Plants*, [*Aſperifolius*, of *Aſper*, rough, and *Folium*, *Lat.* a Leaf] are ſuch Plants as are rough-leaved, having their Leaves placed alternately, or without any certain Order on their Stalks; they have a monopetalous Flower cut or divided into five Parts; after every Flower there ſucceed commonly four Seeds: Of this Claſs are *Bugloſs*, *Borage*, *Comfrey*, *Hounds-tongue*, &c.

ASPERUGO; Small wild Bugloſs.

The *Characters* are;

It hath a Flower conſiſting of one Leaf, which is ſhaped like a Funnel, and cut into ſeveral Segments; out of whoſe Empalement riſes the Pointal, fixed in the Bottom of the Flower, ſurrounded by four Embryo's, which afterwards become ſo many oblong Seeds, which ripen in the Empalement, that is much inlarged, whoſe Parts are then ſo cloſely contracted, that they adhere and cling together.

We have but one Sort of this Plant, which is,

ASPERUGO *vulgaris. Inſt. R. H.* Small wild Bugloſs, great Gooſe-graſs, or *German* Madwort.

This is an annual Plant, which is found wild in ſome Parts of *England*, as near *Newmarket*, at *Boxley* in *Suſſex*, and in *Holy Iſland.* It is preſerved in the botanick Gardens for Variety; it may be eaſily propagated by Seeds, which ſhould be ſown in Autumn; for if the Seeds are kept out of the Ground till Spring, they do not ſucceed ſo well: when the Plants come up, they require no other Culture but to keep them clear from Weeds, and in *May* they will flower; in *June* their Seeds will be perfected, which if ſuffered to ſcatter, will grow again in Autumn; ſo that when this Plant is once brought into a Garden, it will maintain itſelf, provided it be allowed a Place.

ASPERULA, Woodroof.

This Plant grows wild in ſhady Woods in many Parts of *England*, and flowers in *April* and *May*, and is ſometimes uſed in Medicine.

ASPHODELUS, [ʼΑσφόδελος of ἀσφαλὴς, *Gr.* Firm; and by *Pliny* it is called *Haſtula*, or *Baccillus Regius*, becauſe when it flowers, the Stalk reſembles a Royal Sceptre; it is the ſame Herb which is called alſo *Antiricon*, with which, as *Lucian* feigns, the Manes or Ghoſts are fed in *Pluto*'s Dominions] Kingſpear.

The *Characters* are;

The Stalk is round, ſmooth, ſtrong, and branchy; the Leaves are like thoſe of a Leek, but ſtronger and narrower; the Flowers are divided commonly as far as the Baſis, naked, ſtellated, embracing the Ovary like a Calyx: the Apex of the Ovary puts forth ſix Stamina, and a long Tube from the Center, which becomes a roundiſh Fruit, carnous, triangular, and divided into three Partitions, in which are incloſed triangular Seeds.

There are three or four Varieties of this Plant, which are well worth preſerving in all Flower-Gardens; *viz.*

1. ASPHODELUS *luteus & flore & radice. C. B.* The yellow Aſphodel *or* Kingſpear.
2. ASPHODELUS *albus, ramoſus, mas. C. B.* The great white branching Aſphodel *or* Kingſpear.
3. ASPHODELUS *albus, non ramoſus. C. B.* The white unbranched Aſphodel *or* Kingſpear.
4. ASPHODELUS *Allobrogicus, magno flore Lilii. H. L.* The large flowering *Savoy* Aſphodel *or* Kingſpear.

Theſe Plants are all of them extreme hardy, and will proſper in almoſt any Soil, that is not too ſtiff or wet, which is ſubject to rot the Roots in Winter: The Way to increaſe them is, by parting their Roots in *Auguſt*, before they ſhoot up their freſh green Leaves. Theſe Plants growing pretty tall, are proper for large Borders, or to mix with Flowers of large Growth, in ſmall Quarters or Boſquets in Wilderneſs-work, but muſt not be planted in Borders of ſmall Flowers, where, by their large ſpreading Roots, they would deſtroy their weaker neighbouring Plants.

The yellow Sort multiplies very faſt by Roots, and will ſoon overſpread a large Border, if ſuffered to remain unremoved, or the Side-Roots are not taken off: But the other Sorts are not ſo productive of Shoots from their Sides, and are much better kept within Bounds. They may all be raiſed from Seeds, which ſhould be ſown in *Auguſt*; and the *Auguſt* following, may be tranſplanted out into Nurſery-beds or Borders, and will produce Flowers the ſecond Year. The yellow and large-branched *Aſphodels* are ſometimes uſed in Medicine.

To this Article add;

1. ASPHODELUS *albus ramoſus minor, ſeu ramoſus alter. H. R. Par.* Small white branched Aſphodel *or* Kingſpear.
2. ASPHODELUS *purpuraſcens, foliis maculatis. C. B. P.* Purpliſh Aſphodel with ſpotted Leaves.
3. ASPHODELUS *foliis compreſſis aſperis, caule patulo. Inſt. R. H.* Aſphodel with rough compreſſed Leaves, and a ſpreading Stalk.
4. ASPHODELUS *Africanus anguſtifolius luteus minor. Inſt. R. H.* Small yellow *African* Aſphodel with narrow Leaves.
5. ASPHODELUS *ſpiralis luteus Italicus, flore magno. H. R. Par.* Yellow ſpiral *Italian* Aſphodel, with a large Flower.
6. ASPHODELUS *albus minimus. C. B. P.* Smalleſt white Aſphodel.
7. ASPHODELUS *foliis fiſtuloſis. C. B. P.* Aſphodel with fiſtulous Leaves.
8. ASPHODELUS *Creticus luteus ſerotinus patulus, folio aſpero. Tourn. Cor.* Late yellow ſpreading Aſphodel of *Candy*, with a rough Leaf.

All the Sorts of Aſphodel are very pretty Ornaments for a Flower-garden, and requiring very little Trouble to cultivate them, renders them more acceptable. They may be all propagated by Seeds, which ſhould be ſown ſoon after they are ripe, on a warm Border of light freſh Earth; in the Spring the Plants will appear, when you ſhould carefully clear them from Weeds, and in dry Weather they muſt be frequently watered; if this be duly obſerved, the Plants will have acquired Strength enough to be tranſplanted by the *Michaelmas* following; at which Time you muſt prepare a Bed of freſh Earth in the Flower-nurſery, into which you ſhould plant the Roots, at about ſix Inches Diſtance every Way; obſerving to plant them ſo low, as that the Top of the Roots may be three or four Inches under the Surface of the Bed; in this Bed they may remain one Year, during which Time they ſhould be frequently refreſhed with Water in dry Weather, and muſt be kept very clear from Weeds. In this Time the Roots will have acquired Strength enough to produce Flowers the following Year, ſo ſhould at *Michaelmas*, when their Leaves are decayed, be carefully taken up, and tranſplanted into the Flower-garden, obſerving to place them in the middle of the Borders, amongſt other hardy Kinds of Flowers, where being properly intermixed, they will make an agreeable Variety, and continue a long Time in Flower.

Theſe Plants may alſo be propagated by parting of their Roots, but this muſt not be too often repeated, leſt it weaken the Roots, and prevent their Flowering ſo ſtrong as they otherwiſe would do. Once in three Years will be often enough to tranſplant the Roots, at which Times you may ſeparate thoſe which are grown large, ſo as to make two or three Roots of each; but do not part them too ſmall, for that will ſo weaken them, as to prevent their flowering the following Summer. The beſt Time to tranſplant theſe Roots is at *Michaelmas*, juſt when their Leaves begin to decay.

ASPLENIUM, *or* Ceterach, [is ſo call'd of *Splen*, the *Spleen*, becauſe good againſt Diſeaſes of the Spleen; it is alſo call'd *Scolopendria*, becauſe the Leaves of this Plant, by their Figure, reſemble the Body and Feet of this Animal. The Name *Ceterach* is *Arabic*] Spleen-wort *or* Miltwaſte.

The *Characters* are;

The Leaves are like thoſe of the Polypody, *but leſs, and pretty round, notched toward the Side, downy, having a ſquamous Duſt, in which, by the Help of a Microſcope, membranous* [Capſulæ] *or Seed-pods lying cloſe to one another, are perceived, every one furniſhed with a little round Rope, which by its Conſtruction opening the Fruit into two Parts, pours forth certain very ſmall Seeds; the Root is fibrous. This Plant thrives in ſtony Places, as in Walls,* &c.

This Plant is of the Fern-kind, and grows upon old moiſt ſhady Walls in divers Parts of *England.*

ASTER, [ʼΑςὴρ, *Gr.* a Star; ſo call'd, becauſe the Flower is radiated with little Leaves after the manner of a Star, according to *Dioſcorides*: It is alſo called *Helenium*, of ἥλιος, the Sun; or, as others ſay, of *Helena*, the Daughter-in-law of *Priamus*] Starwort.

The *Characters* are;

It hath a fibroſe Root; the Leaves are, for the moſt part, intire, and are placed alternately on the Branches; the Stalks are branched; the Flowers are radiated, ſpecious, and have a ſcaly Cup: the Seeds are included in a downy Subſtance.

The *Species* are;

1. ASTER *Atticus, cœruleus, vulgaris. C. B.* The *Italian* blue Starwort.

2. ASTER *Pyrenaicus, præcox, flore cæruleo majore. Dod.* The early *Pyrenean* Starwort, with large blue Flowers.

3. ASTER *Novæ Angliæ, altiſſimus hirſutus, floribus maximis purpureo-violaceis. Par. Bat. Prod.* The tall rough *New England* Starwort, with large purple Flowers.

4. ASTER *Novæ Angliæ, latifolius, paniculatus, floribus ſaturate violaceis. H. L.* The broad-leaved panicled *New England* Starwort, with deep violet-colour'd Flowers.

5. ASTER *Novæ Angliæ, umbellatus, floribus dilute violaceis. H. L.* *New England* Starwort, with pale violet-colour'd Flowers growing in an Umbel.

6. ASTER *Virginianus, ſerotinus, parvo albente flore. Park.* The late-flowering *Virginian* Starwort, with ſmall whitiſh Flowers.

7. ASTER *cæruleus, ſerotinus, fruticeſcens, Tradeſcanti. Raii Hiſt.* *Tradeſcant*'s ſhrubby late-flowering blue Starwort.

8. ASTER *Tripolii flore. C. B.* Narrow-leav'd Starwort, with Flowers like *Tripolium.*

9. ASTER *Virginianus, pyramidatus, Hyſſopi foliis, aſperis, calycis ſquamulis foliaceis. Rand.* The *Virginian* Starwort, with Leaves like *Hyſſop*, and large blue Flowers with ſcaly Cups.

10. ASTER *Novæ Angliæ, linariæ folio, chamæmeli flore. Par. Bat.* *New England* Starwort, with Toad-flax Leaves, and Flowers like thoſe of Camomil.

11. ASTER *Americanus, Belvideræ foliis, floribus ex cæruleo albicantibus, ſpicis prælongis. Pluk. Phyt. Tab.* 78. *f.* 5. *American* Starwort, with Leaves like the *Belvidere*, and long Spikes of bluiſh white Flowers.

12. ASTER *ſerotinus ramoſus alter, flore purpuraſcente. H. R. Pur.* Another late-branch'd Starwort, with a purpliſh Flower.

13. ASTER *latifolius, tripolii flore. H. R. Par.* Broad-leav'd Starwort, with a Flower of *Tripolium.*

14. ASTER *tripolii flore, anguſtiſſimo & tenuiſſimo folio. Flor. Bat.* Starwort, with a *Tripolium* Flower, and very narrow ſlender Leaves.

15. ASTER *Canadenſis ſubhirſutus, ſalicis folio, ſerotinus, flore cæruleo. Inſt. R. H.* Late hairy *Canady* Starwort, with Willow Leaves, and a blue Flower.

16. ASTER *Atticus cæruleus minor. Inſt. R. H.* Small blue *Attick* Starwort.

17. ASTER *hirſutus Auſtriacus, cæruleo magno flore, foliis ſubrotundis. C. B. P.* Hairy *Auſtrian* Starwort, with a large blue Flower, and roundiſh Leaves.

18. ASTER *montanus cæruleus, magno flore, foliis oblongis. C. B. P.* Blue Mountain Starwort, with a large Flower, and oblong Leaves.

19. ASTER *Alpinus, flore purpuraſcente. Raii Hiſt.* *Alpine* Starwort, with a purpliſh Flower.

20. ASTER *Atticus Alpinus alter. C. B. P.* Another *Attick* Starwort of the *Alps.*

21. ASTER *Atticus cæruleus major. Inſt. R. H.* Greater blue *Attick* Starwort.

22. ASTER *maritimus paluſtris cæruleus, ſalicis folio. Inſt. R. H.* Marſh or Sea Starwort, with Willow Leaves, commonly called *Tripolium.*

23. ASTER *Canadenſis, foliis imis amplioribus cordatis & ſerratis. D. Sarrazin.* *Canady* Starwort, whoſe under-Leaves are broad, Heart-ſhaped, and ſerrated.

24. ASTER *virgæ aureæ latifoliæ folio ſubhirſuto, floribus fere umbellatis. D. Sarrazin.* Hairy Starwort, with broad Golden-rod Leaves, and Flowers growing almoſt in an Umbel.

25. ASTER *cæruleus ex* PROVINCIA MARIANA, *quaſi perfoliatus floribus ſparſis ſpicatis. Pluk. Mantiſ.* Blue Starwort from *Maryland*, whoſe Leaves almoſt ſurround the Stalk, and ſmall Flowers growing in Spikes.

26. ASTER *annuus, caule villoſo purpuraſcente, eryngii folio, flore maximo purpureo pulcherrimo, ſemine violaceo, Kiang-ſita Sinenſis. Jeſſieu.* Annual Starwort from *China*, with purple hairy Stalks, Eryngo Leaves, a beautiful large purple Flower, and a Violet-colour'd Seed.

27. ASTER *annnus, caule villoſo vireſcente, eryngii folio, flore maximo albo.* Annual Starwort from *China*, with hairy greeniſh Stalks, Eryngo Leaves, and a large white Flower.

28. ASTER *Americanus, foliis pinnatis & ſerratis, floribus aurantiis. Houſt.* *American* Starwort, with winged ſerrated Leaves, and Orange-colour'd Flowers.

29. ASTER *Americanus paluſtris, ſalicis folio ſerrato, floribus exiguis albidis. Houſt.* Marſh *American* Starwort, with a ſerrated Willow Leaf, and ſmall white Flowers.

30. ASTER *Americanus procumbens, bellidis minoris facie, Houſt.* Trailing *American* Starwort, with the Face of the leſſer Daizy.

31. ASTER *Africanus fruteſcens, lavendulæ folio, flore purpureo. Hort. Amſt.* Shrubby *African* Starwort, with a Lavender Leaf, and a purple Flower.

32. ASTER *Africanus ramoſus, hyſſopi foliis, floribus cæruleis. Olden. Inſt. R. H.* *African* branched Starwort, with Hyſſop Leaves, and blue Flowers.

33. ASTER *Americanus fruteſcens, ſatureiæ foliis ſcabris, floribus amplis ſaturate violaceis. Pluk. Alm.* Shrubby *American* Starwort, with rough Savory Leaves, and large Violet-colour'd Flowers.

The firſt, ſecond, eighth, and ninth Sorts are much preferable to the reſt, for ſmall Gardens, being not ſo apt to ſpread at the Root as are the others, and grow much lower, are leſs ſubject to ſhed their Seeds, and, with a ſmall Support, may be kept upright in a regular Shape. The ſecond Sort is the firſt in Flower; it grows about two Feet high, and produces large purple Flowers, but ſeldom in ſuch large Tufts as the firſt, nor are the Flowers ſo beautiful; however, as it comes to flower much ſooner, it deſerves a Place in every good Garden: This Sort is ſucceeded in Flower by the eighth, which is of ſhorter Growth, ſeldom riſing above a Foot in Height: The Flowers are much ſmaller, but are produced in very large Cluſters, ſo as to make a very agreeable Shew.

The firſt Sort ſucceeds theſe, and is one the moſt beautiful Kinds; it grows ſeldom more than two Feet high, and is eaſily kept in Compaſs; the Flowers are large, produced in great Tufts, and are of a fine blue Colour, with a yellow Thrum in the Middle, and is a great Ornament to Gardens in its Seaſon of Flowering. This is the *Amellus* of *Virgil.*

The third, fourth, and fifth Sorts, grow to the Height of four or five Feet, and produce large Quantities of Flowers, and are very proper for large Gardens, where they may have Room; but in ſmall Places they are very apt to over-run whatever is planted near them, and the Seeds are ſubject to ſhatter and fill the Garden with young Plants, if the Stalks are not cut down and carried away ſoon after the Flowers are paſt; for which Reaſons few People care to keep them, but yet in large Wilderneſſes they are very good to fill up Vacancies, and the Flowers are very proper to adorn Halls and Chimnies, and as they come at a Seaſon when few better Flowers appear, are the more valuable: But in order to keep them within Bounds, you ſhould at leaſt once a Year dig round them, and cut off all the ſpreading Roots, which would otherwiſe extend themſelves very far, and become unſightly, and with theſe Roots you may make freſh Plantations. Theſe come at a middle Seaſon to flower.

The ſixth, ſeventh, and ninth Sorts are very late Flowerers, ſeldom appearing till *October*, and do in a good Seaſon hold till the Middle of *November*; for which Reaſon they are much eſteem'd.

The ſeventh Sort grows to a great Height, and is very proper to intermix with other large Kinds; but it is not ſo ſubject to creep at the Root as they are, and the Flowers are large, growing in handſome Tufts.

The ſixth Sort flowers very late, but they are very ſmall, and grow ſparſedly on the Branches; for which Reaſon it is not ſo valuable as the other. But the ninth Sort is one of the moſt beautiful; the Flowers are large, and of a deep blue Colour; the whole Plant grows erect, and never creeps at the Root: It begins to flower toward the End of *September*, and continues till the Middle of *November*, and makes a very good Shew during that Seaſon.

The tenth Sort is a very handſome Plant, and is not ſo apt to ſpread as moſt of the other Kinds. This produces a great Quantity of white Flowers in *October*, and is worthy of a Place in every good Garden.

The eleventh Sort is apt to ſpread much by its creeping Roots, ſo ſhould not be placed amongſt other Plants, leſt it over-bear them. This continues flowering moſt part of *November.*

All the Sorts of *Starworts* are propagated by parting their Roots early in the Spring, and will grow in almoſt any Soil or Situation; the larger Sorts increaſe ſo faſt, that in a ſhort Time they will run over a large Spot of Ground, if not prevented: Theſe grow beſt in the Shade; the lower Kinds ſeldom creep at the Root, but muſt be taken up and planted every other Year, which will cauſe their Flowers to be the fairer. The ninth Sort may be increas'd by planting Cuttings of it in any of the Spring Months, which will flower the firſt Year: The Roots of this increaſing but ſlowly, this is the only Method to get a Stock of this Plant. This Plant, if ſet in Pots, and ſhelter'd in bad Weather, will continue flowering moſt part of the Winter, but dies to the Surface in the Spring, as do all the Sorts of *Starworts.*

The twenty-five Sorts firſt mentioned, are all of them very hardy Plants, which will endure the ſevereſt Cold of our Climate in the full Ground. Theſe are propagated by parting of their Roots, early in the Spring, before they begin to ſhoot; for, as many of the Sorts do not flower till late in the Autumn, ſo it will not be proper to tranſplant them after their Stems decay, which is ſeldom long before *Chriſtmas*, therefore it is better to be done in *February*.

The Seeds of the twenty-ſixth Sort were ſent from *China* to *Paris*, and ſown in the Royal Garden there, whence this Plant hath been diſtributed to ſeveral curious Gardens in *Europe*, and is become one of the greateſt Ornaments of the Flower-garden in Autumn. It begins to produce its Flowers the Beginning of *Auguſt*, and continues to produce new Flowers, until the Froſt prevents it.

This Plant is propagated from Seed, which ſhould be ſown on a warm Border ſoon after it is ripe (for if it be kept 'till Spring, it ſeldom grows.) The Plants will begin to appear early in the Spring, when they ſhould be clear'd from Weeds, and in very dry Weather muſt be refreſh'd with Water, which will forward their Growth; for during the firſt ſix Weeks or two Months after they come up, they make but ſmall Progreſs. The Beginning of *May* theſe Plants will be fit to tranſplant, when they ſhould be carefully drawn up, and planted in a Bed of rich Earth, ſix Inches aſunder, obſerving to water them frequently in dry Weather, and to keep 'em conſtantly clear from Weeds. When theſe Plants are about four or five Inches high, they ſhould be taken up with a Ball of Earth to their Roots, and tranſplanted, either into Pots, or into the Borders of the Flower-garden, where they are to remain, obſerving to water and ſhade them until they have taken Root; after which time thoſe in the Borders will require no farther Care, but to keep them clear from Weeds; but thoſe in the Pots muſt be frequently refreſh'd with Water, otherwiſe they will not grow large, nor produce near ſo many Flowers. In *Auguſt* theſe Plants will produce their beautiful Flowers, which will continue 'till the End of *September*; at which time the Seeds will ripen, when (as was before directed) ſome of it ſhould be ſown on a warm Border; but it will be proper to ſave ſome of the Seed 'till Spring, leſt, by a violent hard Winter, thoſe ſown in Autumn ſhould be deſtroyed.

The twenty-ſeventh Sort is a Variety of the twenty-ſixth, which accidently roſe from the ſame Seeds. This only differs from the former in the Colour of its Stalks and Flowers, which are white, ſo are not near ſo beautiful as the former, but for Variety a few of them may have Place in the Flower-garden.

This Plant is commonly called *Margarit*, by the *French* Gardeners.

The twenty-eighth, twenty-ninth, and thirtieth Sorts, were diſcovered by the late Dr. *William Houſtoun*, near *Vera-cruz* in the *Spaniſh Weſt-Indies*. The twenty-eighth and thirtieth grows plentifully on the ſandy Ground about *Old Vera-cruz*; and the twenty-ninth, in watery Places near the Sea. Theſe are all of them annual Plants, which may be propagated by ſowing their Seeds in Pots filled with light freſh Earth, early in the Spring; and then plunge the Pots into a Hot-bed of Tanners-bark, obſerving to water them frequently, as the Earth in the Pots ſhall require it; and in very hot Weather you ſhould ſhade the Glaſſes of the Hot-bed, during the Heat of the Day, to prevent the Earth from drying too faſt. When the Plants are come up, they muſt be frequently refreſhed with Water, and the Glaſſes of the Hot-bed ſhould be raiſed with Stones in the Heat of the Day, to admit Air to the Plants, otherwiſe they will draw up very weak. When the Plants are about an Inch high, they ſhould be carefully tranſplanted each into a ſeparate Pot, filled with light freſh Earth, and then plunged into the Hot-bed again, obſerving to ſhade the Glaſſes until they have taken new Root; after which time they ſhould have freſh Air admitted to them, by raiſing of the Glaſſes every Day, when the Weather will permit; you muſt alſo conſtantly ſupply them with Water, as you find the Earth in the Pots is dried. When the Plants have filled theſe Pots with their Roots, you muſt ſhift them carefully into Pots of a larger Size; and then plunge them into the Bark-bed in the Stove, where they will flower in *Auguſt*, and their Seeds will be perfected in *September*; after which the Plants decay.

The thirty-firſt, thirty-ſecond and thirty-third Sorts, are abiding Plants, which grow to the Height of ſix or eight Feet, and become ſhrubby. Theſe Plants may be propagated by Cuttings, which ſhould be taken off in *June*, and planted into Pots filled with light freſh Earth, and plunged into a moderate Hot-bed, obſerving to water and ſhade them until they have taken Root; after which time they ſhould be inured to bear the open Air by degrees. Towards the End of *July* they ſhould be taken out of the Hot-bed, and placed amongſt other exotick Plants, in a Situation where they may be defended from cold Winds; in this Place they may remain until the Beginning of *October*, when they ſhould be removed into the Green-houſe, obſerving to place them where they may enjoy a large ſhare of Air in mild Weather; otherwiſe their Shoots will become weak, and they will not produce their Flowers ſtrong, where their Shoots are too much drawn. Theſe Plants muſt be removed out of the Green-houſe in the Spring, at the time when Orange Trees are taken out, and ſhould be houſed again about the ſame time as thoſe are. In Winter they ſhould be frequently watered, but it muſt not be given them in large Quantities at that Seaſon. In Summer they muſt be plentifully watered in dry Weather, which will cauſe them to flower very ſtrong.

Theſe produce their Flowers in Autumn, and continue in Beauty a long time; during which Seaſon they afford an agreeable Proſpect, and greatly add to the Variety, amongſt other exotick Plants.

ASTERISCUS; [of *Aſter* or *Starwort*, which it is very like, except that the Seeds are not Pappous, but Channel'd.] Yellow Starwort.

This Plant having no *Engliſh* Name, I have call'd it *Yellow Starwort*, altho' it is very different in its *Characters* from that Plant; the Seeds of this being plain, and for the moſt part bordered round the Edges, having no Down adhering to them, and the Flowers being ſurrounded with a *Foliaceous Calyx*.

There are ſeveral *Species* of this Plant cultivated in the curious Botanick Gardens, but in *England* we have but three Sorts, which are preſerv'd for their Beauty, *viz.*

1. ASTERISCUS *annuus, foliis ad florem rigidis. Tourn.* The annual *Aſteriſcus*, with ſtiff Leaves and Flowers.

2. ASTERISCUS *annuus, Luſitanicus, odoratus. Boerh.* The *Portugal* ſweet-ſmelling annual *Aſteriſcus*.

3. ASTERISCUS *maritimus perennis patulus. Tourn.* The maritime Perennial dwarf *Aſteriſcus*.

The two firſt Sorts being Annuals, muſt be ſown in good Ground, and a warm open Situation, early in the Spring, in the Places where they are to remain, for they do not care for tranſplanting.

Theſe produce their Flowers in *Auguſt*, and if the Autumn is dry and warm, will perfect their Seeds in *September*, but in bad Years they often miſcarry.

The ſureſt Method to preſerve theſe Kinds, is, to ſow their Seeds in Autumn, on a dry Soil, and in a warm Situation, where the Plants will live thro' the Winter, and in the Spring they may be carefully removed, and planted where they are to flower. By this Method they will flower early in Summer, and produce very good Seeds.

The firſt Sort will grow near three Feet high, when planted in a good Soil, and will branch out and produce great Numbers of Flowers for upward of two Months; but the ſecond Sort is of humble Growth, and rarely riſes above a Foot high. This branches very much, and continues a long time in Flower.

The third Sort is propagated either from Seeds, or by planting Cuttings in any of the Summer Months; it is an abiding Plant, and continues flowering the greateſt Part of the Year, for which it is valued: This is tender, requiring a little Shelter in very hard Weather.

ASTEROIDES; Baſtard Starwort.

The *Characters* are;

It hath a compound radiated Flower, whoſe Disk is compoſed of many Florets which are hermaphrodite, and of Semi-florets which are female, and reſt upon the Embryo's, which are all included in a ſcaly Empalement. Theſe Embryo's afterwards become Seed, for the moſt part oblong.

The *Species* are;

1. ASTEROIDES *Alpina, ſalicis folio. Tourn. Cor.* Baſtard Starwort of the *Alps*, with a Willow Leaf.

2. ASTEROIDES *orientalis, petaſitidis folio, flore maximo. Tourn. Cor.* Oriental Baſtard Starwort, with a Butter-bur Leaf, and a large Flower.

3. ASTEROIDES *Americana minor annua. Vaill.* Leſſer *American* Baſtard annual Starwort.

The firſt of theſe Plants is pretty common in the *Engliſh* Gardens. This is a very hardy Plant, which is propagated by parting its Roots, (for it ſeldom produces good Seed in this Country); the beſt time to part the Roots is in *October*, about which time their Leaves decay. For if it be deferred till the Spring, and the following Seaſon ſhould prove dry, they will not flower ſo ſtrong as thoſe which were planted in Autumn, tho' they ſhould be conſtantly ſupplied with Water.

This Plant will thrive in almoſt any Soil or Situation, and continues to flower from *June* to *September*, which renders it worthy of a Place in every good Garden. This Plant is proper for large Borders, or to place under Groves of Trees, where if it be not too much ſhaded by the Trees, it will thrive very well, and add to the Variety. The Flowers are of a bright yellow Colour, and their Stems are about two Feet high, a great Number of which are produced from each Root, if they have ſufficient Strength.

The ſecond Sort was diſcovered by Dr. *Tournefort* in the *Levant*, and is at preſent rarely to be found in *England*. This may be propapated as the former Sort, but muſt have a warmer Situation; nor will it grow under the Drip of Trees. Theſe Plants ſhould not be tranſplanted oftener than every other Year, for when they are often parted and tranſplanted, they do not flower ſo well, nor make ſo large an increaſe.

The third Sort is an annual Plant, which muſt be raiſed on a Hot-bed, and planted into Pots filled with light rich Earth, and brought forward on another Hot-bed, obſerving not to draw them up too weak; and in *June* they ſhould be inured to bear the open Air by degrees, into which they ſhould be removed toward the End of the Month, and placed in a warm Situation, where they will flower in *July*, and their Seed will be perfected in *September*, ſoon after which time the Plants will decay.

ASTRAGALOIDES; Baſtard Milk-Vetch.

The *Characters* are;

It hath a papilionaceous Flower, out of whoſe Empalement riſes the Pointal, which afterwards becomes a Pod, ſhaped almoſt like a Boat, and full of Kidney-ſhap'd Seeds.

We have but one Sort of this Plant, which is;

Astragaloides *Luſitanica. Inſt. R. H.* Portugal Baſtard Milk-Vetch.

This Plant is only propagated by Seeds, which ſhould be ſown in the Place where it is to remain; for this Plant has a long tap Root, which runs deep into the Ground, ſo that it is very difficult to tranſplant, ſo as to thrive well, eſpecially if it be not done while the Plants are young; for I have ſeen Roots of this Plant, which have been four Feet long, and as large as a Man's Wriſt. The Seeds of this Plant ſhould be ſown in *March*, on a Border of light freſh Earth; and when the Plants are come up, they ſhould be thinned, where they grow too cloſe to each other, and muſt be carefully weeded; for if they are not kept very clean while they are young, the Weeds will ſoon over-bear and deſtroy them. Theſe Plants will require no other Culture, but only to dig about their Roots every Spring, juſt before they begin to ſhoot, being careful not to bruiſe or injure their Roots, and to make the Earth looſe about them. In Summer they muſt be kept clear from Weeds; with this Management the Plants will thrive very well, but they will not flower until the third Year after ſowing, but will continue to flower every Year after. The Stems of this Plant do uſually riſe three Feet high, the Flowers are produced in a long Spike, which are ſhaped like thoſe of the *Lupine*, and come out on Branches, from the Wings of the Leaves, all the way up the Stalks. The Flowers appear firſt white, before they are fully blown out; afterwards they are of a dark yellow Colour, and continue near a Month before they fall off. This Plant rarely produces good Seeds in *England*, ſo that it muſt be procured from Abroad.

ASTRAGALUS; Milk-Vetch.

The *Characters* are;

It hath a papilionaceous Flower, conſiſting of the Standard, the Keel, and the Wings. Out of the Flower-cup ariſes the Pointal, covered with a Sheath, which afterward becomes a bicapſular Pod, which is filled with Kidney-ſhap'd Seeds; to which Notes may be added, that the Leaves grow by Pairs along the middle Rib, with an odd one at the End.

The *Species* are;

1. Astragalus *luteus perennis procumbens vulgaris ſive ſylveſtris. Mor. Hiſt.* Wild Liquorice or Liquorice-Vetch.

2. Astragalus *luteus annuus Monſpeliacus procumbens. Mor. Hiſt.* Yellow annual trailing Milk-Vetch of *Montpelier*.

3. Astragalus *luteus perennis, ſiliqua gemella rotunda veſicam referente. Mor.* Yellow perennial Milk-Vetch, with a round Pod reſembling a Bladder.

4. Astragalus *annuus maritimus procumbens latifolius, floribus pediculo inſidentibus. Tourn.* Annual maritime trailing Milk-Vetch, with broad Leaves, and the Flowers ſitting on Pedicles.

5. Astragalus *annuus anguſtifolius, floſculis pediculis oblongis inſidentibus. Tourn.* Narrow-leav'd annual Milk-Vetch, whoſe Flowers ſtand on long Foot-ſtalks.

6. Astragalus *annuus anguſtifolius, floſculis ſubcœruleis, cauliculis adhærentibus. Tourn.* Narrow-leav'd annual Milk-Vetch, with blueiſh Flowers, adhering to the Stalks.

7. Astragalus *annuus procumbens, floribus glomeratis purpureis. Boerh. Ind.* Annual trailing Milk-Vetch, with purple Flowers growing in Cluſters.

8. Astragalus *Alpinus procerior alopecuroides. Tourn.* Taller Fox-tail Milk-Vetch of the *Alps*.

9. Astragalus *pumilis, ſiliqua epiglottidis forma. Tourn.* Dwarf Milk-Vetch, with a Pod ſhaped like the Epiglottis.

10. Astragalus *montanus purpureus Anglicus. Tourn.* *Engliſh* purple Milk-Vetch of the Mountains.

11. Astragalus *Alpinus, tragacanthæ folio, veſicarius. Tourn.* Bladder Milk-Vetch of the *Alps*, with a Goat's-Thorn Leaf.

12. Astragalus *Alpinus, tragacanthæ folio, ramoſus, flore cœruleo glomerato. Tourn.* Branched Milk-Vetch of the *Alps*, with a Goat's-Thorn Leaf, and blue glomerated Flowers.

13. Astragalus *orientalis altiſſimus, galegæ foliis amplioribus, flore parvo flaveſcente. Tourn. Cor.* Talleſt Eaſtern Milk-Vetch, with ample Goat's-rue Leaves, and a ſmall yellowiſh Flower.

14. Astragalus *orientalis altiſſimus, fraxini folio, flore è viridi flaveſcente. Tourn. Cor.* Talleſt Eaſtern Milk-Vetch, with an Aſh Leaf, and a greeniſh yellow Flower.

15. Astragalus *orientalis maximus incanus erectus, caule ab imo ad ſummum florido. Tourn. Cor.* Greateſt hoary upright Milk-Vetch, with a Stalk flowering from the Bottom to the Top.

16. Astragalus *Canadenſis, flore viridi flaveſcente. Acad. Reg. Scien.* Milk-Vetch of *Canady*, with a greeniſh yellow Flower.

The firſt Sort is very common in divers Parts of *England*, and is ſeldom preſerved in Gardens. This dies to the Root every Winter, and riſes again the following Spring. It flowers in *June*, and the Seeds are ripe in *Auguſt*. This may be propagated by ſowing the Seeds in the Spring, upon almoſt any Soil, or in any Situation, and requires no farther Care but to keep it clear from Weeds.

The tenth Sort grows wild in ſeveral Parts of *England*, but is not ſo common as the former. This may be propagated in the ſame manner as the former.

The ſecond, fourth, fifth, ſixth and ſeventh Sorts are annual Plants. Theſe may be propagated by ſowing of their Seeds in *March* upon a Bed of light freſh Earth, in an open Situation; and when the Plants are come up, they ſhould be thinn'd, leaving them about a Foot aſunder; after this there will be no other Trouble but to keep 'em clear from Weeds. Theſe will produce their Flowers in Summer, and in Autumn their Seeds will be perfected.

The other Sorts are all abiding Plants, but muſt be propapated by ſowing of their Seeds towards the latter End of *March*, on a Bed of freſh light Earth, obſerving not to bury the Seeds too deep, leſt they rot; and when the Plants are come up, they ſhould be thinned, leaving them about ſix Inches aſunder; and during the Summer following you ſhould conſtantly keep 'em clear from Weeds. In *October* you may tranſplant theſe Plants into the Borders where they are to remain, in doing of which you ſhould be careful to dig to the Bottom of their Roots; for moſt of them ſend forth long tap Roots; which go deep into the Earth, and, if cut or broken, rarely overcome it. Theſe Plants, many of them, grow very tall, and ſhould be allowed a great Share of Room. The fifteenth Sort is a beautiful Plant; it grows about four Feet high, and produces Flowers from the Bottom to the Top of the Stems, ſo that it makes a fine Appearance in a large Border. The ſixteenth Sort is ſomewhat tender, and is often deſtroyed in ſevere Froſt, but in mild Winters it will ſtand abroad very well.

ASTRANTIA; Maſterwort.

The *Characters* are;

It hath a roſe and umbellated Flower, conſiſting of ſeveral Leaves; the Apices are for the moſt part reflexed, and are placed orbicularly on the Flower-cup; this afterwards becomes a Fruit, compoſed of two Seeds, each of which is covered with a furrow'd Husk: to theſe Notes muſt be added, the Flowers are collected into a Head, ſurrounded with a Circle of Leaves.

The *Species* are;

1. ASTRANTIA *major, corona floris purpuraſcente. Tourn.* Black Maſterwort, with purpliſh Flowers.

2. ASTRANTIA *major, corona floris candida. Tourn.* Greater Maſterwort, with white Flowers.

Theſe Plants are both very hardy: They may be propagated either by ſowing of their Seeds, or parting their Roots. If they are propagated from Seeds, they ſhould be ſown early in the Spring, or in Autumn, ſoon after the Seeds are ripe, on a ſhady Border; and when the Plants are come up, they ſhould be carefully weeded, and where they are too cloſe, ſome of the Plants ſhould be drawn out, to allow Room for the others to grow, until *Michaelmas*, when they ſhould be tranſplanted where they are to remain; which ſhould always be in a moiſt Soil, and a ſhady Situation. The Diſtance theſe Plants ſhould be placed is two Feet, for their Roots will ſpread to a conſiderable Width, if they are permitted to remain ſome Years in the ſame Place. They require no other Culture, but to keep 'em clear from Weeds, and every third or fourth Year taken up at *Michaelmas*, and their Roots parted and planted again. Theſe Plants are ſeldom preſerved but in botanick Gardens, there being no great Beauty in their Flowers, nor are they uſed in Medicine at preſent; tho' by ſome Perſons they have been called *Black Hellebore*, and I believe have been uſed for that.

ATMOSPHERE; ['Ατμοσφαῖρα, of 'Ατμὸς, a Vapour, and σφαῖρα, *Gr.* a Sphere] is an Appendage of the Earth, which conſiſts of a thin, fluid, elaſtick Subſtance, call'd *Air*, ſurrounding the Terraqueous Globe to a conſiderable Height.

The whole Maſs or Aſſemblage of ambient Air, is commonly underſtood to be the *Atmoſphere*.

But the more accurate Writers reſtrain the Term *Atmoſphere* to that Part of the Air which is next to the Earth, which receives the Vapours and Exhalations, and which is terminated by the Refraction of the Light of the Sun.

Thoſe Spaces that are higher, and beyond theſe, are call'd *Æther*; and being ſuppos'd to be poſſeſs'd by a finer Subſtance, are call'd the *Ætherial Regions*, tho' theſe perhaps are not deſtitute of Air.

This *Atmoſphere* inſinuates itſelf into all the Vacuities of Bodies, and by that means becomes the great Spring of moſt of the Mutations here below, as Generation, Corruption, Diſſolution of Vegetables, *&c.* To the Preſſure of the *Atmoſphere* Plants owe their Vegetation, as well as Animals do their Reſpiration, Circulation, and Nutrition. See *Æther* and *Air*.

Dr. *Halley* found, by undoubted Experiments, that the Weight of *Mercury* to *Water*, is as $13\frac{1}{2}$ to 1, or very near it; and that the Specifick Weight of *Air* to *Water*, is as 1 to 800; ſo that the Weight of *Mercury* to *Air*, is as 10800 to 1; and a Cylinder of *Air* of 10800 Inches, or 900 Feet, is equal to an Inch of *Mercury*: ſo that if the *Air* was of an equal Denſity like *Water*, the whole *Atmoſphere* would be no more than $5\frac{1}{10}$ Miles high, and in the Aſcent of every 900 Feet, the *Barometer* would ſink an Inch; but the Expanſion of the *Air* increaſing in the ſame Proportion, as the incumbent Weight of the *Atmoſphere* decreaſes, that is, as the *Mercury* in the *Barometer* ſinks, the upper Parts of the *Air* are much more rarefied; and each Space anſwering to an Inch of *Quickſilver*, grows greater and greater, ſo that the *Atmoſphere* muſt be extended to a much greater Height.

Upon theſe and ſuch like Suppoſitions, it will appear, that at the Height of 45 Miles, the *Air* is ſo rarified, as to take up 3000 Times the Space it occupies here; and at 53 Miles high it would be expanded above 300000 Times: But it is probable, that the utmoſt Power of its Spring cannot exert itſelf to ſo great an Extenſion, and that no Part of the *Atmoſphere* reaches above 45 Miles from the Surface of the Earth.

ATRACTYLIS. Diſtaff-Thiſtle; *vide* CNICUS.

ATRIPLEX; Orrach.

The *Characters* are;

It hath no Leaves to the Flower, but conſiſts of many Stamina, which ariſe from a five-leav'd Empalement; the Pointal afterwards becomes the Seed, which is flat and orbicular, and is incloſed in the Empalement, which becomes a foliaceous Capſule, in which are included two Sorts of Seeds.

The *Species* are;

1. ATRIPLEX *hortenſis alba, ſive pallide virens. C. B. P.* Garden Orrach, of a pale green Colour.

2. ATRIPLEX *hortenſis nigricans. C. B. P.* Dark green Garden Orrach.

3. ATRIPLEX *hortenſis rubra. C. B. P.* Red Garden Orrach.

4. ATRIPLEX *latifolia, ſive Halimus fruticoſus. Mor. Hiſt.* Shrubby broad-leav'd Orrach, commonly called *Sea-purſlane-tree.*

5. ATRIPLEX *maritima fruticoſa, Halimus & Portulaca marina dicta, anguſtifolia. Raii Syn.* Shrubby Sea Orrach, commonly called *Sea-purſlane*, with a narrow Leaf.

6. ATRIPLEX *maritima laciniata. C. B. P.* Sea Orrach, with jagged Leaves.

7. ATRIPLEX *anguſto oblongo folio. C. B. P.* Long narrow-leav'd Orrach.

8. ATRIPLEX *anguſtiſſimo & longiſſimo folio. H. L.* Orrach, with very long narrow Leaves.

9. ATRIPLEX *ſylveſtris, fructu compreſſo roſeo & ſtellato. C. B. Prod.* Wild Orrach, with a compreſſed ſtarry and roſe-ſhap'd Fruit.

10. ATRIPLEX *Cretica maritima erecta, folio triangulari. Tourn. Cor.* Upright Sea *Candy* Orrach, with a triangular Leaf.

11. ATRIPLEX *Græca fruticoſa humifuſa, halimi folio. Tourn. Cor.* Dwarf ſhrubby Orrach, with a Sea-purſlane Leaf.

12. ATRIPLEX *orientalis fruteſcens, folio ampliſſimo argenteo. Tourn. Cor.* Shrubby Oriental Orrach, with a large Silver-colour'd Leaf.

13. ATRIPLEX *orientalis, frutex aculeatus, flore pulchro. Tourn. Cor.* Shrubby prickly Oriental Orrach, with a fair Flower.

The firſt of theſe Plants was formerly cultivated in the Kitchen-Gardens, as a culinary Herb, being uſed as Spinage, and is by ſome Perſons preferred to it, tho' in general it is not eſteemed amongſt the *Engliſh*; but the *French* now cultivate this Plant for Uſe. It may be ſown in the Spring as Spinage, and muſt be eaten young; for when it is run up to Seed, it is very ſtrong: This Plant, if ſuffer'd to ſhatter its Seeds in a Garden, will become a laſting Inhabitant, the Seeds often remaining ſeveral Years in the Ground, and every Time the Ground is dug, will ſend forth many of the Plants.

The ſecond and third Sorts are believed to be Varieties of the firſt, for they differ in nothing from that, but in the Colour of their Stalks and Leaves; however, this Difference is not accidental, for I have ſeveral Years cultivated all the three Sorts in the ſame Soil, and they have always retained their Difference from Seeds, and have not interchanged, as moſt Varieties generally do.

Theſe Plants are annual, ſo muſt be ſown for Uſe early in the Spring, or at *Michaelmas*, ſoon after the Seeds are ripe; at which Time it generally ſucceeds better than when it is ſown in the Spring, and will be fit for Uſe at leaſt a Month earlier in the Spring. Theſe Plants require no other Culture, but to hough them when they are about an Inch high, to cut them down where they are too thick, leaving them about four Inches aſunder, and to cut down all the Weeds. This muſt be done in dry Weather, otherwiſe the Weeds will take Root again, and render your Work of no Uſe. When your Plants are grown about four Inches high, it will be proper to hough them a ſecond time, in order to clear them from Weeds; and if you obſerve the Plants are left too cloſe in any Part, you muſt then cut them out. If this be well perform'd, and in dry Weather, the Ground will remain clean until the Plant is fit for Uſe. Where theſe Plants are ſown on a rich Soil, and allowed a good Diſtance, the Leaves will be very large, in which the Goodneſs of the Herb conſiſts. This muſt be eaten while it is young, for when the Stalks become tough, it is good for nothing. Some few Plants of each Kind may be permitted to ſtand for Seed, to preſerve their Kinds, which will ripen in *Auguſt*, and may then be cut and laid on a Cloth to dry, after which the Seeds may be beaten out, and put up for Uſe. The firſt Sort is ordered by the College of Phyſicians for medicinal Uſe.

The fourth Sort was formerly cultivated in Gardens as a Shrub, and by ſome Perſons they were formed into Hedges, and conſtantly ſheer'd to keep them thick; but I do not approve of this Plant for ſuch Purpoſes, on many Accounts, for it is too vigorous; the Shoots, in one Month, at the growing Seaſon of the Year, will be two Feet long, provided they have a good Soil, ſo that a Hedge of this Plant cannot be kept in tolerable Order, nor will it ever form a thick Hedge. But a worſe Inconvenience attends this Plant, for in very hard Winters it is often deſtroyed, as alſo in very dry Summers many of the Plants will decay, whereby there will become large Gaps in the Hedge.

But altho' this Plant be not proper for Hedges, yet it may have a Place in Wilderneſs Quarters, where it will ſerve to thicken, and the Silver-coloured Leaves will add to the Variety, amongſt other Shrubs of the ſame Growth. This will grow eight or ten Feet high, and if ſuffered to grow wild without pruning, will ſpread ſeveral Feet in Compaſs, and will ſometimes produce Flowers.

It may be propagated by Cuttings, which may be planted in any of the Summer Months, on a ſhady Border, where, if they are duly watered, they will ſoon take Root, and will be fit to tranſplant the *Michaelmas* following, when they ſhould be planted where they are to remain; for they do not ſucceed well in tranſplanting, when they are grown pretty large and woody.

The fifth Sort grows wild in divers Parts of *England* on the Sea-ſide, from whence the Plants may be procured; or it may be propagated by Cuttings, in the ſame manner as the former Sort. This is a low Under-ſhrub, ſeldom riſing above two Feet and an half, or at moſt three Feet high; but becomes very buſhy. The Leaves of this Kind are narrow, and of a whitiſh Colour, but are not ſo white as thoſe of the former. This may have a Place amongſt other low Shrubs; and if planted on a poor gravelly Soil, will abide ſeveral Years, and make a pretty Diverſity.

The ſixth, ſeventh, eighth, and ninth Sorts grow wild in *England* and *Holland*, and are ſeldom preſerved but in botanick Gardens, for the ſake of Variety. Theſe are propagated by Seeds, which may be ſown ſoon after they are ripe, when they will ſucceed much better than if they are ſown in the Spring. When the Plants are come up, they ſhould be thinned, ſo as to leave them four or five Inches diſtant, and kept clear from Weeds, which is all the Culture they require.

The tenth, eleventh, twelfth, and thirteenth Sorts were diſcovered by Dr. *Tournefort* in the *Levant*, who ſent their Seeds to the Royal Garden at *Paris*, from whence they have been communicated to ſeveral Gardens in *Holland* and *England*. The tenth Sort may be propagated by Seeds as the four former Sorts, but muſt have a warmer Situation, otherwiſe it will not perfect Seeds in this Country.

The other three Sorts may be propagated by Seeds, or by Cuttings, planted on a ſhady Border, as was directed for the fourth and fifth Sorts. Theſe muſt be planted in Pots, and ſheltered in Winter under a Garden-frame, where they may have as much free Air as poſſible in mild Weather; but in hard Froſt they muſt be ſheltered, otherwiſe it will deſtroy them. Some of theſe Plants may be planted on a warm Border, in a poor gravelly Soil, where they will endure the Cold of our ordinary Winters very well, and will make a pretty Variety amongſt Plants of the ſame Growth. The eleventh Sort will ſeldom riſe above two Feet high, but the twelfth and thirteenth Sorts will grow to be ſix or ſeven Feet high.

AVENA; Oats.

The *Characters* are;

It is of the Graſs-leav'd Tribe; the Flowers have no Petals, and are diſpoſed in a looſe Panicle; the Grain is eatable.

The *Species* are;

1. AVENA *vulgaris ſeu alba. C. B. P.* Common or white Oats.
2. AVENA *nigra. C. B. P.* Black Oats.
3. AVENA *nuda. C. B. P.* Naked Oats.

The firſt Sort here mentioned is the moſt common in *England*; the ſecond Sort being much leſs eſteemed, the white being the heavier Grain, and makes whiter Meal. The third Sort is leſs common than either of the former, eſpecially in the Southern Parts of *England*; but in the North of *England*, *Scotland*, and *Wales*, it is cultivated in plenty. This Sort is eſteemed, becauſe the Grain threſhes clean out of the Huſk, and need not be carried to the Mill to be made into Oatmeal or Griſt. An Acre of Ground doth not yield ſo many Buſhels of theſe, as of the common Oats, by Reaſon the Grain is ſmall and naked, and goes near in Meaſure; but what is wanting in the Meaſure, is ſupplied in Value.

Oats are a very profitable Grain, and abſolutely neceſſary, being the principal Grain which Horſes love; and are eſteemed the moſt wholeſome Food for thoſe Cattle, being ſweet, and of an opening Nature; other Grains being apt to bind, which is injurious to labouring Horſes. But if you feed them with this Grain, ſoon after they are houſed, before they have ſweat in the Mowe, or are otherwiſe dried, it is as bad on the other hand; for they are then too laxative.

This Grain is a great Improvement to many Eſtates in the North of *England*, *Scotland*, and *Wales*; for it will thrive on cold barren Soils, which will produce no other Sort of Grain; it will alſo thrive on the hotteſt Land. In ſhort, there is no Soil too rich or too poor for it, too hot or too cold for it. And in wet Harveſts when other Grain is ſpoil'd, this will receive little or no Damage; the Straw and Huſks being of ſo dry a Nature, that if they are houſed wet, they will not heat in the Mowe, or become mouldy as other Grain uſually do, ſo is of great Advantage in the Northern Parts of *England*, and in *Scotland*, where their Harveſt is generally late, and the Autumns wet.

The Meal of this Grain makes tolerable good Bread, and is the common Food of the Country People in the *North*. In the *South* it is eſteemed for Pottage and other Meſſes, and in ſome Places they make Beer with this Grain.

The beſt time for ſowing of Oats is in *February* or *March*, according as the Seaſon is early or late, and ſometimes I have known it ſown in *April*, and has been early ripe. The Manner of preparing the Ground, as alſo of ſowing the Grain, being the ſame as for other Corn, I ſhall not mention it in this Place.

AVENUES, are Walks or Entrances leading to a Place, and in Gardening, are Walks planted with Rows of Trees, made in the Front-end of the Garden, leading to the Front of an Houſe, or to a Garden Gate, to a Highway Gate or Wood, to terminate in a Proſpect.

As to ſuch *Avenues* that lead to an Houſe, they ought to be as wide as the whole Breadth of the Front, and if they be wider, they are better.

And as for ſuch *Avenues* to Woods or Proſpects, *&c.* they ought not to be leſs than ſixty Feet in Breadth; and becauſe ſuch Walks are a long time before they are ſhady, it will be convenient to plant another Row on each Side, rather than to loſe the Statelineſs that the main Walk will afford in Time by being broad, where any thing of a Proſpect is to be gained.

And as to the Diſtance one from another, they ſhould not be planted nearer to one another than thirty-five or forty Feet, eſpecially if the Trees are any thing of a ſpreading Kind; and the ſame Diſtance, if they are for a regular Grove.

As to the Trees proper for planting *Avenues*, they may be the *Engliſh Elm*, the *Lime Tree*, the *Horſe Cheſnut*, the *Common Cheſnut*, the *Beech*, and the *Abele*.

The *Engliſh Elm* is approv'd for all Places where it will ſucceed, and that will do in moſt Places, except in very wet or cold ſhallow Grounds. 1. Becauſe it will bear cutting, heading, lopping in any manner whatſoever, and probably with better Succeſs than any other Tree.

Others approve of the *Dutch Elm*, rough or ſmooth; the broad-leav'd or *Witch Elm*, becauſe they are of quicker Growth than the *Engliſh*, and will grow tolerably well in almoſt any Soil: It will alſo remove very well, and ſeldom miſcarries, if but an ordinary Care be taken of it, which the *Engliſh Elm* is ſubject to do. 2. Becauſe it is out with green Leaves in the Spring, with the earlieſt Plants, and continues its Beauty as long as almoſt any other Tree. 3. Becauſe it makes an incomparable Hedge, and is preferable to all others for lofty Eſpaliers.

Secondly, The *Lime Tree:* This is approv'd by others, becauſe it will do well in any tolerable Soil, if the Bottom be not wet and cold, and becauſe of the regular Shape it has in growing, the Agreeableneſs of its Shade, and the beautiful Colour of its Leaves.

Thirdly, The *Horſe Cheſnut* is recommended to be uſed every where in ſuch Places as are very well defended from ſtrong Winds; becauſe where-ever it grows freely, if it be not ſkilfully manag'd now and then by cutting, the Branches are ſubject to ſplit down: This Tree is valuable on account of its quick Growth, the Earlineſs of its coming out, the Nobleneſs of its Leaves, and the Beauty of its Flowers, being a fine Plant both for Shade and Ornament. This delights in a ſtrong, hearty Soil, but will do well in any tolerable Soil, if good Care be taken in the Planting of it.

Fourthly, The *common Cheſnut* will do well in a proper Soil, and will riſe to a conſiderable Height if planted cloſe together, but if it be planted ſingly, where the Tree can take its own natural Shape, it is rather inclin'd to ſpread and grow globous than tall.

Fifthly, the *Beech* is recommended by ſome, but this ſeldom ſucceeds well after tranſplanting, without extraordinary Care, tho' it arrives to a very large Tree in many Places in *England* where it grows naturally, and is the moſt tedious and troubleſome to raiſe to any tolerable Size in a Nurſery Way.

Sixthly, the *Abele:* This indeed grows more diſpers'd and looſe in its Head than any of the former, and conſequently is worſe for Defence; but yet is not to be left out from the Number of Trees for *Avenues*, becauſe it is the quickeſt in Growth of all the Foreſt Trees, and will thrive tolerably well in almoſt any Soil, and particularly in wet Ground, where few of the before-mention'd Trees will thrive: And this ſeldom fails in tranſplanting.

Seventhly, The *Oak*; but this is ſeldom uſed in planting *Avenues*, becauſe it requires ſo long a time to raiſe it up to any tolerable Stature in the Nurſery Way; nor is it apt to thrive much after it has been tranſplanted, if at any Bigneſs.

As for the *Alder*, *Aſh*, *Platanus*, and *Sycamore*, they are but rarely uſed for planting *Avenues*.

The old Method of planting Avenues with regular Rows of Trees, is what has been generally practis'd 'till of late Years; ſince the old Manner of laying out Gardens being with good Reaſon diſuſed, they have lately introduced a more magnificent Method of planting Avenues; which is to plant the Trees in Clumps, or Platoons, making the Opening much wider than before, and ſo place the Clumps of Trees at about three hundred Feet Diſtance from each other. In each of theſe Clumps ſhould be planted ſeven or nine Trees, according to the Fancy of the Owner, or the Perſon who deſigns the Plantation: But this is only to be practis'd, where the Avenue is of a tolerable Length; for, in ſhort Walks, it will not appear ſo ſightly as even Rows of Trees. In large Parks this Method of planting in Clumps has a very good Effect; for as a Perſon rides through the Avenue, the Opening between the Trees, to the Turf where the Deer are feeding, is much more agreeable, than in paſſing between ſtrait Rows of Trees. The Trees ſhould be planted about thirty Feet aſunder in the Clumps, and a little Ditch thrown up round each Clump, to prevent the Deer from coming to bark them.

AUGUST.

Work to be done in the KITCHEN GARDEN.

The Beginning of this Month you muſt ſow Onions, to ſupply the Table early in the Spring for Sallets, *&c.* and leſt the Winter ſhould prove ſevere, it will be proper to ſow a few *Welſh* Onions at the ſame time; for theſe will endure the greateſt Cold, when the common Sort are all deſtroy'd; but they are ſtronger than the common Sort, which is the only Reaſon they are not ſo much eſteem'd.

You muſt alſo ſow Spinage to ſtand the Winter, to ſupply the Kitchen in Winter and Spring. The beſt Sort to endure Cold is the prickly Kind, which is what moſt People ſow at this Seaſon, it being much hardier than the round-leav'd Kinds.

About the fifth or ſixth Day of this Month you ſhould ſow your early *Batterſea* Cabbage-ſeed; for that which is ſown earlier will run to ſeed in the Spring, if the Winter ſhould prove mild: And if it is ſown later than this time, the Plants will not have Strength to reſiſt the Cold, nor will they come ſo early, provided they do ſtand thro' the Winter.

The tenth or eleventh Day of this Month you ſhould ſow ſome Cauliflower-ſeed for the early Crop to be planted under your Bell or Hand-glaſſes, and under the Walls where they are deſign'd to ſtand open: But you ſhould alſo ſow ſome more Seeds about the fourteenth Day for a ſecond Crop, to plant under Frames to abide the Winter; for it often happens, in a mild Winter, that many of thoſe Plants which were firſt ſown, do run in the Spring; therefore if you have not a ſecond Supply, you will be at a great Loſs; beſides, theſe will come to flower after the firſt ſowing is gone, ſo that your Table will be ſupply'd much longer with the ſecond ſowing.

About the middle of this Month you ſhould ſow ſome common Cabbage-Lettuce, and ſome brown *Dutch* Lettuce to ſtand the Winter on warm Borders without covering; and about the twentieth Day of the Month you may ſow ſome Sileſia, Cos, and other large Kinds of Lettuce, to plant under Glaſſes, or upon Beds, to be cover'd in Winter, that they may come early the following Spring: you ſhould always obſerve, if the Weather be hot and dry when all theſe Seeds are ſown, to ſhade the Beds with Mats in the Heat of the Day, and to ſupply them duly with Water, otherwiſe the Plants will not come up regularly.

In moiſt Weather tranſplant Endive and Celery for blanching, which ſhould be well water'd to ſettle the Earth to their Roots; and if the Weather ſhould alter to Drought, they muſt be duly water'd until they have taken Root.

You may now tranſplant ſome of the Lettuces which were ſown the former Month, to ſupply the Kitchen in Autumn; theſe ſhould be planted in a warm Situation, leſt the Froſts, which often happen early in *October*, ſhould injure them: They muſt alſo be duly water'd until they have taken Root.

Toward the latter End of the Month you ſhould ſow ſeveral Sorts of Seeds which remain a long Time in the Ground, which, if ſown in the Spring, do often miſcarry; as Chervil, Angelica, Lovage, Maſterwort, Scurvygraſs, Fennel, Alexanders, Sweet-Seſeli, and ſome others, which always ſucceed better when ſown at this Seaſon, than when they are ſown in the Spring.

Your Beds of Coleworts, *&c.* which were ſown the laſt Month, ſhould be carefully weeded; and if the Plants are very thick, ſome of them ſhould be drawn out, and tranſplanted into another Spot, that thoſe which remain may have more room to grow.

Cut off the flowering Branches of moſt Sorts of Aromatick Plants, as Lavender, Roſemary, Savory, Hyſſop, *&c.* that they may make new Shoots before Winter; but do not perform this Work in dry Weather, for many times the Plants are deſtroy'd by it, when there happens to be a long Drought.

Pull up Onions, Garlick, Rocambole, and Shallots, when their Leaves begin to wither and fall; and ſpread them thin in an airy Place to dry, before you put them up where they are to remain for Winter uſe.

In dry Weather you muſt earth up your Celery which is large enough, obſerving not to bury the Hearts of the Plants, for that will rot them. You muſt alſo tye up your Endive, which is full grown, to blanch; this muſt alſo be perform'd when the Leaves are very dry, otherwiſe the Plants will rot.

Your Artichokes which were planted the laſt Spring, will now begin to ſhew their Fruit; therefore all ſmall Suckers which come out on the Sides of their Stalks, ſhould be cut off; for if they are permitted to remain on, they will weaken and ſtarve the top Fruit: You ſhould alſo clear them from Weeds, or any other large growing Plants, which ſtand near them.

Tranſplant your Brocoli (which was not planted out the former Month) into the Place where it is to remain for flowering, obſerving to water it duly until it has taken Root. Theſe Plants ſhould be planted in Rows about two Feet aſunder, and a Foot Diſtance from each other in the Rows.

You may yet tranſplant ſome Savoys, to come late in the Spring; but if the Winter ſhould prove ſevere, they will not grow to be large, nor will they cabbage; but in mild Winters they often ſucceed very well.

Obſerve to keep the Roots of your Melons from too much Wet, which many times cauſes the Plants to decay before the Fruit is ripe.

Your Cucumbers for pickling are now in Seaſon, therefore they ſhould be looked over twice a Week, to gather ſuch as are fit, for in a ſhort time they will grow too large for that Purpoſe; theſe muſt alſo be frequently water'd in dry Weather, which will cauſe them to produce a greater Quantity of Fruit.

The Aſparagus which was planted the laſt Spring, ſhould be carefully clear'd from Weeds; for at this Seaſon it will make new Shoots, which will be much ſtronger, where they are not injur'd by Weeds or other Plants, than on the contrary.

All your Winter Crops, as Parſnips, Leeks, Beets, Cabbages, *&c.* ſhould be conſtantly kept clear from Weeds, which, if ſuffered to grow, will greatly injure your Crops, and will ſoon ſcatter their Seeds at this Seaſon, whereby your Ground will be plentifully ſtock'd with Weeds, which cannot be rooted out in many Years.

The Dunghills ſhould alſo be cleared from Weeds, particularly Atriplex's and Nightſhade, which at this Seaſon are very common upon almoſt every Dunghill, and if the Seeds are permitted to ſcatter, when the Dung is carried into the Garden, they will be mixed therewith, and thereby fill your Ground with Weeds; therefore they ſhould be pull'd up, and caſt into an Heap to rot at ſome Diſtance from the Garden or Dunghill; for if they are only hough'd down, and permitted to lie upon the Dunghill, (as is by ſome practiſed) the Seeds will ripen as they lie, and be almoſt as bad as if they had been ſuffered to grow to Maturity.

You may in this Month plant Slips of Sage, Roſemary, Stœchas, Lavender, Maſtick, and other Aromatick Plants, where it was omitted in the Spring; but theſe will not be near ſo ſtrong, nor capable of reſiſting the Cold ſo well, as thoſe planted in the Spring, and therefore ſhould be ſhelter'd, if the Winter ſhould prove ſevere.

Cut ſuch Herbs as are now in Flower to diſtil, or to dry for Winter Uſe, always obſerving to hang them up in a dry ſhady Place; for if they are dried in the Sun, the will ſhrink up, and be little worth.

Continue to ſow the Seeds of Creſſes, Rape, Turnep, Radiſh, Muſtard, and other kinds of Sallet-herbs every Week, that the Table may not be unfurniſhed; for theſe ſoon grow too large for Uſe.

Gather all Sorts of Kitchen-Garden Seeds which are now ripe, ſpreading them upon Mats to dry, and then beat or rub them out of their Huſks or Pods, and put them up till the Seaſons for ſowing them.

Your Radiſh-ſeed, which is now in Pod, muſt be guarded, to prevent the Birds from devouring it, which they will do in a ſhort time, if they are not deſtroyed.

Sow Turneps for a latter Crop, which may be done any time before the Twentieth Day of this Month; but thoſe which are ſown later, do ſeldom apple well, eſpecially if the Autumn proves cold.

Earth up your Finnochia, which is full grown, to blanch it, that it may be fit for Uſe; and continue to tranſplant Celery into Drills, that you may have a Succeſſion to ſupply the Table thro' the Seaſon.

Products of the Kitchen-Garden *this Month.*

Cabbages, Kidney-beans, ſome large kinds of Peaſe, Artichokes, Garden-Beans, Carrots, Cabbage-Lettuces of ſeveral Sorts, Finnochia, Celery, Turneps, Cucumbers, Melons, Onions, Purſlain, all Sorts of young Sallet-herbs, ſome late Cauliflowers, Endive, and ſome other Sorts.

Work to be done in the Fruit Garden *and* Vineyard.

Look carefully over your Wall-fruit-trees to deſtroy Snails and other Vermin, which will gnaw your choice Fruits, and ſpoil them. You ſhould alſo deſtroy Sparrows and Tomtits, which will peck your choice Pears, Figs, and Grapes, as faſt as they ripen, where they are not defended; and you ſhould fix ſome Phials with Honey-water on different Parts of your Trees, to deſtroy the Waſps, which will drown themſelves by attempting to drink of the Water.

Where any Branches of your Trees do project from the Wall, or have been diſplaced by Winds, *&c.* they ſhould be carefully faſten'd to the Wall in their due Poſition, that the Fruit may receive the Benefit of the Sun to ripen it; but do not pull off the Leaves of the Trees, (as is by ſome Perſons practiſed) for this expoſes the Fruit too much, whereby it becomes hard, and ſeldom ripens kindly.

Your Vines in the Vineyard, and thoſe againſt the Walls, ſhould now be gone over for the laſt Time, pulling off all trailing Branches which have been lately produced; and faſten thoſe Branches which are looſe in their proper Places, that the Fruit (which is now full grown) may receive the Benefit of the Sun and Air to ripen it. You ſhould alſo obſerve to keep the Ground clear from Weeds between your Rows of Vines, that the Sun may dry up the Moiſture of the Ground every Day, and the Reflexion of Heat may be greater.

Untie the Buds of Fruit-trees which were inoculated the laſt Month, otherwiſe their Bandage will pinch the Bark of the Stocks, and prevent their growing equally in the Part where the Bud is put in. You ſhould alſo obſerve to clear the lower Part of your Stocks from Shoots, and keep the Ground clear from Weeds near the Roots of your Fruit-trees.

Fruits in prime, or yet laſting.

Apples; The Summer white Couſtin, Margaret Apple, Codlin, Summer Pearmain, Summer Pippin, with ſome others.

Pears; The Jargonelle, Windſor, Cuiſſe Madam, Orange Muſk, Gros Blanquette, Muſk Blanquette, Long-ſtalk'd Blanquette, Poire ſans Peau, Muſcat Robine, Amber Pear, Green Orange, Caſſolette, Magdalen Pear, Gros Oignonet, Poire Roſe, Summer Boncretien, Cailot Roſat, Ruſſellet, with ſome others of leſs Note.

Peaches; Red and white Magdalen, Early Newington, the Mignonne or Minion, Italian Peach, Nobleſs, Bellows or Bellis, Violette Hative, La Chevreuſe, (or Belle Chevreuſe) Early Admirable, Albemarle, Violet Peach, Nivette Peach, Montaubon, Royal George, Teton de Venus, purple Alberge, Chancellor, with ſome others.

Nectarines; Roman Red, Elruge, Newington, Brugnon, Italian, Murray, and Temple's.

Plums; Orleans, white Perdrigon, Violet Perdrigon, red Imperial, white Imperial or Bonum Magnum, Le Royal, Cheſton Plum, Drap d'Or, St. Katharine, Roche Courbon, Reine Claude, Myrabolan, green Gage, La Mirabelle, Abricot Plum, Prune Monſieur, Maitre Claude, Royale Dauphin, with ſome others.

Grapes; The July, white Sweet-water, black Cluſter, Munier, Chaſſelas, white Muſcadine, and Orleans.

Figs; The Early White, Long Blue, Long White, Round Blue, Italian White, Large Yellow, Brunſwick, and Cyprus Fig.

Filberts; Nuts, Mulberries; and in the Stove, the Anana or Pine-Apple.

Work to be done in the Nursery.

The Beginning of this Month you ſhould look carefully over the Stocks which were budded the laſt Month, and looſen the Bandage, leſt the Buds ſhould be pinch'd thereby; and where there are any Shoots produced below the Buds, they ſhould be cut off. You ſhould alſo look over your Trees which were budded the former Year, or grafted in the Spring, cutting off all ſuch Shoots as are produced below the Buds or Grafts; for if theſe are permitted to grow, they will ſtarve the Buds or Grafts.

Keep your Ground clear from Weeds between your Trees, and train up the ſeveral Sorts of Ever-greens, Foreſt Trees, and Shrubs, for the ſeveral Purpoſes they are deſigned; but do not trim the Stems of Standard Trees too cloſe; for if they have not ſome ſmall Shoots left on the Sides of their Stems to detain the Sap, they will not be able to ſupport their Heads.

Toward the End of this Month you may plant Cuttings of Laurels, and Honeyſuckles, in a ſhady Border, obſerving to keep them conſtantly refreſhed with Water; for if they ſhrink with Drought, they ſeldom recover again.

You ſhould now begin to clear and trench the Ground, where you intend to plant out Stocks, or young Foreſt Trees in Autumn, that the Rain may ſoak and mellow the Ground before the Seaſon of planting; and if your Land is ſtiff, the laying of it a Month or ſix Weeks in Ridges before it is planted, will mellow the Clods, and render them much eaſier to be broken, than if it was newly dug.

Work to be done in the Pleasure Garden.

Tranſplant the Layers of Carnations, Pinks, and Sweet-Williams, which by this Time will have taken good Root, if timely laid. Thoſe choice Sorts of Carnations which are deſigned for Pots, may be planted at this Time each in a ſmall Half-penny Pot, filled with freſh light Earth, and placed in a ſhady Situation until they have taken Root; after which they may be removed into a more open Situation, where they may remain until the Beginning of *October*, when they ſhould be placed under a Hot-bed Frame, or plunged into an old Bark-bed, and arched over with Hoops, that they may be cover'd in Winter, to protect them from hard Rains, Snow, and ſevere Froſt; but they ſhould be always open'd in mild Weather, otherwiſe they will draw up weak. In this manner they may be much better preſerved, than if they were planted out at firſt into the Pots where they are to remain for blowing, becauſe they will ſtand in a ſixth part of the Compaſs; and in Spring they may be turn'd out of the ſmall Pots with the Earth to their Roots, whereby they will not receive any Check, and placed into larger Pots to flower. But thoſe Carnations, Pinks, and Sweet-Williams, which are deſigned for the Borders of the Pleaſure Garden, ſhould be now planted in Beds in the Flower Nurſery, to remain till the Middle or latter End of next Month, when you muſt dig the Borders of the Pleaſure Garden, and new plant them, at which time theſe may be taken up with a Ball of Earth to their Roots, and planted in the Borders with other Flowers.

You may now ſhift your choice Auricula's into freſh rich Earth, obſerving to clear them from dead Leaves, and place them in a ſhady Situation until they have taken Root: This freſh Earth will ſtrengthen the Plants greatly, and improve their Flowers the following Spring.

You may remove the Bulbs of Iris's, Fritillaria's, and Hyacinths of *Peru*, and alſo the Roots of Lilies, Martagons, Crown Imperials, Pæonia's, and Flag-Iris's, whoſe Leaves are now decayed; but if ſuffered to remain longer in the Ground, will puſh out freſh Fibres, when it will be too late to remove them.

Gather all ſorts of Flower-ſeeds as they ripen, and ſpread them to dry in the Sun; after which they ſhould be preſerved in their Pods or Husks until the Seaſons for ſowing them; for the Seeds of moſt Plants may be kept longer good in their Pods than when they are rubb'd out.

Tranſplant Polyanthus's, Primroſes, and ſeedling Auricula's, obſerving to ſhade and water them until they have taken Root, as alſo to cloſe the Earth to their Roots, otherwiſe the Worms will draw them out of the Ground.

Cut down the Stalks of ſuch Plants as have done flowering, and are decayed; and faſten all tall growing Plants to Sticks, to ſupport them from being broken or blown down by ſtrong Winds, which often reign at this Seaſon.

Your Pots of annual Plants muſt now be duly water'd in dry Weather, otherwiſe they will ſoon loſe their Beauty; and ſuch of them as are tender, ſhould be removed into Shelter when the Nights begin to be cold, that they may perfect their Seeds, which in bad Seaſons do ſeldom ripen well, if they are not protected from the Inclemency of the Weather.

Toward the latter End of this Month you ſhould begin to prepare your Beds to receive your choice Hyacinths, Tulips, and Ranunculus's, that the Earth may ſettle before the Roots are planted; otherwiſe, when the Earth ſinks unequally, there will be Holes on the Tops of the Beds, which will detain the Water, whereby the Roots in thoſe Places will be rotted.

Clean all the Parts of your Flower-Garden from Weeds, which, if permitted to ſtand, will ſhed their Seeds in a ſhort time, whereby your Garden will be ſo ſtock'd with Weeds, as not to be rooted out in ſeveral Years.

You may now ſow the Seeds of Anemonies, Pulſatilla's, Ranunculus's, Crocus's, Fritillaria's, Hyacinths, Tulips, Narciſſus's, Cyclamens, Iris's, *&c.* in Pots or Boxes, filled with light rich Earth, obſerving not to cover thoſe Seeds which are thin and light, too deep; for theſe will rot in the Ground when buried deep, as the Ranunculus's, Pulſatilla's, Anemonies, and Fritillaria's; but the larger Seeds may be covered thicker. Theſe Pots or Boxes ſhould be placed where they may have the Morning Sun till Ten or Eleven o'Clock; for if they are too much expoſed to the Heat of the Sun at this Seaſon, the Seeds will not grow ſo well: They muſt alſo be frequently refreſh'd with Water, but it ſhould be given very gently, otherwiſe the Seeds will be in danger of being waſhed out of the Ground.

The Seeds of ſeveral Kinds of annual Flowers may now be ſown on warm Borders to ſtand the Winter, that they may flower early the following Summer, whereby they will be much ſtronger, and produce a greater Quantity of Flowers, than thoſe which are ſown in the Spring, and the Seeds will conſtantly ripen better. Of theſe are the Sweet Pea, Venus Navelwort, Dwarf Annual-Stock, Lobel's Catchfly, with ſome others.

Plants now in Flower in the PLEASURE-GARDEN.

Some Carnations, Painted Lady Pink, Old Man's-head Pink, Female Balſamine, Marvel of Peru, Amaranthus's, Amaranthoides, ſeveral ſorts of Starwort, Golden-Rods of ſeveral Kinds, Scarlet and Blue Cardinals-Flower, Campanula, Hollyhocks, Colchicum of Chio, Cyclamens, Greater Convolvulus of ſeveral Sorts, Flos Adonis, Venus Looking-glaſs, Venus Navelwort, Africans, French Marygold, Sweet Sultans, Indian Scabious, Nigella's, Candy Tuft, Apocynums, Sweet Pea, Tangier Pea, Everlaſting Peaſe, Sun-Flowers of many Kinds, Lavatera's, Mallows of ſeveral ſorts, Linaria's, Jacea's, Ketmia Veſicaria, Hieraciums, Stramoniums, Tuberoſes, Sclarea's, Geraniums, Lychnis's, Annual Stocks, Blattaria Lutea, Double Ptarmica, Xeranthemums, two Sorts of Marygolds from the *Cape of Good Hope*, Onagra's, Lyſimachia's, Veronica's, Autumnal Hyacinth, Globe Thiſtles, Dwarf Annual Stock, Naſturtium Indicum, Fairchild's Mule, Virginian Spiderwort, Catanance Quorundam, Elichryſum Americanum. Stœchas Citrina, Double Feverfew, Coronilla Herbacea flore vario, Buphthalmums, Aſteroides Alpina ſalicis folio, Eryngiums, Glauciums, Capnoides, Aſclepias albo flore, Aconitum Lycoctonum luteum, Aconitum ſalutiferum, Napellus cœruleus, Alcea's, Helianthemums, Double Sopewort, Argemone Mexicana, Antirrhinums, Lupines of ſeveral ſorts, Lavendula folio diſſecto, Iris Uvaria, Cerinthe, Perſicaria Orientalis, Alkekengi's, Limoniums, Moldavica's, Molucca lævis & ſpinoſa, Solanums of various Kinds, Melongena's, Hedyſarums, Phalangiums, Oriental Bugloſs, Alyſſons, with ſome others.

Hardy Trees and Shrubs now in Flower.

Common white Jaſmine, Paſſion-Flower, Periploca, Scorpion Senna, Althæa fruteſcens Bryoniæ folio, Agnus Caſtus, Althæa fruteſcens parvo flore, Kitmia's four ſorts, Honeyſuckles, Mallow-tree, Shrubby Canary Hypericum, Stinking ſhrubby Hypericum, Lauruſtinus, Double Virgin's-Bower, Bignonia, or Trumpet Flower, Traveller's Joy, Muſk Roſe, Monthly Roſe, Bladder Senna, Spaniſh Broom, with ſome others.

Work to be done in the GREEN-HOUSE, GARDEN *and* STOVE.

About the Beginning of this Month you may inoculate Orange-trees, obſerving to turn that Side of the Stock where the Bud is put in, from the Sun. Cut off Oranges, Jaſmines, and other Exoticks which were enarch'd the former Spring, from their Mother-trees, being careful in the Operation not to looſen the Graft from the Stock, nor ſhould the Clay or Wax be rubb'd off until the following Spring.

The Beginning of this Month is a proper Seaſon for ſhifting Aloes, Sedums, Ficoides's, Cereus's, Euphorbiums, and other exotick ſucculent Plants which now begin to grow, and will take Root again ſooner than at any other Time of the Year; you ſhould at the ſame time take off the Off-ſets of your Aloes, and plant them into ſmall Pots filled with freſh ſandy Earth, placing them where they may have the Morning Sun, obſerving to refreſh them now and then with a little Water in dry Weather, which if duly obſerved, there will be no Occaſion to give them any artificial Heat to encourage them to take Root, for at this Seaſon they are greatly diſpoſed to ſend forth Roots.

The ſeveral Kinds of tender Exotick Plants, which are conſtantly preſerved in the Bark-ſtoves, ſhould now be ſhifted, that they may make ſtrong Roots before Winter; for if they are ſhifted too late in the Seaſon, they do not recover it before the Cold comes on, which checks their Growth, ſo that they will not appear ſo vigorous, nor will they be ſo ſtrong to maintain themſelves in Winter; but if they are not ſhifted at this Seaſon, their Roots will be ſo matted in the Pots, that they will grow mouldy in Winter, and decay, which has often been deſtructive to many choice Plants.

Your Beds in which your Anana's are placed, ſhould be now refreſhed with ſome freſh Tanners-Bark, (provided it was not done the former Month) for the Evenings at this Seaſon do begin to grow cold, and if the Heat of the Beds do alſo decline, the Plants will not thrive; and this being the principal Seaſon of their Growth, it will prevent their ſtrengthening themſelves for Fruit the following Year; nor will the Heads or Off-ſets which have been newly planted, be ſufficiently furniſhed with Roots before Winter, if the Beds are not kept in a kindly Temper of Warmth; and as the Nights grow cold, the Glaſſes ſhould be cover'd with Mats, to keep them warm.

The ſeveral Kinds of hardy Green-houſe Plants ſhould now be ſhifted, and thoſe which require it, ſhould have larger Pots; for if their Roots are too much confined, and matted about the Pots, they will grow mouldy, and decay. When they are ſhifted, they ſhould be placed in a ſhady Situation, until they have taken Root, after which they may be expoſed again in the Sun, until the Time of houſing them: But you ſhould not expoſe them too much to ſtrong Winds, which will blow them out of the Pots again, when they have been lately removed.

You ſhould now take ſome of the Earth out of the Tubs or Pots of Orange-trees, filling them up again with rich freſh Earth, which will encourage them to ſupport their Fruit in Winter.

Waſh and cleanſe the Leaves and Stems of your Coffee-trees, and other Exotick Plants, from Filth, which they are very ſubject to contract at this Seaſon; and if it be not clean'd off, will intice Vermin, to the great Injury of your Plants.

Toward the latter End of the Month, you may remove your Cereus's, Euphorbiums, and other ſucculent Plants, which have been placed abroad, into the Stove again; for at this Seaſon the Nights begin to grow cold, and there often happens much Rain, which is very injurious to theſe Plants, when they are expoſed thereto.

Plants now in Flower in the GREEN-HOUSE, GARDEN, *and* STOVE.

Geraniums of ſeveral ſorts, Ficoides's of various kinds, Fritillaria Craſſa, ſeveral ſorts of Aloes, Sedums, Cotyledons, Myrtles, Oranges, Ciſtus's, Colutea Æthiopica, ſeveral ſorts of Paſſion-Flower, Senſitive Plant, Humble Plant, Indian Figs, Oleanders, Alcea's, Anemonoſpermos's, Myrto-Ciſtus, Ricinoides Staphyſagriæ folio, Ricinoides folio multifido, Quamoclit, Spaniſh Jaſmine, Arabian Jaſmine, Azorian Jaſmine, Indian yellow Jaſmine, Laurel-leaved Jaſmine, and Ilex-leaved Jaſmine, Apocynums, Acacia's, Senna Alexandrina, Caſſia's of ſeveral ſorts, Hedyſarums, Viburnums, Elichryſums, Indian Naſturtium with a double Flower, Jacobea's, Doria's, Senecio folio retuſo, Canna Indica, Fabago's, Trachelium umbellatum Azureum, Limonium Aſplenii folio, Limonium Siculum Gallas ferens, Turnera, Colvolvulus's of ſeveral ſorts, Plumeria, Phytolacca, Solanoides, Poliums, Solanums, Lotus argentea Cretica, Martynia, Indian Arrow-root, Aloes of ſeveral ſorts, with ſome others.

AURANTIUM, [this Plant is called of *Aurum, Lat.* Gold, on account of its Golden Colour; or, as others ſuppoſe, of the Province of *Orange*] The Orange-tree.

The *Characters* are;

The Leaves have two Lobes or Appendages at their Baſe, which are like Ears, and cut in Form of a Heart; the Fruit is round and depreſſed, and of a yellow Colour when ripe; the Juice is ſweet, in which it differs from the Citron *and* Lemon.

There is a very great Variety of this Tree preſerved in the Gardens of the Curious; to enumerate them all, would be too tedious in this Place; I ſhall therefore only mention the beſt known Sorts, and proceed to their Culture.

1. AURANTIUM *acri medulla, vulgare. Ferr. Heſp.* The common *Sevil* Orange.
2. AURANTIUM *medulla dulci, vulgare. Ferr. Heſp.* The ſweet *Sevil* Orange.
3. AURANTIUM *Sinenſe. Ferr. Heſp.* The *China* Orange.
4. AURANTIUM *criſpo folio. Ferr. Heſp.* The curl'd-leav'd Orange.
5. AURANTIUM *criſpo folio, elegantiſſime variegato. Boerh. Ind.* The ſtriped curl'd-leav'd Orange.
6. AURANTIUM *corniculatum. Ferr. Heſp.* The horned Orange.
7. AURANTIUM *folio variegato, vulgare, Anglicum dictum, Boerh. Ind.* The common ſtriped Orange.
8. AURANTIUM *hermaphroditum, partim Aurantium, partim Citrium.* The Hermaphrodite Orange.
9. AURANTIUM *anguſto ſalicis folio dictum. Boerh. Ind.* The Willow-leav'd Orange, *commonly call'd*, The *Turkey* Orange.
10. AURANTIUM *anguſto ſalicis folio, elegantiſſime variegato.* The ſtriped *Turkey* Orange.
11. AURANTIUM *fructu maximo, Indiæ Orientalis. Boerh. Ind.* The Pumpelmoes, *or* Shaddock.
12. AURANTIUM *flore duplici.* The double flower'd Orange.
13. AURANTIUM *fructu minimo.* The Nutmeg *or* Dwarf Orange.
14. AURANTIUM *fructu minimo, foliis ex albo variegatis.* The ſtriped Nutmeg *or* Dwarf Orange.

There is alſo a great Variety of *Oranges* with ſtriped Leaves, to be found in the curious Collections of theſe Trees, which differ in the Colour or Manner of the Stripes or Blotches; but theſe I ſhall paſs over, and proceed firſt to the Manner of raiſing them from Seed.

If you purpoſe to raiſe Stocks for budding of *Oranges*, you ſhould procure ſome *Citron*-Seeds which were duly ripen'd; for the Stocks of this Kind are preferable to any other, both for Quickneſs of Growth, as alſo that they will take Buds of either *Orange*, *Lemon*, or *Citron*: The beſt Seeds are uſually to be had from rotten Fruits, which are commonly eaſy to be procured in the Spring of the Year: Then prepare a good Hot-bed of either Horſe-dung or Tanners-bark, the laſt of which is by much the better, if you can eaſily procure it: When this Bed is in a moderate Temper for Heat, you muſt ſow your Seeds in Pots of good rich Earth, and plunge them into the Hot-bed, obſerving to give them Water frequently, and ſhade the Glaſſes with Mats in the great Heat of the Day; and raiſing the Glaſſes to give proper Air, leſt the Seeds ſhould ſuffer by too great Heat: In three Weeks Time your Seeds will come up; and if the young Plants are not ſtunted, either for want of proper Heat or Moiſture, they will be, in a Month's Time after their Appearance, fit to tranſplant into ſingle Pots; you muſt therefore renew your Hot-bed; and having prepared a Quantity of ſmall Half-penny Pots, (which are about five Inches over at the Top) fill theſe half full of good freſh Earth, mix'd with very rotten Cow-dung; and then ſhake out the young Plants from the large Pots, with all the Earth about them, that you may the better ſeparate the Plants without tearing their Roots; and having put a ſingle Plant into each of the ſmall Pots, fill them up with the ſame Earth as before directed, plunging the Pots into the new Hot-bed, giving them a good Watering to fix the Earth to their Roots, and obſerve to repeat the ſame very often, (for this Plant, when in a Hot-bed, requires much Water) and be ſure to ſcreen them from the Sun in the Heat of the Day: In this Method, with due Care, your Plants will grow to be two Feet high by *July*, when you muſt begin to harden them by degrees, in raiſing your Glaſſes very high; and when the Weather is good, take them quite off, but do not expoſe them to the open Sun in the Heat of the Day, which would be very injurious to them, eſpecially while young: Toward the End of *September* you muſt houſe them, obſerving to place them near the Windows of the Green-houſe, to prevent the Damps from moulding their tender Shoots: During the Winter-ſeaſon they may be often refreſhed with Water, but it muſt be done ſparingly, giving them but a little each Time; and in *March* or *April*, waſh their Heads and Stems, to clear them from the Filth that may have ſettled thereon, during their being in the Houſe; and you muſt alſo give them a gentle Hot-bed in the Spring, which will greatly forward them; but harden them by the Beginning of *June*, that they may be in right Order to bud in *Auguſt*, when you ſhould make Choice of Cuttings from Trees that are healthy and fruitful, of whatever Kinds you pleaſe, obſerving that the Shoots are round, the Buds of theſe being much better and eaſier to part from the Wood than ſuch as are flat: When you have budded the Stocks, you ſhould remove them into a Green-houſe, to defend them from Wet, turning the Buds from the Sun; but let them have as much free Air as poſſible, and refreſh them often with Water: In a Month's Time after budding, you will ſee which of them has taken; you muſt then untie them, that the Binding may not pinch their Buds, and let them remain in the Green-houſe all the Winter, and in the Spring prepare a moderate Hot-bed of Tanners-bark; and after having cut off the Stocks about three Inches above the Buds, plunge their Pots into the Hot-bed, obſerving to give them Air and Water, as the Heat of the Weather ſhall require; but be ſure to ſcreen them from the violent Heat of the Sun during the Heat of the Day: In this Management, if your Buds ſhoot kindly, they will grow to the Height of three Feet by *July*; at which time you muſt begin to harden them before the cold Weather comes on, that they may the better ſtand in the Green-houſe the following Winter: and as this will be a ſufficient Height for the Stems, you may ſtop the leading Shoot, in order to force out lateral Branches: In the firſt Winter after their ſhooting, you muſt keep them very warm; for by forcing them in the Bark-bed, they will be ſomewhat tenderer; but it is very neceſſary to raiſe them to their Height in one Seaſon, that their Stems may be ſtrait: for in ſuch Trees which are two or more Years growing to their heading Height, the Stems are always crooked: In the ſucceeding Years, their Management will be the ſame as in full-grown Trees, which will be hereafter treated of; I ſhall therefore now proceed to treat of the Management of ſuch Trees as are brought over every Year in Cheſts from *Italy*; which is, indeed, by much the quicker Way of furniſhing a Green-houſe with large Trees; for thoſe which are raiſed from Seeds in *England*, will not grow ſo large in their Stems under ten or twelve Years as theſe will have when brought over; and altho' their Heads are ſmall when we receive them, yet in three Years, with good Management, they will obtain large Heads, and produce Fruit.

In the Choice of theſe Trees, obſerve, firſt, the Difference of their Shoots and Leaves, (if they have any upon them) to diſtinguiſh their different Sorts; alſo prefer thoſe that have two good Buds in each Stock, (for many of them have but one, which will always produce an irregular Head;) the Straitneſs of the Stem, Freſhneſs of the Branches, and Plumpneſs of the Bark, are neceſſary Obſervations.

When you have furniſhed yourſelf with a Parcel of Trees, you muſt prepare a moderate Hot-bed of Tanners-bark, in Length and Breadth according to the Number of Trees; then put your Trees into a Tub of Water upright, about half-way of the Stems, leaving the Head and upper Part of the Stem out of the Water, the better to draw and imbibe the Moiſture: In this Situation they may remain two or three Days, (according to their Plumpneſs when you received them) then take them out, and clean their Roots from all Filth, cutting off all broken or bruiſed Roots, and all the ſmall Fibres, which are quite dried by being ſo long out of the Earth, and ſcrub the Stems with an hard Hair-bruſh, cleaning them afterwards with a Cloth; then cut off the Branches about ſix Inches from the Stem; and having prepared a Quantity of good freſh Earth, mix'd with very rotten Neats-dung, plant your Trees therein, obſerving never to put them into large Pots; for if they are but big enough to contain their Roots, it is ſufficient at firſt planting; and be ſure to put ſome Potſheards and large Stones in the Bottom of each Pot, to keep the Holes at the Bottom of the Pots from being ſtopp'd with Earth, that the Water may freely paſs off; then plunge theſe Pots into the Bark-bed, watering them well to ſettle the Earth to their Roots, frequently repeating the ſame as they may require it; and obſerve to ſcreen the Glaſſes of your Hot-bed from the Sun in the Heat of the Day.

If your Trees take to grow kindly, (as there is little Reaſon to doubt of it, if the Directions given be duly obſerved) they will have made ſtrong Shoots by the Beginning of *June*; at which Time you ſhould ſtop their Leaders, to obtain lateral Branches to furniſh their Heads: and now you muſt give them Air plentifully, and begin to harden them, that in the Middle of *July* they may be removed into the open Air, in ſome warm Situation, defended from the great Heat of the Sun and Winds, that they may be harden'd before Winter: About the End of *September* you ſhould houſe theſe Plants, ſetting them at firſt in the Front of the Green-houſe near the Glaſſes, keeping the Windows open at all Times when the Weather will permit; and about the latter End of *October*, when you bring in the

Myrtles, and other leſs tender Trees, you muſt ſet your *Oranges* in the warmeſt and beſt Part of the Houſe, placing lower Plants or Trees in the Front to hide their Stems: During the Winter, let your Waterings be frequent, but give them but little at a Time; for now their Heads are but ſmall, and therefore incapable to diſcharge too great a Quantity of Moiſture; and take great Care to guard them from Froſt.

In the Spring, when you begin to take out ſome of your hardieſt Sorts of Plants, to thin your Houſe, waſh and cleanſe the Stems and Leaves of your *Orange-Trees*, taking out the upper Part of the Earth in the Pots, filling them up again with good, freſh, rich Earth, laying thereon a little rotten Neats-dung round the Outer-ſide of the Pots, but do not let it lie near the Stem of the Trees; then place them at wider Diſtances in the Houſe, that the Air may circulate round their Heads, giving them Air diſcretionally as the Weather grows warm; but do not remove them into the open Air until the Middle of *May*, that the Weather is ſettled; for many Times, when they are removed out too ſoon, the Mornings often proving Cold, give them at leaſt a great Check, and many Times kill the extreme weak Part of the Shoots: Let the Situation for your *Orange*-Trees, during the Summer Seaſon, be as much defended from the Sun in the Heat of the Day, and ſtrong Winds, as poſſible, by tall Trees and Hedges, both of which, if they are expoſed thereto, are very hurtful to them.

As theſe Trees advance, it will be neceſſary in the Summer to ſtop ſtrong Shoots, when they grow irregular, to force out lateral Branches to fill the Head; but do not pinch off the Tops of all the Shoots, (as is the Practice of ſome) which will fill the Tree with ſmall Shoots, too weak to ſupport Fruit; but endeavour to form a regular Head, and obtain ſtrong Shoots, taking away weak trifling Branches where they are too cloſe.

During the Summer Seaſon your *Orange*-Trees will require frequent and plentiful Waterings in dry Weather, eſpecially if they are large; therefore you ſhould endeavour to have the Water as near the Trees as poſſible, to ſave the Trouble of carrying it, which, in a large Quantity of Trees, takes up much Time: Your Water ſhould be ſoft, and expoſed to the Air, but never add Dung of any ſort thereto, which, altho' by many frequently recommended, yet has always been found deſtructive to theſe and all other Trees, if much uſed; it being like hot Liquors to human Bodies, which at firſt taking ſeem to add Vigour, yet certainly leave the Body weaker after ſome Time than before.

Your *Orange*-Trees will require to be ſhifted and new potted every Year; therefore you muſt prepare a Quantity of good Earth, at leaſt a Year before you intend to uſe it, that it may be well mix'd, and perfectly rotten: the beſt Seaſon for this Work is about the End of *April*, that they may have taken freſh Root before they are removed out of the Green-houſe; and when this Work is performed, it will be neceſſary to let them remain in the Houſe a Fortnight longer than uſual, to be well ſettled.

In the performing this Work, after you have drawn the Trees out of the Pots, you muſt cut off all the Roots round the Outſide of the Ball of Earth, and take away all mouldy Roots, (if any ſuch be) then with a ſharp Iron Inſtrument, get as much of the old Earth from between the Roots as poſſible, being careful not to break or tear the Roots; then ſet the Root of the Tree into a large Tub of Water, for about a Quarter of an Hour, to ſoak the under Part of the Ball of Earth; and afterwards ſcrub the Stems of the Trees with a hard Hair-bruſh, cleaning them and the Heads with Water and a ſoft Woollen Cloth; your Pots being prepared, with ſome Potſheards and large Stones in the Bottom, put ſome of your freſh Earth into the Pot, about two Inches thick, and having placed your Tree thereon in the Middle of the Pot upright, fill it up with the ſame rich Earth, preſſing it down hard with your Hands; then water the Tree all over the Head, with a Watering-pot that has a Roſe upon the Spout, to let the Water fall light and thick, (as in a Shower of Rain;) and in watering theſe Trees, do it in the ſame Manner, during the Time they abide in the Houſe after ſhifting; this will greatly refreſh their Heads, and promote their taking freſh Roots.

When you firſt ſet theſe Trees abroad after ſhifting, you ſhould place them near the Shelter of Hedges, and faſten their Stems to ſtrong Stakes, to prevent their being diſturbed by Winds, which ſometimes will blow freſh-planted Trees out of the Pots, if too much expoſed thereto, and thereby greatly injure their new Roots.

If old *Orange*-Trees have been ill managed, and their Heads become ragged and decayed; the beſt Method to reſtore them, is, to cut off the greateſt Part of their Heads early in *March*, and draw them out of the Tubs or Pots, and ſhake off the Earth from their Roots, cutting away all ſmall Fibres and mouldy Roots; and then ſoak and clean their Roots, Stems, and Branches, planting them into good Earth, and ſetting them into a Hot-bed of Tanners-bark, as was directed for ſuch Trees as came from Abroad, managing them in the ſame Manner; by this Method they will produce new Heads, and in two Years time become good Trees again. But if theſe are large Trees, and have grown in Tubs for ſeveral Years, your beſt Way will be, to prepare a Parcel of rough Baſkets, (ſuch as are uſed for baſketing Ever-greens, when ſent to a diſtant Place;) let theſe be ſomewhat leſs than the Tubs you deſign to plant your Trees into, then plant your Trees herein, plunging them into the Hot-bed; and about the Beginning of *July*, when your Trees have good Shoots, you may remove them into the Tubs, with their Baſkets about them, filling the empty Space with the ſame good Earth; this will preſerve your Tubs from rotting in the Bark, and the Trees will do equally as well as if planted into the Tubs at firſt, provided you are careful in removing the Baſkets not to diſturb their Roots; and alſo, let them remain in the Green-houſe a Fortnight or three Weeks after planting, before you ſet them abroad.

Theſe Trees being new potted or tubb'd every other Year, thoſe Years in which they are not ſhifted, you muſt in *April* obſerve to take out as much of the old Earth from the Tops of the Pots and Tubs, and alſo round the Sides of them, as poſſible, without injuring the Roots of the Trees, and fill them up with freſh Earth; you muſt alſo waſh and clean their Stems and Leaves from Filth, which will greatly ſtrengthen their flowering, and cauſe them to ſhoot vigorouſly the following Summer.

In the Management of *Orange*-Trees which are in good Health, the chief Care ſhould be to ſupply them with Water duly, and not (as is ſometimes practiſed) ſtarve them in Winter, whereby their Fibres are dried, and become mouldy, to the great Prejudice of the Trees; nor to give them Water in too great abundance; but rather let their Waterings be frequent, and given in moderate Quantities. You muſt alſo obſerve that the Water has free Paſſage to drain off; for if it be detained in the Tubs or Pots, it will rot the tender Fibres of the Trees. During the Winter Seaſon they muſt have a large Share of Air, when the Weather is favourable; for nothing is more injurious to theſe Trees than ſtifling of them; nor ſhould they be placed too near each other in the Green-houſe; but ſet them at ſuch Diſtance, that their Branches may be clear of each other, and that the Air may circulate freely round their Heads. In Summer they ſhould be placed where the Winds are not violent, and to have the Morning and Evening Sun; for if they are too much expoſed to the Mid-day Sun, they will not thrive. The beſt Situation for them is near ſome large Plantation of Trees, which will break the Force of the Winds, and ſcreen them from the violent Heat of the Sun. In ſuch a Situation they may remain until the Beginning of *October*, or later, according as the Seaſon proves favourable; for if they are carried into the Green-houſe early, and the Autumn ſhould prove warm, it will occaſion the Trees to make freſh Shoots, which will be weak and tender, and ſo liable to periſh in Winter, and ſometimes it will occaſion the Flowering in Winter, which greatly weakens the Trees.

The *Shaddock* and *Citron* are much tenderer than either the *Orange* or *Lemon*, ſo ſhould be ſet into the Green-houſe ſooner, and have a warmer Situation in Winter, otherwiſe their Fruit will all drop off.

The beſt Compoſt for *Orange*-Trees is Two-thirds of freſh Earth from a good Paſture, which ſhould not be too light, nor over-ſtiff, but rather a Hazel Loam; this ſhould be taken about ten Inches deep with the Sward, which ſhould be mixed with the Earth to rot, and One-third Part of Neats-dung; theſe ſhould be mixed together, at leaſt twelve Months before it is uſed, obſerving to turn it over every Month, to mix it well, and to rot the Sward; this will alſo break the Clods, and cauſe the Mould to be finer. Before you make uſe of this Earth, you ſhould paſs it thro' a rough Screen, to ſeparate the great Stones and the Roots of the Sward therefrom; but by no means ſift the Earth too fine, for this is very prejudicial to moſt Plants, but particularly to *Orange*-Trees.

AURICULA MURIS, or PILOSELLA; Mouſe-ear.

This is a ſort of Hawkweed, with ſmall hairy Leaves, which are white underneath; the Plant trails upon the Ground, taking Root at the Joints, by which Means it will ſoon ſpread over a large Compaſs of Ground.

This is very common in *England*; it grows chiefly on dry barren Places, or upon old Walls.

AURICULA URSI, [*i. e.* Bear's-ear; ſo called, becauſe the Antients fancied it reſembled the Ear of a Bear] Bear's-ear, or Auricula.

The *Characters* are;

It hath a perennial Root; the Leaves are ſmoother and thicker than thoſe of the Primroſe; the Cup of the Flower is ſhorter, ſo that the Tube appears naked; the Flower is ſhaped like a Funnel, the upper Part is expanded and divided into five Segments; this is ſucceeded by a globular Seed-veſſel, containing many ſmall Seeds.

To enumerate the Diverſities of this Plant, would be almoſt endleſs and impoſſible: for every Year produces vaſt Quantities of new Flowers, differing in Shape, Size, or Colour of the Flowers; and alſo in the Leaves of theſe Plants, there is as great a Variety, ſo that the ſkilful Floriſt is oftentimes capable of diſtinguiſhing the particular Sorts thereby.

But as it ſeldom happens, that ſuch of theſe Flowers as are at one Time in great Eſteem, continue to be regarded a few Years after, (there being ſtill finer or larger Flowers produced from Seeds, which are what the Floriſts chiefly ſeek after) ſo it would be needleſs to mention any of them: Wherefore I ſhall proceed to give the Characters of a good *Auricula.*

1. *The Stem of the Flower ſhould be lofty and ſtrong.*
2. *The Footſtalk of the Flower ſhould be ſhort, that the Umbel may be regular and cloſe.*
3. *The Pipe or Neck of each Flower ſhould be ſhort, and the Flowers large and regularly ſpread, being no ways inclinable to cup.*
4. *That the Colours are very bright, and well mixed.*
5. *That the Eye of the Flower be large, round, and of a good White, or Yellow, and that the Tube or Neck be not too wide.*

All the Flowers of this Kind, that want any of the above-mentioned Properties, are now rejected by every good Floriſt; for as the Varieties every Year increaſe from Seeds, ſo the bad ones are turn'd out to make Room for their Betters; but in ſome People the Paſſion for new Flowers ſo much prevails, that ſuppoſing the old Flower greatly preferable to a new one, if it is of their own raiſing, the latter muſt take Place of the old one.

In order to obtain good Flowers from Seeds, you muſt make choice of the beſt Flowers you have, which ſhould be expoſed to the open Air, that they may have the Benefit of Showers, without which they ſeldom produce good Seeds; the Time of their Ripening is in *June*, which you will eaſily know, by their Seed-veſſel turning to a brown Colour, and Opening; you muſt therefore be careful leſt the Seeds be ſcatter'd out of the Veſſel, for it will not be all fit to gather at the ſame Time.

The Time for ſowing this Seed, is commonly in *Auguſt*; but if it be ſown any Time before *Chriſtmas*, it will be Time enough.

The beſt Soil for this Seed, is good, freſh, light, ſandy Mould, mix'd with very rotten Neat's-dung, or Tanners-bark; with this you ſhould fill your Pots, Boxes, or Baſkets, in which you intend to ſow your Seeds; and having levell'd the Surface of the Earth very ſmooth, ſow your Seeds thereon, covering it very lightly with rotten willow Mould, then cover the Box, *&c.* with a Net or Wire, to prevent the Cats, Fowls, *&c.* from ſcratching out, or burying your Seeds too deep; let theſe Boxes, *&c.* be placed ſo as to receive half the Day's Sun, during the Winter Seaſon; but in the Beginning of *March*, remove them where they may have only the Morning Sun till Ten of the Clock; for your young Plants will now ſoon begin to appear, which, if expoſed to one whole Day's Sun only, will be all deſtroyed.

During the Summer Seaſon, in dry Weather, often refreſh them with Water; but never give them too great Quantities at once: In the *July* following, your Plants will be large enough to tranſplant, at which Time you muſt prepare a Bed, or Boxes, filled with the above-mention'd Soil, in which you may plant them about three Inches ſquare, and (if in Beds) you muſt ſhade them every Day, till they are thoroughly rooted, as alſo in very hot dry Weather; but if they are in Baſkets or Boxes, they may be removed to a ſhady Place.

When you have taken all your Plants which are now come up out of your Boxes or Pots, level the Earth gently again; for it often happens, that ſome of the Seeds will lie in the Ground two Years before they appear, eſpecially, if they were covered too deep when ſown.

The Spring following many of theſe Flowers will ſhew; when you may ſelect ſuch of them as have good Properties, which ſhould be removed each of them into a Pot of the ſame prepared Earth, and preſerved until the next Seaſon, at which Time you will be capable to form a Judgment of the Goodneſs of the Flower; but thoſe that produce plain-colour'd, or ſmall Flowers, ſhould be taken out, and planted in Borders in the Out-parts of the Garden, to make a Shew, or gather for Noſegays, *&c.* the others, which do not produce their Flowers the ſame Year, may be taken up, and tranſplanted into a freſh Bed, to remain till you ſee how they will prove.

The Manner of propagating theſe Flowers when obtained, is from Off-ſets, or Slips, taken from the old Roots in *April*, when the Flowers are in Bloom; theſe Off-ſets muſt be planted into ſmall Pots, filled with the ſame ſort of Earth, as was before directed for the Seedlings, and, during the Summer Seaſon, ſhould be ſet in a ſhady Place, and muſt be often refreſhed with Water, but in the Winter ſhould be ſheltered from the violent Rains; the Spring following, theſe young Plants will produce Flowers, tho' but weak; ſoon after they are paſt flowering, you muſt put them into larger Pots, and the ſecond Year they will blow in Perfection.

But in order to obtain a fine Bloom of theſe Flowers, you muſt obſerve the following Directions.

Firſt, Preſerve your Plants from too much Wet in Winter, which often rots and ſpoils them, but let them have as much free open Air as poſſible; nor ſhould they be too much expoſed to the Sun, which is apt to forward their budding for Flower too ſoon; and the froſty Mornings, which often happen in *March*, do thereby deſtroy their Buds, if they are not protected therefrom.

Secondly, In the Beginning of *February*, if the Weather is mild, you muſt take off the upper Part of the Earth in your *Auriculas* Pots, as low as you can without diſturbing their Roots, and fill up the Pots with freſh rich Earth, which will greatly ſtrengthen them for Bloom; as alſo prepare your Offſets for tranſplanting in *April*, by cauſing them to puſh out new Roots.

Thirdly, You muſt cover your Pots with Mats in froſty Weather, during this Time of their budding for Flower, leſt the ſharp Mornings blight them, and prevent their blowing.

Fourthly, when your Flower-ſtems begin to advance, and the Bloſſom-buds grow turgid, you muſt protect them from haſty Rains, which would waſh off their white mealy *Farina*, and greatly deface the Beauty of their Flowers; but at the ſame time, obſerve to keep them as much uncovered as poſſible, otherwiſe their Stems will be drawn up too weak to ſupport their Flowers, (which is often the Caſe when their Pots are placed under Walls) and give them gentle Waterings to ſtrengthen them; but let none of the Water fall into the Center of the Plant, or among their Leaves.

Fifthly, When your Flowers begin to open, you ſhould remove their Pots upon a Stage, (built with Rows of Shelves, one above another, and covered on the Top, to preſerve them from Wet; this ſhould be open to the Morning Sun, but ſhelter'd from the Heat of the Sun in the Middle of the Day;) in this Poſition they will appear to much greater Advantage, than when the Pots ſtand upon the Ground; for their Flowers being low, their Beauty is hid from us; whereas when they are advanced upon Shelves, we ſee them in a full View; in this Situation they may remain, until the Beauty of their Flowers are paſt; when they muſt be ſet abroad to receive the Rains, and have open free Air, in order to obtain Seeds, which will fail if they are kept too long under Shelter. When your Seed is ripe, obſerve to gather it when it is perfectly dry, and expoſe it to the Sun in a Window upon Papers, to prevent its growing mouldy, and let it remain in the Pods till the Seaſon for ſowing it.

AURICULA URSI MYCONI: *Vide* Verbaſcum.

AXIS *of a Plant.* *Axis* is properly that round, ſmooth Cylinder, about which a Wheel is turn'd; whence, by way of Metaphor, that long, round, ſmooth Part, placed in the Center in ſome Fruits, or Cat-tails, on Nut-trees, *&c.* about which the other Parts are diſpoſed, may be call'd the *Axis.* The *French* call it *Ame*, *Noyau*, or *Poinçon.*

AZEDARACH, the Bead-tree.

The *Characters* are;

It hath pennated Leaves ſomewhat like thoſe of the Aſh; the Flowers conſiſt of five Leaves, which expand in Form of a Roſe; in the Center of the Flower is a long fimbriated Tube, containing the Style; the Fruit is roundiſh and fleſhy, containing a hard furrow'd Nut, which is divided into five Cells, each containing one oblong broadiſh Seed.

The *Species* are;

1. AZEDARACH. *Dod.* The Bead-tree.
2. AZEDARACH *ſemper-virens & florens. Tourn.* The Bead-tree, which is always green and flowering.

The firſt Sort is propagated only by Seeds, (which may be obtained from *Italy* or *Spain*, where theſe Trees annually produce ripe Fruits in the Gardens where they are planted ; for it is not an Inhabitant of either of thoſe Countries :) the Seeds or Berries ſhould be ſown in Pots filled with good freſh light Earth, and plunged into a Hot-bed of Tanners-bark, where (if the Seeds are freſh) they will come up in about two Months Time : When the Plants are come up, you ſhould water them frequently, and begin to let them have a large Quantity of free Air, by raiſing the Glaſſes every Day ; and in *July* you ſhould expoſe them to the open Air, in a well ſhelter'd Situation, that they may be harden'd before Winter. In *October* you ſhould remove the Pots into the Conſervatory, where they ſhould be placed near the Windows, that they may enjoy free open Air, when the Weather is open ; for they don't care to be over-topp'd with other Plants. During the Winter Seaſon, you muſt refreſh them gently with Water ; but by no means repeat this too often, nor give them too much each time ; for their Leaves being fallen, they will not be in a Condition to throw off a Superfluity of Moiſture.

In *March* following, you may ſhake out your Plants from the Seed-pots, and divide them, planting each into a ſeparate ſmall Pot, filled with light freſh Earth, plunging them into a moderate Hot-bed, which will greatly promote their Rooting, and increaſe their Growth ; but you ſhould not draw them too much, but give them a large Share of Air, when the Weather is good ; and in *June* you ſhould remove them out into the open Air as before ; and during the three or four Winters, while the Plants are young, you muſt houſe them, to ſecure them from the Cold ; but when the Plants are grown pretty large and woody, they will endure to be planted in the open Air : The beſt Seaſon for this is in *April*, at which time you ſhould ſhake them out of the Pots, being careful not to break the Earth from the Roots, but only pare off with a Knife the Outſide of the Ball of Earth ; then open your Holes, and put in the Plant, cloſing the Earth to its Roots, obſerving, if the Weather is dry, to give it ſome Water, which ſhould be repeated twice a Week, until the Plants have taken Root : but you muſt obſerve to plant them on a dry Soil, and in a warm Situation, otherwiſe they will be liable to miſcarry in ſevere froſty Weather.

I have been informed, that there was formerly a large Tree of this Kind, in the Gardens of the Biſhop of *London*, at *Fulham*, which produced Flowers ſeveral Years ; but this, with many other valuable Trees, which were grown to a conſiderable Height in the ſame Gardens, have been long ſince demoliſhed.

At preſent I don't know of any of theſe Trees in *England*, which are arrived to any conſiderable Stature ; but I have tranſplanted one Tree, which is ſeven Years old, into the open Ground in the Phyſick-Garden, which I find reſiſts the Cold extremely well without any Shelter.

The outſide Pulp of this Fruit is in ſome Countries eat, but I don't find it is much commended ; but the Nut is by the *Monks* (and other Religious Perſons in *Roman* Catholick Countries) bored thro' with an Awl, and ſtrung as Beads, with which they ſay their *Pater-noſter*, which has occaſioned its being call'd the *Bead-tree*.

The ſecond Sort is at preſent very rare in *England*, being in very few Gardens ; this is much tenderer than the common Sort : It is propagated by Seeds, which muſt be ſown on a Hot-bed in the Spring ; and when the Plants are come up two or three Inches high, they muſt be tranſplanted each into a ſmall Half-penny Pot, filled with freſh light Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to water and ſhade them, until they have taken Root, after which they muſt have Air and Water in Proportion to the Warmth of the Seaſon, or the Bed in which they ſtand. In this Bed they may remain until *Michaelmas*, when the Pots muſt be removed into the Stove, where they muſt have a moderate Share of Heat, and be often refreſhed with Water. The Spring following, they muſt be removed into larger Pots ; and if they are plunged into a moderate Hot-bed, to facilitate their taking Root, it will greatly promote their Growth ; but they ſhould not remain too long in this Bed, nor be too much drawn, which will weaken them. As the Summer advances, ſo they ſhould be inured by Degrees to bear the open Air, into which they ſhould be removed in *June*, obſerving to place them where they may be ſcreen'd from ſtrong Winds, and not too much expoſed to the Mid-day Sun. In this Situation they may remain till *Michaelmas*, when they muſt be removed into the Stove, and managed during the Winter Seaſon as was directed for the foregoing Winter ; and as the Plants grow large, they will be more hardy, when a ſmall Share of Heat will preſerve them in Winter, and in Summer they may be expoſed in a well ſhelter'd Situation. With this Management they will produce Flowers extremely well, and ſometimes they will fruit in *Europe*.

The common Sort has flower'd three or four Years ſucceſſively in the *Phyſick Garden* at *Chelſea* ; and the laſt Seaſon there was a good Quantity of Fruit on ſeveral Plants, but they were not perfected : but as theſe Plants are young, they can't nouriſh the Fruit ſo well as thoſe which are well grown ; ſo I doubt not but in a few Years they may produce ripe Fruit here.

AZEROLE, or L'AZAROLE : *Vide* Meſpilus.

B A

BACCA, *i. e.* a Berry, is a round Fruit, for the moſt part ſoft, and covered with a thin Skin, containing Seeds in a pulpy Subſtance ; but if it be harder, and covered with a thicker Skin, it is called *Pomum* ; *i. e.* an Apple.

BACCÆ, are ſmall roundiſh Fruits, that grow ſcattering upon Trees and Shrubs ; and in that are diſtinguiſh'd from *Acini*, which are Berries hanging in Cluſters.

Baccæ, in a more ſtrict Senſe, are uſed for a ſmaller thin-ſkinn'd Fruit, of a ſoft Pulp and Fleſh, including moiſt Seeds in a thinner Membrane.

BACCHARIS, Plowman's Spikenard. *Vide* Conyza.

BACCIFEROUS, [*Baccifer, Lat.* of *Bacca*, a Berry, and *fero, Lat.* I bear] is an Epithet added to the Names of any *Trees, Shrubs*, or *Plants*, that bear Berries, as *Bryony, Dwarf Honey-ſuckle, Lily of the Valley, Aſparagus, Butchers Broom, Night-ſhade, Solomon's-ſeal*, and many others.

BALAUSTIA. *Vide* Punica.

BALAUSTIUM, the Flower of the wild Pomegranate.

BALLOTE, [Βαλλωτὴ, ſo call'd by *Dioſcorides*, and is reckon'd among the Plants that were known to the Antients ; the Virtues of which *Dioſcorides* hath ſufficiently ſet forth. It is alſo call'd *Herba Jaculatoria*, becauſe it is good for thoſe wounded with Darts] Stinking black Horehound.

The *Characters* are ;

It hath Leaves like the Dead-Nettle, *the Flowers are produced in Bunches at the Joints of the Stalks, from the Pedicle of the Leaves, which have one ſingle Footſtalk, and ſtand but on one Side of the Stalks ; the Cup of the Flower is tubulous, and hath five Angles, divided into five Segments at the Top ; the* Galea *(or Creſt) of the Flower is hollow, and the Beard is cut into three Parts, the middle Part being broad, and ſhaped like a Heart ; each Flower is ſucceeded by four naked Seeds.*

We have two Varieties of this Plant growing wild in *England* ; which are,

1. BALLOTE. *Matth.* 825. *Marrubrium nigrum, ſive Ballote. J. B.* The ſtinking black Horehound.
2. BALLOTE, *flore albo. Tourn.* Stinking black Horehound, with white Flowers.

The firſt of theſe Plants is common upon moſt dry Banks near *London*, and is ſeldom ſuffer'd to have a Place in Gardens ; but this being a Plant ſometimes uſed in *Phyſick*, I thought proper to mention it in this Place : It may be eaſily propagated by either Seeds or Roots, but is very apt to increaſe too faſt in a Garden. This is the common *Black Horehound* of the Shops. The ſecond Sort is a Variety of the firſt, which is found ſometimes with the other wild.

BALM. *Vide* Meliſſa.

BALSAMINA, the Female Balſamine, *or* Balſam Apple.

The *Characters* are ;

It hath an anomalous Flower, which conſiſts of an unequal Number of Leaves, having ſometimes two, three, four, ſix, or more Leaves, with a Calcar *or* Spur *to the Flower : Theſe Flowers are ſucceeded by turbinated Veſſels, reſembling Pods, which, when ripe, upon the firſt Touch burſt, and caſt forth ſeveral roundiſh Seeds.*

The *Species* are ;

1. BALSAMINA *lutea, ſive Noli me tangere. C. B.* The yellow Balſamine, *or* Touch me not.

2. Balsamina *fœmina, flore purpureo.* The Female Balſamine, with purple Flowers.
3. Balsamina *fœmina, flore candido. H. L.* The white Female Balſamine.
4. Basamina *fœmina, flore rubro. H. L.* The Red Female Balſamine.
5. Balsamina *fœmina, flore majore candido. Tourn.* The large white-flower'd Balſamine.
6. Balsamina *fœmina, flore majore ſpecioſo. Tourn.* The large ſpecious-flower'd Female Balſamine.
7. Balsamina *fœmina, flore partim candido, partim purpureo.* The purple and white-ſtrip'd Balſamine.
8. Balsamina *fœmina, flore majore, elegantiſſime variegato.* The large-flower'd ſtrip'd Balſamine.
9. Balsamina *fœmina, flore majore pleno, elegantiſſime variegato.* The double large-flower'd ſtrip'd Balſamine, or immortal Eagle Flower.

The firſt of theſe *Species* is preſerv'd in Gardens, for the Diverſion it affords when the Seed Veſſels are ripe, by deſiring ignorant Perſons to gather them, who are ſurpriz'd to find, upon the firſt Touch, that the Pods fly to Pieces in their Hands: This Plant is very hardy in reſpect to Cold; and altho' it is Annual, yet, if ſuffer'd to caſt its Seeds, will come up every Spring without any Care; it delights beſt in moiſt ſhady Places, where, if it is not rooted out, it will multiply faſt enough.

The other Sorts are commonly rais'd on Hot-beds in the Spring, and afterwards planted into Pots or Borders, to adorn Court-Yards and Parterres. The ſecond, third, and fourth Sorts will come up in the common Ground, without any artificial Heat, and make ſtronger Plants than when rais'd in a Hot-bed, and ſtand longer in Flower, but the four laſt mention'd Sorts are much tenderer, and muſt be rais'd on a Hot-bed, and afterward planted in Pots, and ſet into a freſh Hot-bed to bring them forward (eſpecially the laſt Sort) which otherwiſe will not flower ſoon enough to produce ripe Seeds. There are two different Kinds of this large double-flower'd *Balſamine*, one is brought from the *Weſt-Indies*, by the Name of the *Cockſpur*; this is very apt to produce large ſtrong Plants, but rarely begins to flower till the End of the Summer, and then very often hath but ſmall Quantities of Flowers, and ſeldom produces ripe Seeds in *England*.

The other Sort is brought from *China*, by the Name of *Immortal Eagle Flower*; this Plant produces large beautiful double Flowers in great Quantities, and is one of the fineſt annual Plants we have, continuing a long Time in Flower (eſpecially if ſhelter'd from the Violence of Wind and Rain, both of which are great Enemies to this Plant); this Sort alſo ripens Seeds very well, but is apt to degenerate in a few Years with us to ſingle Flowers, and plain Colours.

Theſe Plants muſt be taken great Care of while young, and in the Hot-bed, particularly to give them as much free Air as poſſible, to prevent their running up too ſlender; nor muſt they have much Water, which often rots them at Bottom near the Surface of the Ground.

When you put theſe Plants into Pots, obſerve to chuſe ſuch as have clear ſpotted Stems, which always produce ſtrip'd Flowers, and thoſe with greeniſh Stems white Flowers, and the red Stems red Flowers: So that if you have Plants enough, you need only take the ſtrip'd ones. And in order to preſerve them from degenerating, you ſhould take off all ſingle or plain-colour'd Flowers from your Plants, and not ſuffer them to ſeed, by which means you will preſerve this beautiful Plant many Years longer than you otherways could.

BALSAMITA; Coſtus Hortorum, or Coſt-Mary.

The *Characters* are;

The Flowers are naked, and of a yellow Colour, growing in Umbels on the Top of the Stalks; the Leaves are intire, and are crenated about the Edges.

We have at preſent but one *Species* of this Plant in the *Engliſh* Gardens, which is;

Balsamita *major. Dod.* The large Coſt-Mary.

This Plant was formerly in greater Requeſt than it is at preſent; many People were fond of it in Soups with other Herbs; and its Uſe in Medicine is, at preſent, but ſmall: However, as it hath been an old Garden-Herb, I thought proper to mention it in this Place.

This Plant increaſes very faſt at the Root, and will grow in almoſt any Soil or Situation, ſo that whoever hath a mind to propagate it, need only plant a few Slips in the Spring or Autumn, in any common Border, and they will ſoon be furniſh'd with enough of it.

BAMIA MOSCATA. *Vide* Ketmia.

BANANA. *Vide* Muſa.

BANISTERA. *Houſt.*

This was ſo called from a famous *Botaniſt*, who loſt his Life in the Search of Plants in *Virginia*, ſo we have no *Engliſh* Name for the Plant.

The *Characters* are;

It hath a papilionaceous Flower, which is ſucceeded by one naked Seed, whoſe outer Membrane is extended into a winged Leaf, after the Manner of the Maple Seed.

The *Species* are;

1. Banistera *Americana ſcandens, foliis laurinis. Houſt.* Climbing Baniſtera with Laurel Leaves.
2. Banistera *Americana ſcandens, folio ſubrotundo, flore ex aureo coccineo. Houſt.* Climbing *American* Baniſtera, with a roundiſh Leaf, and a Flower from Gold to a ſcarlet Colour.
3. Banistera *Americana ſcandens, foliis citri, flore cæruleo ſpicato. Houſt.* Climbing *American* Baniſtera, with a blue ſpiked Flower.
4. Banistera *Americana ſcandens, foliis ſubrotundis, ſubtus pubeſcentibus. Houſt.* Climbing *American* Baniſtera, with roundiſh Leaves, of a whitiſh Colour underneath.
5. Banistera *Americana ſcandens, Pſeudoacaciæ folio, flore purpuraſcente. Houſt.* Climbing *American* Baniſtera, with a baſtard Acacia Leaf, and a purpliſh Flower.

Theſe Plants are all of them Natives in the warmeſt Parts of *America*, where they grow in the Woods, and twiſt themſelves round the Trunks of other Trees or Plants which grow near them, ſome of them growing four or five Feet high, and others will riſe to the Height of ten, twelve, or fourteen Feet; but muſt be ſupported by other Plants, for they do not grow erect.

The firſt, ſecond and third Sorts grow plentifully in the Woods in *Jamaica*, but the other two Sorts were collected by the late Dr. *William Houſtoun*, at *Carthagena* in the *Spaniſh Weſt-Indies*. Theſe Plants were called *Maples*, by Sir *Hans Sloane* and Father *Plumier*, from the Reſemblance which their Seeds have to thoſe of the *Maple*; but the Flower differing ſo remarkably from that of the *Maple*, the late Dr. *Houſtoun*, with good reaſon, ſeparated it from that *Genus*, and gave the Name of *Baniſtera* to them.

Theſe Plants may be propagated by Seeds which muſt be procured from the Places of their Growth. The ſureſt Method to ſucced, is to take the Seeds when they are fully ripe, and put them into a Tub of Earth or Sand, (for if they are brought over dry, they will not grow): when the Seeds arrive, they ſhould be immediately ſown in Pots filled light freſh Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to keep the Earth conſtantly moiſt. Theſe Seeds will ſometimes lye ſeveral Months in the Ground, before they ſhoot, and at other times they will come up in a Month or five Weeks after ſowing. When the Plants begin to appear, they muſt be duly watered, and conſtantly kept clear from Weeds, and in warm Weather the Glaſſes ſhould be raiſed to admit freſh Air to the Plants. When they are about two Inches high, they ſhould be carefully ſhaken out of the Pots, and parted, planting each into a ſeparate ſmall Pot,and then plunged into the Hot-bed again, obſerving to water and ſhade them until they have taken new Root; after which time they muſt have a large Share of freſh Air in warm Weather, and muſt be frequently watered.

When the Plants have filled theſe ſmall Pots with their Roots, they ſhould be ſhaken out, and tranſplanted into Pots of a larger Size; and muſt be plunged into the Bark-bed again. When they are grown too tall to remain under the Glaſſes of the Hot-bed, they muſt be removed into the Bark-ſtove, and placed amongſt other tender exotick Plants, where if they thrive well, they will produce Flowers in two or three Years.

BARBA CARPA; *vide* Ulmaria.

BARBA JOVIS; Jupiter's Beard, *or* Silver Buſh.

The *Characters* are;

It hath pennated or winged Leaves; the Flowers are papilionaceous, and are ſucceeded by ſhort oval Pods, in which is, for the moſt part, contained one roundiſh Seed.

The *Species* are;

1. BARBA *Jovis, pulchre lucens. J. B.* The Silver Buſh; *vulgo.*

2. BARBA *Jovis, Hiſpanica, incana, flore luteo. Tourn. Spaniſh* Jupiter's Beard.

3. BARBA *Jovis, Caroliniana, arboreſcens, Pſeudoacaciæ foliis.* Baſtard Indigo *Incolis. Rand. Act. Phil. N.* 407. Baſtard Indigo, or *Carolina* Barba Jovis.

4. BARBA *Jovis, Africana, foliis viridibus pinnatis, flore cæruleo. Boerh. Ind.* The *African* Jupiter's Beard, with deep green Leaves and blue Flowers.

5. BARBA *Jovis Græca, linariæ folio argenteo ampliori, flore luteo parvo. Tourn. Cor. Greek* Jupiter's Beard, with a ſilver toad-flax Leaf, and ſmall yellow Flowers.

6. BARBA *Jovis Americana, annua, humilis, ramoſiſſima, floribus ſpicatis cæruleis.* Dwarf annual *American* Jupiter's Beard, with blue Flowers growing in a Spike.

7. BARBA *Jovis Americana, ſcandens, floribus cæruleis, ad alis foliorum conglobatis.* Climbing *American* Jupiter's Beard, with blue Flowers, coming out from the Wings of the Leaves.

8. BARBA *Jovis Americana, humilis, rotundifolia & villoſa, flore vario. Houſt.* Dwarf *Americana* Jupiter's Beard, with round hairy Leaves and a variable Flower.

9. BARBA *Jovis Cretica fruteſcens, incana, flore ſpicato purpureo amplo. Breyn. Prod.* 2. Shrubby Jupiter's Beard of *Crete*, with white Leaves, and large purple Flowers growing in a Spike.

The firſt of theſe Plants is very common in many Gardens; the ſecond is, at preſent, more rare with us; the third Sort was rais'd from Seeds ſent from *Carolina*, by Mr. *Cateſby*, and is by the Inhabitants made into a coarſe ſort of *Indigo*: This grows to be a large Shrub, and will reſiſt the Cold in the open Air very well; it is alſo a beautiful flowering Shrub, and for Diverſity merits a Place in Quarters of curious flowering Trees. This Plant will ſometimes produce ripe Seeds, by which means it may be eaſily propagated, and will alſo take Root by laying down the Branches in the Spring, which by the next Spring will be fit to tranſplant out: It delights in a ſandy dry Soil, and muſt have Room to ſpread its Branches, which extend a conſiderable Diſtance from the Stem: This Tree is very ſubject to ſplit if expos'd to ſtrong Winds.

The fourth Sort may be preſerv'd with the firſt and ſecond in a common Green-Houſe: They are not very tender, but require much free Air in good Weather, and frequent Waterings; They are all propagated by Seeds, which ſhould be ſown on a Hot-bed in the Spring, and tranſplanted into Pots of good light Earth (but not over-dung'd) and hous'd in Winter, with Myrtles, *&c.* and have a good Effect in adding to the Diverſity of the Green-houſe: Theſe Plants will ſometimes take Root from Cuttings; but as 'tis difficult to obtain Plants this Way, and the Seeds many times ripen very well with us, ſo I would recommend the raiſing them that Way, as the moſt ſure and expeditious.

The fifth and ninth Sorts were diſcovered by Dr. *Tournefort* in the *Archipelago*, and were brought to the Royal Garden at *Paris*, from whence they have been diſtributed to ſeveral of the *European* Gardens: Theſe may be propagated in the ſame Manner as the firſt Sort, and do require the ſame Culture.

The ſixth Sort is an annual Plant which was diſcovered by Dr. *William Houſtoun* at *Campechy*. This is only propagated by Seeds, which muſt be ſown very early in the Spring on a good Hot-bed, and when the Plants are come up two Inches high, they ſhould be each tranſplanted into a ſmall Pot filled with freſh light Earth, and plunged into a Hot-bed of *Tanners* Bark, obſerving to water and ſhade 'em until they have taken Root, after which time they ſhould have *Air* and *Water* in proportion to the Heat of the Seaſon. In *July* theſe Plants will flower, and if the Plants are preſerved either in the Stove, or under Glaſſes, they will perfect their Seeds in *September*, and ſoon after they will decay.

The ſeventh and eighth Sorts may be propagated from Seeds, which muſt be ſown as hath been directed for the ſixth; but theſe are abiding Plants, which muſt be placed in the Stove amongſt other *American* Plants, and will produce their Flowers every Year.

BARBAREA, or Winter-Creſs; *vide* Siſymbrium.

BARDANA, Burdock; *vide* LAPPA.

BAROMETER, [of βαρόμετρον, of βάρος a Weight or Burden, and μέτρον a Meaſure] is an Inſtrument or Machine for meaſuring the Weight of the Atmoſphere, or the minute Variations of the Weight or Preſſure of the incumbent Air, in order to determinate the Changes of Weather.

This Machine is founded on the *Toricellian* Experiment, ſo call'd from the Inventor *Toricellius*.

It conſiſts of a long Tube of Glaſs, hermetically ſealed at one End; and being fill'd with Quickſilver, is inverted ſo as to have one End of it immerg'd in a Baſon of ſtagnant Quickſilver, and the other hermetically ſeal'd, which is expos'd to the Preſſure of the outward Air: Out of which open End (after ſuch Immerſion) the Quickſilver in the Tube being ſuffer'd to run as much as it will into the ſtagnant Quickſilver, in which that Mouth or open End is immers'd; there is wont to remain a Cylinder of Quickſilver ſuſpended in the Tube, about twenty-eight, twenty-nine, or thirty Inches high, meaſuring from the Surface of the ſtagnant Quickſilver perpendicularly; but more or leſs within ſuch Limits, according as the Weight or Preſſure of the Air incumbent on the external ſtagnant Quickſilver expos'd to it, is greater or leſſer, leaving the upper Part of the Tube void, or at leaſt empty of common Air.

The *Phænomena* of the *Barometer* are various; and the Cauſes aſſign'd for them by ſeveral Authors as various; nor is the Uſe of it in predicting the Weather yet perfectly aſcertain'd.

The greateſt Height the Mercury has been known to ſtand at *London*, is thirty Inches three Eights, and its leaſt twenty-eight Inches: And though, as Mr. *Boyle* obſerves, the *Phænomena* of the *Barometer* are ſo very precarious, that it is very difficult to form any general Rules about the Riſe and Fall thereof, in that which ſeems to hold moſt univerſally, *viz.* That when the high Winds blow, the *Mercury* is the lower, ſometimes fail; yet the following Obſervations have been made by ſeveral Authors.

Dr. *Halley* obſerves, that in calm Weather, when the Air is inclin'd to rain, the Mercury is continually low; in ſerene good ſettled Weather, high.

That on great *Winds*, tho' unaccompany'd with Rain, the Mercury is loweſt of all, with regard to the Point of the Compaſs the Wind blows on; that, *cæteris paribus*, the greateſt Heights of the Mercury are on Eaſterly and North-eaſterly Winds; that after great Storms of Wind, when the Mercury has been low, it riſes again very faſt.

That in calm froſty Weather it ſtands high.

That the more northernly Places find greater Alterations than the more ſouthern; and that within the *Tropicks*, and near 'em, there is little or no Variation of the Mercury at all.

Dr. *Beal* obſerves, That *cæteris paribus*, the Mercury is higher in cold Weather than in warm, and uſually higher at Morning and Evening than at Mid-day.

That the Mercury is higher in ſettled and fair Weather than either a little before, or after, or in the Rain; and that it generally deſcends lower after Rain than it was before it: If it chance to riſe higher after Rain, it is generally follow'd by a ſettled Serenity.

That there are frequently great Changes in the Air without any perceptible Alterations in the *Barometer*.

As to the Predictions from the *Barometers*, Dr. *Halley* has found,

That the Riſing of the Mercury forebodes fair Weather after foul, and an Eaſterly or North-eaſterly Wind.

That the Falling of the Mercury portends Southerly or Weſterly Winds, with Rain, or ſtormy Winds, or both.

That in a Storm the Mercury beginning to riſe, is a pretty ſure Sign that it begins to abate.

Mr. *Patrick* obſerves, That the Falling of the Mercury in hot Weather preſages Thunder: That when foul Weather happens after the Fall of the Mercury, it ſeldom holds long: And the ſame is obſerv'd, if fair Weather ſucceeds preſently after its Riſe.

Dr. *Halley* alſo obſerves, as we have mention'd, That within the *Tropicks*, and near them, there is very little or no Variation of the Height of the Mercury at all.

Hence Mr. *Pointer* conceives, That the principal Cauſe of the Riſe and Fall of the Mercury is from the variable Winds which are found in the *Temperate Zones*, and whoſe great Unconſtancy here in *England* is moſt notorious.

A ſecond Cauſe he takes to be, uncertain Exhalation and Perſpiration of the Vapours lodging in the Air, whereby it comes to be at one time much more crowded than at another, and conſequently heavier; but this latter in a great meaſure depends upon the former.

And from theſe Principles he endeavours to explain the ſeveral *Phænomena* of *Barometer*.

1. The Mercury's being low, inclines it to Rain, becauſe the Air being light, the Vapours are no longer ſupported thereby, being become ſpecifically heavier than the Medium wherein they are floated; ſo that they deſcend towards the Earth, and in their Fall, meeting with other aqueous Particles, they incorporate together, and form little Drops of Rain; but the Mercury's being at one Time lower than another, is the Ef-

fect of two contrary Winds blowing from the Place where the *Barometer* ſtands; whereby the Air of that Place is carried both Ways from it, and conſequently the incumbent Cylinder of Air is diminiſh'd, and accordingly the Mercury ſinks: As for inſtance, if in the *German* Ocean it ſhould blow a Gale of Weſterly Wind, and at the ſame Time an Eaſterly Wind in the *Iriſh* Sea; or if in *France* it ſhould blow a Northerly Wind, and in *Scotland* a Southerly, it muſt be granted that that Part of the Atmoſpere impendent over *England* would thereby be exhauſted and attenuated, and the Mercury would ſubſide, and the Vapours which before floated in thoſe Parts of the Air, of equal Gravity with themſelves, would ſink to the Earth.

2. The greater Height of the *Barometer* is occaſion'd by two contrary Winds blowing towards the Place of Obſervation, whereby the Air of other Places is brought thither and accumulated; ſo that the incumbent Cylinder of Air being increas'd both in Height and Weight, the Mercury preſſed thereby muſt needs riſe and ſtand high, as long as the Winds continue ſo to blow; and then the Air being ſpecifically heavier, the Vapours are better kept ſuſpended, ſo that they have no Inclination to precipitate and fall down in Drops; which is the Reaſon of the ſerene good Weather, which attends the greater Heights of the Mercury.

3. The Mercury ſinks the loweſt of all by the very rapid Motion of the Air in Storms of Wind.

For the Tract of the Region of the Earth's Surface, wherein theſe Winds rage, not extending all round the Globe, that ſtagnant Air which is left behind, as likewiſe that on the Sides, cannot come in ſo faſt as to ſupply the Evacuation made by ſo ſwift a Current, ſo that the Air muſt neceſſarily be attenuated when and where the ſaid Winds continue to blow, and that more or leſs, according to their Violence: Add to which, that the horizontal Motion of the Air being ſo quick as it is, may, in all Probability, take off ſome Part of the perpendicular Preſſure thereof; and the great Agitation of its Particles, is the Reaſon why the Vapours are diſſipated, and do not condenſe into Drops, ſo as to form Rain, otherwiſe the natural Conſequence of the Air's Rarefaction.

4. The Mercury ſtands the higheſt upon an Eaſterly or North eaſterly Wind, becauſe in the great *Atlantick* Ocean on this Side the thirty-fifth Degree of North Latitude, the Weſterly and South-weſterly Winds blow almoſt always Trade; ſo that when-ever here the Winds come up at Eaſt and North-Eaſt, 'tis ſure to be check'd by a contrary Gale as ſoon as it reaches the Ocean; wherefore, according to what is made out in the ſecond Remark, the Air muſt needs be heap'd over this Iſland, and conſequently the Mercury muſt ſtand high, as often as theſe Winds blow.

This holds true in this Country; but is not a general Rule for others, where the Winds are under different Circumſtances: And he ſays, he has often ſeen the Mercury here as low as twenty-nine Inches upon an Eaſterly Wind, but then it blew exceeding hard, and ſo comes to be accounted for by what was obſerv'd upon the third Remark.

5. In calm froſty Weather, the Mercury generally ſtands high, becauſe, as he conceives, it ſeldom freezes but when the Winds come out of the *Northern* and *North-eaſtern* Quarters, or at leaſt unleſs thoſe Winds blow at no great Diſtance off:

For the Northern Parts of *Germany*, *Denmark*, *Sweden*, *Norway*, and all that Tract, from whence North-eaſtern Winds come, are ſubject to almoſt continual Froſt all the Winter, and thereby the lower Air is very much condens'd, and in that State is brought hitherwards by thoſe Winds; and being accumulated by the Oppoſition of the *Weſterly* Wind blowing in the Ocean, the Mercury muſt needs be preſs'd to a more than ordinary Height; and as a concurring Cauſe, the ſhrinking of the lower Parts of the Air into leſſer Room by Cold, muſt needs cauſe a Deſcent of the upper Parts of the Atmoſphere, to reduce the Cavity made by this Contraction to an *Equilibrium*.

6. After great Storms of Wind, when the Mercury has been very low, it generally riſes again very faſt: He ſays, he once obſerv'd it to riſe an Inch and a half in leſs than ſix Hours after a long continu'd Storm of South-weſt Wind.

The Reaſon is, becauſe the Air being very much rarefy'd by the great Evacuations that ſuch continued Storms make thereof, the neighbouring Air runs in the more ſwiftly, to bring it to an *Equilibrium*, as we ſee Water runs the faſter for having a great Declivity.

7. The Variations are greater in the more northerly Places, as at *Stockholm* greater than at *Paris*, [compar'd by Mr. *Paſcal*] becauſe the more northerly Parts have uſually greater Storms of Wind than the more *ſoutherly*, whereby the Mercury ſhould ſink lower in that Extreme; and then the northerly Winds bringing the condens'd and ponderous Air from the Neighbourhood of the Pole, and that again being check'd by a Southerly Wind, at no great Diſtance, and ſo heap'd up, muſt of Neceſſity make the Mercury, in ſuch caſe, ſtand higher in the other Extreme.

8. This Remark, that there is little or no Variation near the Equinoctial, does above all others confirm the Hypotheſis of the variable Winds being the Cauſe of theſe Variations of the Height of the Mercury; for in the Places above-named, there is always an eaſy Gale of Wind, blowing nearly upon the ſame Point, *viz.* E. N. E. at *Barbados*, and E. S. E. at St. *Helena*; ſo that there being no contrary Currents of the Air to exhauſt or accumulate it, the Atmoſphere continues much in the ſame State.

However, upon Hurricanes (the moſt violent of Storms) the Mercury has been obſerv'd very low; but this, but once in two or three Years, and it ſoon recovers its ſettled State, of about twenty-nine Inches and a half.

Dr. *Wallis* alſo made the following Obſervations on the *Barometer*:

That in thick foggy Weather, he found his Quickſilver to riſe, which he aſcrib'd to the Heavineſs of the Vapours in the Air.

That in Sun-ſhiny Weather it roſe, and commonly the clearer, the more; and this he thought might be imputed partly to the Vapours rais'd by the Sun, and making the Air heavier, increaſing the elaſtick or ſpringy Power of the Air: Which latter, he rather adds, becauſe he had ſometimes obſerv'd in Sun-ſhiny Weather, when Clouds had come for ſome conſiderable Time, as ſuppoſe an Hour or two, the Quickſilver has fallen; and then upon the Sun's breaking out again, it has riſen as before.

In rainy Weather it uſes to fall, the Reaſon of which is obvious, becauſe the Air is lightened by ſo much as falls, in ſnowy Weather likewiſe; but not ſo much as in Rains: And he had ſometimes obſerv'd it, upon a hoar Froſt falling in the Night.

In windy Weather he found it generally to fall, and that more univerſally, and more diſcernibly than upon Rain, which he attributed to the Winds moving collaterally, and thereby not ſuffering it to preſs ſo much directly downwards; (the like of which we ſee in Swimming, *&c.*) and that he had never found it lower than in high Winds.

That he had divers times upon diſcerning his Quickſilver to fall, without any viſible Cauſe at home, look'd abroad, and found (by the Appearance of broken Clouds, or otherwiſe) that it had rain'd not far off, tho' not with them, whereupon the Air being then lightened, the heavier Air with them, where it rained not, might have in Part diſcharg'd itſelf on that lighter.

Dr. *Liſter*'s Obſervations on the *Barometer* are as follow:

In *England*, in a violent Storm, or when the Quickſilver is at the very loweſt, it then viſibly breaks, and emits ſmall Particles (as he informs us he had more than once obſerv'd) which Diſorder he looks upon as a kind of fretting; and conſequently at all Times of its Deſcent, it is more or leſs upon the Fret.

In this Diſorder of the Quickſilver, he imagines it to have its Parts contracted; becauſe the Quickſilver them emits freſh Particles of Air into the Tube, which increaſing the Bulk of the Air, and conſequently its Elaſticity, the Quickſilver is neceſſarily depreſs'd thereby.

And that much Air is mix'd with it, appears from the Application of a heated Iron to the Tube, as is practis'd in the purging of it that Way.

Now when the Quickſilver riſes in the Tube (which it certainly does both in hot and froſty Weather) it may then be ſaid to be in a natural State, free, open, and expanded like itſelf, which it ſeems it ever is within the *Tropicks*, and with us only in very hot, and very froſty Weather.

But when it deſcends, it is then contracted, and as it were convuls'd, and drawn together; as it moſtly is in our Climate of *England*, and more or leſs (as we gueſs) in all Places on this Side the *Tropicks*.

Which Contraction plainly appears from the concave Figure of both Surfaces, not only in that of the Quickſilver in the Tube, but alſo, if well obſerv'd, in that which ſtagnates in the Pot or Diſh itſelf.

The Difficulty ſeems to lie in reconciling the ſame Effect of the Quickſilver's riſing in the Tube, from ſuch ſeemingly different Cauſes, as great Heat, and intenſe Froſt: And thoſe who ſhall aſſent in one Particular, and grant that Warmth is a probable Cauſe of its Reſtitution to its Nature, will yet be at a Stand how to imagine, that great Froſt ſhould likewiſe bring the Quickſilver nearer to its own Nature too.

To which he anſwers, that *Salts* liquified, will coagulate or cryſtalize, *i. e.* will return to their own proper Natures, both in Cold, and in Heat; and therefore, tho' moſt Men practiſe the ſetting them in a cool Cellar for that Purpoſe, yet ſome (as *Zwelfer*) adviſe, as the beſt Means to have them ſpeedily and fairly cryſtaliz'd, to keep them conſtantly in *Balno*.

Thus alſo the *Lympha* of the *Blood* becomes a Jelly, if it be ſet in a cool Place, and the ſame is inſpiſſated in like Manner by Warmth.

This Account of Dr. *Liſter*'s, however ingenious, is objected againſt, as coming far ſhort of accounting for the *Phænomena* of the *Barometer*, and that in ſome reſpects it contradicts them.

The Changes of the Weight of the Atmoſphere, muſt be laid down as the Cauſe of thoſe in the *Barometer*; but then whence thoſe Alterations ariſe in the Atmoſphere, will be no eaſy Matter to determine.

It is probable the Winds which are driven this or that Way, may have a great Share; and the Vapours and Exhalations ariſing from the Earth, alſo the Changes of the Air in the neighbouring Regions; and alſo the Flux and Reflux occaſioned in the Air by Moon.

Dr. *Halley* is of Opinion, the Winds and Exhalations are ſufficient, and on their footing, gives a very probable Rationale of the *Barometer*, the Subſtance of which is to the Purpoſe following:

1. The Winds muſt neceſſarily alter the Weight of the Air in any particular Country, and that either by bringing together or accumulating a greater Quantity of Air, and ſo loading the Atmoſphere of any Place; which will be the Caſe, as often as two Winds blow at the ſame Time, from oppoſite Points towards the ſame Point; or by ſweeping away Part of the Air, and removing ſome of the Load, give Room for the Atmoſphere to expand itſelf, which will be the Caſe, when two Winds blow at the ſame Time, and from the ſame Point oppoſite Ways; or in the laſt Place by cutting of the perpendicular Preſſure of the Atmoſphere, which happens as often as any ſingle Wind blows briſkly any Way; it being found by Experiment, that a ſtrong Blaſt of Wind, even made by Art, will render the Atmoſphere lighter, and accordingly the Mercury in a Tube, under which it paſſes, as well as in another at a Diſtance from it, ſubſides conſiderably.

2. The cold, nitrous Particles, and even Air itſelf condens'd in the Northern Parts, and driven elſewhere, muſt load the Atmoſphere, and increaſe its Preſſure.

3. Dry, heavy Exhalations from the Earth, muſt increaſe the Weight of the Atmoſphere, and heighten its Elaſtick Force, as the Specifick Gravity of *Menſtruums* are found to be increas'd, by diſſolv'd Salts and Metals.

4. The *Air* being render'd heavier from theſe and the like Cauſes, is thereby the more able to ſupport the Vapours, which being likewiſe intimately mix'd with it, and ſwimming every where equally throughout it, make the Weather ſerene and fair.

Again, the Air being made lighter from the contrary Cauſes, it becomes unable to ſupport the Vapours, wherewith it is replete; theſe therefore precipitating, are gathered into Clouds, and thoſe in their Progreſs coaleſce into Drops of Rain.

Theſe Things being obſerv'd, it appears pretty evident, that the ſame Cauſes, which increaſe the Weight of the Air, and make it more able to ſupport the Mercury in the *Barometer*, do likewiſe make a ſerene Sky, and a dry Seaſon; and the ſame Cauſes which render the Air lighter, and leſs able to ſupport the Mercury, do likewiſe generate Clouds and Rain.

Hence, Firſt, when the Air is lighteſt, and the Mercury in the *Barometer* loweſt, the Clouds are very low; and when after Rain the Clouds break, and a calm Sky again ſhines forth, being purg'd of its Vapours, it appears exceedingly bright and tranſparent, and affords an eaſy Proſpect of remote Objects.

Secondly, when the Air is heavier, and the Mercury ſtands higher in the Tube, the Weather is calm, tho' ſomewhat leſs clear, by Reaſon that the Vapours are diſpers'd every where equally; if any Clouds now appear, they are very high, and move ſlowly; and when the Air is heavieſt of all, the Earth is frequently found invelop'd in pretty thick Clouds, which appear to be formed out of the groſſer Exhalations, and which the Air is then able to ſuſtain, tho' a lighter Atmoſphere could not.

Thirdly, Hence it is, that with us the Mercury ſtands higheſt in the coldeſt Seaſons, and when the Wind blows from the North, and North-eaſt Corners: For in that Caſe there are two Winds blowing towards us at the ſame Time, and from oppoſite Corners, there being a conſtant Weſt Wind found in the *Atlantick* Ocean, in a Latitude that correſponds to ours. To this it may be added, that the cold condens'd Air of the Northern Parts is brought hither in a North Wind.

Fourthly, Hence in the Northern Regions, the Variation of the Mercury is more ſenſible than in the Southern ones; the Winds being found both more ſtrong, more frequent, more various, and more oppoſite to each other in the former than the latter.

Laſtly, Hence it is, that between the Tropicks, the Variation of the Mercury is ſcarce ſenſible; the Winds there being extremely gentle; and uſually blowing the ſame Way.

Now this Account, however well adapted to many of the particular Caſes of the *Barometer*, yet comes ſhort of ſome of the moſt principal, and the moſt obvious ones; and is beſides liable to ſeveral Objections.

For firſt, If the Wind were the ſole Agent in effecting theſe Alterations, we ſhould have no Alterations without a ſenſible Wind, nor any Wind without ſome Alteration of the Mercury; both which are contrary to Experience.

Secondly, If two Winds be ſuppos'd blowing from the ſame Place, *viz. London*, oppoſite Ways, *viz.* N. E. and S. W. there will be two others blowing from oppoſite Points, *viz.* N. W. and S. W. to the ſame Place; which two laſt will balance the firſt, and bring as much Air towards the Point, as the others ſwept from it. Or thus; in Proportion as the Air is carried off N. E. and S. W. the adjacent Air will crowd in from the other Points, and form a couple of new Currents in the Direction N. W. and S. E. to fill up the Vacancy, and reſtore the Equilibrium; this is a neceſſary Conſequence from the Laws of Fluids.

Thirdly, If the Wind were the ſole Agent, the Alterations in the Height of the Mercury would only be relative or topical; there would be ſtill the ſame Quantity ſupported at ſeveral Places taken collectively. Thus what a Tube at *London* loſt, another at *Paris*, or at *Piſa*, or at *Zurich*, &c. would gain at the ſame Time. But the very contrary is found true in Fact; for from all the Obſervations hitherto made, the *Barometers* riſe and fall together in ſeveral Parts of the Globe; ſo that it muſt be ſome Alteration in the abſolute Weight of the Atmoſphere, that accounts for the Riſe and Fall of the Mercury.

Laſtly, Setting all Objections aſide, theſe popular *Phænomena*, the Fall of the Mercury before, and the Riſe after Rain, are really unexplicable on the Foot of this Hypotheſis; for ſuppoſe two contrary Winds ſweeping the Air from over *London*, it is known, but few Winds, if any, reach above a Mile high; all therefore they can do, will be to cut off a certain Part of the Column of the Air over *London*: If the Conſequence of this be the Fall of the Mercury, yet there is no apparent Reaſon for the Rains following it: the Vapours indeed may be let lower, but it will only be till they come into an Air of the ſame ſpecifick Gravity with themſelves, and there they will ſtick as before.

M. *Leibnitz* has endeavour'd to ſupply the Defects of this Hypotheſis with a new one of his own. He aſſerts, That a Body immers'd in a Fluid, only weighs with that Fluid, while it is ſuſtain'd thereby; ſo that when it ceaſes to be ſuſtain'd, *i. e.* to fall, its Weight ceaſes to make a Part of the Fluid, which by this Means becomes lighter.

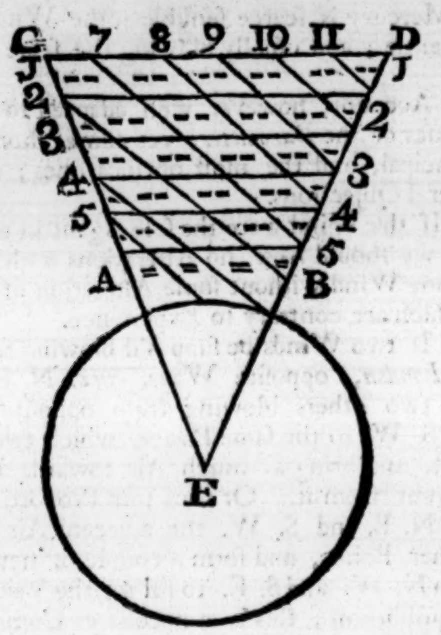
Thus, he adds, that the watery Vapours, while ſuſtain'd in the Air, increaſe its Weight; but when let fall, ceaſe to weigh along with it. Thus the Weight of the Air is diminiſh'd, and thus the Mercury falls, and Rain enſues.

But this Principle of M. *Leibnitz* is falſe, notwithſtanding the Experiment he brings to confirm it, as Dr. *Deſaguliers* has made appear by the Counter-experiment. For while a Body is immers'd in a Fluid, whether it be equal with it, or heavier, or lighter than the Fluid, whether it be at Reſt or in Motion, it adds to the Fluid a Weight of an equal Bulk of the Fluid, as follows from that Law in *Hydroſtaticks, that Fluids gravitate according to their perpendicular Altitudes.*

But however, if this Principle of M. *Leibnitz* were true, yet it is defective, and that in the ſame reſpect with Dr. *Halley*'s; nor would it account for the *Phænomena* more than the other.

For ſuppoſing the Vapours, by being condens'd, to be put in a Motion downward, and ſo ceaſing to gravitate with the Atmoſphere, they will therefore fall till they reach a Part of the Atmoſphere of the ſame ſpecifick Gravity with themſelves, and there they will hang as before: If the Mercury falls, it will be only during the Time of that Deſcent; for theſe once fix'd, the former Gravity is retriev'd; or were it not retriev'd, yet no Rain would enſue the Fall of the Mercury.

In order to account for theſe Variations of the *Phænomena* of the *Barometer*, Mr. *Chambers* advances what follows: Suppoſe any Number of watery Vehicles, *v. g.* a Million floating in any part of the Atmoſphere, over any determinate Portion of the Globe; as for Inſtance, over A B; if the upper Veſicles be condens'd by the Cold of the upper Regions, their ſpecifick Gravity will be increas'd, and they will deſcend; the horizontal Claſs 1 *v. g.* to 2, 2 to 3, *&c.* where meeting with other Veſicles, not yet precipitated, they will coaleſce or run into larger Veſicles, by the known Laws of Attraction.



Or, if we rather chuſe to have the Wind act, let it drive horizontally or obliquely: In the former Caſe, the Veſicles Claſs 8 will be driven againſt 9, that againſt 10, *&c.* or the oblique Claſs A 7 driven againſt 5, 8 againſt 4, *&c.*

By this means likewiſe will the Particles coaleſce, and form new and larger Veſicles as before; ſo that their Number, which before was a Million, will now be reduced, *v. g.* to an Hundred Thouſand: But by the ſame Coalition, whereby their Number is diminiſh'd, their ſpecifick Gravity is increaſed, *i. e.* they come to have more Matter in the ſame Space, or under the ſame Surface, as may eaſily be proved by Principles of Geometry.

For, in augmenting the Maſs of any homogeneous Body, the Increaſe of Surface does not keep pace with that of the Solidity; but that of the former is as the Square of the Diameter, and that of the latter, as the Cube of the ſame.

If then the Diameter of a Veſicle were 4, and its Surface and Maſs 24; after Coalition, if its Diameter be 6, its Surface or Bulk will be 54, and its ſolid Content 81. But ſince the ſame Quantity of Matter is now in a leſs Space, or under leſs Dimenſions, it will loſe of its Weight by the Reſiſtance of the Medium.

This is evident; for a Body immers'd in a Fluid loſes nothing of its Weight, but by the Friction of its Parts againſt thoſe of the Fluid; but the Friction is evidently as the Surface: Therefore, where the Surface is leſſen'd, the Reſiſtance muſt be ſo too. Conſequently the Veſicles, whoſe Gravity, before the Coalition, was equal to the Reſiſtance of the Medium, now that Reſiſtance is diminiſh'd, will deſcend, and that with a Velocity in a *Ratio* of the Increaſe of the Maſs to the Increaſe of the Surface.

In their Deſcent, as they ariſe at denſer Parts of the Atmoſphere, *v. g.* at 4, 5, *&c.* their Maſs and Surface again will be increas'd by new Coalitions; and thus by conſtant freſh Acceſſions, more than equal to the conſtant Reſiſtances, they will be enabled to purſue their Journey, thro' all the Stages of the Air, till they reach the Earth; their Maſſes exceedingly Magnified, and in the Form of Rain.

Now that the Vapours are got down, let us conſider how the *Barometer* muſt have been affected in their Paſſage, ere any of the Veſicles began to ſubſide, either from the Action of the Cold or of the Wind, they all floated in the Portion of the Atmoſphere A B C D, and all gravitated towards the Center E.

Here now each reſpectively reſiding in a Part of Medium, of the ſame ſpecifick Gravity with itſelf, will loſe as much of its Weight as is equal to that of a Part of the Medium of the ſame Bulk with itſelf, *i. e.* each will loſe all its Weight.

But then, whatever Weight each loſes, it communicates to the Medium, which now preſſes on the Surface of the Earth A B, with its own Weight, and that of its Veſicles conjointly.

Suppoſe then this united Preſſure keeps up the Mercury in the *Barometer*, at thirty Inches; by the Coalition of the Veſicles from the Cauſes aforeſaid, their Surfaces, and conſequently their Friction, are leſſen'd; they will therefore communicate leſs of their Weight to the Air, *i. e.* leſs than the Whole; and conſequently will deſcend with the Exceſs, *i. e.* with a Velocity equal to the Remainder, as before obſerved.

Now, as the Veſicles can act no otherwiſe upon the Surface of the Earth A B, but by the Mediation of the interjacent Air; in Proportion as their Action on the Medium is leſs, their Action on the Earth will be the leſs.

It is alſo evident, that the Surface of the Earth A B muſt be leſs preſſed than before; and that in Proportion as the Veſicles reſerve more of their Weight uncommunicated to the Medium, to promote their own Deſcent, *i. e.* in Proportion to the Velocity of the falling Veſicles, which is again in Proportion to their Bulks.

Thus, as the Veſicles deſcend, their Bulks continually increaſing the Friction, and therefore the Preſſure on the Earth, and laſtly, the Height of the Mercury, will continually decreaſe during the whole Time of the Fall.

Hence we ſee, both why the Veſicles, when once beginning to fall, perſevere; why the Mercury begins to fall at the ſame time; and why it continues and ceaſes to fall together with them: which were the great *Deſiderata* in the Philoſophy of the *Barometer*.

He ſays, he ſees but one Objection againſt this Theory, and that is, that the Veſicles being put in Motion, and ſtriking againſt the Particles of the Medium, and one another, with ſome Moment, will meet with a conſiderable Reſiſtance from the *vis inertiæ* thereof; by which means their Deſcent will be retarded, and the Preſſure of the Atmoſphere retriev'd; the *Impetus* of the moving Veſicles being ſuppoſed to compenſate for their Loſs of Surface.

Thus a heavy Body ſuſtain'd in a Fluid by a Hair, and moved up and down therein, preſſes more on the Bottom than when held at reſt; which additional Preſſure will be the greater, as the Velocity of the falling Veſicles is the greater, a greater Impulſe being requir'd to break thro' the *vis inertiæ* of the contiguous Particles, in a leſs Time than in a larger.

But there is both Reaſon and Experiment againſt this Objection; for beſides that the Velocity of the Veſicles in theſe Circumſtances muſt be very ſmall, and their Impulſe very inconſiderable; beſides that, the *vis inertiæ* of the Air muſt be very weak, by reaſon of its extreme Subtilty; and that it muſt be a very improper Vehicle to convey an Impulſe to a Diſtance, by reaſon of its Elaſticity.

We find, that even in Water (a groſs, unelaſtick Medium) and a piece of Lead, (a ponderous Body, which falls with a great Moment) that even here the Body, in its Deſcent thro' the Fluid, gravitates conſiderably leſs than when ſuſtain'd at reſt therein. In which the ſeveral Experiments of *Reaumur*, *Ramarrini*, and *Deſaguliers*, all agree.

Mr. *Patrick* gives us the following Rules and Obſervations for the Riſing and Falling of the Mercury, in order to foreknow the Weather by the *Barometer*.

It has been obſerv'd, that the Motion of the Mercury does not exceed three Inches in its Riſing or Falling in the *Barometer* of the common Form.

2. That its leaſt Alterations are to be minded, in order to the right finding of the Weather by it.

3. The Riſing of the *Mercury* preſages in general fair Weather, and its Falling foul, as Rain, Snow, high Winds and Storms.

4. In very hot Weather, the Falling of the Mercury foreſhews Thunder.

5. In Winter the Riſing of the Mercury preſages Froſt; and in froſty Weather, if the Mercury falls three or four Degrees, there will certainly follow a Thaw; but if the Mercury riſes in a *continued Froſt*, it will certainly ſnow.

6. When foul Weather happens *ſoon* after the falling of the Mercury, you may expect but little of it; and you may judge the ſame, when the Weather proves fair *ſhortly* after the Mercury has riſen.

7. When the Mercury riſes much and high in foul Weather, and continues ſo for two or three Days before the foul Weather is over, you may expect a *Continuance* of fair Weather to follow.

8. When the Mercury falls much and low in fair Weather, and continues ſo for two or three Days before the Rain comes, then you may expect a great deal of Wet, and probably high Winds.

9. The unſettled Motion of the Mercury, denotes uncertain and changeable Weather.

10. You are not ſo ſtrictly to mind the Words engraven on the Plates, tho' for the moſt part it will agree with them, as the Riſing and Falling of the Mercury; for if it ſtands at much Rain, and riſes up to changeable, it preſages fair Weather, altho'

altho' not to continue ſo long as it would have done if the Mercury were higher; and ſo on the contrary.

The following Rules and Obſervations have been made by another.

1. A ſtill Air, clear Sky, and the Mercury falling, with a froſty Morning in *October* and *November*, indicates much Rain or Snow about to ſucceed, eſpecially if the Wind be in any Point of the South.

2. If the Mercury riſes very ſuddenly and haſtily after Rain, it is generally a Sign that more Rain will ſucceed in a few Days, if the Wind be in any Point of the South.

3. If there be a compleat Circle or Halo at a Diſtance from the Body of the Moon (eſpecially if the Mercury fall) it is taken to be an infallible Sign of Rain or Snow.

4. If the Mercury falls when the Wind is full South, it is another never-failing Sign of Rain.

5. If the Mercury riſes not much, or continues low after the Fall of much Rain, the Wind being in any Point of the South, you may expect a fair and clear Sky, *ſtante cardine*.

6. If after Rain the Wind change into any Point of the North, with a clear and dry Sky, and the Mercury riſes, it is a certain Sign of fair Weather.

7. A Continuance of fair Weather, the Wind being in the North, and the Mercury high or riſing, is never ſucceeded by Rain, till the Wind changes into ſome Point of the South.

8. A Continuance of Rain from the South, is ſcarce ever ſucceeded by ſettled fair Weather, before the Mercury riſes much, and the Wind changes either to the Weſt, or ſome Point of the North.

9. The Reaſon why the *Barometer* ſeems to fail, in truth, is, that in Winter time, when the Wind is in the North, and the Mercury high, a deep Snow may fall without any Alteration of the *Barometer*; but in ſuch caſe it is only an Indication of very low Clouds, and a clear Atmoſphere above; the Conſequence of which is, the ſucceeding of a clear Air, and froſty Weather.

10. If in a Morning the Sky be red, with a ſudden cloudy Air, or the Mercury ſticks or ſtands with a concave Superficies, it is a ſure Sign of Rain or Snow to fall that very Day.

11. If the Mercury fall ſuddenly in Summer, eſpecially if the Wind be in the South, and the Air hot, heavy Rains, attended with Storm, Thunder, and Lightning, commonly ſucceed.

12. If the Mercury ſubſides when the Wind is in any Point of the North, Rain is to be expected, and a great deal of Rain if the Mercury continue to ſubſide.

13. If the Wind change into the Weſt, (as it commonly does) or ſome Point of the North; after there has been Rain in the South, and the Mercury riſes, the Rain yet falling, you may conclude that there will be but little Rain.

14. If in *fair Weather* the Mercury ſubſides very much, and continues to do ſo for two or three Days before Rain comes, you may expect high Winds, and a great deal of Wet.

15. If Rain follows *immediately* upon the ſubſiding of the Mercury, you need not fear *much Rain*.

16. It is remarkable, that moſt of the common and uſual Signs of Rain fall during the Seaſon of the Dog-days, and therefore are not to be regarded while the Mercury continues high.

N. B. The Mercury will fall for a Thaw, if it is not attended with Rain if the Wind change from the North to any Point of the South, becauſe a Thaw is always attended with a warm Miſt, and a very moiſt Air.

BARLERIA.

This Name was given to this Genus of Plants by Father *Plumier*, in honour of *Jacobus Barelier* of *Paris*, who was a famous Botaniſt. We have no *Engliſh* Name for it, but the Inhabitants of the Iſland of *Jamaica* call it *Snap-dragon*.

The *Characters* are;

It hath a perſonated Flower, conſiſting of one Leaf, whoſe upper Lip or Creſt is erect, but the under is divided into three Parts; from whoſe Empalement riſes the Pointal in the hinder Part of the Flower, which afterwards becomes a quadrangular oblong membranaceous Fruit, with one Capſule in which are lodged flat roundiſh Seeds.

The *Species* are;

1. BARLERIA *ſolani folio, flore coccinea. Plum. Nov. Gen.* Barleria with a Night-ſhade Leaf, and a ſcarlet Flower.

2. BARLERIA *aculeata, ſolani folio anguſtiore, flore cœruleo. Plum. Nov. Gen.* Prickly Barleria, with a narrow Night-ſhade Leaf, and a blue Flower.

The firſt of theſe Plants is very common in *Jamaica*, and ſeveral other Parts of the *Weſt-Indies*, but at preſent it is very rare in *England*. It grows to the Height of three or four Feet, and divides into many ſlender Branches, which are hoary. On the Top of the Branches come out the Flowers, which are of a fine red Colour, and ſhaped like thoſe of the *Antirrhinum* or Calves-ſnout; theſe Flowers are ſucceeded by quadrangular Seed-veſſels, which are about an Inch long, which contain a great Number of flat brown Seeds. Theſe Seeds when ripe, are caſt out with Violence on their Veſſels being touched.

The ſecond Sort is leſs common in *Jamaica* than the firſt, but it grows in great Plenty on ſome of the *French* Iſlands in *America*. This doth not riſe above two Feet high; the Leaves are narrower than thoſe of the former Sort, and the Flowers are of a fine blue Colour.

Theſe Plants are propagated by Seeds, which ſhould be carefully gathered when ripe, and muſt be ſown in Pots filled with light freſh Earth early in the Spring; theſe Pots muſt be plunged into a Hot-bed of Tanners-bark, and ſhould be frequently watered; but this muſt be done with great Caution, otherwiſe the Seeds may be waſhed out of the Earth. In about a Month's Time the Plants will begin to appear, when they ſhould be watered two or three times a Week, according as the Earth in the Pots ſhall become dry. In very warm Weather the Glaſſes of the Hot-bed ſhould be raiſed, in order to admit freſh Air to the Plants, as alſo to let out the Steam which may ariſe from the Bed: but if the Nights are cold, the Glaſſes ſhould be covered with Mats, to preſerve a gentle Warmth in the Bed; otherwiſe the Plants will ſtarve.

When the Plants are about an Inch high, they ſhould be carefully ſhaken out of the Seed-pots, and each planted into a ſeparate Half-penny Pot, filled with light freſh Earth, and then plunged into a moderate Hot-bed of Tanners-bark, obſerving to water and ſhade them until they have taken new Root; after which Time they ſhould have the Glaſſes of the Hot-bed raiſed every Day, in Proportion to the Warmth of the Seaſon, and the Heat of the Bed in which they are placed. You muſt alſo water them frequently, but you muſt obſerve to let the Water fall gently on them, otherwiſe you will deſtroy the Plants when they are ſmall.

In two Months after their removing (if the Plants have thriven) they will have filled the ſmall Pots with their Roots; therefore they ſhould be ſhaken out of thoſe Pots, and their Roots trimmed, and then put into Penny-pots, which ſhould be filled with light freſh Earth, and plunged into the Hot-bed again, where (if the Frames are deep enough to contain the Plants, without preſſing of their Tops) they may remain all the Summer Seaſon, obſerving to admit a large Share of freſh Air in warm Weather, as alſo to refreſh them with Water as often as they ſhall require it. With this Management the Plants will ſometimes produce their Flowers the ſame Seaſon, but they ſeldom produce good Seeds in this Climate the firſt Year; ſo that at *Michaelmas*, you ſhould remove ſome Plants of each Kind into the Bark-ſtove, where they ſhould be often refreſhed with Water during the Winter Seaſon, but it ſhould not be given to them in large Quantities. The Stove ſhould be kept to temperate Heat, which will preſerve theſe Plants thro' the Winter in good Health, and the following Summer they will produce Flowers and Seed in great Plenty.

BASELLA, or climbing Night-ſhade from *Malabar*.

The *Characters* are;

It hath an annual Root: The Stalks are climbing, and of a purple Colour: The Leaves are round, thick and ſucculent, and of a dark green Colour: From the Foot-ſtalk of the Leaves are produc'd Spikes of Flowers, which are Male and Female, in different Parts of the Spike: The Female Flowers are ſucceeded by flat Berries, in each of which is contained one hard Seed.

The *Species* are;

1. BASELLA. *Hort. Mal.*

2. BASELLA *flore albo, caule & foliorum pallide virentibus.* Climbing Night-ſhade from *Malabar*, with white Flowers, and pale green Stalks and Leaves.

3. BASELLA *Sinica, foliis & caulibus viridibus, minus ſucculentibus, fructu minori. Jeſſ.* Climbing *Indian* Night-ſhade, with green Stalks and Leaves, which are leſs ſucculent, and a ſmall Fruit.

Theſe Plants muſt be ſown early in the Spring upon a Hot-bed; and when they come up, muſt be planted into Pots of good freſh Earth, and ſet into a freſh Hot-bed, in order to bring them forward; and when grown too high to be contain'd under the Glaſſes, may be ſet into the Green-houſe, or in ſome well-defended Part of the Garden, that they may ripen their Seeds. There is no great Beauty in the Flower, but for the ſingular Appearance of theſe Plants, may deſerve a Place in all curious Collections of Plants.

The firſt Sort has thick ſtrong ſucculent Stalks and Leaves, which are of a deep purple Colour. The Plant requires to be ſupported; for it will climb to the Height of eight or ten Feet, and produce a great Number of Side-branches, which will twiſt round Stakes, and climb to a great Height, provided the Plants are preſerved in the Stove; for if they are expoſed to the open Air, they will not grow very large, nor will they perfect their Seeds, except it be in very warm Seaſons; but if they are placed in the Bark Stove, they will often live thro' the Winter, and produce great Quantities of Flowers and Seeds. The Flowers of this Plant have no great Beauty, but the Plant is preſerved for the odd Appearance of the Stalks and Leaves.

The ſecond Sort is exactly the ſame as the common Sort, excepting the Colour of the Leaves, Stalks, and Flowers; but I have obſerv'd it conſtantly retains the ſame Colour, ſo that I don't believe it to be an accidental Variety from Seeds; for from all the Seeds which I have ſown I never found any one of the Plants which differed from the Parent Plant. The laſt two Plants ſeldom continue more than one or two Years, but as they produce Seeds in Plenty, ſo they may be eaſily propagated.

The third Sort is leſs common in *England* than either of the former. I received the Seeds of this Plant from Dr. *Jeſſieu* of *Paris*, from which I have obtained a Variety with variegated Stalks and Leaves. This Sort will not perfect its Seeds ſo ſoon as either of the former Sorts, ſo muſt be placed in the Stove, where it will continue through the Winter, and produce ripe Seeds the ſecond Year. All theſe Sorts may be propagated by Cuttings, which ſhould be laid to dry a Day or two after they are taken from the Plants, before they are planted, that the Wound may heal, otherwiſe they will rot. Theſe Cuttings muſt be planted into Pots filled with light freſh Earth, and plunged into a moderate Hot-bed of Tanners-bark, where they will take Root in a Fortnight or three Weeks Time, when they ſhould be treated in the ſame Manner as the ſeedling Plants.

All theſe Plants will climb to a conſiderable Height, and ſend forth a great Number of Branches, ſo that they ſhould have a Place near the Back of the Stove, where they may be trained up to a Trelliſe, or faſtened to the Back of the Stove, otherwiſe they will twiſt themſelves about whatever Plants ſtand near them, which will make a very diſagreeable Appearance in a Stove, and alſo be very injurious to the other Plants; whereas, when they are regularly trained to a Trelliſe, they will have a good Effect in adding to the Variety.

From the Berries of the two firſt Sorts I have ſeen a beautiful purple Colour drawn, but when uſed for painting, did not continue very long, but chang'd to a pale Colour; tho' I believe there might be a Method invented, whereby this beautiful Colour might be fixed, ſo as to become very uſeful; for I have been aſſured, that the Juice of theſe Berries has been uſed for ſtaining of Callicoes in *India*.

BASILICUM or Baſil, *vide* Ocymum.

BASONS or Fountains, *&c.* which ſerve either for the Ornament or Uſe of Gardens, are made in divers Forms, ſome round, ſome oblong, or oval, others ſquare, octangular, *&c.* but their moſt common Form is circular; and, if the Ground will permit, the larger they are, the better: and when they exceed in Size, they are called Pieces of Water, Canals, Mirrors, Fiſh-ponds, Pools, and Reſervoirs.

In making theſe, Care ought to be taken to avoid both the Extremes, and not to make them either too big or too little; that a Water-work may not take up the beſt Part of a ſmall Spot of Ground; nor to make too little a *Baſon* in a large Spot. This muſt depend intirely on the Judgment of the Deſigner of the Garden.

Some would have the Size of a *Baſon* to be proportion'd to the *Jet d'Eau*, that the Water thrown up in the Air, may not, by being blown by the Air, be carried beyond the Edge of the *Baſon*, but all fall down without wetting the Walk.

As to the Depth of *Baſons*, it is uſually from two to three Feet: This Depth being ſufficient to ſecure the Bottom of the *Baſons* from Froſt, and to dip Watering-pots.

But if they are to ſerve for *Reſervoirs*, or to keep Fiſh in, then they may be made four or five Feet deep, which will both hold Water enough, and be deep enough for the Fiſh to breed in, and alſo to bear a Boat.

Deeper than this they need not be; and if they were deeper, they would be dangerous as to the drowning of Perſons, who might chance to fall in.

In making *Baſons*, great Care ought to be taken in making them at firſt; for the Water always naturally endeavouring to run away, and by its Weight and Preſſure in a *Baſon*, making its Way out at the leaſt Cranny, it will grow conſtantly bigger and bigger, ſo that if it be not well made at firſt, it will be very difficult to repair it.

Baſons are made either with *Clay*, *Cement*, or *Lead*; they are moſt uſually made of *Clay*: In making ſuch, at the marking out the Dimenſions, the Diameter ought to be four Feet bigger on each Side; yet the *Baſon* will not be the wider, for it will be taken up with the Walls on each Side; and the Clay Work, which is to fill the Space between the *Baſon*, muſt alſo be dug two Feet deeper than the Depth of the Water is deſign'd to be, becauſe it is to be laid over eighteen Inches thick with Clay, and ſix Inches with Gravel and Paving.

The Clay ought to be well wrought with the Hands and Water, and when it is ſpread, ſhould be trodden in with the naked Feet, that the Water of the *Baſon* may not dilute through it, and the Roots of any Trees that may grow near, may not penetrate into the outward Wall; which may be made of Shards, Rubble, or Flints, with Mortar made of the natural Earth, and is called the Ground-wall, becauſe 'tis only made to reſiſt the Preſſure of the Ground about it. The inward Wall ought to be made with good Rubble-ſtones, that will not ſcale and come off in Flaſhes in the Water; or elſe of Flints and Stones from the Hills, which will make durable Work, but will not look ſo neat as the pointed Rubble; and there ought to be laid here and there Stones, the Thickneſs of the Wall, to render it the more ſubſtantial.

The Method of making *Baſons* of *Cement* is as follows: After you have mark'd out the Dimenſions of the *Baſon* as before, if you inlarge it one Foot nine Inches, it will be ſufficient; and the ſame Depth deeper at the Bottom will be enough.

This being done, you muſt begin to back up and raiſe againſt the Ground; cut perpendicularly a Wall of Maſonry a Foot thick, which muſt go to the Bottom, and ſhould be built with Shards and Rubble-ſtones laid in Mortar of Lime and Sand.

When the Wall is finiſhed round the Circumference, then the Bottom is to be wrought a Foot thick with the ſame Materials; and then the ſolid Work or Lining of *Cement* is to be back'd up againſt the Walls nine Inches thick, including the Plaiſtering and inward Surface.

This Solid ought to be made of ſmall Flints, laid in Beds of Mortar made of Lime and *Cement*.

When this Solid is eight Inches thick, it ought to be plaiſter'd over the whole Surface of the Bottom with *Cement* well ſifted before it be temper'd with Lime; and with this it ſhould be wrought over ſmooth with the Trowel.

The Proportion of this *Cement* ſhould be two Thirds of *Cement* or powder'd Tile to one Third of Lime.

This *Cement* has the Property to harden ſo under Water, that it will be as hard as Stone or Marble, and the Body will be ſo ſolid as never to decay.

After the finiſhing of the *Baſon*, the Plaiſtering ſhould be for four or five Days ſucceſſively anointed over with Oil or Bullock's Blood, to prevent it from cracking or flawing; this being done, the Water ſhould be let into the *Baſon* as ſoon as may be.

Thoſe *Baſons* which are made of *Lead*, are to be thus wrought: The Out-lines ought to be inlarg'd one Foot of a Side, and digg'd half a Foot deeper than the *Baſon* is to be.

The Wall muſt be made a Foot thick, that it may be able to bear up againſt the Earth lying againſt it; but the Bottom will not require to be more than half a Foot thick.

Theſe Walls muſt be built with *Rubble*, laid in Mortar all of Plaiſter, becauſe the Lime will eat the Lead; and then the Lead muſt be laid on the Walls and Bottom, and be ſeam'd with Solder.

But *Baſons* of *Lead* are not much in Uſe, becauſe of their great Charge in making, and the Danger of the Lead being ſtolen.

Great Care ought to be taken to keep the upper Edge and Superficies of a *Baſon* upon a Level, that the Water may cover all the Walls equally.

As for the waſte Pipes of *Baſons*, whether at the Bottom or Superficies, they ought not to be made too ſmall, leſt they ſhould be choak'd, notwithſtanding the Cauls that are drawn before them.

When this waſte Water is only to be loſt in Sinks and common Sewers, it is carried away in Drains or Earthen Pipes; but when it ſerves to play the *Baſons* that lie below it, it muſt paſs thro' Leaden Pipes.

BAUHINIA; Mountain-Ebony, *vulgo*.

This Plant was ſo named by Father *Plumier*, in Honour of the two famous Botaniſts *John* and *Caſpar Bauhin*.

The *Characters* are ;

It hath a polypetalous anomalous Flower, conſiſting of five or more Leaves, which are diſpoſed on one Side ; from the Flower-cup ariſes the incurved Pointal, accompanied with ſeveral Stamina of the ſame Form, which afterward becomes a Pod incloſing kidney-ſhap'd Seeds.

The *Species* are ;

1. **BAUHINIA** *non aculeata, folio ampliori & bicorni. Plum. N. Gen.* Mountain-Ebony, *vulgo.*
2. **BAUHINIA** *aculeata, folio rotundo emarginato. Plum. N. Gen.* The *Indian* Savin Tree.
3. **BAUHINIA** *aculeata, folio rotundo emarginato, flore magno albo. Houſt.* Bauhinia with round Leaves, and large white Flowers.
4. **BAUHINIA** *flore luteo ſpicato, folio ſubrotundo bicorni. Houſt.* Bauhinia with a yellow ſpiked Flower, and a round Leaf divided at the Top.
5. **BAUHINIA** *non aculeata, folio nervoſo bicorni, floribus albicantibus. Houſt.* Smooth Bauhinia, with a nervous Leaf divided at the Top, and white Flowers.
6. **BAUHINIA** *non aculeata, folio ſubrotundo majore, rigido & bicorni, flore purpuraſcente. Houſt.* Smooth Bauhinia, with a large ſtiff Leaf divided at the Top, and a purpliſh Flower.
7. **BAUHINIA** *ſcandens & fruteſcens, folio ſubrotundo & bicorni, flore albo.* Shrubby climbing Bauhinia, with a round divided Leaf, and a white Flower.

The firſt Sort grows very plentifully on the Hills in every Part of the Iſland of *Jamaica* ; it is alſo a Native of the *Eaſt-Indies*, and is well figured and deſcribed in the *Hortus Malabaricus*. It grows to the Height of ſixteen or eighteen Feet, and produces Cluſters of party-coloured Flowers at the Extremity of the Branches, which are ſucceeded by long flat Pods, in each of which are contained four or five Seeds. The Wood of this Tree being very hard, the Inhabitants of the *Weſt-Indies* have given it the Name of *Mountain-Ebony*.

The ſecond Sort grows plentifully in the low Lands of *Jamaica*, and in ſeveral other Parts of the *Weſt* and *Eaſt-Indies* : this is alſo well figured and deſcribed in the *Hortus Malabaricus*. It grows to the Height of fifteen or ſixteen Feet, and produces large Spikes of beautiful yellow Flowers at the End of the Branches. The whole Plant, if bruiſed, emits a ſtrong Scent, ſomewhat like *Savin*, from whence the Inhabitants of the *Weſt-Indies* have given it the Name of *Indian Savin* Tree.

The third Sort grows at *Carthagena*, from whence I received Specimens of this Plant, collected by the late Dr. *William Houſtoun*.

The fourth, fifth, ſixth, and ſeventh Sorts have been collected in the *Spaniſh Weſt-Indies*, from whence I have receiv'd their Seeds, with fair Samples of the Plants dried ; ſome of them were collected by the late Dr. *Houſtoun*, and the others by Mr. *Robert Millar*, Surgeon.

Theſe Plants are only propagated from Seeds, which may be eaſily procured from the *Weſt-Indies*, which ſhould be ſown on a Hot-bed early in the Spring ; and when the Plants are come up two or three Inches high, they ſhould be tranſplanted, each into a ſeparate ſmall Pot, filled with freſh light Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to water and ſhade them until they have taken Root ; after which they muſt have *Air* and *Water* in proportion to the Warmth of the Seaſon, and the Bed in which they are placed. When the Plants have quite filled theſe Pots with their Roots, they ſhould be removed out of theſe Pots, and after paring off the Roots on the Outſide of the Ball of Earth, they muſt be put into Pots a Size larger than thoſe, obſerving to fill the Pots with the ſame freſh Earth ; and if the Plants are too high to ſtand under the Glaſſes of the common Hot-bed, they muſt be plunged into the Bark-bed in the Stove, being careful to water them ſo often as they ſhall require it, and to let them have Air in Summer, in proportion to the Heat of the Seaſon ; but in the Winter they muſt be kept pretty cloſe ; the firſt Sort will not require ſo great a Share of Heat as the ſecond or third, both which are pretty tender Plants, and ſhould be placed near the Fire, or in a Stove, amongſt other of the moſt tender Plants. If theſe Rules be obſerved, and the Pots changed every Year, and new Earth applied to their Roots, they will make great Progreſs, and may be expected to flower in a few Years : but they muſt always be preſerved in the Bark-ſtove.

BAY. *Vide* Laurus.

BEANS.

There are four Sorts of *Beans* commonly planted in Gardens, *viz.* the ſmall *Liſbon*, the *Spaniſh*, the *Sandwich*, and *Windſor Beans*. The firſt and ſecond Sorts are uſually planted in *October* and *November*, under warm Walls or Hedges, to have them early ; where, if they ſtand thro' the Winter, they will produce *Beans* early in the Spring : Or they may be planted cloſe in Beds, in ſome Piece of Ground that is well defended from the *North* and *Eaſt* Winds ; and being arch'd over with Hoops or Withies, may be cover'd, in very hard Froſts, with Mats and Straw ; and in the Spring theſe Plants may be tranſplanted into warm Borders, by which means your Crop will be ſecured from Injuries of Froſt ; and if Care be taken in tranſplanting them, not to break their Roots, and alſo to water them, if the Seaſon proves dry, until they have taken freſh Root, they will bear as plentiful a Crop as thoſe which remain'd where they were at firſt Planted, with this Difference, that they will be a Fortnight later. The *Liſbon Bean* is chiefly preferr'd to the *Spaniſh* ; and the beſt Way is, to procure freſh Seeds from Abroad, at leaſt every other Year ; for they are ſubject to degenerate in a few Years in *England*, not in Goodneſs, but only in their Earlineſs.

The *Sandwich* and *Windſor Beans* are ſeldom planted before *Chriſtmas*, but eſpecially the *Windſor*, which is moſt ſubject to be hurt by Cold of any of the Kinds.

Theſe *Beans* ſhould have an open Expoſure, and require to be planted at a greater Diſtance than the two early Kinds ; for if they are planted in ſhady Places, or too cloſe, they will grow to a great Height, but ſeldom produce many *Beans*. The uſual Diſtance for theſe (if in an open Situation) is two Feet and an half Row from Row, and four Inches in the Rows ; but if the Place is cloſely ſurrounded with Hedges, Walls, or tall Trees, the Diſtance muſt be greater ; the Rows ſhould then be three Feet apart, and the *Beans* ſix Inches diſtant in the Rows. The *Sandwich Beans* being hardier than the *Windſor*, are uſually planted about *Chriſtmas*, to ſucceed the forward Crops ; and theſe, altho' at preſent but in little Requeſt, yet are very ſerviceable, being plentiful Bearers, and very little inferior either in Size or Goodneſs, to the *Windſor*.

In the Middle of *January*, if the Weather is open and good, you may plant your firſt Crop of *Windſor Beans*, which will ſucceed the *Sandwich*, and every three Weeks make a freſh Plantation, until the Middle of *May*, in order to preſerve a Succeſſion thro' the Seaſon : Indeed there are ſome People, who are very fond of *Beans*, which plant even in *June* ; but unleſs the Soil is very ſtrong and moiſt, or the Seaſon proves wet or cold, they ſeldom ſucceed well ; for in hot dry Weather, (which commonly happens in *July*) the Inſects infeſt theſe Plants very much, and often deſtroy them quite, ſo that I have known large Quarters of *Beans* to die away without producing one ſingle *Bean*. There are others who adviſe the cutting down of *Beans*, in order to cauſe them to produce freſh Shoots from the Bottom for a late Crop ; but this ſeldom anſwers the Trouble ; for they are liable to the above-mentioned Inconveniencies much more than a freſh-planted Crop.

There is an Error very common in moſt Gardeners, which I can't help mentioning, that is, their planting of *Beans* in the Alleys of their *Aſparagus-Beds*, which damages the two outer Rows of the *Aſparagus* much more than the Value of the *Beans*.

KIDNEY *or* FRENCH BEANS. *Vide* Phaſeolus.

BEAN-TREFOIL. *Vide* Cytiſſus.

BEAR's-EAR. *Vide* Auricula.

BEAR's-EAR SANICLE. *Vide* Verbaſcum.

BEAR's-FOOT. *Vide* Helleborus.

BECABUNGA, *or* Brook-lime.

This is a Sort of *Veronica*, or Water-ſpeedwel ; of which there are two Sorts, one with a long Leaf, and the other round : they are both very common in Ditches and watery Places, almoſt every-where in *England*.

BEE *or* GNAT-FLOWER. *Vide* Orchis.

BEECH-TREE. *Vide* Fagus.

BELL-FLOWER. *Vide* Campanula.

BELLADONA, Deadly Night-ſhade.

The *Characters* are ;

It hath a Bell-ſhaped Flower, conſiſting of one Leaf, which is divided into five acute Segments at the Top ; each of theſe Flowers is ſucceeded by a globular, ſoft Fruit, which is divided into two Cells, in which are lodged the Seeds.

The *Species* are ;

1. **Belladona** *majoribus foliis & floribus. Tourn.* The common Deadly Night-ſhade.

2. **Belladona** *minoribus foliis & floribus. Tourn.* Deadly Night-ſhade, with ſmaller Leaves and Flowers.

3. **Belladona** *fruteſcens, rotundifolia, Hiſpanica. Tourn.* Shrubby *Spaniſh* Deadly Night-ſhade, with a round Leaf.

4. **Belladona** *Americana fruteſcens, flore albo, nicotianæ folio. Plum. Cat.* Shrubby *American* Deadly Night-ſhade with a white Flower and a Tobacco Leaf.

The firſt Sort grows very common in many Parts of *England*, about Farmers Yards, and in ſhady Lanes, but is never kept in Gardens, unleſs in thoſe of Botaniſts ; nor indeed ſhould it be ſuffer'd to grow in any Places where Children reſort ; for it is a ſtrong Poiſon, and there have been ſeveral Inſtances, within a few Years paſt, of its deadly Quality, by ſeveral Children being kill'd with eating the Berries, which are of a fine black Colour, and about the Size of a black Cherry, and not unpleaſant to the Taſte.

Mr. *Ray* gives a good Account of the various Symptoms it produces, by what happen'd to a *Mendicant Frier* upon his drinking a Glaſs of Mallow Wine, in which was this Plant infuſed : In a ſhort Time he became delirious, ſoon after was ſeized with a grinning Laughter, after that, ſeveral irregular Motions, and at laſt a real Madneſs ſucceeded, and ſuch a Stupidity as thoſe that are ſottiſhly drunk have ; which, after all, was cured by a Draught of Vinegar.

There is alſo an Inſtance of the direful Effects of this Plant recorded in *Buchanan's* Hiſtory of *Scotland*, wherein he gives an Account of the Deſtruction of the Army of *Sweno*, when he invaded *Scotland*, by mixing a Quantity of the Juice of theſe Berries with the Drink which the *Scots* by their Truce were to ſupply them with, which ſo intoxicated the *Danes*, that the *Scots* fell upon them in their Sleep, and killed the greateſt Part of them, ſo that there were ſcarcely Men enough left to carry off their King.

The ſecond Sort is not ſo common in *England* as the firſt, but it is preſerved in Botanick Gardens for Variety.

Theſe Plants are both eaſily cultivated, by ſowing of their Seeds in the Spring on any Soil, or in any Situation, and when the Plants are come up, they may be tranſplanted into any abject Part of the Garden, where if they are ſuffered to remain, and drop their Fruit, they will fill the Ground with young Plants, and the old Roots will continue ſeveral Years. I have frequently ſeen theſe Plants growing out of the Joints of Walls, where they have endured the ſevereſt Froſt and the greateſt Drought for ſeveral Years. They do alſo grow equally well in low moiſt Soils ; ſo that there is no danger of their ſucceeding in any Place. The green Herb of theſe Plants is ſometimes uſed in cooling Ointments, as a Subſtitute for the *Garden Night-ſhade*, which being an annual Plant, is not to be had ſo early in the Seaſon as the other Herbs uſed in theſe Ointments, when the *Belladona* being in Perfection, is by many uſed.

The ſhrubby *Spaniſh* Kind is preſerved by the Curious in Botany, for the ſake of Variety, but there is very little Beauty in it. This will grow to the Height of eight or ten Feet, and have a ſtrong woody Stem. It may be propagated by planting the Cuttings in the Spring, upon a moderate Hot-bed, obſerving to water and ſhade them until they have taken Root ; after which time they muſt be inured to the open Air by degrees, and then they muſt be carefully potted, and placed in the Shade until they have taken new Root, when they may be ſet abroad with *Myrtles*, *Oleanders*, &c. and in Winter it muſt be removed into the Green-houſe, and placed amongſt the hardier Kinds of Exoticks. This plant produces Flowers every Year ; but I have not obſerved any Fruit produced in *England*.

The fourth Sort was diſcovered by Father *Plumier* in the *French* Settlements in *America* ; it hath alſo been found by Mr. *Robert Millar*, Surgeon, in the *Spaniſh Weſt-Indies* ; from whom I received the Seeds of this Plant. It is propagated by Seeds, which ſhould be ſown in Pots filled with light rich Earth, and plunged into a Hot-bed of Tanners-bark ; when the Plants are come up an Inch high, they ſhould be carefully tranſplanted, each into a ſeparate ſmall Pot, and plunged into the Hot-bed again, obſerving to water and ſhade them until they have taken Root ; after which Time, they ſhould have freſh Air admitted to them every Day, by raiſing of the Glaſſes ; and they muſt be conſtantly ſupplied with Water. During the Summer Seaſon they may remain in theſe Hot-beds, but in Winter they muſt be removed into the Bark-ſtove, where if they are kept in a temperate Degree of Heat, they will thrive extremely well, and produce their Flowers.

BELLIS, [is ſo call'd of *Bellus*, *Lat.* pretty, handſome, *&c.*] the Daizie.

The *Characters* are ;

It hath a perennial Root ; the Stalks are naked, and never branch out ; the Calyx (or Cup) of the Flower is ſcaly and ſimple, divided into many Segments, almoſt to the Footſtalk ; the Flowers are radiated ; and the Heads, after the Petals are fallen off, reſemble obtuſe Cones.

The *Species* are ;

1. **Bellis** *ſylveſtris, minor. C. B.* The common ſmall Daizie.

2. **Bellis** *ſylveſtris minor, flore miſto. C. B.* The ſmall ſtriped Daizie.

3. **Bellis** *hortenſis, flore pleno, magno vel parvo, rubro. C. B.* The red Garden Daizie, with double Flowers.

4. **Bellis** *hortenſis, flore pleno, magno vel parvo, albo. C. B.* The white double Garden Daizie.

5. **Bellis** *hortenſis, flore pleno, magno vel parvo, varie ex candido & rubro. C. B.* The double ſtriped Garden Daizie.

6. **Bellis** *hortenſis, prolifera. C. B.* The Garden childing Daizie, *commonly called*, The Hen and Chicken Daizie.

7. **Bellis** *hortenſis, floro pleno albo, in formam criſtæ galli figurato.* The white Cocks-comb Daizie.

8. **Bellis** *hortenſis, flore pleno rubro, in formam criſtæ galli figurato. Boerh. Ind.* The red Cocks-comb Daizie.

The firſt and ſecond Sorts are very common in the Meadows, almoſt in every Part of *England* : They are uſed indifferently in Medicine, being the ſame in all reſpects, except the Colour of the Flowers. This is alſo called *Conſolida minima*, or the *leaſt Conſound*.

The different Varieties of the Garden Daizies are propagated by parting their Roots in Autumn, and ſhould be planted in Borders of ſtrong Earth, which are expoſed to the Eaſt ; for the great Heats in Summer are very ſubject to deſtroy theſe Plants, if they are too much expoſed thereto. Theſe Plants are pretty Ornaments to a Garden in the Spring of the Year, and may be planted for Edgings in large rural Walks in Wilderneſſes, where the Soil is poor, which will prevent their ſpreading too much ; but in Parterre Gardens they ſhould only be planted in ſingle Roots in ſhady Borders, and every Year tranſplanted, which will preſerve them in their Colours, and keep them within Compaſs.

BELLIS MAJOR. *Vide* Leucanthemum.

BELLONIA.

This Plant was ſo named by Father *Plumier*, in Honour of the famous *Petrus Bellonius*, who has left many valuable Tracts on Natural Hiſtory, *&c.*

The *Characters* are ;

It hath a wheel-ſhaped Flower conſiſting of one Leaf, and divided at the Top into ſeveral Parts ; from whoſe Cup ariſes the Pointal, fixed in the middle of the Flower like a Nail : The Flower-cup afterward becomes a hard oval pointed Fruit, in which is contained many ſmall Seeds.

We have but one *Species* of this Plant, *viz.*

Bellonia *fruteſcens, folio meliſſæ aſpero. Plum. Nov. Gen.* Shrubby Bellonia, with a rough Balm Leaf.

This Plant is very common in ſeveral Parts of *America*, from whence I have received the Seeds ; which were collected by the late Dr. *William Houſtoun*.

It is propagated by Seeds, which ſhould be ſown early in the Spring, in a Pot filled with light freſh Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to water it frequently, as the Earth appears dry, but you muſt be careful not to waſh the Seeds out of the Ground. When the Plants are come up half an Inch high, they ſhould be carefully tranſplanted into Pots filled with light freſh Earth, and plunged into the Hot-bed again, obſerving to water and ſhade them until they have taken Root ; after which Time they ſhould have Air admitted to them every Day when the Weather is warm, and they muſt be frequently watered. When the Plants have filled theſe Pots with their Roots, they ſhould be carefully ſhaken out of them, and their Roots trimmed, and then put into larger Pots filled with light freſh Earth, and then plunged into the Hot-bed again, obſerving to admit a larger Share of Air to them as the Weather becomes warmer, and as the Plants increaſe in Strength. In theſe Beds the Plants may remain during the Summer Seaſon,

ſon, provided the Glaſſes will admit of them to ſtand under them without preſſing their Tops; at *Michaelmas* the Plants ſhould be placed in the Stove, where they ſhould be frequently watered during the Winter, but it ſhould be given to them moderately at this Seaſon: The Stove in which theſe Plants are placed, ſhould be kept to temperate Heat, which is more agreeable to theſe Plants than a greater Warmth at that Seaſon; the ſecond Year theſe Plants will ſometimes flower, but they rarely produce good Seeds in this Climate; however, they may be propagated by Cuttings in the Summer Months, provided they are planted in light Earth on a moderate Hot-bed, and carefully watered and ſhaded until they have taken Root. Theſe Plants muſt be conſtantly kept in the Stove, and ſhould have a large Share of free Air in warm Weather, but if they are ſet abroad, they will not thrive in this Climate.

BELVEDERE: *vide* Chenopodium.

BENZOIN, The Benjamin-tree.

The *Characters* are;

From a Calyx, which conſiſts of four Leaves, are produced three ſmall Flowers, which have an oblong Tube; the upper Part, which is expanded, is divided into eight Segments; between theſe Segments are ſeveral ſhort Stamina *or Threads; and in the Middle of the Tube is the* Ovarium, *which becomes the Fruit.*

We have but one *Species* of this Plant in *England*, which is,

BENZOIN. *Boerh. Ind. Arbor Benzoinifera. Breyn. Prod.* The Benjamin-tree: *Vulgo.*

This Tree was brought from *Virginia* into *England* ſome Years ſince, and was by many People kept in Green-houſes as a tender Plant; but it hath been ſince planted into the open Ground, where it hath thriven mighty well, and is found hardy enough to reſiſt the ſevereſt Cold of our Winters: It commonly produces its Flowers early in the Spring, before the green Leaves appear, and many times will flower again in the Autumn, if the Seaſon proves mild; but I have not ſeen any Fruits produced in *England*.

This Tree is propagated by laying down the tender Branches in the Spring of the Year; which, by the ſucceeding Spring, will have made Roots ſufficient to be tranſplanted. The beſt Seaſon for this Work, is juſt before the green Leaves come out.

From this Tree, it was formerly ſuppoſed, that the *Gum Benjamin* was produced; but it is now generally otherwiſe believed; for that Gum is brought from the *Eaſt Indies*: nor is it certainly known from what Tree or Plant it is produced: And this Tree being a Native of the *Weſt Indies*, if any ſuch Gum had been produced from the Trees, it would have been more certainly known, and we ſhould have been furniſhed from thence with the Gum long before this Time.

BERBERIS, the Barberry *or* Pipperidge-Buſh.

The *Characters* are;

It is ſet with ſharp Prickles; the Leaves are oblong, and ſerrated on the Edges: the Flowers conſiſt of ſix Leaves, which expand in Form of a Roſe, and are of a yellow Colour: the Fruit is long, of an acid Taſte, and for the moſt part of a red Colour, and grows in Cluſters hanging down: the Bark of the Tree is whitiſh.

The *Species* are;

1. BERBERIS *Dumetorum. C. B.* The common Barberry.
2. BERBERIS *ſine nucleo. C. B.* Barberry without Stone.
3. BERBERIS *latiſſimo folio, Canadenſis. H. R. P.* The broad-leav'd *Canada* Barberry.
4. BERBERIS *fructu albo.* The white Barberry.

The firſt of theſe Sorts is very common in *England*, being often planted for Hedges; but the beſt Method to have large good Fruit, is, to plant them eight or ten Feet aſunder, keeping their Middles thin and free from dead Wood; but their Fruit being for the moſt part produced towards the Extremity of their Branches, you ſhould be ſparing in ſhortning them; and when this is done, 'it ſhould be at *Michaelmas*, when their Leaves begin to decay.

The ſecond Sort, I believe to be only an accidental Variety of the firſt; for young Plants taken from old Trees, which produce Fruits without Stone, are rarely found to prove right; and it hath been obſerved, that none but old Trees produce their Fruits ſo, nor are all the Fruits upon the ſame Tree without Stones. That Sort with white Fruit ſeems not to differ from the common, except in the Colour of the Fruit.

The *Canada Barberry* hath been of late Years introduced amongſt us. The Leaves of this Tree are larger than thoſe of the common Sort; and the Fruit of this Sort is black when ripe; but I have not ſeen any produced in *England*, altho' the Tree is equally as hardy as the common Sort.

Theſe are all propagated from Suckers taken from Roots of the old Plants, which generally furniſh them in abundance: Or they may be raiſed from Seeds, or by laying down their Branches, which will in one Year take ſufficient Root to be tranſplanted: They delight in a ſtrong loamy Soil, and may be planted either in *October* or *February*.

BERMUDIANA.

This Plant takes its Name from the *Bermudas Iſlands*, from whence the Seeds of the firſt Species was brought.

The *Characters* are;

It hath a Lilly Flower compoſed of ſix Petals, whoſe Empalement becomes a triangular Fruit, which opens in three Parts, and is divided into three Cells, which are filled with roundiſh Seeds.

The *Species* are;

1. BERMUDIANA *Iridis folio, fibroſa radice. Tourn.* Bermudiana with a Flower-de-lys Leaf and a fibrous Root.
2. BERMUDIANA *Palmæ folio, radice bulboſa. D. Lign. Tourn.* Bermudiana with a Palm Leaf and a bulbous Root.

The firſt Sort may be propagated by ſowing of the Seeds in the Spring on a moderate Hot-bed; and when the Plants are come up, they ſhould be tranſplanted into ſmall Pots, filled with light freſh Earth, and placed in a ſhady Situation until they have taken Root; after which time, they may be expoſed to the open Air in Summer; but in Winter they muſt be ſhelter'd from ſevere Froſt, to which if they are expoſed, it will deſtroy them. This Sort may alſo be propagated by parting of their Roots in the Spring; but they ſhould not be divided into too ſmall Parts, leſt it prevent their Flowering. This Plant produces ſmall blue Flowers in *June* and *July*, and in kindly Seaſons will perfect their Seeds in this Country.

The ſecond Sort never produces any Seeds in *England*, ſo can be only propagated by Off-ſets. This has a bulbous Root about the Size of the *Corn-flag*, but is not ſo flat. The Leaves of this Plant do die off in Winter, and in the Spring there are new ones put forth. This Plant is much tenderer than the former, and requires a Stove to preſerve it thro' the Winter: In Summer the Pots ſhould be placed in a Bark-bed, otherwiſe the Plants will not produce Flowers in this Country: In Winter they ſhould have very little Water given to them; for Wet will ſoon rot the Roots when their Leaves are decayed. There is no great Beauty in either of theſe Plants; but they are preſerved by the Curious, for Variety ſake.

BERNARDIA.

This was ſo named by the late Dr. *William Houſtoun*, in Honour of Dr. *Bernard de Jeſſieu*, Demonſtrator of Plants in the Royal Garden at *Paris*.

The *Characters* are;

It is Male and Female in different Plants; the Male Plants produce ſmall Katkins, which, when ripe, fall off; the Female-Plants have apetalous Flowers, which are ſucceeded by Tricoccos Fruits, reſembling thoſe of the Ricinus.

The *Species* are;

1. BERNARDIA *fruteſcens erecta, carpini folio, mas. Houſt.* Male upright ſhrubby Bernardia with an Hornbeam Leaf.
2. BERNARDIA *fruteſcens erecta, carpini folio, fœmina. Houſt.* Female upright ſhrubby Bernardia with an Hornbeam Leaf.
3. BERNARDIA *fruticoſa maritima repens, foliis ſubrotundis & ſubtus argenteis, mas. Houſt.* Male creeping ſhrubby Bernardia, with roundiſh Leaves, which are of a Silver Colour underneath.
4. BERNARDIA *fruticoſa maritima repens, foliis ſubrotundis & ſubtus argenteis, fœmina. Houſt.* Female creeping ſhrubby Bernardia, with roundiſh Leaves, which are of a Silver Colour underneath.

The two firſt Sorts were found by Doctor *Houſtoun* in *Jamaica*, where they are in great Plenty near the Sea and generally grow near each other; ſo that where-ever a Female Tree is found, there is rarely a Male wanting near it. Theſe uſually grow to the Height of eight or ten Feet, and divide into many Branches; the Flowers are produced at the Joints, near the Footſtalks of the Leaves.

The other two Sorts were found by Doctor *Houſtoun* at *La Vera Cruz*, where they grow on the Shore upon the Sand-banks; theſe ſeldom riſe above a Foot high, having many trailing Branches, which ſend forth Roots from their Joints, whereby they propagate themſelves.

Theſe Plants may be obtained from Seeds, which ſhould be brought over ſoon after they are ripe, and ſown in Pots filled with light freſh Earth, and plunged into a moderate Hot-bed of Tanners-bark, obſerving frequently to water them; when the Plants are come up, they ſhould be carefully tranſplanted into ſeparate Pots filled with light freſh Earth, and plunged into the Hot-bed again, obſerving to water and ſhade them until they have taken Root, after which Time they ſhould have Air and Water in proportion to the Warmth of the Seaſon, and the Heat of the Bed in which they are placed: in Summer they ſhould have a large Share of freſh Air in warm Weather, and ſhould be frequently watered; but in Winter they muſt be placed in a Stove, where they ſhould be kept in a moderate Heat, and muſt be frequently watered, but it ſhould not be given to them in large Quantities at that Seaſon. With this Management theſe Plants will thrive extremely well, and will produce their Flowers in this Climate, but they will rarely perfect their Seeds in this Country: Theſe Plants may be propagated by Cuttings, or laying down their tender Branches in the Spring; which, if duly watered, will take Root in three Months, when they may be cut off from the old Plants, and treated as thoſe raiſed from Seeds.

BESLERIA.

This Plant was named after *Baſilius Beſler*, an Apothecary at *Nuremberg*, who was the Author of a Book intituled *Hortus Eyſtetenſis*.

The *Characters* are;

It hath a Flower conſiſting of one Leaf, which is tubulous, and of an anomalous or perſonated Figure, having two Lips; from whoſe Cup ariſes the Pointal, which is fixed like a Nail in the hinder Part of the Flower, which afterward becomes a ſoft fleſhy oval-ſhaped Fruit, in which are many ſmall Seeds.

The *Species* are;

1. BESLERIA *meliſſæ Tragi facie. Plum. Nov. Gen.* Beſleria with the Face of Tragus's Balm.
2. BESLERIA *virgæ aureæ foliis, flore luteo minor. Plum. Nov. Gen.* Beſleria with Golden-rod Leaves, and a ſmall yellow Flower.
3. BESLERIA *virgæ aureæ foliis, flore luteo, major. Plum. Nov. Gen.* Beſleria with Golden-rod Leaves, and a large yellow Flower.
4. BESLERIA *ſcandens criſtata fructu nigro. Plum. Nov. Gen.* Climbing Beſleria with a black Fruit.

Theſe four Plants are common in the warm Parts of *America*, from whence the Seeds have been brought into *Europe*, and have been cultivated in ſome curious botanick Gardens. Theſe Seeds ſhould be ſown on a Hot-bed early in the Spring, and when the Plants are come up half an Inch high, they ſhould be each tranſplanted into a ſmall Pot filled with light freſh Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to water and ſhade them until they have taken Root; after which Time they ſhould have Air and Water in proportion to the Warmth of the Seaſon, and the Heat of the Bed in which they are placed. When the Plants have filled theſe ſmall Pots with their Roots, they ſhould be ſhaken out of them, and their Roots trimmed, and then put into larger Pots filled with light freſh Earth, and plunged into the Hot-bed again; where they ſhould have a large Share of freſh Air in warm Weather, and muſt be frequently watered; with this Management theſe Plants will thrive very well in Summer, but in Winter they muſt be removed into the Stove, where they muſt be placed in a temperate Warmth, and ſhould be often watered: the ſecond Year theſe Plants will flower, and ſometimes they will perfect their Seeds in this Country; but they muſt be conſtantly preſerved in the Stove for they will not live in the open Air.

BETA, The Beet.

The *Characters* are;

It hath a thick fleſhy Root; the Flowers have no viſible Leaves, but many Stamina *or Threads, which are collected into a Globe; the Cup of the Flower is divided into five Segments; the Seeds are covered with a hard outer Coat, and grow too or three together in a Bunch.*

The *Species* are;

1. BETA *alba, vel palleſcens, quæ Cicla officinarum. C. B.* The common white Beet.
2. BETA *communis, ſive viridis. C. B.* The common green Beet.
3. BETA *rubra, vulgaris. C. B.* The common red Beet.
4. BETA *rubra, radice rapæ rotundæ. Boerh. Ind.* The Turnip-rooted red Beet.
5. BETA *rubra, major. C. B.* The great red Beet.
6. BETA *lutea, major. C. B. P.* The yellow Beet.
7. BETA *maxima, Helvetica, latiſſimo caule. Boerh. Ind.* The Swiſs *or* Chard Beet.

The two firſt mentioned are preſerved in Gardens for the Uſe of their Leaves in Pot-herbs, but at preſent they are not ſo much eſteem'd as they have been, and are but in few Gardens: The other Sorts are propagated for their Roots, which, in Winter, are boiled as Parſnips, *&c.* and ſerved up to Table, and are by many greatly eſteemed: The *Red Beet* is the moſt commonly cultivated, and is often uſed to garniſh Diſhes withal. The *Swiſs Beet* is by ſome very much eſteemed: the large flat Ribs of the Leaves are ſtew'd, and afterwards fry'd in Butter, which is accounted by many a delicate Diſh.

Theſe *Beets* are all propagated by ſowing their Seeds in *February* or *March*, in a deep looſe Soil, (but not over-dung'd) and muſt be houghed out after they are come up, ſo as to leave them ten or twelve Inches aſunder; for they ſpread very much, and if they have not Room, their Roots will be very ſmall. The Gardeners near *London*, in order to make the moſt of their Ground, ſow theſe *Beets* with *Carrots* upon the ſame Ground, and draw off their *Carrots* in the Summer-time for the Market, before the *Beets* have grown very large; and when the *Carrots* are gone, there will be Room for the *Beets* to grow, ſo that they have a double Crop: and if their *Beets* ſhould happen to fail, they plant a Crop of *Savoys* for the Winter, ſo that their Ground ſeldom lies idle.

BETONICA, [alias *Vetonica*, of the *Vetones*, an ancient People of *Spain*, who firſt found this Plant] Betony.

The *Characters* are;

The Leaves are green, rough, and crenated on the Edges; the Flowers are diſpoſed in a Spike; the upper Creſt of the Flower is advanced, and divided into two Segments; the Beard or lower Part of the Flower is divided into three; and the middle Segment is bifid; each Flower is, for the moſt part, ſucceeded by four naked Seeds.

The *Species* are;

1. BETONICA *purpurea. C. B.* The Common *or* Wood Betony.
2. BETONICA *alba. C. B. P.* Betony with a white Flower.
3. BETONICA *major, Danica. Park. Theat.* Greater *Daniſh* Betony.
4. BETONICA *minima, Alpina Helvetica. Park. Theat.* The leaſt Betony of the *Helvetian Alps*.
5. BETONICA *Alpina, incana, purpurea. Barell. Icon.* Hoary *Alpine* Betony, with purple Flowers.
6. BETONICA *Orientalis, folio anguſtiſſimo & longiſſimo, ſpica florum craſſiore. Tourn. Cor.* Eaſtern Betony, with a long narrow Leaf, and a thick Spike of Flowers.
7. BETONICA *rubicundiſſimo flore, Montis Aurei. H. R. Par.* Betony with a very red Flower, of *Mont d'Or* in *Auvergne*.
8. BETONICA *Orientalis, latifolia, caule brevi, flore maximo. Tourn. Cor.* Broad-leaved Eaſtern Betony, with a ſhort Stalk, and a very large Flower.
9. BETONICA *arvenſis, annua, flore ex albo flaveſcente. Tourn.* Annual Field Betony, with a yellowiſh white Flower.
10. BETONICA *Alpina, latifolia, major villoſa, flore luteo. H. R. Par.* Great broad-leaved hairy Betony of the *Alps*, with a yellow Flower.

The firſt Sort is very common in Woods and ſhady Places in moſt Parts of *England*: It may be propagated in ſhady Borders in a Garden, by either ſowing the Seeds in Spring, or by parting the Roots, which may be taken out of the Woods: The Soil ſhould be rather moiſt than dry, and not over-rich.

The other Sorts are all hardy Plants, and may be propagated by ſowing of their Seeds in the Spring, on a Bed of freſh Earth; and when the Plants are come up ſtrong enough to tranſplant, they ſhould be planted on a ſhady Border, where they will thrive, and the ſecond Year will produce Flowers, and perfect their Seeds. The ninth Sort is an annual Plant, which ſhould be ſown ſoon after the Seeds are ripe; for if they are ſown in the Spring, the Seeds do not come up ſo well, nor will the Plants produce good Seeds; ſo that, if the Seeds are permitted to ſhed, the Plants will come up and thrive without any farther Culture.

All theſe Sorts are preſerved by the Curious in Botany for Variety, but there are none of them uſed except the firſt Sort, which grows wild in Woods, and other ſhady Places, in divers Parts of *England*. This is greatly eſteemed as a vulnerary Herb; *Antonius Muſa* Phyſician to the Emperor *Auguſtus* wrote a whole Book concerning the Virtues of this Plant, from whence it came to be ſo much in Eſteem, that they have a Proverb in *Italy* to this Purpoſe; *Vende la Tonica, e compta la Betonica.* i. e. *Sell your Coat and buy Betony*; and when they would praiſe any Perſon very much, they ſay, he has more Virtue than Betony.

BETONICA AQUATICA: *vide* Scrophularia.

BETONICA PAULI: *vide* Veronica.

BETULA, The Birch-tree.

The *Characters* are;

The Leaves are like thoſe of the Poplar; *the Shoots are very ſlender and weak; the* Juli *or Catkins are produced at remote Diſtances from the Fruits on the ſame Tree; the Fruit becomes a little ſquamoſe Cone: the Seeds are winged; and the Tree caſts its outer Rind every Year.*

We have but one *Species* of this Tree in *England*, which is,

BETULA. *Dod.* The Birch-tree.

This Tree is propagated by Suckers taken from the Roots of old Trees, which may be tranſplanted either in *October* or *February*: It delights in a poor Soil, and will grow in either moiſt ſpringy Soils, or in ſtony or gravelly Marſhes, or Bogs: When the young Trees have been planted one Year, you ſhould (if deſigned for Under-wood) cut them down within ſix Inches of the Surface, which will cauſe them to ſhoot out ſtrong and vigorous Branches; but if they are deſigned for large Trees, it will be much better to let them ſtand two Years before you head them down; and when you do it, cut them within three Inches of the Ground, that their Stems may be ſtrait and handſome: but you muſt obſerve, when they begin to put out, whether they produce more than one Shoot; which if they do, you muſt rub off all but the ſtrongeſt and moſt convenient Shoot, which muſt be train'd up for a Stem.

The Timber of this Tree, tho' accounted the worſt of all others, yet is not without its various Uſes: the Turners often uſe it, to make Chairs, *&c.* and the Huſbandman, for making Ox-yokes; it is alſo planted for Hop-poles, Hoops, *&c.* but in Places within twenty Miles of *London*, it is kept often cut to make Brooms, and turns to great Account.

BIDENS, Water-hemp Agrimony.

The *Characters* are;

It hath a compound Flower, for the moſt part floſculous, conſiſting of many Florets, divided into ſeveral Segments, ſetting on the Embryo, and contained in the Flower cup: Sometimes there are alſo found Semi-florets: The Embryo afterward becomes a Seed, ending in Prickles.

The *Species* are;

1. BIDENS *folio tripartito diviſo. Cæſalp.* Water-hemp Agrimony, with a divided Leaf.
2. BIDENS *folio non diſſecto. Cæſalp.* Water-hemp Agrimony, with an undivided Leaf.
3. BIDENS *Canadenſis, latifolia, flore luteo. Tourn.* Broad-leaved Hemp-Agrimony of *Canada*, with a yellow Flower.
4. BIDENS *Americana, Apii folio. Tourn. American* Hemp-Agrimony, with a Smallage Leaf.
5. BIDENS *Indica, Hieracii folio, caule alato. Tourn. Indian* Hemp-Agrimony, with an Hawkweed Leaf, and winged Stalk.
6. BIDENS *trifolia, Americana, Leucanthemi flore. Tourn.* Three-leaved *American* Hemp-Agrimony, with a greater Daizie-flower.
7. BIDENS *Americana, ramoſiſſima, foliis gramineis, flore parvo luteo, Hieracium fruticoſum, anguſtiſſimis gramineis foliis, capitulis parvis. Sloan. Cat. American* branchy Hemp-Agrimony, with graſſy Leaves, and ſmall yellow Flowers.

The two firſt Sorts do grow wild in moiſt Places, and by the Sides of Ditches and ſtanding Waters, in moſt Parts of *England*, ſo are rarely permitted to have a Place in Gardens.

The third and fourth Sorts are Natives of the Northern Parts of *America*, where they are the moſt common Weeds: Theſe muſt be raiſed on a Hot-bed in the Spring, in order to bring the Plants forward, otherwiſe they will not perfect their Seeds in this Country.

The fifth, ſixth, and ſeventh Sorts were brought from the warmer Parts of *America*, ſo do require a greater Share of Heat to bring them to flower and ſeed in *England*. They are all annual Plants, ſo muſt be raiſed every Spring on a Hot-bed, and afterwards planted into Pots, and the two laſt ſhould be placed in a Bark-Bed, to bring them to flower; but the other three Sorts may be placed in the open Air, when the Plants have obtained ſufficient Strength, but muſt they be frequently water'd in dry Weather. There is no great Beauty in theſe Plants; but they are preſerved in many curious Gardens, for Variety.

BIFOLIUM, Twyblade.

This Plant grows wild in moiſt Meadows in divers Parts of *England*; it riſes in *May*, and flowers in *June*, and ſoon after dies away. This Plant is of no Uſe or Beauty.

BIGNONIA, [M. *Tournefort* call'd this Plant *Bignonia*, in Memory of Abbot *Bignon*, Librarian to *Lewis* XIV. King of *France*, he being a great Encourager of Learning:] The Trumpet-Flower *or* Scarlet Jaſmine.

The *Characters* are;

It hath a tubulous Flower, conſiſting of one Leaf, which opens at the Top like two Lips; theſe Flowers are ſucceeded by Pods, which are divided into two Cells, and contain ſeveral winged Seeds.

The *Species* are;

1. BIGNONIA *Americana, Fraxini folio, flore amplo Phœnicio. Tourn.* The Scarlet Trumpet-Flower: *Vulgo.*
2. BIGNONIA *Americana, capreolis donata, ſiliqua breviori. Tourn.* The four-leav'd Dwarf Trumpet-Flower: *Vulgo.*
3. BIGNONIA *Americana, arbor, flore luteo, Fraxini folio. Plum.* The large yellow Trumpet-Flower: *Vulgo.*
4. BIGNONIA *Americana, arbor, ſyringæ cœruleæ foliis, flore purpureo. Cateſb.* The blue Trumpet-Flower *or* Cattalpa.
5. BIGNONIA *Americana, arboreſcens, pentaphylla, flore roſeo, major, ſiliquis planis. Plum.* White Wood *or* Tulip-Flower: *Vulgo.*
6. BIGNONIA *ſcandens, tetraphylla, fructu maximo echinato. Houſt.* Climbing four-leaved Bignonia, with a large echinated Pod.
7. BIGNONIA *ſcandens, tetraphylla, flore racemoſo carneo. Houſt.* Climbing four-leaved Bignonia, with fleſh-colour'd Flowers growing in long Bunches.
8. BIGNONIA *Americana, foliis ſubrotundis glabris, fructu compreſſo orbiculato.* Trumpet Flower with ſmooth roundiſh Leaves, and round compreſſed Fruit.
9. BIGNONIA *Americana ſcandens, foliis pinnatis hirſutis, & marginibus ſinuatis, ſiliquis longiſſimis & anguſtiſſimis.* Climbing *American* Trumpet Flower, with winged hairy Leaves indented on their Edges, and long narrow Pods.
10. BIGNONIA *Americana ſcandens, triphylla & pentaphylla, lobis amplioribus mucronatis & ſerratis, ſiliquis longis compreſſis marginatis.* Climbing Trumpet-Flower, with three and five Leaves, which are large, pointed, and ſawed on their Edges, and long flat Pods which are bordered.
11. BIGNONIA *Caroliniana ſcandens, & ſempervirens, foliis anguſtis glabris, floribus luteis odoratis, ſiliquis breviſſimis.* Climbing *Carolina* Trumpet Flower, with narrow ſmooth Leaves, ſweet yellow Flowers, and ſhort Pods, commonly called yellow Jaſmine in *America*.

The Sort firſt mentioned is common in ſeveral curious Gardens near *London*, and is planted againſt Walls expoſed to the South Sun, where it thrives and produces large Quantities of Flowers annually; but it requires a great deal of Room, for it is a large Shooter; and the Flowers being always produced at the extreme Parts of the ſame Year's Shoots, if theſe are ſtopp'd, the Flowers are taken off; but in the Spring the young Branches may be ſhorten'd to three or four Eyes, as in Vines, and the ſmall weak Shoots taken out, leaving the large ones twenty Inches or two Feet aſunder: Theſe Branches ſtrike Roots into the Walls, by which they are ſecured, and require very little Aſſiſtance in nailing them up.

The ſecond Sort is of humble Growth, and is only propagated by laying down the Branches in Summer, when they are free of Growth, which in about ſix or eight Months will take Root, when they may be tranſplanted into Pots, and in Winter will require to be ſhelter'd with *Myrtles*, *&c.* where they may have a large Share of Air. In Summer they muſt be placed abroad, and treated as other hardy *American* Plants. This Plant doth not produce large Bunches of Flowers as the firſt, nor are they ſo deep colour'd.

There are two other Varieties of the firſt Sort, one of which has deeper colour'd Flowers, and the other has much ſmaller Leaves than the firſt: but they are both climbing Plants, and to be treated in the ſame Manner as was directed for the firſt. Theſe Plants will riſe to the Height of forty Feet, if they are permitted; ſo they are very proper to cover any high Wall or Building, to which they will faſten themſelves by ſtriking Roots into the Joints of the Wall.

The third Sort is ſcarce in *England* at preſent: this is a Tree of a large Growth in the warm Parts of *America*, but being tenderer than the other Sorts, requires to be kept in a Stove in *England*.

The fourth Sort was brought from the *Bahama* Iſlands by Mr. *Catesby*, a few Years ſince: It hath produced Flowers in *England*: It is very hardy, and grows to be a handſome upright Tree: The Leaves are very like thoſe of the *Lilac*, but ſomewhat larger. Theſe Trees are all of them propagated by laying their Branches, or from Suckers, (which in the two firſt Sorts are produced in great Plenty) and ſometimes the Cuttings will take Root, tho' not very often. The beſt Seaſon for tranſplanting theſe Trees, is in the Spring, after the cold Weather is paſt: They delight in a moiſt ſandy Soil.

The fifth Sort grows upright to a conſiderable Size in the *Weſt-Indies*, but in *England* it only makes a large Shrub, and produces Flowers annually in great Plenty. This Plant makes a beautiful Appearance in the Stove, the Leaves being large, of a thick Subſtance, and a ſhining green Colour: the Flowers are large, and have a ſweet ſcent, but are of a ſhort Duration. The Cuttings of this Plant will take Root, if they are taken off toward the latter End of *March*, before the Plants begin to ſhoot, and laid in the Stove two or three Days, to heal the wounded Part, before they are planted; for there is a large Quantity of a milky Juice in this Plant, which will occaſion the rotting of the Cuttings, if they are planted too green. Theſe Cuttings muſt be planted in Pots filled with freſh Earth, and plunged into a Bot-bed of Tanners-bark, obſerving to ſhade them in the Heat of the Day, and to refreſh them with Water; but it muſt not be given in too large Quantities, leſt it rot the Cuttings. It may alſo be propagated from Seeds, which may be obtained from *Jamaica* or *Barbadoes*; but it ſhould be brought over in the Pods, otherwiſe it will not keep, and ſhould be ſown as ſoon as poſſible, in Pots filled with freſh light Earth, and plunged into a moderate Hot-bed. When the Plants come up, they muſt be each tranſplanted into a ſeparate Pot filled with the ſame Sort of Earth, and plunged into the Hot-bed again, obſerving to water and ſhade them until they have taken Root; after which they muſt be treated in the Manner directed for the *Coffee-tree*, and other tender Plants, which are preſerved in the Bark-ſtove.

The ſixth and ſeventh Sorts are trailing Plants of lower Growth: Theſe were ſent from *Carthagena* by the late Dr. *Houſtoun*. Theſe may be propagated from Seeds, or by laying down of the Branches, which will take Root in three or four Months. Theſe ſhould be treated in the ſame Manner as the former Sort, and muſt be kept in the Bark-ſtove; but they do not require ſo much Heat in Winter, and in Summer ſhould have more Air; otherwiſe they will draw up weak. Theſe have not produced Flowers in *England* as yet; tho', from the Appearance of the Plants, we may expect them to flower very ſoon.

The eighth, ninth, and tenth Sorts were diſcovered by Mr. *Robert Millar*, Surgeon, at *Campechy*, from whence he ſent their Seeds, which have ſucceeded in the Phyſick-Garden at *Chelſea*, where theſe Plants are now growing.

All theſe Sorts may be propagated by Seeds, which ſhould be ſown in Pots filled with light freſh Earth, and plunged into a Hot-bed of Tanners-bark. Theſe Pots ſhould be frequently watered to keep the Earth moiſt, otherwiſe the Seeds will dry up, which will prevent their growing; when the Plants are come up, they ſhould be each tranſplanted into a ſeparate ſmall Pot filled with light freſh Earth, and plunged into the Hot-bed again, obſerving to water and ſhade them until they have taken freſh Root: after which Time they ſhould have Air and Water in proportion to the Warmth of the Seaſon, and the Heat of the Bed in which they are placed. As theſe Plants advance in Strength, ſo they ſhould be ſhifted into larger Pots; and when they are grown too tall to ſtand under the Glaſſes of the Hot-bed, they ſhould be removed into the Bark-ſtove, where they ſhould be kept in a moderate Heat, and muſt be frequently refreſhed with Water: with this Management the Plants will thrive extremely well, and in two Years many of them will produce their Flowers, but they rarely perfect their Seeds in this Country.

The eleventh Sort is very common in *South Carolina*, where it climbs on the Hedges, or whatever Plants grow near it; and in Summer produces fine Bunches of yellow Flowers, which have a moſt agreeable Scent. This may be propagated by Seeds as the former Sorts, and will thrive in a leſs Degree of Heat than either of them.

BIHAI.

This is the *American* Name of the Plant.

The *Characters* are;

It hath a tubulous Flower conſiſting of one Leaf, ſhaped almoſt like a Lily, and cut into two Parts; the Pointal and Stamina are included in two Leaves. The Pointal afterwards becomes a fleſhy three-cornered Fruit, containing three hard rough Seeds. To theſe Notes ſhould be added, many Flowers contained in a common Covering.

The *Species* are;

1. BIHAI *ampliſſimis foliis, florum vaſculis coccineis. Plum. Nov. Gen.* Bihai with large Leaves, and a ſcarlet Covering to the Flowers.

2. BIHAI *ampliſſimis foliis, florum vaſculis ſubnigris. Plum. Nov. Gen.* Bihai with large Leaves, and black Covering to the Flowers.

Theſe Plants are at preſent very rare in *Europe*. I received Seeds of the firſt Sort from *Panama*, which came up in the Phyſick-Garden at *Chelſea*; but the Plants have not produced any Flowers as yet.

They may be propagated by Seeds, which ſhould be ſown on a Hot-bed early in the Spring; and when the Plants are come up, they ſhould be each tranſplanted into a ſeparate Pot filled with light rich Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to water and ſhade them until they have taken Root; after which time in warm Weather they ſhould have a large Share of freſh Air, and muſt be frequently watered. During the Summer Seaſon the Plants may remain in the Hot-bed; but in Winter they muſt be removed into the Stove, and placed near the Fire-place, that they may have a great Share of Heat, without which they will not live through the Winter in this Climate; they muſt alſo be frequently watered, but it ſhould not be given to them in too great Plenty in the Winter Seaſon, tho' in the Summer they will require a large Share of Moiſture: with this Management theſe Plants will produce their Flowers very well in this Climate.

BINDWEED. *Vide* Convolvulus.

BIRCH-Tree. *Vide* Betula.

BISLINGUA. *Vide* Ruſcus.

BISTORTA, [ſo call'd, becauſe the Root is turn'd or wreath'd into various Rings or Spires] Biſtort *or* Snake-weed.

There are three or four Varieties of this Plant which are found wild in *England*; but as they are ſeldom planted in Gardens, ſo I ſhall paſs them over with only mentioning the common Sort which is uſed in Medicine.

BISTORTA *major, radice minus intorta. C. B.* The common great Biſtort *or* Snake-weed.

This Plant flowers in *May*, and if the Seaſon proves moiſt, will continue to produce new Spikes of Flowers till *Auguſt*. It may be propagated by planting the Roots in a moiſt ſhady Border, either in Spring or Autumn, and will ſoon furniſh the Ground with Plants; for it greatly increaſes by its creeping Roots.

BIVALVULAR, or *Bivalve*, [of *Bivalvis*] Huſk, is one that opens or gapes the whole Length, like a Door that opens in two Parts.

BLADDER-NUT. *Vide* Staphyllodendron.

BLATTARIA, [takes its Name of *Blatta*, *Lat.* a Moth; becauſe, ſays *Pliny*, where-ever it is laid, Moths gather to it] Moth-Mullein.

The *Characters* are;

The Leaves are placed alternately upon the Branches; the Cup of the Flower conſiſts of one Leaf, which is divided into five Segments; the Flowers conſiſt of one Leaf, which ſpreads open, and is divided alſo into five Segments; they are produced in long Spikes, and are ſucceeded by round Veſſels, which are divided into two Cells, and contain many ſmall Seeds in each.

The *Species* are;

1. BLATTARIA *lutea.* *J. B.* The yellow Moth-Mullein.
2. BLATTARIA *alba.* *C. B.* The white Moth-Mullein.
3. BLATTARIA *flore roſeo.* *Boerh. Ind.* The Roſe-colour'd Moth-Mullein.
4. BLATTARIA *purpurea.* *C. B.* The purple Moth-Mullein.
5. BLATTARIA *perennis, folio verbaſci, flore luteo amplo. Mor. Hiſt.* The perennial Moth-Mullein, with large yellow Flowers.

There are ſeveral other Varieties of this Plant, which are preſerv'd in the curious Gardens of the Botaniſts; but theſe mention'd are ſome of the moſt beautiful, and are worthy preſerving in all curious Gardens, except the firſt, which is a ſpontaneous Plant in *England*; for which Reaſon I placed it here in the Front to introduce the reſt.

The three firſt mention'd are biennial Plants, never ſtanding more than two Years, and ſometimes but one: They muſt be ſown in the Spring; and when they are come up, may be tranſplanted where they are to remain for good. If any of theſe Plants ſhoot up to flower the firſt Year, the Winter will deſtroy them; but thoſe that are backward will endure our ſevereſt Winters, provided they are planted on a dry rubbiſhy Soil, and the next Spring will flower and produce good Seeds. When theſe Plants are in Flower, they perfume the Air, and have a Scent ſomewhat reſembling Violets at a ſmall Diſtance.

The fourth and fifth Sorts are Perennials, their Roots abiding ſeveral Years in the Ground: Theſe are alſo raiſed by ſowing their Seeds: for their Roots do ſeldom part well, and the often removing them prevents their flowering ſtrong. All theſe Sorts delight in a dry, poor, ſtony, or gravelly Soil, and are often found growing upon old Walls and Buildings.

BLIGHTS.

There is nothing ſo deſtructive to a Fruit-Garden as *Blights*; nor is there any Thing in the Buſineſs of Gardening which requires more of our ſerious Attention, than the endeavouring to prevent or guard againſt this great Enemy of Gardens.

In order therefore to remedy this Evil, it will be neceſſary firſt to underſtand the true Cauſes of *Blights:* And altho' many curious Perſons have attempted to explain the Cauſes of them, yet very few of them have yet come near the Truth, except the Reverend and learned Dr. *Hales*, who hath in his curious Book, intituled, *Vegetable Staticks*, given us ſome accurate Experiments upon the Growth and Perſpiration of Plants; together with the various Effects the Air hath upon Vegetables; that by carefully attending thereto, together with diligent Obſervations, we need ſeldom to be at a Loſs how to account for the Cauſes of *Blights*, whenever they may happen.

But here I can't help taking Notice of the ſeveral Cauſes of *Blights*, as they have been laid down by ſome of our modern Writers on Gardening; together with their various Methods preſcribed to prevent their Deſtruction of Fruits, *&c.*

Some have ſuppoſed, that *Blights* are uſually produced by an Eaſterly Wind, which brings vaſt Quantities of Inſects Eggs along with it from ſome diſtant Place, which being lodged upon the Surfaces of the Leaves and Flowers of Fruit-Trees, cauſe them to ſhrivel up and periſh. To cure this Diſtemper, they adviſe the burning of wet Litter on the Windward Side of the Trees, that the Smoak thereof may be carried to them by the Wind, which they ſuppoſe will ſtifle and deſtroy theſe Inſects, and thereby cure the Diſtemper.

Others direct the Uſe of Tobacco-duſt; or to waſh the Trees with Water wherein Tobacco-ſtalks have been infuſed for twelve Hours; which, they ſay, will deſtroy theſe Inſects, and recover the Trees: And Pepper-duſt ſcatter'd upon the Bloſſoms of Fruit-Trees, has been recommended as very uſeful in this Caſe: And there are ſome that adviſe the pulling off the Leaves of the Tree, as the beſt Remedy, when they are ſhrivell'd up and wither, and to cut off the ſmaller Branches, when they produce crooked and unnatural Shoots, and to ſprinkle the Tree with a Watering-Pot, or a Hand-Engine.

Theſe Conjectures concerning *Blights*, how ſpecious ſoever they may appear at firſt Sight, yet, when duly conſider'd, will be found far ſhort of the true Cauſe, as will hereafter be ſhewn.

Some there are who imagine the moſt deſtructive *Blights* which attend Fruit-Trees, are produced by ſmall Showers of Rain, or white Hoar-froſts falling upon the Bloſſoms of Fruit-Trees, which being ſucceeded by cold North or Eaſterly Winds, or froſty Mornings, are the Occaſion of the frequent *Blights* which happen in the Spring Seaſon: To prevent this Miſchief, it hath been recommended by a late Author, to build new Walls; in which, at every third Courſe of Bricks, ſhould be laid a Row of plain Tiles, which ſhould project forward, and hang over the Plain of the Wall above an Inch and an half, to carry off the perpendicular Dews and Rains, leaving Room, at Diſtances, between the Tiles to carry up the Branches of the Tree. This Method is ſo poſitively laid down, as a great Advantage for the more certain obtaining of Fruit, by a Gentleman whoſe Profeſſion ſhould incline him to Modeſty, eſpecially when he was not ſure of his Facts, that I can't paſs it over without ſome Animadverſions.

1. He ſays, That theſe horizontal Shelters will be of Advantage, even in the moſt difficult Years, to preſerve the Fruit, ſo that a good Quantity of it may be almoſt depended on, from ſuch Branches and Bloſſoms as were ſhelter'd by the Tiles, as he himſelf had often experienced.

As to this firſt Article, I need ſay no more than what Mr. *Collins* hath already written, *viz.* That this Reverend Gentleman acknowledged to him, at leaſt a Year after his Book was printed, that he never had any Walls of that Kind; but that, a few Days before this Viſit, he had ſtuck a few Pieces of Tiles and Oyſter-ſhells into a Mud-wall at particular Places, over ſome Bunches of Bloſſoms, with Mortar, which was not dry at that Time; which he declared was his firſt Eſſay: Now how a Gentleman of his Character can anſwer the adviſing of Perſons to put themſelves to ſuch an extravagant Expence as the building of new Walls for Fruit, with an Aſſurance of Succeſs, when it was only a ſimple Imagination of his own, without ſo much as a ſingle Experiment to ſupport it, I am wholly at a Loſs to know.

But let us proceed to his ſecond Article, in which he ſays, That Fruit thus ſhelter'd, will be larger, better fed, and finer taſted, than thoſe on the ſame Tree, which are more expoſed. This every one who hath ever made any Obſervations on the different Taſte, Size, Colour, or Goodneſs of Fruits which grew on different Parts of the ſame Tree, will, upon the firſt reading, condemn as falſe: for let us only obſerve ſuch Fruits as are ſometimes produced between the Wood-branches and the Wall, and are by them deprived of the Advantage of a free open Air, ſo that they cannot imbibe the kindly Dews, or other aerial Particles of Nouriſhment, nor can they ſo freely expire or throw off any of thoſe crude watery Particles, which were conveyed thro' the Branches of the Tree to the Fruit, and we ſhall find that it never arrives to half its Magnitude, and is always tough, watery, and inſipid, eſpecially in *Peaches*. This is much the ſame with his horizontal Shelters; for the Rows of Tiles being placed in every third Courſe of Bricks, will effectually keep off all Dews and Rain from the Fruits, Leaves, and Branches; both of which are by every one allow'd to be abſolutely neceſſary, and ſerviceable in the Buſineſs of Vegetation.

As to his third Article, *(viz.)* That the Fruit will be much earlier ripe, I am very ready to ſubſcribe to it: for let us but obſerve ſuch Trees, or Parts of Trees, as are in a decaying State, and are not capable of affording proper Nouriſhment to the Fruit, and we ſhall always find theſe Fruits will be the firſt ripe; but how good they will be, either as to Size or Flavour, I ſhall ſubmit to every one's Judgment, that knows but the leaſt of this Matter.

In his fourth Article he ſays, That Walls built with theſe Rows of Tiles, will effectually cure that common Miſtake of leading Wood-branches perpendicularly. This I believe to be true: for a Wall built in this Manner, and well planted with Fruit-trees, will, in leſs than ſeven Years, have no Wood-branches left alive, to train either horizontally or perpendicular; as I can poſitively affirm was the Caſe with a Wall built after his Directions, within my own Obſervation.

But let us now examine the true Cauſes of *Blights*, ſo far as we have been enabled to judge from repeated Obſervations and Experiments.

1. *Blights* then are often cauſed by a continued dry Eaſterly Wind, for ſeveral Days together, without the Intervention of Showers, or any Morning Dew, by which the Perſpiration in the tender Bloſſoms is ſtopp'd, ſo that in a ſhort Time their

Colour is changed, and they wither and decay: And if it ſo happens, that there is a long Continuance of the ſame Weather, it equally affects the tender Leaves; for their perſpiring Matter is hereby thicken'd, and render'd glutinous, cloſely adhering to the Surfaces of the Leaves, and becomes a proper Nutriment to thoſe ſmall Inſects, which are always found preying upon the Leaves and tender Branches of Fruit-Trees, whenever this *Blight* happens; but it is not theſe Inſects which are the firſt Cauſe of theſe *Blights*, as hath been imagin'd by ſome; tho' it muſt be allow'd, that whenever theſe Inſects meet with ſuch a proper Food, they multiply exceedingly, and are inſtrumental in promoting the Diſtemper; ſo that many Times when the Seaſon proves favourable to them, and no proper Care hath been taken to prevent their Miſchief, it is ſurprizing to think how whole Walls of Trees have ſuffered by this Infection.

The beſt Remedy for this Diſtemper, that I have yet known ſucceed, is, gently to waſh and ſprinkle over the Trees from Time to Time with common Water, (that is, ſuch as hath not had any Thing ſteep'd in it) and the ſooner this is perform'd, (whenever we apprehend Danger) the better; and if the young and tender Shoots ſeem to be much infected, waſh them with a woollen Cloth, ſo as to clear them, if poſſible, from all this glutinous Matter, that their Reſpiration and Perſpiration may not be obſtructed; and if we place ſome broad flat Pans or Tubs of Water near the Trees, that the Vapours exhaled from it may be received by the Trees, it will keep their tender Parts in a ductile State, and greatly help them; but whenever this Operation of waſhing the Trees is perform'd, it ſhould be early in the Day, that the Moiſture may be exhal'd before the Cold of the Night comes on, eſpecially if the Nights are froſty; nor ſhould it be done when the Sun ſhines very hot upon the Wall, which would be ſubject to ſcorch up the tender Bloſſoms.

Another Cauſe of *Blights* in the Spring is, ſharp hoary Froſts, which are often ſucceeded by hot Sun-ſhine in the Day-time, which is the moſt ſudden and certain Deſtroyer of Fruits that is known; for the Cold of the Night ſtarves the tender Parts of the Bloſſoms, and the Sun riſing hot upon the Walls before the Moiſture is dry'd from the Bloſſoms, (which being in ſmall Globules, doth collect the Rays of the Sun) a ſcalding Heat is thereby acquired, which ſcorches the tender Flowers and other Parts of Plants.

But that *Blights* are frequently no more than an inward Weakneſs or Diſtemper in Trees, will evidently appear, if we conſider, how often it happens that Trees againſt the ſame Wall, expos'd to the ſame Aſpect, and equally enjoying the Advantages of Sun and Air, with every other Circumſtance which might render them equally healthy, yet very often are obſerv'd to differ greatly in their Strength and Vigour; and as often do we obſerve the weak Trees to be continually blighted, when the vigorous ones in the ſame Situation ſhall eſcape very well; which muſt therefore, in a great meaſure, be aſcribed to their healthy Conſtitution: This Weakneſs therefore in Trees, muſt proceed either from a want of a ſufficient Supply of Nouriſhment to maintain it in perfect Vigour, or from ſome ill Qualities in the Soil where it grows, or perhaps from ſome bad Quality in the Stock, or inbred Diſtemper of the Bud or Cyon, which it had imbibed from its Mother Tree, or from Miſmanagement in the Pruning, *&c.* all which are productive of Diſtempers in Trees, and which are with Difficulty cured thereof. Now, if it was occaſion'd by a Weakneſs in the Tree, we ſhould endeavour to trace out the true Cauſe, firſt, whether it has been occaſion'd by ill Management in the Pruning, which is too often the Caſe; for how common is it to to obſerve *Peach*-Trees train'd up to the full Length of their Branches every Year, ſo as to be carried to the Top of the Wall in a few Years after planting, when at the ſame Time the Shoots have been ſo weak, as ſcarcely to have Strength to produce their Flowers! But this being the utmoſt of their Vigour, the Bloſſoms fall off, and many Times the Branches decay, either the greateſt Part of their Length, or quite down to the Place where they were produced; and this, whenever it happens to be the Caſe, is aſcribed to a *Blight*.

Others there are, who ſuffer their Trees to grow juſt as they are naturally diſpoſed during the Summer Seaſon, without ſtopping of Shoots, or diſburdening their Trees of luxuriant Branches, by which means, two, three, or four Shoots ſhall exhauſt the greateſt Part of the Nouriſhment of the Trees all the Summer: which Shoots, at the Winter Pruning, are intirely cut out, ſo that the Strength of the Tree was employed only in nouriſhing uſeleſs Branches, while the Fruit Branches are thereby render'd ſo weak, as not to be able to preſerve themſelves: The Remedies to this Evil ſhall be explain'd in the Article of *Pruning Peach*-Trees, *&c.*

But if the Weakneſs of the Tree proceeds from an inbred Diſtemper, it is the better Way to remove the Tree at firſt, and after renewing your Earth, plant a new one in its Place.

Or if your Soil is a hot burning Gravel or Sand, in which your Peach Trees are planted; you'll generally find this will be conſtantly their Caſe after their Roots have gotten beyond the Earth of your Borders; for which Reaſon it is much more adviſeable to dig them up, and plant *Grapes*, *Figs*, *Apricots*, or any other Sort of Fruit which may do well in ſuch a Soil, than to be annually diſappointed of your Hopes: For by a Variety of Experiments, it hath been found, that *Apricots* do attract and imbibe Moiſture with a much greater Force than *Peaches* and *Nectarines*, and ſo conſequently are more capable to aſſimilate their nutritive Particles from the Earth, than the other can do, which require to be planted in a generous Soil, which can afford them a Sufficiency of Nouriſhment without much Difficulty: And it is in ſuch Places we often ſee Peaches do Wonders, eſpecially if aſſiſted by Art; but as for the *Vine* and *Fig-tree*, they perſpire but very ſlowly, and are very often in an imbibing State (ſo that a great Part of that fine racy Flavour, with which their Fruits abound when planted in a dry Soil, is probably owing to thoſe refined aerial Principles, which are collected when in a State of Reſpiration;) and therefore, as theſe Trees do not delight in drawing much watery Nouriſhment from the Earth, ſo they will much better ſucceed in ſuch a Soil than in one that is more generous; we ſhould therefore always endeavour to ſuit the particular Sorts of Fruits to the Nature of our Soil, and not pretend to have all Sorts of Fruit good in the ſame Soil.

But there is another Sort of *Blight*, againſt which it is very difficult to guard our Fruit-trees; this is ſharp pinching froſty Mornings, which often happen at the Time when the Trees are in flower, or while the Fruit is very young, and occaſions the Bloſſoms or Fruit to drop off, and ſometimes the tender Parts of the Shoots and Leaves are greatly injur'd thereby.

The only Method yet found out to prevent this Miſchief is, by carefully covering the Walls, either with Mats, Canvas, *&c.* which being faſtened ſo as not to be diſturb'd with the Wind, and ſuffered to remain on during the Night, by taking them off every Day, if the Weather permits, is the beſt and ſureſt Method that hath yet been uſed in this Caſe; which altho' it has been ſlighted and thought of little Service by ſome, yet the Reaſon of their being not ſo ſerviceable as has expected, was, becauſe they have not been rightly uſed, by ſuffering the Trees to remain too long covered, by which Means the younger Branches and Leaves have been rendred too weak to endure the open Air when they are expos'd to it, which has often proved of worſe Conſequence to Trees than if they had remain'd intirely uncovered.

Whereas, when the Covering before mentioned has been performed as it ought to be, it has proved very ſerviceable to Fruits; and many times, when there has been almoſt a general Deſtruction of Fruits in the neighbouring Gardens, there has been a Plenty of them in ſuch Places where they have been covered: And tho' the Trouble may ſeem to ſome to be very great, yet if theſe Coverings are fix'd near the Upper-part of the Wall, and are faſtened to Pullies, ſo as to be drawn up or let down, it will be ſoon and eaſily done, and the Succeſs will ſufficiently repay the Trouble.

But there is another Sort of *Blight* that ſometimes happens later in the Spring, *viz.* in *April* or *May*, which is often very deſtructive to Orchards and open Plantations, and againſt which we know of no Remedy. This is what is call'd a *Fire Blaſt*, which in a few Hours hath not only deſtroy'd the Fruit and Leaves, but many times Parts of Trees, and ſometimes whole ones have been kill'd by it.

This is ſuppoſed to be effected by Volumes of tranſparent flying Vapours, which among the many Forms they revolve into, may ſometimes approach ſo near to a *Hemiſphere*, or Hemicylinder, either in their upper or lower Surfaces, as thereby to make the Beams of the Sun converge enough to ſcorch the Plants or Trees they fall upon, in Proportion to the greater or leſs Convergency of the Sun's Rays.

The learned *Boerhaave*, in his Theory of *Chymiſtry*, obſerves, "That thoſe white Clouds which appear in Summer-time, are, as it were, ſo many Mirrors, and occaſion exceſſive Heat; theſe cloudy Mirrors are ſometimes Round, ſometimes Concave, Polygonous, *&c.* When the Face of the Heavens is covered with ſuch white Clouds, the Sun ſhining among them muſt of Neceſſity produce a vehement Heat, ſince many of his Rays, which would otherwiſe, perhaps, never touch our Earth, are hereby reflected to us: Thus, if the Sun be one Side, and the Clouds on the oppoſite one, they will be perfect Burning Glaſſes: And hence the Phænomena of Thunder.

"I have ſometimes, *continues he*, obſerv'd a kind of hollow Clouds, full of Hail and Snow, during the Continuance of which the Heat was extreme, ſince by ſuch Condenſation they were enabled to reflect much more ſtrongly: After this came a ſharp Cold, and then the Clouds diſcharg'd their

“Hail in great Quantity, to which ſucceeded a moderate
“Warmth. Frozen Concave Clouds therefore, by their
“great Reflections, produce a vigorous Heat, and the ſame,
“when reſolv'd, exceſſive Cold.”

Whence (as Dr. *Hales* obſerves) we ſee, that Blaſts may be occaſion'd by the Reflections of the Clouds, as well as by the above-mentioned Refraction of denſe tranſparent Vapours.

Againſt this Enemy to Fruits, *&c.* as hath been ſaid, there is no Guard to our Plantations, nor any Remedy to cure it: But as this more frequently happens in cloſe Plantations, where the ſtagnating Vapours from the Earth, and the plentiful Perſpirations from the Trees, are pent in for want of a free Air to diſſipate and diſpel them, which are often obſerv'd in ſtill Weather to aſcend in ſo plentiful a manner as to be ſeen by the naked Eye, but eſpecially with reflecting Teleſcopes, ſo as to make a clear and diſtinct object become dim and tremulous, than in thoſe that are planted at a greater Diſtance, or are not ſurrounded with Hills or Woods; this directs us, in the firſt planting of Orchards, *&c.* that we ſhould allow a greater Diſtance between the Trees, and to make choice of clear, healthy Situations, that the Air may freely paſs between the Trees to diſſipate thoſe Vapours before they are formed into ſuch Volumes, whereby the circumambient Air will be clear, and leſs ſubject to ſuch Injuries, as alſo the Fruits which are produced in this clearer Air, will be much better taſted than thoſe that are ſurrounded with a thick rancid Air; for as Fruits are often in a reſpiring State, ſo they conſequently, by imbibing a part of theſe Vapours, are rendred crude and ill-taſted; which is often the Caſe with a great part of our Fruits in *England*.

BLOODWORT; *vide* Lapathum.

BOCCONIA.

This Plant was ſo called after the Reverend *Paul Boccone* of *Sicily*, who has publiſhed ſome curious Books of Botany.

The *Characters* are;

It hath a Flower conſiſting of one Leaf; from the Middle ariſes the Pointal, which afterward becomes an oval-ſhaped pointed Fruit, which is full of Juice, each containing one round Seed.

We have but one *Species* of this Plant, *viz.*

BOCCONIA *racemoſa, ſphondylii folio tomentoſo. Plum. Nov. Gen.* Branching Bocconia, with a woolly Cow Parſnip Leaf.

This Plant is called by Sir *Hans Sloane* in his Natural Hiſtory of *Jamaica*, *Chelidonium majus arboreum, foliis quercinis*; or greater Tree Celandine with Oak Leaves.

It is very common in *Jamaica*, and ſeveral other Parts of *America*; where it grows to the Height of ten or twelve Feet, having a ſtrait Trunk, as large as a Man's Arm, which is covered with a white ſmooth Bark. At the Top it divides into ſeveral Branches, on which the Leaves are placed alternately. Theſe Leaves are eight or nine Inches long, and five or ſix broad, are deeply ſinuated ſometimes almoſt to the Mid-rib, and are of a fine glaucous Colour; ſo that this Plant makes a beautiful Variety among other exotick Plants in the Stove. The whole Plant abounds with a yellow Juice like the greater Celandine, and is of an acrid Nature, ſo that it is uſed by the Inhabitants of *America*, to take off Warts, and Spots from the Eyes.

It is propagated by Seeds, which ſhould be ſown in a Pot filled with light freſh Earth, early in the Spring, and plunged into a Hot-bed of Tanners-bark, obſerving to water it frequently, otherwiſe the Seeds will not grow; when the Plants are come up, they ſhould be each tranſplanted into a ſeparate ſmall Pot, filled with light ſandy Earth, and plunged into the Hot-bed again, obſerving to ſhade the Glaſſes in the Heat of the Day, until the Plants have taken Root; you muſt alſo refreſh them gently with Water, but it ſhould be done frequently, and given to them ſparingly while they are young; for their Stems being very tender, and full of Juice, will rot, if they receive too much Moiſture; but after their Stems are become woody, they will require a plentiful Share of Water, eſpecially in hot Weather, when alſo they ſhould have a large Share of Air, by raiſing the Glaſſes of the Hot bed. The Plants, in two Months after tranſplanting, will have filled theſe ſmall Pots with their Roots; therefore they ſhould be ſhaken out of them, and planted into larger Pots filled will light freſh Earth, and ſhould be plunged into the Bark-ſtove, where they ſhould have a large Share of freſh Air in warm Weather, and muſt be plentifully watered. With this Management I have raiſed theſe Plants upward of two Feet high in one Seaſon, which were alſo very ſtrong in their Stems. Theſe Plants muſt be conſtantly kept in Stoves, allowing them a temperate Heat in Winter; and in Summer they ſhould have a large Share of Air in warm Weather, as alſo a large Share of Moiſture. I have not heard that this Plant has flowered yet in *Europe*, though I doubt not, but in two or three Years, there are ſome Plants in the Phyſick-Garden at *Chelſea* which will flower; but if it were not to flower, the ſingular Beauty of the Plant renders it worthy of a Place in every curious Collection of Plants; and it ſeems the *Indians* were very fond of it, for *Hernandez* tells us, the *Indian Kings* did plant it in their Gardens.

BONDUC; The Nickar-tree, *vulgo*.

The *Characters* are;

It hath a polypetalous or a monopetalous Flower, cut very deeply into ſeveral Segments, but is almoſt of an anomalous Figure: from whoſe Calyx ariſes the Pointal, which afterward becomes a Pod beſet all over with Prickles, in which are contained one or two round hard Seeds.

The *Species* are;

1. BONDUC *vulgare majus polyphyllum. Plum. Nov. Gen.* The yellow Nickar, or Horſe-nickar, *vulgo*.
2. BONDUC *vulgare minus polyphyllum. Plum. Nov. Gen.* The grey or Aſh-coloured Nickar.

Theſe two Plants are very common in *Jamaica*, *Barbados*, and the *Carribbe Iſlands*, where the Children uſe the Fruit for Marbles, their outer Coats being ſo hard, as with great Difficulty to be broken. Theſe Fruit are often brought to *England*, and formerly were uſed for Buttons, but at preſent I don't know any Uſe there is made of them. They commonly grow to the Height of ten or twelve Feet, and twiſt themſelves round any other Trees which grow near them; there is very little Difference between theſe two Plants, except in the Colour of their Fruit, and that the ſecond Sort has ſmaller and rounder Leaves than the firſt.

The Plants are both propagated by Seeds, which are ſo hard as not eaſily to be made to vegetate in *England*. The only way by which I have been able to get theſe Plants from Seeds, is, to put the Seeds into a warm Bed of Tanners-bark, under a Pot, where the Heat of the Tan, and the Moiſture which gets thro' the Pot, will cauſe the Shell of the Fruit to burſt, and the young Plant ſoon after appears; then they may be taken out of the Tan, and put each into a ſmall Pot filled with freſh Earth, and plunged into the Tan again. Theſe Plants will make conſiderable Progreſs, if they are kept in a warm Bed, and frequently watered. They muſt alſo be kept in a Bark-ſtove in Winter, otherwiſe it will be difficult to preſerve them in this Country. Their Stems, Branches and Leaves, are all beſet with ſharp crooked Spines, which faſten themſelves to the Cloaths of any Perſon who approaches them. Theſe Plants are preſerved for Variety by ſuch as are curious in exotick Plants.

BONTIA; *Barbados* Wild Olive, *vulgo*.

The *Characters* are;

It hath a perſonated Flower conſiſting of one Leaf, whoſe upper Lip is erect, the under Lip is divided into three Parts: from out of the Cup ariſes the Pointal, fixed like a Nail in the hinder Part of the Flower; which afterward becomes an oval Fruit, which is ſoft and full of Juice, in which is contained one oblong Shell, incloſing a Nut of the ſame Form.

We know but one *Species* of this Plant at preſent; which is,

BONTIA *laureolæ facie. Hort. Elth.* The *Barbados* Wild Olive.

This Plant is greatly cultivated in the Gardens at *Barbados* for making of Hedges; than which there is not a more proper Plant which will thrive in thoſe hot Countries, it being an Ever-green, and of quick Growth. I have been informed, that from Cuttings (planted in the rainy Seaſon, when they have immediately taken Root) there has been a compleat Hedge four or five Feet high in eighteen Months. And as this Plant will bear cutting very well, ſo it is formed into a very cloſe thick Hedge, which makes a beautiful Appearance. In *England* it is preſerved in Stoves, with ſeveral curious Plants of the ſame Country. It may be raiſed from Seeds, which ſhould be ſown on a Hot-bed early in the Spring (that the Plants may acquire Strength before Winter.) When the Plants are come up, they muſt be tranſplanted out each into a ſeparate Halfpenny Pot, filled with light freſh Earth, and plunged into a moderate Hot-bed of Tanners-bark, obſerving to water and ſhade them until they have taken Root; after which, they muſt have a large Share of Air in warm Weather, and be often refreſhed with Water. In Winter they muſt be placed in the Stove, where they ſhould have a moderate Degree of Warmth, and will often require Water; but it muſt not be given to them in too great Quantities, leſt it rot their tender Roots. In Summer they muſt have a great Share of Air, but will not do well if expoſed abroad: So that they ſhould always remain in the Stove, among Plants which require a great Share of Air, which may be admitted by opening the Glaſſes in very hot Weather. With this Management, theſe Plants will produce Flowers and Fruit in two or three Years from Seed. They may alſo be propagated by Cuttings, which ſhould be planted in the Spring, before the Plants have begun to ſhoot: Theſe muſt be put into Pots filled with light rich Earth, and plunged into a moderate Hot-bed, obſerving to water and ſhade them until they have taken Root; after which they muſt be treated as hath been directed for the ſeedling Plants. Theſe Plants being ever-green, and growing in a pyramidal Form, make a pretty Variety in the Stove, amongſt other exotick Plants.

BONUS HENRICUS; *vide* Chenopodium.

BORDERS: The Uſe of theſe in a Garden is to bound and incloſe *Parterres*, to prevent them being injur'd by walking in them: Theſe are commonly render'd very ornamental by means of the Flowers, Shrubs, *&c.* that are planted in them.

Theſe ought to be laid with a Riſing in the Middle, becauſe if they are flat, they are not agreeable to the Eye.

As for their Breadth, five or ſix Feet are often allow'd for the largeſt, and four for the leſſer.

Borders are of four Sorts; thoſe are the moſt common that are continu'd about *Parterres* without any Interruption, and are wrought with a ſharp Riſing in the Middle like an Aſs's Back, and planted with low Shrubs and Flowers.

The ſecond Sort of *Borders* are ſuch as are cut into Compartments at convenient Diſtances by ſmall Paſſages; and being alſo rais'd in the Middle, as before-mentioned, are likewiſe ſet off with Shrubs.

The third Sort are ſuch as are laid even and flat, without Flowers, having only a Verge of Graſs in the Middle, being edg'd with two ſmall Paths rak'd ſmooth and ſanded: Theſe are ſometimes garniſh'd with flowering Shrubs and Flowers of large Growth, or with Vaſes and Flower-pots plac'd regularly along the Middle of the Verge of Graſs.

The fourth Sort are quite plain, and are only ſanded, as in the *Parterres* of *Orangery*, and are filled with Caſes rang'd in a regular Order along thoſe *Borders* which are edg'd with *Box* on the Sides next to the Walks, and on the other, with Verges and Graſs-work next the *Parterre*: Sometimes a Yew is planted between each Caſe, which makes the *Border* appear richer, and the *Parterres* handſomer during the Winter Seaſon.

Borders are made either ſtrait, circular, or in Cants, and are turn'd into Knots, Scrolls, Volutes, and other Compartments.

Floriſts do alſo make *Borders* either along Walks or detach'd, and in theſe they raiſe their fineſt and choiceſt Flowers: Theſe are frequently encompaſs'd with Border-boards painted Green, which makes them look exceeding neat.

But in large *Parterres* this is not to be expected; which if they be ſtock'd with Flowers, ſucceeding one another in their ſeveral Seaſons, it is ſufficient, ſo that nothing appears bare and naked.

It is uſual to diſcontinue the *Borders* at the Ends next to the Houſe, that the Embroidery and Riſe of the *Parterre* may not be hidden by the Shrubs and flowering Plants, and that the Deſign may be better judged of.

And ſometimes there are branch'd out of it Foliage, Palm-leaves and Shells ſporting among the Sands.

BORRAGO; [or *Borago*, which ſignifies much the ſame as *Courage*, becauſe it is ſo good a Raiſer of the Spirits.] Borrage.

The *Characters* are;

The Leaves are broad and rough; the Flowers conſiſt of one Leaf, are of a Wheel-ſhape, and divided into five Segments almoſt to the Bottom, which end in ſharp Points like a Star; the Apices in the Middle of the Flower are ſharp-pointed, and adhere together; the Seeds are rough, and appear like a Viper's Head.

The *Species* are;

1. Borrago *floribus cæruleis. J. B.* The common *Borrage*, with blue Flowers.

2. Borrago *flore palleſcente, roſeo aut ſuave-rubente. Tourn.* The common *Borrage*, with a pale Roſe-colour'd Flower.

3. Borrago *floribus albis. J. B.* The common *Borrage*, with a white Flower.

The firſt Sort is very common in all Parts of *England*, being often found upon Dunghils, and in publick Roads, where the Seeds have been ſcattered from Gardens, but is hardly a Native Plant of our Iſland; however, it is ſo far naturalized amongſt us, that where-ever it is ſuffered to ſtand till its Seeds are dropt upon the Ground, there will always be a plentiful Crop.

The Seeds of this Plant may be ſown in the Spring; it will grow in almoſt any Soil, but beſt in that which is dry. This Plant is often uſed in the Kitchen, and for cool Tankards in Summer-time, and the Flowers are uſed in medicinal Cordials.

The White and Roſe-coloured Flowers are accidental Varieties of the common Sort; but the Seeds of either Sort being ſown ſeparately, will produce ſome Plants of the ſame kind.

BOSQUETS, are Groves; ſo call'd from *Boſchetto*, *Italian*, which is a Diminutive of *Boſco*, a Wood or Grove.

Theſe are ſmall Compartments of Gardens, which are form'd of Trees, Shrubs, or tall large growing Plants, planted in Quarters, and are either diſpos'd regularly in Rows, or in a more wild or accidental manner, according to the Fancy of the Owner: Theſe Quarters are commonly ſurrounded with ever-green Hedges, and the Entrances form'd into regular Portico's with Yews, which are by far the beſt, and moſt tonſile Trees for this Purpoſe. In the Inſide of theſe Quarters may be made ſome Walks, either ſtrait or winding; which, if the Quarters are large, ſhould be ſix or eight Feet broad, and may be laid with Turf, and kept well mow'd and roll'd, which will render the walking much eaſier and pleaſanter than if the Walks are only the common Earth, which in ſmaller Quarters can't be otherwiſe; for if the Trees are cloſe, and the Walks narrow, ſo as to be ſhaded and over-hung by the Trees, the Graſs will not grow.

Theſe Quarters may be alſo ſurrounded with Hedges of *Lime*, *Elm*, *Hornbeam*, or *Beech*; which ſhould be kept well ſhear'd, and not ſuffered to riſe too high; that the Heads of the Trees may be fully ſeen over them, and the Stems only hid from the Sight, when in the Walks on the Outſide of the Quarters.

In the planting of theſe *Boſquets*, you ſhould obſerve to mix the Trees, which produce their Leaves of different Shapes, and various Shades of Green, and hoary or mealy Leaves, ſo as to afford an agreeable Proſpect; beſides, there is a great Variety of different Fruits which theſe Trees produce in Autumn, which altho' of little or no Uſe, that we know of, yet have a very good Effect, in affording an agreeable Variety for ſome Time after the Leaves are gone; as the *Euonymus* or *Spindle-Tree*, the *Opulus* or *Marſh-Elder*, the *Cock-ſpur Hawthorn*, with many other Sorts, too many to mention in this Place: But I would adviſe never to mix Ever-greens with deciduous Trees; for beſides the ill Effect it hath to the Sight, (eſpecially in Winter) they ſeldom thrive well together; ſo that thoſe Quarters where you intend to have Ever-greens, ſhould be wholly planted therewith; and in the other Parts, mix as many Varieties of different Trees which caſt their Leaves, as you can conveniently; and alſo plant ſome of the largeſt growing Flowers, (eſpecially near the Outſide of the Quarters) which will add greatly to the Variety, if they have but Air enough to grow.

Theſe *Boſquets* are proper only for ſpacious Gardens, being expenſive in their firſt making, as alſo in keeping.

BOTRYS; *vide* Chenopodium.

BOX TREE; *vide* Buxus.

BRANCA URSINA; *vide* Acanthus.

BRASICA. The Cabbage.

The *Characters* are;

The Leaves are large, fleſhy, and of a glaucous Colour; the Flowers conſiſt of four Leaves, which are ſucceeded by long Taper Pods, containing ſeveral round acrid Seeds.

The *Species* are;

1. Brasica *Capitata alba. C. B.* The common white *Cabbage*.

2. BRASICA *Capitata rubra.* *C. B.* The red *Cabbage.*

3. BRASICA *Capitata alba minor Muſcovitica.* *H. A.* The *Ruſſian Cabbage.*

4. BRASICA *Capitata alba compreſſa.* *Boerh. Ind.* The flat-ſided *Cabbage.*

5. BRASICA *Capitata alba pyramidalis.* The Sugar-loaf *Cabbage.*

6. BRASICA *Capitata alba præcox.* The early *Batterſea Cabbage.*

7. BRASICA *Sabauda Hyberna.* *Lob. Ic.* The white *Savoy Cabbage.*

8. BRASICA *Capitata viridis Sabauda.* *Boerh. Ind.* The green *Savoy Cabbage.*

9. BRASICA *fimbriata.* *C. B.* The *Boor Cole.*

10. BRASICA *capitata vireſcens Italica criſpa.* *Munt. Hiſt.* The green *Broccoli.*

11. BRASICA *Italica Broccoli dicta.* The *Italian Broccoli.*

12. BRASICA *radice Nappiformi.* *Tourn.* The Turnip-rooted *Cabbage.*

13. BRASICA *Cauliflora.* *C. B.* The *Cauliflower.*

14. BRASICA *gongylodes.* *C. B. P.* The Turnep Cabbage.

15. BRASICA *aſparagodes criſpa.* *C. B. P.* Curled Colewort.

16. BRASICA *peregrina moſchum olens.* *H. R. Par.* The Muſk Cabbage.

17. BRASICA *maritima arborea, ſeu procerior ramoſa.* *Mor. Hiſt.* Branching Tree Cabbage from the Sea-coaſt.

18. BRASICA *rugoſa, longioribus foliis.* *J. B.* Brown Broccoli.

19. BRASICA *arvenſis.* *C. B. P.* Common Colewort.

20. BRASICA *Alpina perennis.* *Tourn.* Perennia *Alpine* Colewort.

21. BRASICA *campeſtris perfoliata, flore albo.* *C. B. P.* Perfoliated wild Cabbage, with a white Flower.

22. BRASICA *campeſtris perfoliata, flore purpureo.* *C. B. P.* Perfoliated wild Cabbage, with a purple Flower.

The common white, red, flat, and long-ſided *Cabbages* are chiefly cultivated for Winter Uſe: The Seeds of theſe Sorts muſt be ſown in the middle of *March*, in Beds of good freſh Earth, and in *April*, when the young Plants will have about eight Leaves; they ſhould be prick'd out into ſhady Borders, about three Inches ſquare; that they may acquire Strength, and to prevent their growing long-ſhank'd.

About the Middle of *May*, you muſt tranſplant them out, where they are to remain for good, (which in the Kitchen-Gardens near *London*, is commonly between *Cauliflowers*, *Artichokes*, &c. at about two Feet Diſtance in the Rows); but if they are planted, for a full Crop in a clear Spot of Ground, the Diſtance from Row to Row ſhould be three Feet, and in the Rows two Feet four Inches aſunder: If the Seaſon ſhould prove dry when they are tranſplanted out, you muſt water them every other Evening until they have taken freſh Root; and afterwards, as the Plants advance in Height, you ſhould draw the Earth about their Stems with a Hough, which will keep the Earth moiſt about their Roots, and greatly ſtrengthen the Plants: You muſt alſo obſerve to keep them clear from Weeds, which are apt to draw the Plants up tall, (if ſuffer'd to grow amongſt them) and often ſpoil them.

Theſe *Cabbages* will ſome of them be fit for Uſe ſoon after *Michaelmas*, and will continue until *February*, if they are not deſtroyed by bad Weather: To prevent which, the Gardeners near *London*, pull up their *Cabbages* in *November*, and trench their Ground up in Ridges, laying their *Cabbages* againſt their Ridges as cloſe as poſſible on one Side, burying their Stems in the Ground: In this manner they let them remain till after *Chriſtmas*, when they cut them for the Market; and altho' the outer Part of the *Cabbage* be decay'd, (as is often the Caſe in very wet or hard Winters) yet, if the *Cabbages* were large and hard when laid, the Inſide will remain ſound.

The *Ruſſian Cabbage* was formerly in much greater Eſteem than at preſent, it being now only to be found in particular Gentlemens Gardens, who cultivate it for their own Uſe, and is rarely ever brought to the Market. This muſt be ſown in the Spring of the Year, and managed as thoſe before directed, with this Difference only, that theſe muſt be ſooner planted out for good, and muſt have an open clear Spot of Ground, and require much leſs Diſtance every Way, for it is but a very ſmall hard *Cabbage*. Theſe will be fit for Uſe in *July* or *Auguſt*, but will not continue long before they will break and run up to Seed. The beſt Method to have theſe *Cabbages* good, is to procure freſh Seeds from abroad every Year; for 'tis apt to degenerate in *England* in a few Years.

The early *Batterſea* and Sugar-loaf *Cabbages* are commonly ſown for Summer Uſe, and are what the Gardeners about *London* commonly call *Michaelmas Cabbages*. The Seaſon for ſowing of theſe is about the End of *July*, in an open Spot of Ground; and when the Plants have got eight Leaves, you muſt prick them out into Beds at about three Inches Diſtance every Way, that the Plants may grow ſtrong and ſhort-ſhank'd; and in the Beginning of *October* you ſhould plant them out for good: The Diſtance that theſe require is, three Feet Row from Row, and two Feet aſunder in the Rows. The Gardeners near *London* commonly plant theſe *Cabbages* upon the ſame Spot of Ground where their Winter *Spinage* is ſown; ſo that when the *Spinage* is clear'd off in the Spring, the Ground will have a Crop of *Cabbages* upon it; you muſt therefore clear off the *Spinage* juſt round each Plant early in the Spring, that with a Hough you may draw the Earth up to the Stem; and when all your *Spinage* is clear'd off, which is commonly in *April*, you muſt hough down all the Weeds, and draw up the Earth again about your *Cabbage* Plants.

In *May*, if your Plants were of the early Kind, they will turn in their Leaves for Cabbaging; at which Time, the Gardeners near *London*, in order to obtain them a little ſooner, tie in their Leaves cloſe with a ſlender Oſier Twig to blanch their Middle; by which means they have them, at leaſt, a Fortnight ſooner than they could have if they were left untied.

The early *Batterſea Cabbage* being the firſt we ſhould chuſe, (if for a Gentleman's Uſe) to plant the fewer of them, and a greater Quantity of the Sugar-loaf Kind, which comes after them; for the *Batterſea* Kind will not ſupply you long, they generally cabbaging apace when they begin, and as ſoon grow hard and burſt open: But the Sugar-loaf Kind is longer before it comes, and is as ſlow in its cabbaging, and, being of a hollow Kind, will continue good for a long Time: I have known a large Quarter of Ground which was planted with this Sort of *Cabbage* for Market Uſe, which hath afforded a Supply for near three Months together. This, tho' of ſingular Service to a Gentleman's Garden, is not ſo much for the Advantage of the Market Gardener, who loves to have his Ground clear'd ſooner, that he may have another Crop upon it, of *Celery*, *Endive*, &c. which is more to his Purpoſe; for they paying large Rents for their Land, are oblig'd to have as many Crops in a Year from it as poſſible.

Altho' I before have adviſ'd the planting out of your *Cabbages* for good in *October*; yet the Sugar-loaf Kind may be planted out in *February*, and will ſucceed as well as if planted earlier, with this Difference only, that they will be later before they cabbage. You ſhould alſo reſerve ſome Plants of the *Batterſea* Kind in ſome well-ſhelter'd Spot of Ground, to ſupply your Plantation, in caſe of a Defect.

The *Savoy Cabbages* are propagated for Winter Uſe, as being generally eſteem'd the better when pinch'd by the Froſt; theſe muſt be ſown about the Beginning of *April*, and treated after the manner as was directed for the common *white Cabbage*, with this Difference, that theſe may be planted at a cloſer Diſtance than thoſe; two Feet ſquare will be ſufficient: Theſe are always much the better when planted in an open Situation, which is clear from Trees and Hedges; for in cloſe Places they are very ſubject to be eaten almoſt up by Caterpillars and other Vermin, eſpecially if the *Autumn* prove dry.

The *Boor-Cole* may be alſo treated in the ſame manner, but need not be planted above one Foot ſquare: Theſe are never eaten 'till the Froſt hath render'd them tender; for otherwiſe they are tough and bitter.

The Seeds of the *Broccoli* (of which there are ſeveral Kinds, *viz.* the *Roman*, *Neapolitan*, and *black Broccoli*, with ſome others, but the *Roman* is chiefly preferr'd to them all) ſhould be ſown about the Middle or Latter End of *May*, in a moiſt Soil; and when the Plants are grown to have eight Leaves, tranſplant them into Beds, (as was directed for the common *Cabbage*) and toward the Middle or Latter End of *July* they will be fit to plant out for good, which ſhould be into ſome well-ſhelter'd Spot of Ground, but not under the Drip of Trees: The Diſtance theſe require is about a Foot and half every Way. The Soil in which they ſhould be planted ought to be rather light than heavy, ſuch as are the Kitchen Gardens near *London*: If your Plants ſucceed well (as there will be little Reaſon to doubt, unleſs the Winter prove extreme hard) they will begin to ſhew their ſmall Heads, which are ſomewhat like a *Cauliflower*, about the Beginning of *December*, and will continue eatable 'till the End of *March*.

The Manner of preparing them for the Table, is this; When your Heads are grown to their full Bigneſs, (as may be eaſily known by their dividing, and beginning to run up) then you ſhould cut them off, with about four Inches of the tender Stem to them; then ſtrip off the outer Skin of the Stem, and after having waſh'd them, boil them in a clean Linen-cloth, (as is practis'd for *Cauliflowers*) and ſerve them up with Butter, *&c.* and if they are of a right Kind, they will be tenderer than any *Cauliflowers*, tho' very like unto them in Taſte. When your firſt Heads are cut off, in about a Month's Time after they will produce a Number of Side-ſhoots, which being cut and ſtripp'd of their outer Skin, are very tender and good, almoſt equalling *Aſparagus*. The ſureſt Way to have theſe good, is to be furniſh'd with freſh Seeds from *Italy* every Year; for they are very apt to degenerate in a Year or two, if the Seeds are ſaved in *England*.

The Manner of ſaving the Seeds of all theſe Sorts of *Cabbages*, is, about the Middle of *October*, you ſhould make choice of ſome of your beſt *Cabbages*, which you ſhould pull up, and carry to ſome Shed, or other cover'd Place, where you ſhould hang them up for three or four Days by their Stalks, that the Water may drain from between their Leaves; then plant them in ſome Border under a Hedge or Pale, quite down to the Middle of the *Cabbage*, leaving only the Upper-part of the *Cabbage* above-ground, obſerving to raiſe the Earth up about it, ſo that it may ſtand a little above the Level of the Ground; eſpecially if the Ground is wet, they will require to be rais'd pretty much.

If the Winter ſhould prove very hard, you muſt lay a little Straw or Peaſe Haulm lightly upon them; taking it off as often as the Weather proves mild, leſt by keeping them too cloſe they ſhould rot. In the Spring of the Year theſe *Cabbages* will ſhoot out ſtrongly, and divide into a great number of ſmall Branches; you muſt therefore ſupport their Stems, to prevent their being broke off by the Wind; and if the Weather ſhould be very hot and dry, you ſhould refreſh them with Water once a Week, which will greatly promote their Seeding, eſpecially at the Time when they are in Flower.

When the Pods begin to change brown, you will do well to cut off the extreme Part of every Shoot; which will ſtrengthen your Seeds: And it is generally obſerv'd, that thoſe Seeds which grow near the Top of the Shoots, are very ſubject to run to Seed before they cabbage; ſo that by this there will be no Loſs, but a great Advantage, eſpecially if you have more regard to the Quality than to the Quantity of the Seeds; which indeed is not always the Caſe, when it is intended for Sale: but thoſe who ſave it for their own Uſe, ſhould be very careful to have it good.

When your Seeds begin to ripen, you muſt be particularly careful that the Birds do not deſtroy it; for they are very fond of theſe Seeds. In order to prevent their Miſchief, ſome uſe old Nets, which they throw over their Seeds, to prevent their getting to it: But this will not always do; for unleſs the Nets are very ſtrong, they will force their Way through them, as I have often ſeen: but the beſt Method I know, is to get a Quantity of Birdlime, and dawb over a parcel of ſlender Twigs, which ſhould be faſten'd at each End to ſtronger Sticks, and placed near the upper Part of the Seed, in different Places, ſo that the Birds may alight upon them, by which means they will be faſtened thereto; where you muſt let them remain for a conſiderable Time, if they cannot get off themſelves: And altho' there ſhould not above two or three Birds be caught, yet it will ſufficiently terrify the reſt, that they will not come to that Place again for a conſiderable Time, (as I have experienced.)

When your Seeds are fully ripe, you muſt cut it off; and after drying it, threſh it out and preſerve it in Bags for Uſe.

But in planting of *Cabbages* for Seed, I would adviſe never to plant more than one Sort in a Place, or near one another. As for Example: Never plant *red* and *white Cabbages* near each other, nor *Savoy* with either *white* or *red Cabbages*: For I am very certain they will, by the Commixture of their *Effluvia*, produce a Mixture of Kinds: And it is wholly owing to this Neglect, that the Gardeners rarely ſave any good *red Cabbage-ſeed* in *England*, but are obliged to procure freſh Seeds from abroad, as ſuppoſing the Soil or Climate of *England* alters them from Red to White, and of a mix'd Kind between both; whereas, if they would plant *red Cabbages* by themſelves for Seeds, and not ſuffer any other to be near them, they might continue the Kind as good in *England*, as in any other Part of the World.

Cauliflowers have of late Years been ſo far improv'd in *England*, as to exceed in Goodneſs and Magnitude what are produced in moſt Parts of *Europe*, and by the Skill of the Gardener are continued for ſeveral Months together; but the moſt common Seaſon for them is in *May*, *June*, and *July*. I ſhall therefore begin with Directions for obtaining them in this Seaſon.

Having procured a parcel of good Seed, of an early Kind, you muſt ſow it on the Tenth of *Auguſt*, upon an old Cucumber-bed or Melon-bed, ſifting a little Earth over the Seeds about a Quarter of an Inch thick; and if the Weather ſhould prove extreme hot and dry, you ſhould ſhade the Beds with Mats, to prevent the Earth from drying too faſt, which would endanger the ſpoiling of your Seed; and give it gentle Waterings, as you may ſee occaſion; in about a Week's Time your Seed will appear above-ground, when you muſt take off your Coverings by degrees. But do not expoſe your Plants too much to the open Sun at firſt: In about a Month's Time after ſowing, your Plants will be fit to prick out; you ſhould therefore put ſome freſh Earth upon your old Cucumber or Melon-beds, into which you ſhould prick your young Plants, at about two Inches ſquare, obſerving to ſhade and water them at firſt planting; but do not water them too much after they are growing, nor ſuffer them to receive too much Rain, if the Seaſon ſhould prove wet, which would be apt to make them black-ſhank'd, (as the Gardeners term it, which is no leſs than a Rottenneſs in their Stems) and is the Deſtruction of the Plants ſo affected.

In this Place they ſhould continue 'till about the ſixteenth Day of *October*, when they muſt be removed into the Place where they are to remain during the Winter Seaſon, which, for this firſt ſowing, is commonly under Bell or Hand-glaſſes, to have early *Cauliflowers*; and theſe ſhould be of an early Kind: But in order to have a Succeſſion during the Seaſon, we ſhould be provided with another more late Kind, which ſhould be ſown four or five Days after the other, and manag'd as was directed for them.

In order to have very early *Cauliflowers* we ſhould make choice of a good rich Spot of Ground, that is well defended from the *North*, *Eaſt*, and *Weſt* Winds with Hedges, Pales, or Walls: This Ground ſhould be well trench'd, burying therein a good Quantity of rotten Dung; then level your Ground: And if it be naturally a wet Soil, you ſhould raiſe it up in Beds about two Feet and a half broad, and four Inches above the Level of the Ground. But if your Ground is moderately dry, you need not raiſe it at all: Then plant your Plants about two Feet four Inches Diſtance from Glaſs to Glaſs in the Rows, always putting two good Plants under each Glaſs, which may be at about four Inches from each other; and if you deſign 'em for a full Crop, they may be three Feet, Row from Row: But if you intend to make Ridges for Cucumbers or Melons between the Rows of *Cauliflower-Plants*, (as is generally practis'd by the Gardeners near *London*) you muſt then make your Rows eight Feet aſunder.

When you have planted your Plants, if the Ground is very dry, you ſhould give them a little Water, and then ſet your Glaſſes over them, which may remain cloſe down upon them, until they have taken Root, which will be in about a Week or ten Days time; unleſs there ſhould be a kindly Shower of Rain, in which caſe you may ſet off the Glaſſes, that the Plants may receive the Benefit of it; and in about ten Days after planting, you ſhould be provided with a parcel of forked Sticks, or Bricks, with which you ſhould raiſe your Glaſſes about three or four Inches to the Southward, that your Plants may have free Air: In this manner your Glaſſes ſhould remain over the Plants, Night and Day, unleſs in froſty Weather, when you ſhould ſet them down as cloſe as poſſible; or if the Weather ſhould prove very warm, which many times happens in *November* and ſometimes in *December*, in this Caſe, you ſhould keep your Glaſſes off in the Day-time, and put them on only in the Night, leſt by keeping the Glaſſes over them too much, you ſhould draw them into Flower at that Seaſon; which is many times the Caſe in mild Winters, eſpecially if unſkilfully manag'd.

Towards the latter end of *February*, if the Weather be mild, you ſhould prepare another good Spot of Ground, to remove ſome of the Plants into, from under the Glaſſes, which ſhould be well dung'd and trench'd (as before); then ſet off your Glaſſes; and after making choice of one of the moſt promiſing Plants under each Glaſs which ſhould remain for good, take away the other Plant, by raiſing it up with a Trowel, *&c.* ſo as to preſerve as much Earth to the Roots as poſſible; but have a great Regard to the Plant that is to remain, not to diſturb or prejudice its Roots: Then plant your Plants which you have taken out, at the Diſtance before directed, *viz.* if for a full Crop, three Feet, Row from Row; but if for Ridges of Cucumbers between them, eight Feet, and two Feet four Inches Diſtance in the Rows. Then with a ſmall Hough draw the Earth up to the Stems of the Plants which were left under the Glaſſes, taking great Care not to let the Earth fall into their Hearts: Then ſet your Glaſſes over them again, raiſing your Props an Inch or two higher, to give them more Air, obſerving to take them off whenever there may be ſome gentle Showers, which will greatly refreſh the Plants.

And in a little time after, if you find your Plants grow ſo faſt as to fill the Glaſſes, you ſhould then ſlightly dig about the Plants, and raiſe the Ground about them in a Bed broad enough for the Glaſſes to ſtand, and about four Inches high, which will give your Plants a great deal of Room, when the Glaſſes are ſet over them; and by this Means they may be kept cover'd until *April*, which otherwiſe they could not, without Prejudice to the Leaves of the Plants: And this is a great Advantage to them; for many times we have Returns of ſevere Froſts at the latter End of *March*, which prove very hurtful to theſe Plants, if expos'd thereto, eſpecially after having been nurs'd up under Glaſſes.

After you have finiſh'd your Beds, you may ſet your Glaſſes over your Plants again, obſerving to raiſe your Props pretty high, eſpecially if the Weather be mild, that they may have free Air to ſtrengthen them; and in mild ſoft Weather ſet off your Glaſſes, as alſo in gentle Showers of Rain: And now you muſt begin to harden them by degrees to endure the open Air; however, it is adviſeable to let your Glaſſes remain over them as long as poſſible, if the Nights ſhould be froſty, which will greatly forward your Plants: but be ſure do not let your Glaſſes remain upon them in very hot Sun-ſhine, eſpecially if their Leaves preſs againſt the Sides of the Glaſſes: For I have often obſerv'd, in ſuch Caſes, that the Moiſture which hath riſen from the Ground, together with the Perſpiration of the Plants, which, by the Glaſſes remaining over them, hath been detain'd upon the Leaves of the Plant, and when the Sun hath ſhone hot upon the Sides of the Glaſſes, hath acquir'd ſuch a powerful Heat from the Beams thereof, as to ſcald all their larger Leaves, to the no ſmall Prejudice of the Plants: Nay, ſometimes I have ſeen large Quantities of Plants ſo affected herewith, as never to be worth any thing after.

If your Plants have ſucceeded well, towards the End of *April* ſome of them will begin to Fruit; you muſt therefore look over them carefully every other Day, and when you ſee the Flower plainly appear, you muſt break down ſome of the inner Leaves over it to guard it from the Sun, which would make the Flower yellow and unſightly; and when you find your Flower at its full Bigneſs, (which you may know by its Outſide, parting, as if it would run) you muſt then draw it out of the Ground, and not cut them off, leaving the Stalk in the Ground; as is by ſome practis'd: And if they are deſign'd for preſent Uſe, you may cut them out of their Leaves; but if deſign'd to keep, you ſhould preſerve their Leaves about them, and put them into a cool Place. The beſt Time for pulling of them, is in a Morning, before the Sun hath exhal'd the Moiſture; for *Cauliflowers* pull'd in the Heat of the Day, loſe that Firmneſs which they naturally have, and become tough.

But to return to our *Second Crop* (the Plants being rais'd and manag'd as was directed for the *Early Crop*, until the Middle or latter End of *October*) you muſt then prepare ſome Beds, either to be cover'd with Glaſs-Frames, or arch'd over with Hoops, to be cover'd with Mats, *&c.* Theſe Beds ſhould have ſome Dung laid in the Bottom about ſix Inches or a Foot thick, according to the Size of your Plants; for if they are ſmall, the Bed ſhould be thicker of Dung, to bring them forward, and ſo *vice verſa*; this Dung ſhould be beat down cloſe with a Fork, in order to prevent the Worms from finding their Way through it: Then lay ſome good freſh Earth about four or five Inches thick thereon, in which you ſhould plant your Plants about two Inches and a half ſquare, obſerving to ſhade and water them until they have taken freſh Root: But be ſure do not keep your Coverings cloſe; for the Warmth of the Dung will occaſion a large Damp in the Bed, which, if pent in, will greatly injure the Plants.

When your Plants have taken Root, you muſt give them as much free open Air as poſſible, by keeping the Glaſſes off in the Day-time as much as the Weather will permit; and in the Night, or at ſuch Times as the Glaſſes require to be kept on, raiſe them up with Bricks to let in freſh Air, unleſs in froſty Weather; at which time the Glaſſes ſhould be cover'd with Mats, Straw, or Peaſe-haulm, *&c.* but this is not to be done but in very hard Froſts: You muſt alſo obſerve to guard them againſt great Rains, which in Winter-time are very hurtful to them; and if the under Leaves grow yellow and decay, be ſure to pick them off, for if the Weather ſhould prove very bad in Winter, ſo that you ſhould be oblig'd to keep them cloſe cover'd for two or three Days together, as it ſometimes happens, theſe decay'd Leaves will render the inclos'd Air very noxious, and the Plants inſpiring pretty much at that time, are often deſtroy'd in vaſt Quantities.

In the Beginning of *February*, if the Weather be mild, you muſt begin to harden your Plants by degrees, that they may be prepar'd for Tranſplantation; and the Ground where you intend to plant your *Cauliflowers* out for good, (which ſhould be quite open from Trees, *&c.* and rather moiſt than dry) having been well dung'd and dug, ſhould be ſown with *Radiſhes* a Week or Fortnight before you intend to plant out your *Cauliflowers*: The Reaſon why I mention the ſowing of *Radiſhes* particularly, is this, (*viz.*) that if there are not ſome *Radiſhes* amongſt them, and the Month of *May* ſhould prove hot and dry, as it ſometimes happens, the Fly will ſeize your *Cauliflowers*, and eat them full of Holes, to their Prejudice, and ſometimes their Deſtruction; whereas, if there are *Radiſhes* upon the Spot, the Flies will take to them, and never meddle with the *Cauliflowers* ſo long as they laſt: Indeed the Gardeners near *London* mix *Spinage* with their *Radiſh* Seed, and ſo have a double Crop; which is an Advantage where Ground is dear, or that Perſons are ſtreightened for Room: otherwiſe it is very well to have only one Crop amongſt the *Cauliflowers*, that the Ground may be cleared in time.

Your Ground being ready, and the Seaſon good, about the Middle of *February*, you may begin to plant out your *Cauliflowers*: The Diſtance which is generally allow'd by the Gardeners near *London*, (who plant other Crops between their *Cauliflowers* to ſucceed them, as *Cucumbers* for pickling, and Winter *Cabbages*) is every other Row four Feet and a half apart, and the intermediate Rows two Feet and a half, and two Feet two Inches Diſtance in the Rows; ſo that in the Middle, or towards the latter End of *May*, (when the *Radiſhes* and *Spinage* are cleared off) they put in Seeds of *Cucumbers* for Pickling, in the Middle of the wide Rows, at three Feet and a half apart; and in the narrow Rows, plant *Cabbages* for Winter Uſe, at two Feet two Inches Diſtance, ſo that theſe ſtand each of them exactly in the Middle of the Square between four *Cauliflower*-Plants; and theſe, after the *Cauliflowers* are gone off, will have full Room to grow, and the Crop be hereby continu'd in a Succeſſion through the whole Seaſon.

About three Weeks or a Month after your *Cauliflowers* are planted out, the *Radiſhes* between them will be fit to hough; at which time, when you are houghing out the *Radiſhes*, where they are too thick, you ſhould cut off all ſuch as grow immediately about the *Cauliflowers*, and would prove hurtful to them, by drawing them up tall and weak, and alſo at that time draw the Earth up to the Stems of the Plants, being careful not to let any get into their Hearts, (as was before directed;) and when your *Radiſhes* are fit to pull, be ſure to clear round the *Cauliflowers* firſt, and keep drawing the Earth up to their Stems as they advance in Height, which will keep their Stems from being harden'd by the Weather, and be of ſingular Service to your Plants.

There are many People, who are very fond of watering *Cauliflower* Plants in Summer, but the Gardeners near *London* have almoſt wholly laid aſide this Practice, as finding a deal of Trouble and Charge to little Purpoſe; for if the Ground be ſo very dry as not to produce tolerable good *Cauliflowers* without Water, it ſeldom happens, that watering of them renders them much better; and when once they have been water'd, if it is not conſtantly continu'd, it had been much better for them if they never had had any; as alſo, if it be given them in the Middle of the Day, it rather helps to ſcald them: So that, upon the Whole, if Care be taken to keep the Earth drawn up to their Stems, and clear them from every Thing that grows near them, that they may have free open Air, we ſhall find that they will ſucceed better without than with Water, where any of theſe Cautions are not ſtrictly follow'd.

When your *Cauliflowers* begin to Fruit, you muſt often look over them, to turn down their Leaves, as was before directed, to preſerve their Whiteneſs; and when they are full grown, obſerve the former Directions in pulling them, *&c.* But where-ever you meet with an extraordinary good *Cauliflower*, whoſe Curd is hard and white, and perfectly free from any Frothineſs about the Edges, you ſhould ſuffer it to remain for Seed, keeping the Leaves cloſe down upon it until the Flower hath ſhot out Stems, and then remove the Leaves from them by degrees, but do not expoſe them too much to the open Air at firſt: As the Stems advance, you muſt take the Leaves quite away; and when they begin to branch out, you ſhould fix three pretty ſtrong Stakes, at equal Angles, about it, ſurrounding them with Packthread, *&c.* to ſupport their Branches, which would be otherwiſe liable to break with the Wind.

When your Pods begin firſt to be form'd, if the Weather be dry, you ſhould give them a little Water all over, (with a Watering-pot that hath a Roſe to it) which will promote the Progreſs of the Seeds, and preſerve 'em from the Mildew, which is often hurtful to theſe Seeds; and when your Seeds are ripe, you muſt cut it off, and hang it up to dry, and rub it out, as was directed for *Cabbage* Seed: And although your Flowers do not produce ſo much Seed as thoſe which were of a ſofter or frothy Nature, yet the Goodneſs of ſuch Seeds will ſufficiently recompenſe for the Quantity; and any Perſon who was to purchaſe his Seeds, had better give ten Shillings an Ounce for ſuch Seeds, than two for the Seeds commonly ſav'd for Sale; as the Gardeners about *London* have experienc'd, who will never buy any Seeds of this Kind, that they do not know how they were ſav'd.

But in order to have a third Crop of *Cauliflowers*, you ſhould make a ſlender Hot-bed in *February*, in which you ſhould ſow the Seeds, covering them a quarter of an Inch thick with light Mould, and covering the Bed with Glaſs-frames;

you ſhould now and then gently refreſh the Bed with Water, obſerving to raiſe the Glaſſes with Bricks in the Day-time to let in freſh Air; and when the Plants are come up, and have gotten four or five Leaves, you ſhould prepare another Hot-bed to prick them into, which may be about two Inches ſquare; and in *April* harden them by degrees, to fit them for tranſplanting, which ſhould be done about the latter End of that Month at the Diſtances directed for the ſecond Crop, and muſt be manag'd accordingly: Theſe (if the Soil is moiſt where they are planted or the Seaſon cool and moiſt) will produce good *Cauliflowers* about a Month after the ſecond Crop is gone, whereby their Seaſon will be greatly prolong'd.

There is alſo a fourth Crop of *Cauliflowers*, which is rais'd by ſowing the Seed about the twelfth of *May*; and being tranſplanted, as hath been before directed, will produce good *Cauliflowers* in a kindly Seaſon, and good Soil after *Michaelmas*, and continue thro' *October* and *November*, and if the Seaſon permit, often a great part of *December*.

The Reaſon why I fix particular Days for the ſowing of this Seed, is, becauſe two or three Days often make a great Difference in their Plants; and becauſe theſe are the Days uſually fix'd by the Gardeners near *London*, who have found their Crops to ſucceed beſt when ſown at thoſe Times, although one Day ſooner or later will make no great Odds.

The Turnep Cabbage was formerly more cultivated in *England* than at preſent; for ſince other Sorts have been introduced which are much better flavoured, this Sort has been neglected. There are ſome Perſons who eſteem this Kind for Soups, but it is generally too ſtrong for moſt *Engliſh* Palates, and is ſeldom good but in hard Winters, which will render it tender, and leſs ſtrong.

It may be propagated by ſowing the Seeds in *March*, on a Bed of light freſh Earth and when the Plants are come up about an Inch high, they ſhould be tranſplanted out into a ſhady Border, at about two Inches diſtance every way, obſerving to water them until they have taken Root; after which time they will require no other Culture, but to keep them clear from Weeds, unleſs the Seaſon ſhould prove extremely dry; in which caſe it will be proper to water them every four or five Days to prevent their being ſtunted by the Mildew, which is ſubject to ſeize theſe Plants in very dry Weather.

The latter End of *May*, or the Beginning of *June*, theſe Plants ſhould be tranſplanted out where they are to remain, allowing them two Feet diſtance every way, obſerving to water them until they have taken Root; after which time they will require no other Culture but to keep them clear from Weeds; and as their Stems advance, ſo the Earth ſhould be drawn up to them with a Hough, which will preſerve the Earth moiſt about their Roots, and prevent their Stems from drying, and growing woody, ſo that the Plants will grow more freely. In Winter they will be fit for Uſe, when they ſhould be cut off, and the Stems pulled out of the Ground, and thrown away, as being good for nothing after the Heads are cut off.

The curled Colewort is more generally eſteemed than the former. This may be propagated by ſowing of the Seeds the Beginning of *July*, and when the Plants are ſtrong enough for tranſplanting, they ſhould be planted in Rows about eight or nine Inches aſunder, and four or five Inches diſtance in the Rows; this Work ſhould be performed at a moiſt time, when the Plants will ſoon take Root, and require no farther Care. Theſe will be fit for Uſe after *Chriſtmas*, and continue good until *April*, ſo that they are very uſeful in a Family.

The Muſk Cabbage has thro' Negligence been almoſt loſt in *England*, tho' for eating it is one of the beſt Kinds we have, but is tenderer than many other Sorts, ſo not profitable for Gardeners who ſupply the Markets; but thoſe who cultivate them for their own Table, ſhould make Choice of this, rather than any of the common Cabbage; for it is always looſer, and the Leaves more criſp and tender, and has a moſt agreeable muſky Scent when cut. This may be propagated in the ſame manner as the common Cabbage, and ſhould be allowed the ſame Diſtance. It will be fit for Uſe in *October*, *November*, and *December*; but if the Winter proves hard, theſe will be deſtroyed much ſooner than the common Sort.

The branching Sea-Cabbage is found wild in ſeveral Parts of *England*, on the Sea-coaſt, and is ſometimes gathered by the poor Inhabitants in the Spring, and eaten; but it is apt to be ſtrong and bitter, ſo that it is rarely cultivated for Uſe in the Gardens.

The brown Broccoli is by many Perſons greatly eſteemed, tho' it doth not deſerve a Place in the Kitchen-Garden, where the *Roman* Broccoli can be obtained, which is much ſweeter, and will continue longer in Seaſon. Indeed the brown Sort is much hardier, ſo that it will thrive in the coldeſt Situations, where the *Roman* Broccoli is ſometimes deſtroyed in very hard Winters. The brown Sort ſhould be ſown in *April*, and managed as hath been directed for the common Cabbage, and ſhould be planted at the ſame Diſtance (which is about two Feet and an half aſunder). This will grow very tall, ſo ſhould have the Earth drawn up to their Stems as they advance in Height. This doth not form Heads ſo perfect as the *Roman* Broccoli, ſo the Stems and Hearts of the Plants are the Part which is eaten.

The *Roman* Broccoli (if well managed) will have large Heads, which appear in the Centre of the Plants, like Cluſters of Buds. Theſe Heads ſhould be cut before they run up to Seed, with about four or five Inches of the Stems; the Skin of theſe Stems ſhould be ſtripp'd off, before they are boiled. Theſe will be very tender, and little inferior to *Aſparagus*. After the firſt Heads are cut off, there will be a great Number of Side-ſhoots produced from the Stems, which will have ſmall Heads to them, but are full as well flavoured as the large Heads. Theſe Shoots will continue good until the Middle of *April*, when the Aſparagus will come in Plenty to ſupply the Table.

Beſides this firſt Crop of Broccoli (which is uſually ſown the Middle or latter End of *May*) it will be proper to ſow another Crop the Beginning of *July*, which come in to ſupply the Table the latter End of *March*, and the Beginning of *April*; and being very young, will be extremely tender and ſweet.

In order to ſave good Seeds of this Kind of Broccoli in *England*, you ſhould reſerve a few of the largeſt Heads of the firſt Crop, which ſhould be let remain to run up to Seed, and all the Under-ſhoots ſhould be conſtantly ſtripp'd off, leaving only the main Stem to flower and ſeed. If this be duly obſerved, and no other Sort of Cabbage permitted to ſeed near them, the Seeds will be as good as thoſe procured from abroad, and the Sort may be preſerved in Perfection for many Years.

The common Colewort is now almoſt loſt near *London*, where their Markets are uſually ſupplied with Cabbage or Savoy Plants, inſtead of them, and thoſe being tenderer and more delicate are better worth cultivating than the common Colewort, which is ſtronger, and better able to reſiſt the Cold in ſevere Winters than either of thoſe, but is not near ſo delicate. And ſince the Winters in *England* have been generally temperate of late Years, ſo the common Cabbage and Savoy Plants have conſtantly been cultivated by the Gardeners near *London*, and ſold in the Markets as Coleworts. Indeed where Farmers ſow Coleworts to feed their Milch Cattle in the Spring, when there is a Scarcity of Herbage, the common Colewort is to be preferred, as being ſo very hardy, that no Froſt will deſtroy it.

The beſt Method to cultivate this Plant in the Fields, is, to ſow the Seeds about the Beginning of *July*, chuſing a moiſt Seaſon, which will bring up the Plants in about ten Days or a Fortnight; the Quantity of Seed for an Acre of Land is nine Pounds; when the Plants have gotten five or ſix Leaves, they ſhould be houghed, as is practiſed for Turneps, cutting down all the Weeds from amongſt the Plants, and alſo thinning the Plants where they are too thick; but they ſhould be left thicker than Turneps, becauſe they are more in danger of being deſtroyed by the Fly; this Work ſhould be performed in dry Weather, that the Weeds may be killed; for if it ſhould prove moiſt ſoon after, the Weeds will take Root again, and render the Work of little Uſe. About ſix Weeks after, the Plants ſhould have a ſecond houghing, which if carefully performed in dry Weather, will intirely deſtroy the Weeds, and make the Ground clean, ſo that they will require no farther Culture: in the Spring they may either be drawn up and carried out to feed the Cattle, or they may be turned in to feed them as they ſtand; but the former Method is to be preferred, becauſe there will be little Waſte, whereas when the Cattle are turned in amongſt the Plants, they will tread down and deſtroy more than they eat.

The perennial *Alpine* Colewort is alſo little cultivated in the Gardens near *London* at preſent. This is very hardy, and may be cultivated in the ſame Manner as the former Sort. This will continue two Years before it runs up to Seed, and will afterwards produce many Side-ſhoots, and in poor Land will continue three or four Years; but in rich Soils it will not laſt ſo long. This may be uſed as the former Sort to feed Cattle, for it is not ſo good for the Table as the Plants which are now cultivated for that Purpoſe.

The other two Sorts of wild Cabbage are Varieties fit for a botanick Garden; but are Plants of no Uſe. Theſe may be propagated by ſowing of their Seeds on a Bed of light Earth early in the Spring, in the Place where they are deſigned to remain (for they do not bear tranſplanting well): When the Plants are come up pretty ſtrong, they ſhould be thinn'd, ſo as to leave them four or five Inches apart, and they muſt be conſtantly kept clear from Weeds. In *June* they will flower; and their Seeds will ripen the Beginning of *Auguſt*, which if permitted to fall, the Plants will come up, and maintain themſelves without any farther Care but to keep them clear from Weeds. They are annual Plants, and periſh when they have perfected their Seeds.

BREYNIA.

This Plant was ſo named by Father *Plumier*, in Honour to Dr. *Breynius*, a learned Botaniſt at *Dantzick*, who publiſhed two Prodromus's to his Hiſtory of Plants, and one Century in Folio, in which the Plants are curiouſly delineated and engraven.

The *Characters* are;

It hath a Roſe-flower, conſiſting of many Petals, which are placed in a circular Order, from whoſe Flower-cup riſes the Pointal; which afterward becomes a Fruit or Pod, which is ſoft and fleſhy, in which are ſeveral Kidney-ſhap'd fleſhy Seeds.

The *Species* are;

1. **Breynia** *amygdali foliis latioribus. Plum. Nov. Gen.* Breynia, with broad Almond Leaves.

2. **Breynia** *elæagni foliis. Plum. Nov. Gen.* Breynia, with Leaves like thoſe of the wild Olive.

Both theſe Plants are very common in *Jamaica*, and ſeveral other Parts of *America*, where they uſually grow to the Height of thirty Feet; their Trunks are about the Thickneſs of a Man's Thigh, which are covered with a ſmooth Aſh-coloured Bark. The Branches come out on every Side, ſo as to form a regular Head, and being beſet with hoary Leaves, make an agreeable Appearance.

Theſe Plants are both very impatient of Cold, ſo muſt be preſerved in Stoves, otherwiſe they will not live thro' the Winter in this Climate. They may be propagated by Seeds, which may be obtained from *America*. Theſe Seeds ſhould be ſown on a Hot-bed early in the Spring, and when the Plants are come up two Inches high, they ſhould be carefully tranſplanted each into a ſeparate ſmall Pot, filled with light rich Earth, and then plunged into a moderate Hot-bed of Tanners-bark, obſerving to water and ſhade them until they have taken new Root; after which Time the Glaſſes of the Hot-bed ſhould be raiſed every Day in warm Weather, to admit freſh Air to the Plants, as alſo to let the Steam of the Bed paſs off; they muſt alſo be frequently watered during the Summer Seaſon, and when the Plants have grown ſo much as to fill the Pots with their Roots, they ſhould be carefully ſhaken out of them, and the Fibres round the Outſide of the Ball of Earth ſhould be carefully pared off, and then put into Pots a Size larger than thoſe they were in before, which ſhould be filled with light rich Earth, and then plunged into the Hot-bed again, obſerving to water them frequently in hot Weather, as alſo to admit freſh Air to them every Day. In this Bed they may remain until the End of *September*, when they muſt be placed in the Bark-ſtove, where during the Winter Seaſon they ſhould be kept in a temperate Heat, and muſt be often refreſhed with Water, but it muſt not be given to them in large Quantities at this Seaſon.

As theſe Plants increaſe in Bulk, ſo they ſhould be placed in larger Pots; but you muſt be very careful not to over-pot them, which will cauſe the Plants to decline, and if not timely remedied, will deſtroy them. In Summer theſe Plants ſhould have a large Share of freſh Air in warm Weather, but they muſt not be placed in the open Air; for if they are not conſtantly preſerved from the Cold, it will deſtroy them in a ſhort Time. If theſe Directions are duly obſerved, the Plants will make great Progreſs, and in a few Years will produce Flowers.

BROOM, the Common. *Vide* Cytiſo-Geniſta Scoparia.

BROOM, the *Spaniſh*. *Vide* Spartium & Geniſta.

BRUNELLA. Self-heal.

The *Characters* are;

The Flowers grow in ſhort compact Spikes, which conſiſt of one Leaf, and are labiated (or lip'd); the Creſt (or upper Lip) is intire and hollow'd; the Beard (or lower Lip) is divided into three Segments; the middle Segment is broad, and hollow, like a Spoon, and is farther produc'd than the two other Segments which are narrow; the Cup of the Flower hath two Lips; the upper being erect and trifid, and the lower is arm'd with two ſmall Spines.

There are ſeveral *Species* of this Plant preſerv'd in the curious Botanick Gardens: I ſhall mention the Varieties to be found in the *Engliſh* Gardens, and then give a ſhort Account of their Culture.

1. **Brunella** *major, folio non diſſecto. C. B.* Common Self-heal, with whole Leaves.

2. **Brunella** *major folio non diſſecto, flore albo. C. B* Common Self-heal, with white Flowers.

3. **Brunella** *folio laciniato. C. B.* Cut-leav'd Self-heal.

4. **Brunella** *folio laciniato, flore albo. H. R. P.* Cut-leav'd Self-heal, with white Flowers.

5. **Brunella** *cærulea, magno flore. C. B.* Large blue-flower'd Self-heal.

6. **Brunella** *Hyſſopifolia. C. B.* Narrow-leav'd Self-heal.

7. **Brunella** *Alpina laciniata, flore magno. Boerh. Ind.* Large-flower'd cut-leav'd Self-heal from the *Alps*.

8. **Brunella** *folio verbenæ tenuifoliæ. Boerh. Ind.* Self-heal, with Leaves like the narrow cut-leav'd *Vervain*.

9. **Brunella** *laciniata, flore elegantiſſime ſulphureo. Boerh. Ind.* Cut-leav'd Self-heal, with fine Sulphur-colour'd Flowers.

10. **Brunella** *latifolia Italica, flore carneo. Barrel.* Broad-leav'd *Italian* Self-heal, with Fleſh-colour'd Flowers.

11. **Brunella** *Novæ Angliæ major, foliis longius mucronatis. Rand. New-England* Self-heal, with long-pointed Leaves.

12. **Brunella** *Caroliniana magno flore dilute cæruleo internodiis longiſſimis. Rand. Carolina* Self-heal, with large pale blue Flowers, and long Spaces between the Joints of the Stalks.

Theſe Plants may be any of them propagated by ſowing their Seeds in the *Spring* of the Year, on a Bed of common Earth, and when they are come up, may be planted out in Borders in any ſhady Part of the Garden, where they will thrive, and many of them flower the ſame Year, but all of them the ſecond, after which they ſeldom continue; therefore the Seeds of them muſt be ſown yearly for a freſh Supply.

The firſt Sort is uſed in Medicine, and is very common in divers Parts of *England*: The others are of foreign Growth; and although there is not a great deal of Beauty in them, yet ſome of the Varieties are worth cultivating to add to the Diverſity, eſpecially ſince they require very little Culture.

BRUNSFELSIA. This Plant takes its Name from Dr. *Brunſfelſius*, a famous Phyſician.

The *Characters* are;

The Flower conſiſts of one Leaf ſhap'd like a Funnel, which is tubulous, and cut into many Parts at the Top; from whoſe Calyx ariſes the Pointal, which afterwards becomes a round, ſoft, fleſhy Fruit, containing roundiſh Seeds between the Rind and the Fleſh.

We have but one *Species* of this Plant, which is;

Brunsfelsia *flore albo, fructu croceo molli. Plum. N. G.* Brunsfelſia with a white Flower, and a ſoft ſaffron-coloured Fruit.

This Plant is very common in *Barbadoes* and *Jamaica*, but in *Europe* it is at preſent very rare: It may be propagated from Seeds, which ſhould be ſown early in the Spring, in Pots filled with light Earth, and plunged into a Hot-bed of Tanners-bark; obſerving to water the Earth as often as you find it neceſſary. When the Plants are come up, they ſhould be tranſplanted each into a ſeparate ſmall Pot, filled with freſh light Earth, and plunged into the Hot-bed again; obſerving to water and ſhade the Plants until they have taken Root; after which, they ſhould have Air let into the Hot-bed, in proportion to the Warmth of the Seaſon, and the Bed into which they are placed; and they muſt be frequently refreſhed with Water. When the Plants have advanced ſo high as not to be contained in the Frames, they ſhould be removed into the Bark-ſtove; where, during the Summer Months, they ſhould have a large Share of free Air; but in Winter they muſt be kept very cloſe. With this Management the Plants will be very ſtrong, and produce their Flowers every Seaſon. Theſe Plants may alſo be increaſed by planting their Cuttings in the Spring before they put out, in Pots filled with freſh light Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to water and ſhade them until they have taken Root; after which they muſt be managed as hath been directed for the ſeedling Plants.

BRUSCUS. *Vide* Ruſcus.

BRYONIA; [This Plant is ſo call'd of βρύω, ſignifying to ſhoot or ſpring, becauſe it is a Plant of luxuriant Growth] Briony.

The *Character* is;

It hath a climbing Stalk with Spines; the Leaves are like thoſe of the Vine; *the Flowers conſiſt of one Leaf, which is expanded at the Top, and divided into five Parts; and in the Female Plants are ſucceeded by round Berries growing on Footſtalks; the Flowers of the Male Plants have five Apices in each, but are barren.*

The *Species* are;

1. Bryonia *aſpera ſive alba, baccis rubris. C. B.* The common white Briony.
2. Bryonia *Africana glabra, foliis in profundas lacinias diviſis, flore luteo. Olden.* Smooth *African* Briony with deep cut Leaves and yellow Flowers.
3. Bryonia *Americana, Olivæ fructu rubro. Plum. Cat. American* Briony with a red Olive ſhap'd Fruit.
4. Bryonia *Africana, fructu variegato. Hort. Elth. African* Briony with a variegated Fruit.
5. Bryonia *Africana laciniata, tuberoſa radice, floribus herbaceis. Par. Bat. African* cut-leav'd Briony with a tuberoſe Root and herbaceous Flowers.

The firſt Sort grows upon dry Banks under Hedges in many Parts of *England*, but may be cultivated in a Garden for Uſe, by ſowing the Berries in the Spring of the Year in a dry poor Soil, where they will in two Years Time grow to be large Roots, provided they are not too thick. The Roots of this Plant have been formerly cut into an human Shape, and carry'd about the Country, and ſhewn for *Mandrakes* by a Parcel of idle People, who very eaſily impos'd on the Credulity of the common People, and got good Livings thereby. The Leaves of this Plant are alſo often impo'd on the People in the Market for *Mandrake* Leaves, altho' there is no Reſemblance between them, nor any Agreement in Quality.

The ſecond and fifth Sorts are perennial Plants, their Roots remaining ſeveral Years, but their Branches decay every Winter. Theſe Roots muſt be planted in Pots filled with freſh light Earth, and in Winter muſt be placed in the Greenhouſe, to protect them from Froſt and great Rains, which would deſtroy them if they were expos'd thereto. During the Winter Seaſon they ſhould have very little Water given to them; but in Summer when they are expoſed to the open Air, they muſt be frequently refreſhed with Water in dry Weather. Theſe Plants will flower in *July*, and in warm Summers will perfect their Seeds.

The third and fourth Sorts are annual Plants; theſe muſt be raiſed on a Hot-bed early in the Spring, and when the Plants are about three Inches high, they ſhould be each tranſplanted into a ſmall Pot filled with freſh light Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to water and ſhade 'em until they have taken Root, after which Time they ſhould have Air let into the Bed every Day, in proportion to the Warmth of the Seaſon. When the Plants are grown ſo large, as to ramble about on the Surface of the Bed, and begin to entangle with other Plants, they ſhould be ſhifted into larger Pots, and placed in the Bark-ſtove, where their Branches may be trailed to the Wall, or againſt an Eſpalier, that they may have Sun and Air, which is abſolutely neceſſary for their producing Fruit. When theſe Plants are full of Fruit, they make a very pretty Variety in the Stove amongſt other exotick Plants.

The ſecond and fifth Sorts are alſo propagated from Seeds, which ſhould be ſown on a Hot-bed, and when the Plants are fit to tranſplant, they ſhould be put into Pots, and after they have taken Root, ſhould be inured to bear the open Air by degrees.

The Briony being Male and Female in different Plants, induced me to make ſome Experiments with it, to confirm my Opinion of the Neceſſity of the Female Plant being impregnated by the Farina of the Male Plant, in order to render it fruitful. Accordingly I planted a Female Briony in a Garden, wherein there was no Male Plant of that Kind, nor in any of the neighbouring Parts, as I could diſcover; but, contrary to my Expectation, this Plant produced ripe Fruit, which I ſowed ſoon after it was ripe, and the Spring following I had a great Number of young Plants came up. The following Year I was more curious to try the Experiment, and examined all the neighbouring Parts again, to ſee if I could diſcover any Male Plants, but could not; yet the Succeſs was the ſame as the former Year, and the Plants which aroſe from the Seeds grew very ſtrong and vigorous. So that this and many other Experiments ſhould be frequently repeated, and carefully examined, before we can pronounce any Thing for Certainty concerning the Generation of Plants.

BRYONIA NIGRA. *Vide* Tamnus.

BUCKSHORN or HARTSHORN. *Vide* Coronopus.

BUGLOSSUM, [Βȣ̃γλωσσος, of βȣ̃ς, an *Ox*, and γλῶσσα, a *Tongue*, q. d. *Ox-Tongue*, becauſe the Leaves of this Plant imitate the Tongue of an Ox in their Shape and Roughneſs] Bugloſs.

The *Characters* are;

The Flowers are ſmall and tubulous, divided at the Top into five obtuſe Segments, and are expanded in a round Form; the Seeds are like the Head of a Viper.

The *Species* are;

1. Buglossum *perenne majus ſativum. M. H.* The Garden Bugloſs.
2. Buglossum *ſylveſtre minus. C. B.* The leſſer wild Bugloſs.
3. Buglossum *latifolium ſemper-virens. C. B.* The broad-leav'd ever-green Bugloſs.
4. Buglossum *Orientale flore luteo. T. Cor.* The Eaſtern Bugloſs, with yellow Flowers.
5. Buglossum *Creticum verrucoſum perlatum quibuſdam. H. R. Par.* Warted Bugloſs from *Crete*.
6. Buglossum *anguſtifolium majus, flore albo. C. B. P.* Greater narrow-leav'd Bugloſs, with a white Flower.
7. Buglossum *anguſtifolium majus, flore rubro aut variegato. C. B. P.* Greater narrow-leav'd Bugloſs, with a red or variegated Flower.
8. Buglossum *foliis ſinuoſis. C. B. P.* Bugloſs, with ſinuated Leaves.
9. Buglossum *ſylveſtre majus nigrum. C. B. P.* Greater wild black Bugloſs.
10. Buglossum *Creticum majus, flore cœruleo purpurante. H. R. Par.* Greater Bugloſs of *Candy*, with a blue Flower, inclining to a purple Colour.
11. Buglossum *Luſitanicum, echii folio undulato. Inſt. R. H. Portugal* Bugloſs, with an undulated Vipers Bugloſs Leaf.
12. Buglossum *Creticum minimum odoratum, flore vario eleganti. H. R. Par.* The leaſt ſweet-ſcented *Candy* Bugloſs, with an elegant Flower of various Colours.
13. Buglossum *Creticum humifuſum acaulon perenne, echii folio anguſtiſſimo. Tourn. Cor.* Perennial *Candy* Bugloſs, lying ſpread upon the Ground without Stalks, and with a very narrow Vipers Bugloſs Leaf.
14. Buglossum *Samium fruteſcens, foliis roriſmarini obſcure virentibus, lucide hirſutis. Tourn. Cor.* Shrubby Bugloſs from the Iſland of *Samos*, with Roſemary Leaves of a ſhining dark green Colour, and hairy.
15. Buglossum *orientale erectum, foliis undulatis, flore amœne cœruleo. Tourn. Cor.* Upright Eaſtern Bugloſs, with undulated Leaves, and a Flower of a beautiful blue Colour.
16. Buglossum *orientale anguſtifolium, altiſſimum. Tourn. Cor.* The talleſt Eaſtern Bugloſs, with narrow Leaves.

Theſe may be cultivated, by ſowing their Seeds in the Spring, in Beds of common undung'd Earth, and may be afterwards tranſplanted, where they are to remain: They all delight in a dry poor Soil.

The firſt Sort is cultivated for its Flowers, which are uſed in Medicinal Cordials. The ſecond Sort grows wild upon dry Banks, in moſt Parts of *England*, and is ſometimes uſed in Medicine. The third Sort is always green, and may have a Place in ſhady Wilderneſſes, but is not fit for a fine Garden. The fourth Sort is an abiding Plant, and may deſerve a Place in a good Garden, for its long Continuance to flower. The fifth Sort is an Annual, and if ſuffer'd to ſow itſelf, will come up and abide the Winter very well, and produce its ſmall blue Flowers in the Spring. The fourth and fifth Sorts for their Variety, may have a Place in the Flower Garden, and the firſt Sort in the Phyſick Garden, for its Uſe.

The ſixth and ſeventh Sorts here mentioned are Varieties of the Garden Bugloſs. Theſe are preſerved in botanick Gardens for the ſake of Variety, and may be cultivated in the ſame manner as hath been above directed, as may alſo the eighth, ninth, tenth, and eleventh Sorts, which are all hardy, and produce good Seeds in this Climate.

The twelfth Sort is an annual Plant of an humble Growth, which ſeldom riſes above three or four Inches high, but ſhoots out ſeveral Side-branches, which ſpread near the Surface of the Ground; at the Extremity of theſe Branches the Flowers are produced, which are of a beautiful red Colour, ſtriped with white. This may be propagated by Seeds, which ſhould be ſown on a Bed of light freſh Earth, in the Place where it is deſigned to remain; becauſe it doth not bear tranſplanting. When the Plants are come up, they ſhould be cleared from Weeds; and where the Plants are too cloſe together, they muſt be thinned, leaving them four or five Inches apart; after this they will require no farther Care, but to keep them conſtantly clear from Weeds. In *June* they will flower, and their Seeds will ripen in *Auguſt*, which if permitted to fall, will produce Plants in Autumn, which will abide thro' the Winter; and theſe autumnal Plants will be much ſtronger, and produce a greater Number of Flowers than thoſe which are ſown in the Spring.

The thirteenth and fourteenth Sorts are perennial Plants, which are ſomewhat tenderer than either of the former. Theſe are propagated by Seeds, which ſhould be ſown on a warm Border of light freſh ſandy Earth, early in the Spring, and when the Plants begin to appear, you muſt carefully clear 'em from Weeds, and where they are too cloſe to each other you muſt draw out ſome of them, which may be tranſplanted into Pots filled with light freſh Earth, which may be placed under a common Hot-bed Frame in Winter, to protect them from hard Froſt; for in ſevere Winters moſt of the Plants in the open Air will be deſtroyed, ſo that, unleſs you have ſome Plants in ſhelter, you may intirely loſe the Kinds. Thoſe Plants which are left in the Border where they were ſown ſhould be thinned, ſo as to leave them about eighteen Inches aſunder, and muſt be conſtantly kept clean from Weeds, which is all the Culture they will require. The ſecond Year they will produce Flowers and Seeds, but will continue ſeveral Years after, eſpecially if they are in a dry rubbiſhy Soil, which is poor; for in a moiſt rich Earth they will grow very luxuriant in Summer, but are generally deſtroyed with the firſt Approach of Winter. Theſe generally ſend forth tap Roots, which run very deep in the Ground, ſo will not bear tranſplanting well, when they have acquired much Strength. The thirteenth Sort is a very low ſpreading Plant, ſo ſhould be allowed more Room than the fourteenth, which grows upright, and becomes ſhrubby.

The fifteenth and ſixteenth Sorts are biennial Plants, which ſeldom abide after they have perfected their Seeds, which is uſually the ſecond Year after they were ſown. Theſe Plants are propagated by Seeds, in the ſame manner as the common Bugloſs, but ſhould have a warmer Situation, and a drier Soil, otherwiſe they will not live thro' the Winter in this Climate; therefore it will be proper to plant a few of theſe Plants into Pots while they are young, that they may be ſheltered under a common Frame in Winter; and if the Spring following they are ſhaken out of the Pots carefully, ſo as to preſerve the Earth about their Roots, and planted in a Bed of freſh Earth, they will grow much ſtronger, and produce a greater Number of Flowers, than if they remain in the Pots. But theſe Plants having tap Roots will not bear tranſplanting any better than the two former Sorts.

BUGULA; Bugle.

The *Characters* are;

It hath a Flower conſiſting of one Leaf, with one Lip divided into three Parts, the Middle of which is ſplit into two: The Place of the under Lip is ſupplied by ſmall Teeth. Out of the Flower-cup riſes the Pointal, fixed like a Nail into the hinder Part of the Flower, and attended, as it were, by four Embryo's, which afterwards become ſo many oblong Seeds, ſhut up in a Huſk, which before was the Flower-cup. To theſe Notes may be added, that the Flowers are placed in Whorles round the Stalks.

The *Species* are;

1. BUGULA. *Dod. pempt.* Common Bugle.
2. BUGULA *flore cinereo vel albo. Inſt. R. H.* Bugle with a white or aſh-colour'd Flower.
3. BUGULA *Alpina maxima. Inſt. R. H.* The greateſt Bugle of the *Alps*.
4. BUGULA *ſylveſtris villoſa, flore cæruleo. Inſt. R. H.* Hairy Wood Bugle with a blue Flower.
5. BUGULA *ſylveſtris villoſa, flore ſuaverubente. Inſt. R. H.* Hairy Wood Bugle, with a fine red Flower.
6. BUGULA *ſylveſtris villoſa, flore albo. Inſt. R. H.* Hairy Wood Bugle, with a white Flower.
7. BUGULA *Samia verna, boraginis folio, flore inverſo, & cæruleo flaveſcente. Tourn. Cor.* *Samian* Spring Bugle, with a borage Leaf, and an inverted Flower of a yellowiſh blue Colour.
8. BUGULA *orientalis villoſa, flore inverſo cæruleo, alba macula notato. Tourn. Cor.* Hairy Eaſtern Bugle, with an inverted blue Flower, ſpotted with White.
9. BUGULA *orientalis villoſa, flore inverſo candido, cum oris purpureis. Tourn. Cor.* Hairy Eaſtern Bugle, with an inverted white Flower, edged with Purple.
10. BUGULA *orientalis, flore ex violaceo purpuraſcente. Tourn. Cor.* Eaſtern Bugle, with a purpliſh Violet-colour'd Flower.
11. BUGULA *orientalis longifolia, flore majore intenſe cæruleo. Tourn. Cor.* Eaſtern Bugle, with a long Leaf, and a larger Flower, of an intenſe blue Colour.

The firſt and ſecond Sorts grow wild in moiſt Woods and Meadows in moſt Parts of *England*, and continue in Flower from *May* to *September*. Theſe Plants propagate themſelves greatly by their creeping Stalks, which ſend forth Roots at every Joint, ſo that where they have room to ſpread, they will make a great Increaſe; but they are ſeldom preſerved in Gardens.

The Bugle is greatly eſteemed as a vulnerary Herb, and is uſed both internally and externally; it enters as an Ingredient into the vulnerary Decoctions of the Surgeons, and is commended, externally applied to Ulcers.

The third, fourth, fifth, and ſixth Sorts are preſerved in botanick Gardens for the ſake of Variety; theſe are very hardy Plants, and propagate greatly by their trailing Stalks, as the common Sort. They muſt have a moiſt Soil, and a ſhady Situation, where they will thrive exceedingly, without any other Culture, but to keep them clear from Weeds.

The ſeventh, eighth, ninth, tenth, and eleventh Sorts were diſcovered by Dr. *Tournefort* in the *Levant*, who ſent their Seeds to the Royal Garden at *Paris*, where they were propagated firſt in *Europe*, and from thence ſeveral other Gardens have been ſupplied with theſe Plants. They may be propagated by Seeds, which ſhould be ſown on a ſhady Border, and a light moiſt Soil early in the Spring; and when the Plants begin to appear, they ſhould be carefully cleared from Weeds, and in dry Weather muſt be frequently watered, otherwiſe they will not make any great Progreſs. When the Plants have acquired Strength enough to be removed, they ſhould be tranſplanted, ſome into Pots, and the reſt into a ſhady moiſt Border, where they may remain to flower. Thoſe which are put into Pots ſhould have a ſhady Situation during the Summer Seaſon, and muſt be frequently watered in dry Weather, but in Winter they ſhould be placed under a Hot-bed Frame, where they may be protected in ſharp Froſts, but in mild Weather they ſhould have as much free Air as poſſible, for they are ſo hardy as to endure the Cold of our ordinary Winters very well in the open Air without any Shelter.

Theſe Plants may alſo be multiplied by parting of their Roots in the Spring, after the Manner of the *Auricula*; but you muſt be careful not to part them too ſmall, leſt you deſtroy them; for if each Head hath not good Roots, they ſeldom ſucceed, ſo that they are not to be increaſed very faſt in this Method.

BULB, [*Bulbus*, Lat. of βόλβος, Gr.] A Bulbous Root conſiſts of many Coats incloſed one within another, or join'd together by many Scales diſpoſed in an imbricated Manner, and is of an orbicular Form, ſending forth many Fibres from its Baſe. Of this Claſs are *Onions*, *Tulips*, &c.

BULBOCASTANUM; Earth-Nut, or Pig-Nut.

The *Characters* are;

It is an umbelliferous Plant, with a Roſe-ſhaped Flower, conſiſting of many Leaves, placed orbicularly, and ſitting on the Empalement; which turns to a Fruit compoſed of ſmall oblong ſmooth Seeds, which are ſometimes channelled, gibbous on one Side, but plain on the other. To theſe Notes muſt be added, a fleſhy tuberous Root.

The *Species* are;

1. BULBOCASTANUM *majus, folio apii. C. B. P.* Greater Earth-Nut, with a parſley Leaf.
2. BULBOCASTANUM *minus ſaxatile, peucedani folio. Tourn.* Smaller Rock Earth-Nut, with a Swines Fennel Leaf.
3. BULBOCASTANUM *majus Alpinum, paſtinacæ folio.* Greater Alpine Earth-Nut, with a Parſnip Leaf.
4. BULBOCASTANUM *tenuiter inciſo folio, luſitanicum. Tourn.* Portugal Earth-Nut, with a fine cut Leaf.
5. BULBOCASTANUM *Creticum, radice napiformi. Tourn. Cor.* Candy Earth-Nut, with a Navew Root.
6. BULBOCASTANUM *Creticum, ferulæ folio, ſemine oblongo. Tourn. Cor.* Candy Earth-Nut, with a Giant Fennel Leaf, and oblong Seeds.

The firſt Sort is very common in ſhady Woods and Paſtures in divers Parts of *England*, it riſes early in the Spring, and flowers in *May*. In *July* the Seeds are ripe, ſoon after which time the green Leaves begin to decay, which is the proper Seaſon to take up the Roots for Uſe, becauſe they may be more readily found before their Leaves are quite decayed; and if they are taken up, while the Plants are in Vigour, the Roots will be ſmall, and not near ſo firm. Some People dig up theſe

Roots, and eat them raw, which taſte very much like Cheſnuts, and are no unpleaſant Morſel; but when they are boiled, they are a very delicious Food, eaten with Butter and Pepper, and are eſteemed very nouriſhing.

The other Sorts are not Natives of *England*, ſo are rarely to be found except in botanick Gardens, where they are preſerved for the ſake of Variety, more than any Beauty there is in their Appearance.

They are all very hardy Plants in reſpect to Cold, ſo may be eaſily propagated by ſowing of their Seeds on a moiſt ſhady Border, ſoon after they are ripe (for if they are kept out of the Ground till Spring, they ſeldom ſucceed ſo well as when they are ſown in Autumn). When the Plants appear in the Spring, they muſt be carefully cleared from Weeds, and where they are too near, they ſhould be thinned, ſo as to leave them three or four Inches aſunder; after this they will require no other Culture, but to keep them clear from Weeds; for they do not bear tranſplanting, ſo muſt be ſown where they are to remain. The Autumn following the Roots will be fit for Uſe, and will continue good all the Winter, till they ſhoot up all their Stems in the Spring for Seed, after which time they are tough, and not fit for eating.

BULBOCODIUM, [of *Bulbus*, a Bulb, and *Codium*.]

The *Characters* are;

The Flowers conſiſt of one Leaf, and are divided into ſix Segments, being in Shape like the Crocus *Flower; the Leaves are very long and narrow; the Root conſiſts of ſolid Bulbs, one over the other, which are cloſely join'd.*

We have but one *Species* of this Plant in the *Engliſh* Gardens, which is,

Bulbocodium *croci folio, flore parvo violaceo. T. Cor.* Bulbocodium with Leaves like the Saffron, and ſmall Violet-colour'd Flowers.

This Plant is cultivated after the Manner of the Spring *Crocus's*, *viz.* by parting its Bulbs, or ſowing the Seeds: It is commonly three or four Years before it comes to flower from Seed; but as it increaſes but ſlowly by the Root, ſo we muſt ſow the Seeds, if we intend to have a Stock of this Plant: It flowers in *April*, and the Seeds are ripe in *June*, and ſhould be ſown ſoon after in Pots of common Earth, where they ſhould remain two Years undiſturb'd, and then may be planted out into a Border at about three Inches ſquare, where they may ſtand to flower: It is alſo very probable, that ſome other Colours may be obtain'd by ſowing the Seeds, as we find is often the Caſe with moſt other Bulbs, when raiſed from Seeds.

BUPHTHALMUM, [Βȣφθαλμὸς, of Βοῦς, an *Ox* or *Bull*, and ὀφθαλμὸς an *Eye*; q. d. an *Ox Eye*, becauſe the Flower reſembles an Eye] Ox-Eye.

The *Characters* are;

The whole Face of the Plant is like Tanſy; the Flowers, which are radiated, are, for the moſt part, produced ſimply; the Florets of the Disk are ſeparated with an imbricated little Leaf.

The *Species* are;

1. **Buphthalmum** *tanaceti minoris folio. C. B.* The common Ox-eye, with Leaves like Tanſy.
2. **Buphthalmum** *Orientale, tanaceti minoris folio, flore luteo ampliſſimo. T. Cor.* The Eaſtern Ox-eye, with large yellow Flowers.
3. **Buphthalmum** *Orientale, tanaceti minoris folio, flore albo ampliſſimo. T. Cor.* The Eaſtern Ox-eye, with large white Flowers.
4. **Buphthalmum** *tanaceti minoris folio incano, flore ſulphureo ampliſſimo. Boer. Ind.* Ox-eye with hoary Tanſy Leaves, and large Sulphur-colour'd Flowers.
5. **Buphthalmum** *Creticum, cotulæ folio. Breyn. Cent.* 1. Ox-eye from *Crete*, with a *May-weed* Leaf.

The firſt of theſe Plants is mention'd by Mr. *Ray* as a Native of *England*, but is rarely found wild with us. The other two were found by Monſ. *Tournefort*, in the *Levant*. Theſe are propagated by ſowing their Seeds in *March*, in a Bed of light Earth; and when they are come up, may be tranſplanted into Borders of the Flower-Garden, or in little Wilderneſs Knots. Theſe Plants do continue flowering almoſt all the Summer long; for which they deſerve a Place in every good Garden. The Flowers are very proper to gather for Flower-pots, to adorn Rooms and Chimnies in the Summer Seaſon.

They delight in a dry Soil, and ſuch as is not much dung'd; and may alſo be increaſed by parting their Roots at *Michaelmas*, or early in the Spring. The firſt Sort is ſometimes uſed in Medicine.

The fourth Sort was ſent from *Auſtria* to the learned Dr. *Boerhaave*, at *Leyden*: This is ſo nearly akin to the two Eaſtern Sorts, as not to be diſtinguiſhed therefrom, but by their hoary Leaves, and the Colour of the Flower: It muſt be treated in the ſame Manner as hath been directed for them.

The fifth Sort is an annual Plant: this is propagated from Seeds, which ſhould be ſown on a Bed of light freſh Earth, and when the Plants are come up two Inches high, they ſhould be tranſplanted where they are to remain to flower, where they muſt be allowed at leaſt a Foot, to ſpread their Branches: they require no other Care, but keep them clear from Weeds: In *July* they will flower, and in Autumn they perfect their Seeds. Some Botanick Authors have mentioned three or four Varieties of this Plant, one with a naked Flower, another with very ſmall Rays, and one with large Rays; but theſe Varieties will all come from the ſame Seeds, as I have frequently experienced.

BUPLEUROIDES: [of Βοῦς, πλευρὸν and εἶδος, *Form* or *Shape*] *See* Bupleurum.

The *Characters* are;

The Leaves grow together by two's and three's in the ſame Place; the End of the Foot-ſtalk bears an oblong Ovary, the Apex of which is crown'd with a naked, herbaceous, pentapetalous Flower, the Petals being rolled up, incloſing five Stamina; the Ovary has a Tube cleft in two, the Apices of which are backwards, and rough; when ripe, it paſſes into two longiſh Seeds; the Flowers are diſpoſed in the Form of an Umbel or Umbrella.

Bupleuroides, *quæ ſimpla nobla Canarienſium. Pluk. Alm.*

There is at preſent but this one *Species* of this Plant known; it was formerly growing in many *Engliſh* Gardens, but was intirely loſt in the Gardens near *London*, till in 1727. I brought it over from *Holland* again. It is a Plant of no great Beauty; but as it is an Ever-green, may be kept, to add to the Variety in the Green-houſe. It is pretty hardy, and will endure our Winters with very little Shelter; and is propagated by ſowing of the Seeds in *March*, in a Bed of common Earth, where they will eaſily come up, and may be afterwards tranſplanted into Pots, in order to remove them in Winter into Shelter. They require to be often water'd, and love open Air.

BUPLEURUM, [Βούπλευρον, of Βοῦς, an *Ox*, and πλευρὸν a *Side*, becauſe it is ſaid to cauſe a Crepitation of the Side of an Ox; but more probably, becauſe it affords the Ox a Bed: Or it may be ſuppoſed to be ſo call'd, becauſe the Leaves bear ſome Reſemblance to the Rib of an Ox; or of Βοῦ, *great*, and πλευρὸν, *Side*, as tho' Large Rib] Hare's-ear.

The *Characters* are;

The Leaves grow alternately upon the Branches; and, for the moſt part, ſurround the Stalk, having no Foot-ſtalk: the Seeds are oblong, ſmooth, and furrow'd.

The *Species* are;

1. **Bupleurum** *arboreſcens, folio ſalicis. Tourn. Seſeli Æthiopicum, frutex. Dod.* The ſhrubby Hartworth of *Æthiopia.*
2. **Bupleurum** *folio rigido. C. B. P.* Stiff-leav'd Hare's Ear.
3. **Bupleurum** *folio ſubrotundo, ſive vulgatiſſimum. Tourn.* The moſt common round-leav'd Hare's Ear.
4. **Bupleurum** *annuum anguſtifolium. Bot. Monſp.* Narrow-leav'd annual Hare's Ear.
5. **Bupleurum** *annuum minimum anguſtifolium. H. R. Par.* The leaſt narrow-leav'd annual Hare's Ear.
6. **Bupleurum** *anguſtiſſimo folio. C. B. P.* Very narrow-leav'd Hare's Ear.
7. **Bupleurum** *perfoliatum rotundifolium annuum. Tourn.* Annual round-leav'd Hare's Ear, commonly called Thorough-wax.
8. **Bupleurum** *perfoliatum longifolium annuum. Tourn.* Annual long-leav'd perfoliated Hare's Ear.
9. **Bupleurum** *montanum latifolium. Tourn.* Broad-leav'd mountain Hare's Ear.
10. **Bupleurum** *montanum, floſculis exiguis. Tourn.* Mountain Hare's Ear, with ſmall Flowers.

11. Bupleurum *Alpinum latifolium minus. Tourn.* Smaller broad-leav'd Hare's Ear of the *Alps.*

12. Bupleurum *Alpinum anguſtifolium majus. Tourn.* Greater narrow-leav'd Hare's Ear of the *Alps.*

13. Bupleurum *Alpinum anguſtifolium minus. Tourn.* Smaller narrow-leav'd Hare's Ear of the *Alps.*

14. Bupleurum *montanum, gramineo folio. Tourn.* Mountain Hare's Ear, with a graſs Leaf.

15. Bupleurum *Hiſpanicum arboreſcens, gramineo folio. Tourn.* Spaniſh Tree Hare's Ear, with a graſs Leaf.

16. Bupleurum *Hiſpanicum fruticoſum aculeatum, gramineo folio. Tourn.* Prickly *Spaniſh* Shrub Hare's Ear, with a graſs Leaf.

17. Bupleurum *Luſitanicum, gramineo longiori & rigidiſſimo folio. Tourn.* Portugal Hare's Ear, with a long rigid graſs Leaf.

18. Bupleurum *Orientale anguſtifolium, ſemine longiori. Tourn. Cor.* Narrow-leav'd Eaſtern Hare's Ear, with a longer Seed.

This is a ſhrubby Plant, commonly growing to the Height of ſix or ſeven Feet, and divides into many Branches; the Leaves, which are ever-green, are ſomewhat like thoſe of the broad-leav'd Willow, but much thicker. This Shrub is hardy, and will endure our ſevereſt Winters in the open Air, provided it is planted in a dry Soil. This may be increaſed by ſowing the Seeds in Autumn, ſo ſoon as they are ripe, in a Pot of common Earth, which ſhould be put under Shelter in very cold Weather, but not kept too dry: In the Spring following, the Seeds will come, and when the young Plants have acquired a little Strength, they may be planted in a Border a little defended from cold Winds, where they may continue for a Year or two, and then be removed where they are deſigned to remain. The Cuttings of this Tree will alſo take Root; but this being a leſs certain Method than the other, and as the Plant produces large Quantities of Seeds, it is hardly worth the Trial.

The ſixth and ſeventh Sorts are Natives of *England*, and grow on cultivated Places amongſt the Corn in ſeveral Counties. The ſeventh Sort is placed amongſt the medicinal Plants in the College Diſpenſatory, but is rarely uſed, tho' it has been formerly eſteemed as a vulnerary Herb.

All theſe Sorts (excepting the fifteenth and ſixteenth are biennial Plants, which are extremely hardy, and may be propagated by ſowing of their Seeds in Autumn, upon a Bed of freſh Earth, in almoſt any Situation, but they thrive beſt in the Shade. When the Plants are come up, they ſhould be thinned where they come up too thick, and cleared from Weeds, which is all the Culture theſe Plants require; for if they are permitted to ſhed their Seeds, the Plants will come up, and maintain themſelves without any Care.

The fifteenth and ſixteenth Sorts are perennial Plants, which riſe to the Height of ſix or ſeven Feet. Theſe may be propagated by ſowing their Seeds on a ſhady Border in Autumn, and when the Plants begin to appear, they ſhould be cleared from Weeds, and in dry Weather they muſt be watered, which will greatly promote their Growth. When they are two Inches high, they ſhould be tranſplanted into a Border at about ſix or eight Inches diſtance, obſerving to water and ſhade them until they have taken new Root; after which time they will require no farther Care, but to keep them clear from Weeds, and in very dry Weather to refreſh them now and then with a little Water. In this Bed they may remain until the Beginning of *September*, when they ſhould be carefully taken up, with a Ball of Earth to their Roots, and ſome of them planted amongſt Shrubs in ſmall Wilderneſs Quarters, where they will add to the Variety; but there ſhould be a few planted into Pots, that they may be placed under a Frame in Winter, to ſhelter them from hard Froſts, which will often deſtroy them while they are young; but when they have acquired Strength, they will endure the Cold of our ordinary Winters very well.

BURNET: *vide* Pimpinella.

BURSA PASTORIS, Shepherds-Pouch. This is a common Weed in moſt Parts of *England.*

BUTOMUS, [Βούτομον, of Βοῦς, an *Ox*, and τέμνω, *to cut*, ſo call'd, becauſe the Leaves of it are ſo accute, that the Tongue and Lips of Oxen, who are great Lovers of this Plant, are wounded by it, ſo that the Blood iſſues forth: It is alſo call'd *Juncus Florida*, becauſe it has the Leaves of a *Bulruſh.*] The Flowering Ruſh *or* Water Gladiole.

The *Characters* are;

The Leaves are triangular and graſſy; the Stalks are naked; the Flowers are diſpoſed in an Umbel upon the Top of the Stalk, and each conſiſts of ſix Leaves; three of them are large, and three ſmall, which are expanded in Form of a Roſe.

The *Species* are;

1. Butomus *flore roſeo. Tourn.* The Roſe-colour'd Flowering Ruſh.

2. Butomus *flore albo. Tourn.* The White Flowering Ruſh.

3. Butomus *flore ſaturate purpureo. Boerh. Ind.* The deep Purple-colour'd Flowering Ruſh.

The firſt of theſe Varieties is pretty common in ſtanding Waters, in many Parts of *England*; the other two are Varieties of this, tho' leſs common with us. Theſe Plants may be propagated in boggy Places, or by planting them in Ciſterns, which ſhould be kept fill'd with Water, that ſhould have about a Foot Thickneſs of Earth in the Bottom: Theſe, tho' common Plants, yet produce very pretty Flowers, and are worth propagating for Variety ſake, eſpecially if in any Part of the Garden there ſhould be Conveniency for an artificial Bog, as is many times the Caſe, and Perſons are at a Loſs what to plant in ſuch Places, that may appear beautiful; whereas, if theſe and a few more wild Plants, which naturally grow in ſuch Places, were taken into the Garden, they would have a very good Effect in diverſifying the ſeveral Parts thereof.

BUXUS, The Box-tree.

The *Characters* are;

The Leaves are pennated, and ever-green; it hath Male Flowers, which are produced at remote Diſtances from the Fruit on the ſame Tree; the Fruit is ſhaped like a Porridge-pot inverted, and is divided into three Cells, containing two Seeds in each; which, when ripe, are caſt forth by the Elaſticity of the Veſſel.

The *Species* are;

1. Buxus *arboreſcens. C. B.* The Box-tree.

2. Buxus *arboreſcens, anguſtifolia.* The narrow-leav'd Box-tree.

3. Buxus *foliis ex luteo variegatis. H. R. Par.* Strip'd Box.

4. Buxus *major, foliis per limbum aureis. H. R. Par.* The Gold-edg'd Box-tree.

5. Buxus *humilis. Dod.* The Dwarf Box.

6. Buxus *humilis, foliis variegatis.* The Dwarf ſtriped Box.

7. Buxus *major, foliis per limbum argenteis.* The Silver-edg'd Box.

The firſt and ſecond Sorts grow in great Plenty upon *Box-hill* near *Darking* in *Surrey*, where were formerly large Trees of theſe Kinds; but of late they have been pretty much deſtroyed; yet there are great Numbers of the Trees remaining, which are of a conſiderable Bigneſs. The Wood of this Tree is very uſeful for Turners, Ingravers, and Mathematical Inſtrument-makers, the Wood being ſo hard, cloſe, and ponderous, as to ſink in Water, which renders it very valuable for divers Utenſils.

All the Varieties of the Tree, or large Box, are proper to intermix in Clumps of Ever-greens, &c. where they add to the Variety of ſuch Plantations. Theſe may be propagated by planting the Cuttings in *April* in a ſhady Border, obſerving to keep them water'd until they have taken Root, and may be afterward tranſplanted into Nurſeries, till they are fit for the Purpoſes intended. The beſt Seaſon for removing theſe Trees, is in *April* or *September*, tho' indeed, if Care be taken to take them up with a good Ball of Earth, they may be tranſplanted almoſt at any time, except in the Middle of Winter. Theſe Trees are a very great Ornament to cold and barren Soils, where few other Things will grow. They may alſo be propagated by laying down the Branches, or from Seeds.

The Dwarf Kind of *Box* is uſed for bordering of Flower-beds, or Borders; for which Purpoſe it far exceeds any other Plant, it being ſubject to no Injuries from Cold or Heat, and is of a long Duration, is very eaſily kept handſome, and, by the Firmneſs of its Rooting, keeps the Mould in the Borders from waſhing into the Gravel-Walks more effectually than any Plant whatever. This is increaſed by parting the Roots, or planting the Slips; but as it makes ſo great an Increaſe of itſelf, and ſo eaſily parts, it is hardly worth while to plant the Slips that have no Roots; but it is now become ſo common, that it may be purchaſed from the Nurſeries at a cheap Rate.

The Manner of planting this in Edgings, *&c.* is ſo well underſtood by every working Gardener, that it would be needleſs to mention any thing of that kind here.

C A

CAAPEBA.

This is an *American* Name for this Plant, and at preſent we have no *Engliſh* Name for it.

The *Characters* are;

It hath a Roſe-flower, conſiſting of four Leaves, which are placed orbicularly, but are ſterile; from the Middle ariſes the Pointal, which is plain, round, and umbilicated. The Embryo's grow at a ſeparate Diſtance on the ſame Plants, which afterward become ſoft ſpherical Berries, including rough Seeds.

The *Species* are;

1. CAAPEBA *folio orbiculari & umbilicato lævi. Plum. Nov. Gen.* Caapeba with a round umbilicated Leaf.
2. CAAPEBA *folio orbiculari umbilicato tomentoſo. Plum. Nov. Gen.* Caapeba with a round woolly umbilicated Leaf.
3. CAAPEBA *folio orbiculari non umbilicato. Plum. Nov. Gen.* Caapeba with a round Leaf, not umbilicated.

Theſe Plants are Natives of the warmeſt Parts of *America*, where they twiſt themſelves round whatever Trees or Shrubs grow near them, and ſometimes riſe to the Height of ſix or ſeven Feet. They are propagated by Seeds, which ſhould be ſown in Pots filled with freſh light Earth, early in the Spring. Theſe Pots muſt be plunged into a moderate Hot-bed of Tanners-bark, and muſt be frequently refreſhed with Water; when the Plants are come up about an Inch high, they ſhould be tranſplanted into ſmall Pots filled with light rich Earth, and plunged into the Hot-bed again, obſerving to water and ſhade them until they have taken new Root; after which time the Glaſſes ſhould be raiſed in warm Weather every Day, to admit freſh Air to the Plants, and they muſt be frequently refreſhed with Water. During the Summer Seaſon they may remain in the Hot-bed, but at *Michaelmas* they muſt be removed into the Bark-ſtove, where they ſhould have a moderate Degree of Heat, and muſt be frequently refreſhed with Water. The ſecond Year ſome of the ſtrongeſt Plants will flower, and will continue ſeveral Years after.

CABBAGE: *vide* Braſica.

CABINET, in a Garden, is a Conveniency which differs from an Arbour, in this; that an Arbour or Summer-houſe is of a great Length, and arch'd over Head in the Form of a Gallery; but a *Cabinet* is either ſquare, circular, or in Cants, making a kind of a Salon, to be ſet at the two Ends or in the Middle of a long Arbour.

CACALIANTHEMUM.

The *Characters* are;

It hath a floſculous Flower, conſiſting of many Florets, (like thoſe of Groundſel) but theſe Florets are cut into four Segments; whereas thoſe of Groundſel are divided into five Parts; the Cup of the Flower is alſo ſlenderer than that of the Groundſel.

The *Species* are;

1. CACALIANTHEMUM *folio nerii glauco. Hort. Elth.* Cacalianthemum, with a glaucous Oleander Leaf, *commonly call'd* the Cabbage-tree.
2. CACALIANTHEMUM *Africanum, Ficoidis folio. African* Cacalianthemum, with a Ficoides Leaf.

The firſt of theſe Plants was brought from the *Canary* Iſlands, and hath been ſeveral Years in the *Engliſh* Gardens, where it hath riſen to the Height of eight or ten Feet, and has often produced Flowers in the Autumn, which fall off without bringing any Seed. It hath been by ſome unſkilful Perſons called the *Cabbage-tree*, but for no other Reaſon than that the Stem of this Plant is ſoft, and has ſomewhat the Appearance of a Cabbage-ſtalk. By others it has been as improperly called the *Carnation-tree*, for no other Reaſon than that it has long, narrow, glaucous Leaves; from whence ſome Writers in Botany have called it *Arbor Lavendulæ folio*; *i. e.* a Tree with a Lavender Leaf, but as the Flower and Seeds do nearly agree with the *Cacalia*, ſo Dr. *Dillenius* has given it the Epithet of *Cacalianthemum*; to which I have taken the Liberty to add the ſecond Sort, as being of the ſame Genus, by Flower and Seeds, tho' it has been commonly known by the Epithet *Senecio*.

The firſt of theſe Plants may be propagated by Cuttings; which ſhould be taken off toward the latter End of *May*, and laid in a ſhady Part of the Green-houſe, for a Fortnight or three Weeks, that the Part where it was cut may be perfectly dry, and healed over, otherwiſe it is very ſubject to rot. Theſe Cuttings ſhould be planted in Pots filled with a ſandy Earth, mix'd with a little Lime Rubbiſh, and then plunged into a moderate Hot-bed; obſerving to ſhade them in the Heat of the Day, as alſo to admit the Air, by raiſing the Glaſſes; and every three or four Days they ſhould be refreſhed with Water; but you muſt not give them too much Water, leſt you rot them.

When the Cuttings are rooted, (which may be known by their putting forth new Leaves) they ſhould be enured to the open Air by degrees; into which they muſt be removed towards the End of *July*, or the Beginning of *Auguſt*, that they may be harden'd before Winter; but they muſt be placed in a well-ſhelter'd Situation, where they may be ſcreen'd from Winds, and ſhaded from the Mid-day Sun: In this Place they ſhould remain until the End of *September*, or Beginning of *October*; when they muſt be removed into the Green-houſe, and placed near the Windows, that they may enjoy the free Air, until the End of *October*; when the more hardy Plants are removed into the Houſe, and the whole Number of Plants are diſpoſed in the Order they are to remain during the Winter Seaſon: Therefore at this Time you muſt place theſe Plants in the Middle of the Houſe, where they may be beſt defended from Cold. During the Winter Seaſon, theſe Plants muſt be water'd but little; for much Wet at that Time is apt to rot them: but however, they muſt not be kept too dry; for then they will often ſhrink, which is equally deſtructive to them. In the Summer theſe Plants muſt be placed abroad in a well-ſhelter'd Situation, with *Sedums*, *Cotyledons*, and other ſucculent Plants; obſerving to refreſh them often with Water in dry Seaſons: and as the Plants advance, ſo they ſhould be removed into larger Pots; always obſerving to plant them in light ſandy Earth, mix'd with Lime Rubbiſh, in which they will thrive much better than in richer Earth.

The ſecond Sort is now very common in *England*, tho' it has not been near ſo long an Inhabitant of our Gardens as the former. This is a Native of the Country about the *Cape of Good Hope*; from whence it was brought to the Gardens in *Holland*, where it was firſt propagated in *Europe*, and hath been ſince communicated to moſt Parts of *Europe*. This Plant may be eaſily propagated by Cuttings, which may be taken from the old Plants any time during the Summer Seaſon. Theſe muſt be laid by to dry, as was directed for the former Sort, and may be managed in the like manner. This Plant may be treated in a hardier manner than the former, but muſt not have too much Wet in Winter. This flowers every Year with us, and will grow to be ſix or eight Feet high. The greateſt Beauty of this Plant conſiſts in its fine, glaucous, ſucculent Leaves, which, when broken, do emit a ſtrong Scent ſomewhat like Turpentine; from whence ſome Perſons have given it the Name of *Balm of Gilead Tree*, tho' very improperly.

CACALIA.

This Plant hath no *Engliſh* Name.

The *Characters* are;

It hath a floſculous Flower, conſiſting of many Petals, divided into four Parts, ſitting on the Embryo, and contained in an almoſt cylindrical Empalement. The Embryo afterward becomes a Seed, furniſhed with Down.

The *Species* are;

1. CACALIA *tomentoſa. C. B. P.* Woolly Cacalia.
2. CACALIA *foliis craſſis hirſutis. C. B. P.* Cacalia with thick hairy Leaves.
3. CACALIA *foliis cutaneis acutioribus, & glabris. C.B.P.* Cacalia, with ſmooth-pointed Leaves.
4. CACALIA *Pyrenaica, alliariæ folio. Tourn.* Pyrenean Cacalia, with an Alliaria Leaf.
5. CACALIA *Alpina foliis utrinque denſo & candidiſſimo tomento obſitis. Tourn.* Cacalia of the *Alps*, whoſe Leaves are covered on both Sides with a thick white Down.
6. CACALIA *Virginiana glabra, foliis deltoidibus ſinuatis ſubtus glaucis. Moriſ.* Smooth *Virginian* Cacalia, with ſinuated Leaves, which are of a Sea-green Colour on their Underſide.
7. CACALIA *foliis rotundioribus, ad caulem ſeſſilibus. Mor.* Cacalia, with round Leaves ſitting cloſe to the Stalk.

Theſe Plants do moſt of them grow wild on the mountanous Parts of *Auſtria*, the *Alps* and *Pyrenean* Mountains, from whence they have been obtained by ſome curious Botaniſts, who preſerve them in their Gardens for the Sake of Variety. The ſixth Sort was found in *Virginia*, from whence it was brought to *Europe*.

They are all of them very hardy Plants in reſpect to Cold, therefore they muſt have a cool ſhady Situation, and ſhould be planted in a ſtrong freſh Earth, which has not been dunged. They may be propagated by parting of their Roots in Autumn; and require no other Culture but to keep them clear from Weeds, and in very dry Weather to water them two or three times a Week.

They may alſo be propagated by Seeds, but theſe ſhould be ſown as ſoon as poſſible after they are ripe, for they will not grow, if they are kept long out of the Ground. Theſe Seeds ſhould be ſown in Pots filled with freſh loamy Earth, and placed in a ſhady Situation. In the Spring the Plants will appear, when they muſt be carefully weeded, and in dry Weather ſhould be frequently refreſhed with Water, which will greatly forward the Plants in their Growth. In Autumn they muſt be tranſplanted into a ſhady Border, at about a Foot apart, where they may remain to flower.

CACAO; The Chocolate-nut.

The *Characters* are;

It hath a Roſe-flower, conſiſting of a great Number of Petals, from whoſe many leav'd Empalement ariſes the Pointal, which is a Tube cut into many Parts, which afterward becomes a Fruit ſhaped ſomewhat like a Cucumber, and deeply furrowed, in which are contained ſeveral Seeds, collected into an oblong Heap, and are ſlit down ſomewhat like Almonds.

We have but one *Species* of this Plant, which is,

CACAO. *Cluſ. Exot.* The Chocolate-nut Tree.

This Tree is a Native of *America*, and is found in great Plenty in ſeveral Places between the Tropicks, but particularly at *Carraca* and *Carthagena*, on the River *Amazons*, in the Iſthmus of *Darien*, at *Honduras*, *Guatimala*, and *Nicaragua*. At all theſe Places it grows wild without Culture, but it is cultivated in many of the Iſlands which are poſſeſſed by the *French* and *Spaniards*, and was formerly planted in ſome of the Iſlands which are in the Poſſeſſion of the *Engliſh*; but it has been neglected for many Years paſt, ſo that at preſent it is ſo ſcarce in thoſe Places that the *Engliſh* are ſupplied with it by the *French* and *Spaniards*, who make the Inhabitants pay them a good Price for it; and as there is a great Quantity of it conſumed by the *Engliſh*, ſo conſequently it muſt make an Alteration in the Balance of Trade, greatly to the Prejudice of the *Engliſh*, which might be eaſily remedied if the Planters in our Colonies were but the leaſt induſtrious, ſince as it formerly did grow on thoſe Iſlands, ſo as to produce not only a ſufficient Quantity for their own Conſumption, but did ſupply *England* with great Quantities, ſo there can be no Objection to the planting of it in thoſe Iſlands again, eſpecially, ſince Sugars are become ſo bad a Commodity, that the Planters are moſt of them greatly reduced, and unleſs they can improve their Eſtates by ſome other Commodity, muſt be ruined in a few Years.

I ſhall therefore ſubjoin the beſt Account of this Plant, with the Culture which it requires in thoſe Countries, with the Profits which ariſe from it, to thoſe who have planted ſome of theſe Trees of late Years, by way of Experiment; and ſhall afterwards give Directions for the cultivating of it in *England*, by way of Curioſity.

In the making of a Plantation of Chocolate-Trees you muſt firſt be very careful in the Choice of the Situation and the Soil, otherwiſe there will be ſmall Hopes of Succeſs. As to the Situation, it ſhould be in a Place where the Trees may be protected from ſtrong Winds, to which if they are expoſed, they will ſoon be deſtroyed. So that in ſuch Places where Torrents of Water have waſhed away the Earth, ſo as to leave broad and deep Furrows, (which the Inhabitants of thoſe Iſlands call *Gullies*) theſe Trees will thrive exceedingly. And as theſe are very frequently to be found in thoſe Iſlands, and many of them being of large Extent, ſo it may be a great Improvement to ſome Eſtates, which at preſent are of ſmall Value. The Soil in theſe *Gullies* is generally rich and moiſt, which is what theſe Trees require, ſo that they will make great Progreſs in theſe Places, as hath been experienced by ſome few Perſons who have lately cultivated ſome of theſe Plants. But where there are not a ſufficient Number of theſe *Gullies*, Choice ſhould be made of a Situation which is well ſheltered by large Trees, or if there are not Trees already grown, there ſhould be three or four Rows planted round the Spot which is deſigned for the Chocolate-Trees; of ſuch Sorts which are of quickeſt Growth; and within theſe Rows there ſhould be ſome Plantain-Trees, planted at proper Diſtances, which being very quick of Growth, and the Leaves being very large, will afford a kindly ſhelter to the young Chocolate-Trees, which are placed between them.

The Chocolate-Trees which are cultivated ſeldom grow to be more than fourteen or fifteen Feet in Height, nor do they ſpread their Branches very wide, ſo that if the Plantain-Trees are placed in Rows about twenty-four Feet aſunder, there will be Room enough for two Rows of Chocolate-Trees between each Row of Plantains; and if they are planted at ten Feet Diſtance in the Rows it will be ſufficient Room for them. Thoſe Trees which are found wild in uncultivated Places, are generally of much larger Growth, which may be occaſioned by the other Trees, amongſt which theſe are found growing; for being protected from the Winds by thoſe, they are not ſo much in Danger therefrom, as thoſe which are cultivated; and the other Trees cloſely ſurrounding of them, will naturally draw them up to a greater Height. However, that is not a deſireable Quality in theſe Trees, for the lower they are the better the Fruit may be gathered without injuring of the Trees, and the leſs they are expoſed to the Injuries of the Weather. So that the Inhabitants never deſire to have their Trees above twelve or fourteen Feet high.

The Soil which theſe Trees thrive to moſt Advantage upon, is a moiſt, rich, deep Earth, for they generally ſend forth one tap Root, which runs very deep into the Ground, ſo that where-ever they meet with a rocky Bottom near the Surface, they ſeldom thrive, nor are they of long Continuance; but in a rich deep moiſt Soil they will produce Fruit in pretty good Plenty the third Year from Seed, and will continue fruitful for ſeveral Years.

Before the Plantation is begun, the Ground ſhould be well prepared by digging of it deep, and clearing it from the Roots of Trees and noxious Plants, which if ſuffered to remain in the Ground, would ſhoot up again after the firſt Rain, and greatly obſtruct the Growth of the Plants, and it will be almoſt impoſſible to clear the Ground from thoſe Roots, after the Chocolate-Plants are come up, without greatly injuring them.

When the Ground is thus prepared, the Rows ſhould be marked out by a Line, where the Nuts are to be planted, ſo as that they may be placed in a quincunx Order, at equal Diſtance every way, or at leaſt that the Plantain-Trees between them, may form a Quincunx, with the two Rows of Chocolate-Trees, which are placed between each Row of them.

In making a Plantation of Chocolate-nut-Trees, the Nuts muſt be planted where the Trees are to remain, for if the Plants are tranſplanted, they ſeldom live, and thoſe which may ſurvive it, will never make thriving Trees; for as I before obſerved, theſe Trees have a tender tap Root, which if broken, or any way injured, the Tree commonly decays.

The Nuts ſhould always be planted in a rainy Seaſon, or at leaſt when it is cloudy Weather, and ſome Hopes of Rain falling ſoon after. As the Fruit ripens at two different Seaſons, *viz.* at *Midſummer*, and at *Chriſtmas*, ſo the Plantation may be made at either of thoſe; but the chief Care muſt be to chooſe ſuch Nuts as are perfectly ripe and ſound, otherwiſe the whole Trouble and Expence will be loſt. The Manner of planting the Nuts is, to make three Holes in the Ground, within two or three Inches of each other, at the Place where every Tree is to ſtand; and into each of theſe Holes ſhould be one ſound Nut planted about two Inches deep, covering of them gently with Earth. The Reaſon for putting in three Nuts at every Place is, becauſe they ſeldom all ſucceed, or if moſt of them grow, the Plants will not be all equally vigorous; ſo that when the Plants have had one Year's Growth, it is very eaſy to draw up all the weak unpromiſing Plants, and leave thoſe which are the moſt vigorous; but in doing of this, great Care ſhould be had to the Plants which are to remain, ſo as not to injure or diſturb their Roots in drawing the other out.

It is very proper to obſerve, that the Chocolate-Nuts will not retain their growing Faculty long after they are taken from the Trees, ſo that there is no poſſibility of tranſporting them to any great Diſtance for planting; nor ſhould they be kept long out of the Ground, in the natural Places of their Growth. There are ſome Authors who have wrote the Hiſtory of this Tree, and diſtinguiſh three different Sorts of the Nuts, from the Colour of their Skins, one of which is of a whitiſh green Colour, one of a deep red, and the third of a red and yellow Colour; but theſe are not ſpecifically different, but do all ariſe from Seeds of the ſame Tree, as is the Caſe of our Filberts, which differ in the Colour of their Skins, but are of the ſame Colour within, and have the ſame Taſte. There are others, who would diſtinguiſh theſe Nuts by their Size and Form, ſome being large and thick, others almoſt as flat as Beans; but theſe Differences (I have been credibly informed) ariſe from ſome Accident, as thoſe Trees which are young and vigorous, and grow upon a rich deep Soil, will always produce larger and better nouriſhed Fruit than thoſe which ſtand on a ſhallow dry Ground, and are unthriving Trees. As will alſo the Age of a Tree make a great Alteration in the Size of the Fruit; for old Trees are generally obſerved to produce ſmaller and flatter Nuts than thoſe which are young, or than the ſame Trees did bear while they were vigorous.

When the Chocolate-Trees firſt appear above Ground, they are very tender, and ſubject to great Injuries from the ſtrong Winds, the ſcorching Sun, or great Droughts; for which Reaſon the Planters are obliged to guard againſt all theſe Enemies, firſt by making Choice of a ſheltered Situation, or at leaſt by planting Trees to form a Shelter; and, if poſſible, to have the Plantation near the River, for the Conveniency of watering the Plants the firſt Seaſon, until they have made ſtrong Roots, and are capable of drawing their Nouriſhment from ſome Depth in the Earth, where they meet with Moiſture. But in order to ſhelter the Plants from the ſcorching Rays of the Sun, they generally plant two Rows of Caſſada between each Row of Chocolate-Trees, which will grow about ſeven or eight Feet high, ſo will ſcreen the young Plants from the Violence of the Sun, the firſt Seaſon; after which Time they will be in leſs Danger of Injury therefrom; and the following Seaſon, when the Caſſada is taken up for Uſe, the Ground ſhould be worked between the young Plants, being very careful not to injure their Roots by this Operation. This Method of planting the Caſſada between the young Chocolate-Trees, is of great Advantage to the Planter; for when the Roots of the Caſſada are taken up for Uſe, it will defray the Expence of keeping the Ground clean from Weeds, without which the young Plants would come to nothing. The Plantains alſo, which will be fit to cut in about twelve Months after planting, will defray the whole Expence of preparing the Ground, ſo that the Produce of the Chocolate-Trees, will be neat Profit; for as the Plantains produce Fruit and decay, ſo they will be ſucceeded by Suckers, which will produce Fruit in eight Months after, whereby there will be a continual Supply of Food for the Negroes, which will more than pay for keeping the Ground wrought, and clear from Weeds until the Chocolate-Trees begin to produce Fruit, which is generally the third Year after planting.

The Planters uſually plant the Plantain-Trees two or three Months before the Chocolate-Nuts are ripe, that they may be ſo large as to afford Shelter to the young Plants when they come up, and the Caſſada is always planted a Month or ſix Weeks before the Chocolate-Nuts, for the ſame Reaſon. Some People plant Potatoes, others Cucumbers and Melons, or Water-Melons, between the Rows of Chocolate-Plants, which, they ſay, will prevent the Weeds from riſing to injure the young Plants; for as theſe do all of them trail upon the Ground, ſo they occupy the whole Surface, and prevent the Weeds from growing; but where this is practiſed it ſhould be done with great Caution, leſt by being over-covetous you injure the young Chocolate-Nuts ſo much, as that they may never recover it. Therefore great Care ſhould be taken to reduce the Shoots of theſe Plants, whenever they approach the Chocolate-Trees, otherwiſe they will ſoon greatly injure, if not totally deſtroy them.

In about ſeven or eight Days after the Chocolate-Nuts are planted, the young Plants will begin to appear above Ground, when they ſhould be carefully looked over to ſee if any of them are attacked by Inſects, in which Caſe, if the Inſects are not timely deſtroyed, they will ſoon devour all the young Plants. Or if there ſhould be any Weeds produced near the Plants, they ſhould be carefully cut down with a Hough, in doing of which great Care ſhould be taken that the tender Shoot is not injured. About twenty Days after the Plants have appeared, they will be five or ſix Inches high, and have four or ſix Leaves, according to the Strength of the Plants. Theſe Leaves are always produced by Pairs, oppoſite to each other, as are alſo the Branches; ſo that they make very regular handſome Heads, if they are not injured by Winds. In ten or twelve Months they will be two Feet and an half high, and have fourteen or ſixteen Leaves; by this Time the Caſſada which was planted between the Rows of Chocolate-Plants, will have large Roots fit for Uſe, ſo ſhould be then taken up, and the Ground being then wrought over again, will greatly encourage the young Plants.

In two Years Time the Plants will have grown to the Height of three Feet and a half, or ſometimes four Feet, many of which will begin to flower; but the careful Planters always pull off all theſe Bloſſoms, for if they are permitted to remain to produce Fruit, they will ſo much weaken the Trees that they ſeldom recover their Strength again, ſo as to make vigorous Trees. When theſe Plants are two Years and a half old, they will produce Flowers again, ſome of which are often left to produce Fruit, but the more curious Planters pull off all theſe, and never leave any to produce Fruit until the third Year, when they leave but a few in proportion to the Strength of the Trees; by which Method their Trees always produce larger and better nouriſhed Fruit than thoſe which are ſuffered to bear a larger Quantity, and the Trees will continue much longer in Vigour. The fourth Year they ſuffer their Trees to bear a moderate Crop, but they generally pull off ſome of the Flowers from thoſe Trees which are weak, that they may recover Strength before they are too old.

From the Time when the Flowers fall off to the Maturity of the Fruit, is about four Months; it is eaſy to know when the Fruit is ripe by the Colour of the Pods, which become yellow on the Side next the Sun. In gathering of the Fruit they generally place a Negro to each Row of Trees, who, being furniſhed with a Baſket, goes from Tree to Tree, and cuts off all thoſe which are ripe, leaving the others for a longer Time to ripen. When the Baſket, is full, he carries the Fruit and lays it in a Heap at one End of the Plantation, where, after they have gathered the whole Plantation, they cut the Pods lengthwiſe, and take out all the Nuts, being careful to diveſt them of the Pulp which cloſely adheres to them; and then they carry them to the Houſe, where they lay them in large Caſks, or other Veſſels of Wood raiſed above Ground, and cover them with Leaves of the *Indian* Reed and Mats, upon which they lay ſome Boards, putting ſome Stones thereon to keep them down cloſe, in order to preſs the Nuts. In theſe Veſſels the Nuts are kept four or five Days, during which Time they muſt be ſtirred and turned every Morning, otherwiſe they will be in danger of periſhing from the great Fermentation they are uſually in. In this time they change from being white to a dark red or brown Colour. Without this Fermentation they ſay the Nuts will not keep, but will ſprout, if they are in a damp Place, or ſhrivel and dry too much, if they are expoſed to Heat.

After the Nuts have been thus fermented, they ſhould be taken out of the Veſſels, and ſpread on coarſe Cloths, where they may be expoſed to the Sun and Wind; but at Night, or in rainy Weather, they muſt be taken under Shelter, otherwiſe the Damp will ſpoil them. If the Weather proves fair, three Days Time will be long enough to dry them, provided they are carefully turned from Time to Time, that they may dry equally on every Side. When they are perfectly dry they may be put up in Boxes or Sacks, and preſerved in a dry Place, until they are ſhipp'd off, or otherwiſe diſpoſed of. The freſher theſe Nuts are, the more Oil is contained in them, ſo that the older they are the leſs they are eſteemed.

Theſe Trees do not produce their Fruit on the young Branches, or at their Extremities, as do moſt other Trees; but from the Trunk and the larger Branches come out the Buds for Flowers and Fruit. While the Trees are young they do not produce their Fruit in great Plenty, for before the Trees are eight Years old they reckon it a good Crop to have twenty-eight or thirty Pods on each Tree at one Gathering, eſpecially that at *Midſummer*, which is always a much worſe Crop than the *Chriſtmas* Seaſon, which is occaſioned by the much greater Drought of the Spring; for the Autumns being the rainy Seaſons, the Chocolate-Trees produce a much greater Quantity of Fruit. When the Trees are full grown and vigorous, they will ſometimes produce two Hundred, or two Hundred and forty Pods, at one Seaſon, which will make ten or twelve Pounds of Chocolate, when dried, ſo that it is a very profitable Commodity, and can be managed with very little Charge, when compar'd with Sugar. I have been credibly inform'd by a Perſon of great Worth and Integrity, who reſided ſome Years in *America*, that he has ſeen as much Chocolate gathered from one Tree in a Year, as hath been worth thirty Shillings Sterling on the Spot; ſo that as the Trouble of gathering and preparing for the Market being much leſs than for many other Commodities which are manufactured in the *Britiſh* Colonies, it is ſurprizing it ſhould be neglected, eſpecially as it is ſuch a great Part of Suſtenance to the better Sort of Inhabitants of thoſe Colonies, that they cannot live comfortably without it, and purchaſe it from the *French* and *Spaniards* at a conſiderable Price, which muſt greatly impoveriſh the Colonies in Time.

The Chocolate-Trees, if planted on a good Soil, and are properly taken Care of, will continue vigorous and fruitful twenty-five or thirty Years; ſo that the Charge of cultivating a Plantation of theſe Trees muſt be much leſs than that of Sugar, which muſt be annually planted; for altho' the Ground between the Rows of Plants will require to be often houghed and wrought, yet the firſt working of a Ground to make a new Plantation of Sugar, Indigo, Caſſada, *&c.* is a larger Expence than the after Workings are. Beſides, Sugar-canes require as much Labour in their Cultivation as any Plant whatever; and ſince the Inſects which deſtroy the Sugar-canes, have ſpread ſo much in the *Britiſh* Colonies, nothing is a more uncertain Crop than Sugar, for which Reaſon I think it would be greatly worth the Planters Care, who are poſſeſſed of proper Lands for the Chocolate-Trees, to make ſome ſmall Trials at leaſt to be convinced of the Truth of this Fact.

The Leaves of theſe Trees being large, make a great Litter upon the Ground when they fall; but this is not injurious, but rather of Service to the Trees; for the Surface of the Ground being covered with them, they preſerve the Moiſture on the Surface, which is of great Uſe to the young tender Roots which are juſt under the Surface; and when the Leaves are rotten, they may be buried in digging of the Ground, and it will ſerve as good Manure. Some Planters let the Pods in which the Chocolate is incloſed, lie and rot in a Heap; (after they have taken the Nuts out) which they alſo ſpread on the Ground inſtead of Dung. Either of theſe Manures are very good, provided they are well rotted before they are lay'd on the Ground; and great Care ſhould be had, that no Vermin ſhould be carried on the Plantation with the Dung.

Beſides the ordinary Care of digging, houghing, and manuring the Plantations of Chocolate-Trees, there is alſo another Thing requiſite in order to their doing well, which is, that of pruning the decayed Branches off, and to take off ſmall ill-placed Branches, where-ever they are produced. But you ſhould be cautious how this Work is performed, for there ſhould be no vigorous Branches ſhortened, nor any large Amputations made on theſe Trees; for they abound with a ſoft glutinous milky Juice, which will flow out for many Days whenever they are wounded, which greatly weakens the Trees. However, ſuch Branches whoſe extreme Parts are decayed, ſhould be cut off, to prevent the Infection from going farther on; and ſuch Branches as are much decayed, ſhould be taken off cloſe to the Stem of the Tree; but this Operation ſhould be performed in dry Weather, ſoon after the Crop of Fruit is gathered.

Some People perhaps may imagine, that what I have directed is a tedious laborious Work, and not to be performed by a few Slaves, but this is a great Miſtake; for I have been credibly inform'd, that five or ſix Negroes will cultivate a Plantation of ten Thouſand of theſe Trees, provided they are properly inſtructed, which is a ſmall Number, when compared to the Quantity neceſſary to cultivate a Sugar Plantation of the like Extent of Ground. And when the Profits of both are compared, there will be a great Difference; for ſuppoſing we ſet the Price of five Shillings, for the Produce of each Tree, when grown, *per Annum*, (which I think is being very moderate, conſidering what has been related) then a Plantation of ten Thouſand Trees will produce twenty-five Hundred Pounds a Year, which to be managed by ſix or ſeven Negroes, without the Expence of Furnaces, *&c.* is a much greater Profit than I believe can be made from any other Commodity.

In order to cultivate this Plant in *Europe*, by way of Curioſity, it will be neceſſary to have the Nuts planted into Boxes of Earth (in the Countries where they grow) ſoon after they are ripe (becauſe if the Nuts are ſent over they will looſe their growing Quality before they arrive.) Theſe Boxes ſhould be placed in a ſhady Situation, and muſt be frequently watered, in order to forward the Vegetation of the Nuts. In about a Fortnight after the Nuts are planted, the Plants will begin to appear above Ground; when they ſhould be carefully watered in dry Weather, and protected from the violent Heat of the Sun, which is very injurious to theſe Plants, eſpecially while they are young; they ſhould alſo be kept very clear from Weeds, which if ſuffered to grow in the Boxes will ſoon overbear the Plants, and deſtroy them: When the Plants are grown ſtrong enough to tranſport, they ſhould be ſhipped, and placed where they may be ſcreen'd from ſtrong Winds, ſalt Water, and the violent Heat of the Sun. During their Paſſage they muſt be frequently refreſh'd with Water, but it muſt not be given to them in great Quantities, leſt it rot the tender Fibres of their Roots, which will deſtroy the Plants; and when they come into a cool Latitude, they muſt be carefully protected from the Cold, when they will not require ſo frequently to be watered; for in a moderate Degree of Heat, if they have gentle Waterings twice a Week, it will be ſufficient.

When the Plants arrive in *England*, they ſhould be carefully taken out of the Boxes, and each tranſplanted into a ſeparate Pot filled with light rich Earth, and plunged into a moderate Hot-bed of Tanners-bark, being careful to cover the Glaſſes in the Heat of the Day, to ſcreen the Plants from the Sun; they muſt alſo be frequently watered, but it muſt be done with Caution, not to rot their Roots; in this Hot-bed the Plants may remain till *Michaelmas*, when they muſt be remov'd into the Bark-ſtove, and plunged into the Tan, in the warmeſt Part of the Stove. During the Winter Seaſon the Plants muſt be frequently refreſhed with Water, but it muſt be given to them in ſmall Quantities, but in Summer they will require a more plentiful Share. Theſe Plants are too tender to live in the open Air in this Country, even in the hotteſt Seaſon of the Year, ſo they muſt conſtantly remain in the Bark-ſtove, obſerving in very warm Weather to let in a large Share of freſh Air to them, and in Winter to keep them very warm: As the Plants increaſe in Bulk, ſo they ſhould be ſhifted into larger Pots, in doing of which there muſt be particular Care taken not to tear or bruiſe their Roots, which often kills the Plants, nor muſt they be placed in Pots too large, becauſe that is a ſlow but ſure Death to them: The Leaves of theſe Plants muſt be frequently waſhed, to clear them from Filth, which they are ſubject to contract by remaining conſtantly in the Houſe, and this becomes a Harbour for ſmall Inſects, which will infeſt the Plants, and deſtroy them, if they are not timely waſhed off: If theſe Rules are duly obſerved, the Plant will thrive very well, and may produce Flowers in this Climate, but it will be very difficult to obtain Fruit from them; for, being of a very tender nature, they are ſubject to many Accidents in a cold Country.

CACHRYS.

We have no *Engliſh* Name for this Plant.

The *Characters* are;

The Flowers grow on an Umbel, which conſiſt of many Petals ranged circularly, and expand in Form of a Roſe, theſe reſt on the Empalement, which turns to a Fruit, compoſed of two Parts, which are half oval, ſometimes ſmooth, and ſometimes rough and channelled, containing Seeds which reſemble Barley-corns.

The *Species* are;

1. CACHRYS *ſemine fungoſo ſulcato aſpero, foliis ferulaceis. Mor. Umb.* Cachrys, with a fungous, furrowed, rough Seed, and Fennel-giant Leaves.
2. CACHRYS *ſemine fungoſo ſulcato aſpero, foliis peucedani latiuſculis. Mor. Umb.* Cachrys, with a fungous, furrowed, rough Seed, and broadiſh Hogs-fennel Leaves.
3. CACHRYS *ſemine fungoſo ſulcato plano majore, foliis peucedani anguſtis. Mor. Hiſt.* Cachrys, with larger plain furrow'd fungous Seed, and narrow Hogs-fennel Leaves.
4. CACHRYS *ſemine fungoſo ſulcato plano minore, foliis peucedani. Mor. Umb.* Cachrys, with ſmaller plain furrow'd fungous Seed, and Hogs-fennel Leaves.
5. CACHRYS *Hungarica, panacis folio. Tourn.* Hungarian Cachrys, with an All-heal Leaf.
6. CACHRYS *foliis pucedani, ſemine fungoſo ſulcato aſpero minori. Tourn.* Cachrys, with Hogs-fennel Leaves, and ſmall rough fungous Seed.
7. CACHRYS *Cretica, angelicæ folio, aſphodeli radice. Tourn.* Candy Cachrys, with an Angelica Leaf, and an Aſphodel Root.
8. CACHRYS *Orientalis, ferulæ folio, fructu alato plano. Tourn. Cor. Eaſtern* Cachrys, with a Fennel-giant Leaf, and a plain winged Seed.

Theſe Plants are all propagated by Seeds, which ſhould be ſown ſoon after they are ripe, for if they are kept out of the Ground until the following Spring, they often miſcarry, and when they ſucceed, they never come up until the Spring after, ſo that by ſowing them in *Autumn* a whole Year is ſaved, and the Seeds ſeldom miſcarry. Theſe Seeds ſhould be ſown on a ſhady Border, where the Plants are to remain, for the Plants having long Tap Roots do not bear tranſplanting ſo well as many other Kinds: The Diſtance to be obſerv'd for the ſowing of their Seeds ſhould be two Feet apart; ſo if each kind is ſown in a Drill, when the Plants are come up, they may be thinned, leaving two or three of the moſt promiſing Plants of each kind to remain: Theſe Plants will begin to appear early in *April*, when they muſt be carefully clear'd from Weeds, and in dry Weather they ſhould be watered gently, which will greatly promote their Growth the firſt Year; after which time they will require no farther Care but to keep them clean from Weeds, and every Spring to dig the Ground carefully between them.

Theſe Plants decay to the Ground every *Autumn*, and come up again in the Spring; they commonly flower in the Beginning of *May*, and their Seeds are ripe in *Auguſt*; their Roots ſometimes run down three or four Feet deep in the Earth, provided the Soil be light, and are often as large as Parſnips: They will continue many Years, and if the Soil is moiſt and rich, they will annually produce good Seeds, but when they grow on a dry Soil, the Flowers commonly fall away, and are not ſucceeded by Seeds.

There is but little to be ſaid of the Uſes of This Genus of Plants: The *Hungarians* in the Neighbourhood of *Erlaw*, as alſo thoſe who border on *Tranſylvania*, *Servia*, &c. eat the

Root of the Fifth Species in a Scarcity of Corn, for Want of other Bread.

CÆSALPINA.

This Plant was ſo named by Father Plumier, *who diſcover'd it in* America, *in Honour to* Andreas Cæſalpinus, *who was an eminent Botaniſt, and one of the firſt Writers on a Method of claſſing Plants.*

We have no *Engliſh* Name for this Plant.

The *Characters* are;

It hath a Flower of an anomalous Figure, conſiſting of one Leaf, which is divided into four unequal Parts; the upper Part is large and hollowed like a Spoon. From the Bottom of the Flower ariſes the Pointal, amongſt many incurved Stamina, which afterward becomes a Pod, including oblong Seeds.

We have but one Sort of this Plant, *viz.*

CÆSALPINA *polyphylla, aculeis horrida. Plum. Nov. Gen.* Many-leav'd Cæſalpina, with large Thorns.

This Plant is a Native of *America*, where it riſes to the Height of fourteen or ſixteen Feet, the Trunk and Branches being arm'd with very ſtrong Thorns, ſo that it is difficult to paſs where they are in Plenty. It was found at *Campechy* by the late Doctor *Houſtoun*, who ſent the Seeds into *England*, from which ſome of theſe Plants were raiſed.

This Plant is propagated by Seeds, which ſhould be ſown in ſmall Pots filled with light rich Earth early in the Spring, and plunged into a Hot-bed of Tanners-bark, obſerving to water the Earth as often as it appears dry, in order to promote the Vegetation of the Seeds; and if the Nights ſhould prove cold, the Glaſſes of the Hot-bed ſhould be cover'd with Mats, to keep the Bed in a moderate Warmth: In about two Months after the Plants will begin to appear, when they muſt be carefully clear'd from Weeds, and frequently refreſh'd with Water, and in warm Weather the Glaſſes of the Hot-bed ſhould be raiſed in the middle of the Day, to admit freſh Air to the Plants, which will greatly ſtrengthen them: When the Plants are about three Inches high, they ſhould be carefully taken out of the Pots, and each tranſplanted into a ſeparate ſmall Pot filled with light freſh Earth, and plunged into the Hot-bed again, obſerving to water them, and ſcreen them from the Heat of the Sun, until they have taken new Root, after which time the Glaſſes of the Hot-bed ſhould be raiſed every Day, in proportion to the Heat of the Weather, to admit freſh Air to the Plants, and they muſt be duly watered, and kept clear from Weeds; in this Hot-bed the Plants may remain until they touch the Glaſſes with their Tops, when they will be in Danger of being ſcorch'd by the Sun, which will retard their Growth; therefore whenever they are grown ſo tall as to touch the Glaſſes with their Tops, they ſhould be removed into the Stove, and plunged into the Bark-bed, where they may have Room to grow. Theſe Plants being tender, ſhould always be kept in the Bark-ſtove, and have a moderate Share of Heat in Winter, and being plac'd amongſt other tender Exotick Plants of the ſame Country, will afford an agreeable Variety.

CAINITO, [This is the *American* Name, by which the *Indians* called this Tree, according to *Oviedo*] Star-Apple, *vulgo*.

The *Characters* are;

It hath an open Bell-ſhap'd Flower, conſiſting of one Leaf, and cut into ſeveral Segments towards the Top; from whoſe Cup ariſes the Pointal, which afterward becomes a globular or olive-ſhap'd ſoft, fleſhy Fruit, incloſing a Stone of the ſame Shape.

The *Species* are;

1. CAINITO *folio ſubtus aureo, fructu maliformi. Plum. Nov. Gen.* The Star-Apple, *vulgo*.
2. CAINITO *folio ſubtus aureo, fructu olivæformi. Plum. Nov. Gen.* Cainito with olive-ſhap'd Fruit.

Theſe Plants grow in the warmeſt Parts of *America*, where the Fruit of the firſt Sort is eaten by way of Deſert: This Tree grows to the Height of thirty or forty Feet, and has a ſtreight ſmooth Stem, regularly beſet with Branches, which are adorn'd with Leaves of a ſhining green Colour on their upper Sides, but of a ruſſet colour underneath; from the ſetting on of the Footſtalks of the Leaves comes out the Flowers, which have no great Beauty, but are ſucceeded by the Fruit, which is about the Size of a large Apple, and of the ſame Shape.

The other Sort is not ſo common in our Settlements in *America*, but grows very plentifully in the *Spaniſh Weſt-Indies*, from whence I have receiv'd Seeds of this and the former kind.

They are both propagated by Seeds, which ſhould be ſown in Pots filled with light freſh Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to refreſh the Earth often with Water, in order to promote the Vegetation of the Seeds: When the Plants are come up three Inches high, they ſhould be ſhaken out of the Pots, and carefully parted; then put each into a ſeparate ſmall Pot filled with freſh Earth, and plunge them into the Hot-bed again, being careful to ſhade the Glaſſes until the Plants have taken new Root, after which time they ſhould have Air and Water in proportion to the Warmth of the Seaſon; when the Plants have grown ſo much as that their Roots are confin'd by theſe Pots, they ſhould be ſhifted into larger, always obſerving to preſerve a Ball of Earth to their Roots.

Theſe Plants will not bear the cold of our Air in Summer, ſo muſt always be preſerv'd in the Bark-ſtove, and treated after the manner directed for the Coffee-tree; with this Management the Plants will thrive exceedingly, and it is hoped, will ſoon produce Flowers in *England*.

CAKILE, Sea-Rocket.

The *Characters* are;

It hath a croſs-ſhap'd Flower, conſiſting of four Petals, from whoſe Cup ariſes the Pointal, which afterward becomes a Fruit, reſembling the Point of a Spear, and is jointed, in each of which Diviſions is lodged one Seed, which is for the moſt part oblong.

The *Species* are;

1. CAKILE *maritima, ampliore folio. T. Cor.* Sea-Rocket, with a larger Leaf.
2. CAKILE *maritima, anguſtiore folio. T. Cor.* Sea-Rocket, with a narrow Leaf.
3. CAKILE *Græca arvenſis, ſiliqua ſtriata brevi. T. Cor.* *Greek* Sea-Rocket, with a ſhort ſtriated Pod.
4. CAKILE *Orientalis, fructu minimo verrucoſo. T. Cor.* *Eaſtern* Sea-Rocket, with a ſmall warted Fruit.

The two firſt Sorts grow wild in divers Parts of *Europe* on the Sea-ſhore, where the Salt Water generally flows: The ſecond Sort is pretty common in *England*, but the firſt hath not been found wild in this Country: The third and fourth Sorts were diſcovered by Doctor *Tournefort*, who ſent their Seeds to the royal Garden at *Paris*.

They are all annual Plants, their Seeds ſhould be ſown in *Autumn*, ſoon after they are ripe, in the Place where they ſhould remain, for they will not bear tranſplanting well; when the Plants are come up, they ſhould be kept clear from Weeds, and where they are too cloſe, they muſt be thinned, ſo as to leave them four or five Inches aſunder, which is all the Culture they require; in *June* they will flower, and their Seeds will ripen in *Auguſt*; there is no Beauty or Uſe in theſe Plants at preſent known, but they are preſerved in botanick Gardens for Variety.

CALABA, *Indian* Maſtick-tree.

The *Characters* are;

It hath a roſaceous Flower, conſiſting of ſeveral Petals, which are placed in a circular Order, from whoſe Flower-cup riſes the Pointal, which afterwards becomes a ſpherical fleſhy Fruit, including a Nut of the ſame Form.

We know but one Sort of this Plant, which is,

CALABA *folio citrii ſplendente. Plum. N. G.* 39. *Indian* Maſtick-tree, with a ſhining Citron Leaf.

This Tree grows to a great Magnitude in the warm Parts of *America*, where it is a Native: From the Trunk and Branches there iſſues out a clear Gum, ſomewhat like Maſtick, from whence it received its Name, the Gum being us'd in thoſe Countries as Maſtick.

At preſent this Tree is pretty rare in *England*, it being ſo tender as not to bear the open Air; ſo that it muſt be preſerv'd in Stoves, with the moſt tender Exotick Plants; it is propagated by the Nuts, which are frequently brought from *America*; theſe ſhould be planted in ſmall Pots filled with freſh light Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to water the Pots frequently, to forward the Vegetation of the Nuts, which having hard Shells, are pretty long before they break their Covers, unleſs they have a good Share of Heat and Moiſture. When the Plants are come up about two Inches high, they ſhould be carefully tranſplanted, each into a ſeparate ſmall Pot filled with light freſh Earth, and plung'd into a moderate Hot-bed of Tanners-bark, obſerving to water and ſhade them until they have taken new Root, after which time they ſhould have Air admitted to them in proportion to the Heat of the Weather and the Bed in which they are placed, and they muſt be frequently watered in warm Weather; in this Bed they may remain during the Summer Seaſon, but at *Michaelmas* they ſhould be remov'd into the Bark-ſtove, and plac'd in a warm Situation; during the Winter Seaſon theſe Plants will require Water pretty often, but it ſhould not be given to them in large Quantities, eſpecially in cold Weather, leſt it rot the Fibres of their Roots.

The Spring following the Plants ſhould be ſhaken out of the ſmall Pots, in which they were placed, and tranſplanted into Pots of a larger Size, obſerving to pare off all the decay'd Fibres, and fill the Pots with the above-mention'd freſh Earth, and plunge them into the Hot-bed again, obſerving to water them more frequently, and give them a greater Share, as the Weather increaſes warm: The other Management of theſe Plants being the ſame as hath been directed for the *Coffee-tree* and ſome other tender Exotick Trees, it need not be repeated.

CALAMINTHA, [Καλαμίνθα, of καλὴ, fair or beautiful, and μινθὴ, Mint, becauſe the Virtues are like that of *Mint*.] Calamint.

The *Characters* are;

It hath a long tubulous Flower, which opens at the Top into two Lips; the upper Lip or Creſt is roundiſh, and divided into two Segments; the lower Lip or Beard is divided into three; theſe Flowers are produced from the Joints of the Stalks at the Foot-ſtalks of the Leaves, in Bunches, upon pretty long Pedicles or Footſtalks.

The *Species* are;

1. Calamintha *vulgaris, vel officinarum Germaniæ. C.B.* The common Calamint.
2. Calamintha *pulgei odore, foliis latioribus. H. L.* Broad-leav'd Calamint, with a Penyroyal Smell.
3. Calamintha *magno flore. C. B.* Calamint with large Flowers.
4. Calamintha *incana, ocymi foliis. C. B.* Hoary Calamint, with Leaves like Baſil.

The firſt of theſe Sorts is found wild in many Parts of *England*, but may be propagated in Gardens, by ſowing the Seeds in Spring, or parting the Roots: it will grow in almoſt any Soil or Situation. This is the Sort commonly uſed in Medicine; tho' the ſecond Sort hath of late prevailed in the Markets. The ſecond and third Sorts may be propagated in the ſame Manner as the firſt, and are equally as hardy. The fourth Sort is ſomewhat tenderer, and ſhould be kept in Pots, and ſhelter'd in Winter: This is increaſed by planting Cuttings in any of the Summer Months.

CALCEOLUS, Ladies Slipper.

The *Characters* are;

It hath an anomalous Flower, conſiſting of ſix diſſimilar Leaves, four of which are placed in the Form of a Croſs; the other two poſſeſs the Middle, one of which is bifid, and reſts upon the other, which is ſwelling, and ſhaped like a Shoe: The Empalement becomes a Fruit, open on three Sides, to which adhere the Valves, pregnant with very ſmall Seeds like Duſt.

The *Species* are;

1. Calceolus *Marianus. Dod.* Ladies Slipper.
2. Calceolus *flore majore. Tourn.* Ladies Slipper, with a larger Flower.
3. Calceolus *Marianus Canadenſis. Cornut.* Canady Ladies Slipper.
4. Calceolus *Mariæ luteus. Mor. H. R. B.* The yellow Ladies Slipper.

The firſt Species grows wild in the North of *England*, and in *Scotland*; from whence the Plants may be procured. The beſt Seaſon for tranſplanting of them is in *Autumn*, juſt as the Leaves decay; when the Roots ſhould be carefully taken up with a large Ball of Earth to them, and muſt be planted in a ſtrong loamy Soil, and in a ſhady Situation; where if they are ſuffered to remain undiſturbed, they will produce their beautiful Flowers in *May*, and may be preſerved ſeveral Years: But if they are placed in a warm, rich Soil, they will not thrive, and rarely produce any Flowers.

The ſecond Sort is not a Native of *England*, but is equally hardy with ours; ſo that if Roots can be procured from abroad, they muſt be treated in the ſame Manner as hath been directed for that.

The third Sort is found in *New-England*, *Virginia*, and *North-Carolina*, in moiſt Woods, from whence the Roots may be procured. Theſe muſt have a moiſt, ſhady Situation, and in Winter ſhould be ſcreened from ſevere Froſts, otherwiſe they cannot be preſerv'd in this Country: For although they are found wild in Countries where they have much colder Winters, yet growing in the Woods, they are covered with Leaves, and are protected by the Trees; ſo that the Froſt doth not penetrate very deep into the Earth.

All theſe Plants ſhould be placed in a ſhady Situation, and in dry Weather muſt be frequently water'd, otherwiſe they will not thrive, for they generally grow on moiſt ſpringy Soils, and where they are ſhaded with Trees; ſo that where there is not particular Care to keep them moiſt during their Seaſon of Growth, they ſeldom thrive in Gardens.

CALF's-SNOUT. *Vide* Antirrhinum.

CALTHA, Marygold.

The *Characters* are;

It hath a radiated diſcous Flower; the Petals of the Flower are, for the moſt part, crenated; the Seeds are crooked and rough; thoſe which are outermoſt are long, and thoſe within are ſhort: the Leaves are long, intire, and ſucculent.

The *Species* are;

1. Caltha *vulgaris, flore citrino. C. B.* The common Marygold.
2. Caltha *vulgaris, flore pallido. C. B.* The pale-colour'd Marygold.
3. Caltha *polyanthos major. C. B.* The large double Marygold.
4. Caltha *polyanthos maxima. C. B.* The largeſt double Marygold.
5. Caltha *minima. J. B.* The ſmalleſt Marygold.
6. Caltha *media, folio longo, prolifera. Boerh. Ind.* The childing Marygold.
7. Caltha *Africana, flore intus albo, extus violaceo. Tourn.* The *African* Marygold with Flowers that are white within, and of a violet Colour on the Outſide.
8. Caltha *Africana, flore intus albo, extus leviter violaceo, ſemine plano cordato. Boerh. Ind.* *African* Marygold, with Flowers white within, and of a ſoft violet Colour without, and flat Heart-ſhap'd Seeds.
9. Caltha *Africana, foliis croci anguſtis, florum petalis externe purpuraſcentibus, interne albis. Boerh. Ind.* *African* Marygold, with narrow Leaves like Saffron, and the Petals of the Flower white within, and purple without.

The ſix Sorts firſt mention'd are very hardy Plants, and may be ſown in Beds or Borders of common Earth in any Part of the Garden. They are all Annuals; yet if their Seeds are ſuffer'd to fall to the Ground, they will ſupply you, without the Trouble of ſowing them. But in order to keep the Sorts diſtinct, we ſhould carefully ſave the Seeds of each, and ſow them in the Spring, eſpecially the largeſt, double, and childing Kinds, which are often kept in Gardens for the Beauty of their Flowers, the other are only ſow'd for Pot-herbs. The ſeventh and eighth Sorts are very pretty Annual Plants, and ſhould be ſowed in a warm Border, and in a light Soil, and may be, while young, tranſplanted into other Parts of the Garden, where they are to remain: but if they are grown large before you remove them, it is a great Hazard if they grow again. Theſe Plants will continue producing great Quantities of beautiful Flowers moſt part of the Summer; and if the Seaſon is not too cold and wet, will ripen their Seeds very well; which you muſt be careful to gather when ripe, for they ſoon fall to the Ground.

The ninth Sort is an abiding Plant, and never produces any good Seeds in this Country; but may be propagated by Cuttings, which ſhould be planted in Pots of good light Earth, and plung'd into a gentle Hot-bed, refreſhing them often with Water, and ſhading them from the great Heats of the Sun, until they have taken Root; when you muſt harden them by degrees, to endure the open Air. This Plant muſt be hous'd in Winter with the *Ficoides*, &c. but muſt have as much free open Air as poſſible when the Weather is mild; for if it is kept too cloſe, it is very ſubject to grow mouldy and rot away; it continues flowering the greateſt part of the Year, for which it is very valuable, and often produces its Flowers in the middle of Winter, when few other Flowers appear.

CALTHA PALUSTRIS. *Vide* Populago.

CALYX [with *Botaniſts*, ſignifies the Cup of a *Flower* before it opens, or the ſoft Huſk or Skin in which a *Flower* firſt of all, and afterwards the Seeds of Herbs and Fruit of Trees, is cover'd.] Lat. *The Cup incloſing or containing the Flower.*

CAMARA, *American* Viburnum, *vulgo.*

The *Characters* are;

It hath an anomalous perſonated Flower, conſiſting of one Leaf, whoſe upper Lip (or Creſt) is erect, but the Beard (or under Lip) is divided into three Parts. The Embryo upon which the Flower ſits, afterward becomes a ſoft Fruit or Berry, incloſing a hard, round Seed; to which may be added, that many Embryo's are collected into one Body.

The *Species* are;

1. **Camara** *ſpinoſa, flore variegato. Plum. Nov. Gen. American* Viburnum, with a variegated Flower.
2. **Camara** *trifolia, purpuraſcente flore. Plum. Nov. Gen. American* Viburnum, with three Leaves and a purpliſh Flower.
3. **Camara** *ſalviæ foliis, floribus incarnatis. American* Viburnum, with Sage Leaves, and fleſh-colour'd Flowers.
4. **Camara** *meliſſæ folio, flore variabili. Hort. Elth. American* Viburnum, with a Balm Leaf, and a variable Flower.

Theſe Plants are Natives of *America*, where there are ſeveral other Species than are here enumerated. They may be raiſed from Seeds, which may be obtain'd from *Jamaica, Barbadoes*, or any of the warm Iſlands in the *Weſt-Indies*; where they are known by the Name of *Wild Sage.* Theſe Seeds ſhould be ſown in *February* or *March*, in ſmall Pots filled with light rich Earth, which ſhould be plunged into a Hot-bed of Tanners-bark, obſerving to refreſh the Earth often with Water; and in the Heat of the Day the Glaſſes ſhould be raiſed to admit the Air to the Pots, otherwiſe the Bed will be ſo hot as to endanger the ſcalding of the Seeds. In about five or ſix Weeks after the Seeds are ſown, the Plants will begin to appear; when you muſt be careful to refreſh them often with Water, as alſo to give them Air, in proportion to the Warmth of the Bed in which they are placed; and ſo ſoon as the Plants are two Inches high, they ſhould be taken carefully out of the Pots in which they were ſown, and tranſplanted, each into a ſeparate ſmall Pot filled with freſh light Earth, and plunged again into the Hot-bed: But you muſt obſerve to ſtir up the Bark with a Dung-fork, that it may renew its Heat; and when the Pots are plunged, you muſt water them pretty well, to ſettle the Earth to the Plants, which muſt be repeated often: You muſt alſo ſhade the Glaſſes until the Plants have taken new Root; after which Time they ſhould have Air and Water, in proportion to the Heat of the Seaſon, and the Bed in which they are plac'd.

By the Middle or latter End of *June* the Plants will have acquired Strength, and the Roots will fill the ſmall Pots into which they were planted; therefore you ſhould ſhake them out of thoſe, and put them into Pots of a larger Size, which ſhould be again plunged into the Hot-bed, to encourage the Plants to take Root; after which Time they ſhould be enured by Degrees to the open Air, into which they ſhould be removed in the middle of *July*, placing them in a warm Situation, where they may be defended from ſtrong Winds; and toward the End of the Month they will begin to ſhew their Flowers, which are produc'd in Cluſters at the Extremity of the Branches, and will continue in Beauty for near three Months.

Toward the End of *September* theſe Plants muſt be removed into the Stove, obſerving to place them where they may enjoy free Air, and have the Benefit of the Sun, as alſo to refreſh them often with Water; but in the Depth of Winter you muſt not give them too much at one Time: You muſt alſo keep them clear from dead Leaves, or decayed Branches; which, if ſuffered to remain, are often injurious to the Plants.

Theſe Plants muſt remain in the Stove until *June*; for if they are carried abroad too ſoon, they are often injur'd by the cold Nights, which frequently happen in *May.* But you ſhould let them have as much Air as poſſible in the Spring, when the Weather is mild, otherwiſe the Shoots will be weak, and when the Plants are expoſed they generally decay, whereby their Flowers are deſtroyed. When they are removed out of the Stove, they ſhould be placed in a warm Situation, and muſt be frequently watered; which will cauſe them to produce much ſtronger Flowers, and in greater Plenty than otherwiſe they would. With this Management the Plants will grow to the Height of five or ſix Feet, and may be trained to have regular Heads, and in warm Seaſons will often produce ripe Seeds in *England.*

They may alſo be propagated from Cuttings, which ſhould be taken from the old Plants in *April*, and muſt be planted into Pots filled with light rich Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to water and ſhade them until they have taken Root; after which Time they muſt be treated in the Manner directed for the ſeedling Plants.

CAMPANIFORM *Flowers*, [of *Campana* a Bell; and *Forma*, Lat. Shape.] Such *Flowers* as in Shape reſemble a Bell.

CAMPANULA [ſignifies a little Bell, as tho' *parva Campana*, Lat. ſo called, becauſe the Flowers reſemble a *little Bell.* It is alſo call'd *Trachelium*, of τραχύτης, *Roughneſs*; either becauſe it is a very rough Plant, or becauſe it is good for Inflammations of the *Tracheal Artery.* It is alſo call'd *Uvularia*, becauſe it is good againſt Diſeaſes of the *Uvula*; and alſo *Cervicaria*, of *Cervix* the Neck, becauſe it heals Diſeaſes of the Neck. It is likewiſe call'd *Pentagonia*, becauſe the Flowers contract themſelves into five Angles, eſpecially in the Evening.] Bell-Flower.

The *Characters* are;

The Flower conſiſts of one Leaf, is ſhap'd like a Bell, and is, before blown, of a pentagonal Figure; and, when fully open'd, is cut into five Segments at the Top. The Seed-veſſel is, for the moſt part, divided into three Cells, each having a Hole at the Bottom, by which the Seed is emitted.

The *Species* are;

1. **Campanula** *pyramidata altiſſima. Tourn.* The talleſt pyramidal Bell-flower.
2. **Campanula** *perſicæfolia Lobelii, flore cœruleo. Mor. Hiſt.* The blue Peach-leav'd Bell-flower.
3. **Campanula** *perſicæfolia, flore albo. Mor. Hiſt.* The white Peach-leav'd Bell-flower.
4. **Campanula** *perſicæfolia, flore pleno. Tourn.* The double Peach-leav'd Bell-flower.
5. **Campanula** *perſicæfolia, flore albo pleno. Tourn.* The double white Peach-leav'd Bell-flower.
6. **Campanula** *hortenſis flore & folio oblongo. C. B.* Garden Bell-flower with oblong Leaves and Flowers; *commonly called, Canterbury* Bells.
7. **Campanula** *hortenſis flore & folio oblongo, flore albo. C. B.* White *Canterbury* Bells.
8. **Campanula** *hortenſis flore & folio oblongo, flore variegato.* The ſtrip'd *Canterbury* Bells.
9. **Campanula** *vulgatior, foliis urticæ, vel major & aſperior, flore duplici cœruleo majore. Boerh. Ind.* Large Nettle-leav'd Bell-flower with large double blue Flowers.
10. **Campanula** *vulgatior foliis urticæ, vel major & aſperior, flore duplici albo. H. R. Par.* Large Nettle-leav'd Bell-flower, with double white Flowers.
11. **Campanula** *Canarienſis, atriplicis folio, tuberoſa radice. Tourn. Canary* Bell-flower, with Orach Leaves, and a tuberoſe Root.
12. **Campanula** *minor Americana, foliis rigidis, flore cœruleo patulo. H. L.* Dwarf *American* Bell-flower, with rigid Leaves, and blue Flowers.
13. **Campanula** *minor Americana, foliis rigidis, flore albo. H. H. L.* Dwarf *American* Bell-flower, with rigid Leaves, and white Flowers.
14. **Campanula** *radice eſculenta, flore cœruleo. H. L.* Blue Bell-flower, with edible Roots, *commonly called* Rampions.
15. **Campanula** *arvenſis procumbens. Inſt. R. H. Venus*'s Looking-glaſs, *vulgo.*
16. **Campanula** *arvenſis erecta. H. L.* Upright *Venus*'s Looking-glaſs.
17. **Campanula** *arvenſis erecta, flore albo. Inſt. R. H.* Upright *Venus*'s Looking-glaſs, with a white Flower.
18. **Campanula** *arvenſis procumbens, flore albo. H. L. Venus*'s Looking-glaſs, with a white Flower.
19. **Campanula** *maxima, foliis latiſſimis, flore cœruleo. C. B. P.* Greateſt Bell-flower, with broad Leaves, and a blue Flower, commonly called Giant Throatwort.
20. **Campanula** *maxima, foliis latiſſimis, flore albo. C. B. P.* Greateſt Bell-flower, with broad Leaves, and a white Flower.
21. **Campanula** *pratenſis, flore conglomerato. C. B. P.* Little Throatwort, or *Canterbury* Bells, *vulgo.*
22. **Campanula** *pratenſis, flore conglomerato, albo. H. R. Par.* Little-Throatwort, or *Canterbury* Bells, with a white Flower.

23. Campanula *foliis echii, floribus villoſis.* C. B. Bell-flower with Leaves like Vipers-bugloſs, and hairy Flowers.

24. Campanula *foliis anchuſæ, floribus oblongis.* C. B. Bell-flower with Leaves like Alkanet, and longiſh Flowers.

25. Campanula *nemoroſa anguſtifolia, magno flore, major.* *Inſt. R. H.* Greater wood Bell-flower, with a narrow Leaf, and large Flower.

26. Campanula *nemoroſa anguſtifolia, parvo flore.* *Inſt. R. H.* Narrow-leafed wood Bell-flower, with a ſmall Flower.

27. Campanula *minor rotundifolia vulgaris.* C. B. Common ſmall round-leafed Bell-flower.

28. Campanula *pentagonia perfoliata.* *Mor. Hiſt.* Five-corner'd Bell-flower, with a perfoliated Leaf.

The firſt Sort is commonly cultivated to adorn Chimnies, Halls, &c. in the Summer-ſeaſon; for which Purpoſe there is no Plant more proper, it producing ſometimes eight, ten, or twelve Branches, which will grow four or five Feet high, and produce large Quantities of beautiful Flowers, almoſt the whole Length of the Stalks, which, if kept from Rain and Sun, will continue in Beauty for a long time; and if the Branches are regularly ſpread flat to Sticks, makes a very fine Appearance.

This Plant is propagated either by ſowing the Seeds in *March*, in a Bed of light undung'd Soil, or by parting the Roots; the latter Method being the moſt expeditious, is commonly practiſ'd; for every Dug taken from the Roots in *September* or *March*, will grow, if rightly manag'd: But the Roots which are rais'd from Seeds, will make the ſtrongeſt Bloom; for which Reaſon, you ſhould every Year ſow of the Seeds, to have a Succeſſion of theſe Roots for Bloom, notwithſtanding they are commonly three or four Years before they flower; we ſhould therefore tranſplant the young Plants into Nurſery-beds the *September* after ſowing, which Beds ſhould be made of a light Soil, rather dry than wet: The Diſtance they ſhould be planted at, is ſix Inches ſquare: And if in hard froſty Weather you cover the Bed with Mats, it will greatly ſtrengthen the young Roots; in theſe Beds they may remain until the third Year after ſowing; at which time, if you find the Roots are ſtrong, and promiſe well for flowering, in *September* you ſhould take them up, and plant them into Pots of light Soil; and if you have the Conveniency of a Glaſs-Frame to ſhelter them in Winter from great Rains and ſevere Froſts, they will be vaſtly the ſtronger for it: For altho' they require frequent Waterings in Summer-time, yet too much Wet in Winter is apt to rot them; for their Roots are ſucculent and milky; therefore, if you have no ſuch Conveniency, you muſt lay the Pots on one Side in very wet Weather, and in a great Froſt ſet them under a warm Wall, Pale, or Hedge, and cover them with Peaſe-haulm, &c. obſerving to lay a little old Dung round the Pots, to guard their Roots from the Froſt. If this Care be taken, the Flowers will ſufficiently recompenſe for the Trouble, in their Numbers and Largeneſs.

The Peach-leav'd *Bell-Flowers* may be rais'd from Seeds, in the ſame manner; or be increas'd, by parting their Roots in Autumn, which is the moſt expeditious Method: Theſe are very hardy, and may be planted in open Beds or Borders, where they will flower very ſtrong, eſpecially if their Roots are taken up and parted every other Year; for otherwiſe, the Number of Heads will render their Stems weak, and the Flowers ſmall.

The *Canterbury Bells* are biennial, ſeldom laſting longer than the ſecond Year; theſe therefore are only rais'd, by ſowing their Seeds, the beſt Seaſon for which is in the Beginning of *April*, and in *June* the Plants will be fit to tranſplant; at which time you ſhould prepare a Bed or two in a ſhady Situation, where you muſt plant them at about ſix Inches Diſtance every way; and in *September* following you may plant them out into the Borders of the Flower Garden, where they will flower the *May* following; and when they have ripened, their Seeds will die; therefore you muſt ſow every Year, to have a Supply of freſh Roots.

The two Dwarf *American* Kinds are only propagated by Offſets, their Seeds ſeldom ripening with us; they are hardy, and will endure in the open Air, provided they are planted in a dry Soil, and a warm Situation: The beſt Seaſon for parting their Roots, is in *April*; but they muſt not have too rich a Soil.

The *Canary Campanula* is one of the moſt beautiful Plants of the Green-houſe, it producing its Flowers in the Depth of Winter, and continuing them through the Months of *December*, *January*, and *February*. This Plant is propagated by parting its Roots, the Seaſon for which is in *June*, when the Stems are quite decay'd; and in doing of it, great Care ſhould be taken, not to break or bruiſe their Roots, which would endanger their decaying. The Soil in which theſe Roots ſhould be planted, muſt be one third freſh Earth, a third part Sand, and the reſt Lime-rubbiſh; this ſhould be well mix'd and ſcreen'd, and, if laid together half a Year before it is uſed, that it may incorporate, it will be the better.

When you plant the Roots, give them a little Water to ſettle the Earth about them; but afterwards let your Waterings be ſparingly done, and but ſeldom repeated until their Stems begin to advance; after which, they muſt have it a little freely: For want of this Caution, many of theſe and other Flower-roots which are kept in Pots, are deſtroy'd; for it is impoſſible to ſuppoſe that a Root which is intirely at Reſt, and deſtitute of Leaves, ſhould be capable of diſcharging any Quantity of Moiſture; therefore let this Caution be conſtantly obſerv'd. The Stems of the Flower will begin to appear in *Auguſt*; and if the Roots are ſtrong, will riſe to eight or nine Feet in height; and in *November*, or ſooner, will begin to ſhew its beautiful flame-colour'd Flowers. When theſe Stems begin to advance, we ſhould remove the Plant into Shelter, to guard it from Morning Froſts, or great Rains; and as the Weather grows colder, it muſt be remov'd into a good Green-houſe, where it ſhould have as much free Air as poſſible in open mild Weather. This Plant will require the ſame Proportion of Heat as is allotted for the *Ficoides*, and will thrive in the ſame Houſe better than amongſt *Orange-trees*, &c.

The *nettle-leav'd Bell-flowers* are very hardy, and may be increas'd by parting their Roots either in Spring or Autumn, and are proper for large open Borders.

The *Rampion* is propagated in the Kitchen-Garden, for its Root, which was formerly in greater Eſteem in *England* than at preſent, altho' the *French* are ſtill very fond of it: The Seeds of this Plant ſhould be ſown in *March*, in a Bed of light dry Earth, as thin as poſſible; and in *May*, when the Plants are come up, hough them out, leaving them about four Inches Square; and during the Summer keep them clear from Weeds, and the Winter following they will be fit for Uſe.

The two dwarf *American* Sorts will endure our common Winters in the open Air; but in ſevere Froſts they are often deſtroyed: Therefore it will be proper to preſerve ſome Plants of each Sort in Pots, which may be placed under a common Hot-bed Frame in Winter; obſerving to take off the Glaſſes every Day in mild Weather, that they may enjoy as much free Air as poſſible; and in hard Froſts the Glaſſes may be covered with Mats, Straw, or Peaſe-Haulm, to prevent the Earth in the Pots from being frozen, which will preſerve the Plants in Vigour.

The four Sorts of *Venus*'s Looking-glaſs are annual Plants; the Seeds of theſe ſhould be ſown in the Borders of the Flower-garden, where they are to remain; for they do not love tranſplanting. If the Seeds are ſown in *April*, the Plants will flower in *June* and *July*; but if they are ſown in *May*, they will not flower till *Auguſt*: ſo that by ſowing them at different Times, there may be a Succeſſion of them in flower during all the Summer Months; and if the Seeds are ſown toward the End of *Auguſt*, upon a light warm Soil, the Plants will abide the Winter, and flower early the Spring following. The Seeds of the firſt Sort are very common in all the Seed-ſhops in *London*: the fourth is a Variety of the firſt; but the ſecond and third Sorts are leſs common in *England*.

All the other Sorts (except the laſt) are very hardy Plants, which abide many Years, and will grow in ſhady Places under the Drip of Trees; ſo that they are very proper to plant in Wilderneſs Quarters, where they will thrive, and produce their Flowers every Year; ſo will afford an agreeable Variety in ſuch Parts of the Garden, where few other Plants will thrive.

They may be propagated by ſowing of their Seeds on a Bed of freſh Earth in the Spring; and when the Plants are come up, they ſhould be tranſplanted into Beds in the Flower-nurſery, obſerving to water them, until they have taken new Root; after which Time they will require no farther Care, but to keep them clear from Weeds. At *Michaelmas* they may be tranſplanted into the Places where they are deſigned to remain; where they will continue many Years, and will increaſe by their Roots, by which Method they may alſo be propagated.

The laſt Sort is an annual Plant, which may be propagated in the ſame Manner as the *Venus*'s Looking-glaſs; but being a larger Plant, ſhould be allowed more Room to grow. If the Seeds of this Plant are permitted to fall on the Ground, the Plants will come up the following Spring, and thrive without any other Culture but keeping them clear from Weeds.

CAMPHORA: [This is call'd *Caphura* or *Camphora* by the *Latins*, and *Capur* and *Caphur* by the *Arabians*: This Tree is call'd *Camphora Officinarum*, or *Camphire of Japan.*] The Camphire-Tree.

The *Characters* are;

It hath Leaves like thoſe of the Pear-Tree, but are full of Ribs, which grow alternately upon the Branches: The Flowers conſiſt of one Leaf, which is divided into five or ſix Segments: The Fruit is ſhap'd like a Nut; the Shell is tender, and the Kernel bifid.

Camphora *officinarum. C. B.* The Camphire-Tree.

The Authors who have treated of this Tree, ſuppoſe there are two Sorts of it, one of which is a Native of the Iſle of *Borneo*, and is the Tree from whence the beſt *Camphire* is taken, which is ſuppos'd to be a natural Exudation from the Tree, produced in ſuch Places where the Bark of the Tree has been wounded or cut. The other Sort is a Native of *Japan*, which Dr. *Kempfer* deſcribes to be a Kind of *Bay*, bearing black or purple Berries, and from whence the Inhabitants of the Province of *Satzuma*, and the Iſland of *Gotho*, prepare their *Camphire*, which is procur'd by making a ſimple Decoction of the Root and Wood of this Tree cut into ſmall Pieces: But this Sort of *Camphire* (he ſays) is extremely cheap, being in Value eighty or an hundred Times leſs than the true *Bornean Camphire*.

This Tree is at preſent very rare in *Europe*, and is only increas'd by laying down the Branches, which are commonly two or three Years before they take Root, ſo as to be fit to remove: It requires a light Soil, and frequent Waterings in warm Weather, but in Winter you muſt do it ſparingly: It muſt be kept in a moderate Warmth in Winter, but in Summer may be expos'd to the open Air in a well-ſhelter'd Place.

CAMPHORATA, Stinking Ground-pine.

The *Species* are;

1. **Camphorata** *hirſuta. C. B.* Hairy ſtinking Groundpine.
2. **Camphorata** *glabra. C. B.* Smooth ſtinking Groundpine.

Theſe Plants grow plentifully on ſandy and rocky Soils near *Montpelier*, as alſo in *Italy* and *Spain*; but are ſeldom cultivated in Gardens.

The firſt Sort is reckoned amongſt the official Plants in the College Diſpenſatory; but at preſent is ſeldom uſed in Medicine.

They may be propagated by Slips, which ſhould be planted in a ſhady Border in *April*, juſt as the Plants begin to ſhoot, obſerving to water them frequently; and when the Slips have taken good Root, they may be tranſplanted (with a Ball of Earth to their Roots) into a warm dry Border, or elſe into Pots, that they may be ſheltered in ſevere Froſts, otherwiſe they will be deſtroyed.

They may alſo be propagated by Seed; but as they ſeldom perfect their Seeds in this Country, ſo the other Method is always uſed to propagate them here.

CAMPION. *Vide* Lychnis.

CANDLE-BERRY-TREE. *Vide* Gale.

CANDY-TUFT. *Vide* Thlaſpi.

CANNA INDICA. *Vide* Cannacorus.

CANNABIS [Κάνναβις, *Gr.*] Hemp.

The *Characters* are;

It hath digitated (or finger'd) Leaves, which grow oppoſite to one another; the Flowers have no viſible Petals; it is Male and Female, in different Plants.

Cannabis *ſativa. C. B.* The Manured Hemp.

This Plant is propagated in the rich fenny Parts of *Lincolnſhire*, in great Quantities, for its Bark, which is ſo uſeful for Cordage, Cloth, &c. and the Seeds afford an Oil which is uſed in Medicine.

This Plant is propagated from Seeds, which ſhould be ſown early in the Spring, on a rich moiſt Soil, which is not too ſtiff; about three Buſhels of this Seed will ſow an Acre. In chuſing of the Seeds, obſerve to take the beſt coloured, and the heavieſt, and crack ſome of them, to ſee if their Kernels are full and plump, otherwiſe it will not grow. When the Plants are come up, they ſhould be houghed out in the ſame Manner as is practiſed for *Turnips*, leaving the Plants a Foot or ſixteen Inches apart; obſerve alſo to cut all the Weeds, which if well performed, and in dry Weather, will deſtroy 'em. This Crop will require a ſecond Houghing about a Month after the firſt, in order to deſtroy the Weeds; if this be well performed, it will require no farther Care; for the Hemp will ſoon after cover the Ground, and prevent the Growth of Weeds.

The firſt Seaſon for pulling the Hemp, is uſually about the middle of *Auguſt*, when they begin to pull what they call the *Fimble-Hemp*, which is the Male Plants; but it would be much the better Method, to defer this a Fortnight or three Weeks longer; until theſe Male Plants have fully ſhed their Duſt, without which the Seeds will prove abortive, produce nothing if ſown the next Year, nor will thoſe concerned in the Oil-mills give any Thing for them, there being only empty Huſks, without any Kernels to produce the Oil.

The ſecond pulling is a little after *Michaelmas*, when the Seeds are ripe; this is uſually called *Karle-Hemp*, it is the Female Plants, which were left, at the Time when the Male were pulled. This *Karle-Hemp* is bound in Bundles of a Yard Compaſs, according to Statute Meaſure, which are laid in the Sun for a few Days to dry, and then it is ſtack'd up or houſed to keep it dry, till the Seed can be thraſhed out. An Acre of Hemp on a rich Soil will produce near three Quarters of Seed, which together with the unwrought Hemp, is worth from ſix to eight Pounds.

CANNABINA, Baſtard-hemp.

The *Characters* are;

It is a Genus, whoſe Flowers have no Petals; but conſiſt of a Number of Threads, and are barren: for the Seed is produced on Female Plants, which have no viſible Flower; but have membranaceous Seed-veſſels, which incloſe triangular Seeds, which are for the moſt part oblong.

The *Species* are;

1. **Cannabina** *Cretica fructifera. Tourn. Cor.* Fruitful Baſtard-hemp of *Candy*.
2. **Cannabina** *Cretica florifera. Tourn. Cor.* Male Baſtard-hemp of *Candy*.

Theſe two Plants both ariſe from the ſame Seeds (as is the Caſe with the Male and Female Plants of the common Hemp). They are Natives of the *Archipelago*, from whence Dr. *Tournefort* ſent the Seeds to the Royal Garden at *Paris*. They are hardy Plants, which may be propagated by ſowing their Seeds on a Bed of light freſh Earth in the Spring; and when the Plants are come up two Inches high, they ſhould be carefully tranſplanted into a Bed of freſh Earth, obſerving to ſhade and water them, until they have taken new Root; after which Time they will require no farther Culture, but to keep them clear from Weeds. At *Michaelmas* the Plants will die down to their Roots; ſo they ſhould remain in theſe Beds until the Beginning of *March*, at which Time they ſhould be tranſplanted out where they are to remain; where they ſhould be placed at a good Diſtance from each other, or any other Plants; for they grow pretty large, and will form large Heads, if they are ſuffered to remain many Years; ſo that they ſhould be planted at leaſt three Feet aſunder.

In the native Places of their Growth they often riſe to the Height of ten or twelve Feet; but in *England* they ſeldom grow to more than half that Size: but when their Roots are very ſtrong, they will ſend forth ſix or eight Stems from each Root, ſo that they will occupy a large Space of Ground; but as there is no great Beauty in theſe Plants, ſo there ſhould be but few of them admitted for Variety.

CANNACORUS, [ſo call'd of *Canna* a Stem; and *Acorus*, becauſe it has a Root and Leaves like the *Acorus*.] The *Indian* Reed.

The *Characters* are;

It hath a knobbed tuberoſe Root: The Leaves are long and nervous: The Flower conſiſts of one Leaf, is tubulous, and cut into ſix Segments; theſe are ſucceeded by roundiſh membranaceous Veſſels, which are divided into three Cells, each containing two or three round hard Seeds.

The *Species* are;

1. **Cannacorus** *latifolius vulgaris. Tourn.* The common broad-leav'd *Indian* Reed, with pale Flowers.
2. **Cannacorus** *latifolius vulgaris, foliis variegatis.* The common *Indian* Reed, with ſtrip'd Leaves.
3. **Cannacorus** *flore luteo punctato. Tourn.* The yellow ſpotted *Indian* Reed.

4. Cannocorus *flore coccineo ſplendente. Tourn.* The fine ſcarlet-colour'd *Indian* Reed.

5. Cannacorus *ampliſſimo folio, flore rutilo. Tourn.* The largeſt-leav'd *Indian* Reed, with reddiſh-colour'd Flowers.

6. Cannacorus *anguſtifolius, flore flaveſcente. Tourn.* Narrow-leav'd *Indian* Reed, with yellow Flowers.

Theſe Sorts are all propagated by Seeds, which muſt be ſown on a Hot-bed in *March*, and afterwards ſhould be tranſplanted into Pots fill'd with good rich Earth, and, during the Summer Seaſon, muſt be plentifully water'd: Theſe Plants, thus manag'd, will many Times produce Flowers the firſt Seaſon; but 'tis not till the ſecond Year that they blow ſtrong: In order to which, you ſhould houſe them before the Froſt pinches their Leaves, obſerving to give them but little Water in the Winter, and keep them intirely from the Froſt: In *May* following, prepare a good rich Bed of Earth, and turn your Plants out of the Pots into this Bed, being careful not to diſturb the Earth about their Roots, giving them Water plentifully in dry Weather; and when your Roots have once faſten'd themſelves into this Bed, they will grow vigorouſly, and produce many ſtrong Stems, which will flower much ſtronger than thoſe kept in Pots, and ripen their Seeds very well.

The Scarlet Bloſſom is by far the moſt beautiful Kind; but a Mixture of the yellow ſpotted Sort will look very agreeable; but the common pale-colour'd Sort is hardly worth keeping, unleſs in *Botanick* Collections.

Theſe Sorts may be alſo increaſ'd by parting their Roots in the Spring, but theſe Plants ſeldom flower ſo well as Seedlings: And ſince the Seeds are ſo eaſy to be obtain'd, 'tis hardly worth practiſing, unleſs for the ſtrip'd leav'd Sort, which can be no other Way increaſ'd. The Inhabitants of *America* call this Plant *Indian-ſhot*, and ſay, the *Indians* make Uſe of this Seed inſtead of Shot, to ſhoot Wild-fowl, &c.

There is alſo another *Species* of this Plant, the Root of which is the *Curcuma* of the Shops; but this I have not as yet ſeen in the *Engliſh* Gardens.

CAPERS; *vide* Capparis.

CAPILLAMENTS; [*Capillamenta*, Lat.] the Strings or Threads about the Roots of Plants.

CAPILLARY *Plants*; [of *Capillaris*, Lat. of, or like Hair] are ſuch Plants as have no main Stem, but their Leaves ariſe from the Root upon Pedicles, and produce their Seeds on the Back of their Leaves.

CAPITULUM; *i. e.* a little Head; the Head or Top of any flowering Plant.

CAPNOIDES; [ſo call'd from the *Greek* καπνὸς *Fumitory*, and εἶδος *Shape*, on account of its Reſemblance to Fumitory.] Podded Fumitory.

The *Characters* are;

The Leaves and whole Face of this Plant is like Fumitory, *but the Style of the Flower becomes a long taper Pod, which contains many round ſhining Seeds.*

Capnoides. *Tourn.* Podded Fumitory.

This is a pretty annual Plant, which may be ſown in an open Border in the Spring of the Year; and when the Plants are come up, they may be remov'd and planted in the Borders of the Flower Garden, where they will make a pretty Shew for two or three Months together: The Seeds of this Plant, if ſuffer'd to ſhed upon the Ground, will furniſh you with Plants enough, without giving you the Trouble to ſow it any more.

CAPNORCHIS; *Indian* Bulbous-rooted Fumitory.

The *Characters* are;

This hath the whole Face of Fumitory: *The Root is ſometimes tuberoſe, ſometimes ſcaly, and at other times bulbous; the Flower conſiſts of two Leaves, is of an anomalous Figure, and hangs downward; the Pods are like thoſe of* Shepherd's-Pouch.

Capnorchis *Americana. Boerh. Ind.* American bulbous-rooted Fumitory.

This Plant is propagated by parting its Roots, or from Seeds: It is not hardy enough to endure our Winters in the open Ground, ſo muſt be put into Pots filled with light Earth, and houſed in Winter: The Flowers are ſomewhat like thoſe of *Fumitory*, and tho' none of the moſt beautiful Plants, yet deſerves a Place in a good Garden.

CAPPARIS; [Κάππαρις, *Gr. to deſire.*] The Caper-Buſh.

The *Characters* are;

Its Flowers conſiſt of four Leaves, which are expanded in Form of a Roſe; *the Fruit is fleſhy, and for the moſt part ſhap'd like a* Pear, *in which are contain'd many roundiſh Seeds.*

The *Species* are;

1. Capparis *non ſpinoſa, fructu majore. C. B.* The large-fruited Caper, without Thorns.
2. Capparis *ſpinoſa, fructu minore, folio rotundo. C. B. P.* Prickly round-leafed Caper, with a ſmall Fruit.
3. Capparis *folio acuto. C. B. P.* Sharp-leafed Caper.
4. Capparis *Americana arboreſcens, lauri folio, fructu longiſſimo. Plum. Cat. American* Tree-caper, with a Bay-leaf, and a long Fruit.
5. Capparis *alia arboreſcens, lauri foliis, fructu oblongo ovato. Plum. Cat. American* Tree-caper, with a Bay-leaf, and an oval Fruit.
6. Capparis *Americana arboreſcens, laurocerasi foliis, fructu oblongo. American* Tree-caper, with Laurel-leaves, and an oblong Fruit.

The firſt, ſecond, and third Sorts are common in the *South* of *France*, and in *Italy*, where they grow wild on the Walls, and old Ruins. At *Toulon* they cultivate theſe Plants upon the Walls, by ſowing of their Seeds in the Holes of the ſtone Walls, about three or four Feet from the Ground; ſo that the Roots of the Plants penetrate into the Joints of the Walls, and from thence draw their Nouriſhment. In *England* it is very difficult to preſerve theſe Plants, eſpecially if they are planted in Earth; for theſe Plants thrive much better in Rubbiſh: ſo that where any Perſon is deſirous to cultivate them, they ſhould be planted in Pots filled with Lime-rubbiſh and Sand, and placed into a moderate Hot-bed, to forward their making new Roots; after which time they may be expoſed in the open Air in Summer; but in Winter they muſt be ſheltered from ſevere Froſt, which will deſtroy them. The Stump of theſe Plants are generally brought over in Plenty from *Italy* every Year, by the Perſons who bring over *Orange-trees* and *Jaſmines*; ſo that they may be purchaſed from them at a moderate Price, which is far the eaſieſt Method of being furniſhed with theſe Plants; for the Seeds are not eaſily obtained from abroad, nor do they ſucceed very well with us. Altho' theſe Plants require Shelter, when planted in Pots; yet they will endure the ſevereſt Cold of our Winters, in growing in a Wall.

The fourth, fifth and ſixth Sorts, are Natives of *America*: the fourth and fifth were diſcovered by Father *Plumier* in the *French* Iſlands; but the ſixth was found by Mr. *Robert Millar*, near *Carthagena* in the *Spaniſh Weſt-Indies*, from whence he alſo ſent me the other two Kinds. Theſe three Sorts may be propagated by Seeds, which ſhould be ſown in Pots filled with light ſandy Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to water the Earth frequently, to forward the Vegetation of the Seed. When the Plants are come up, they ſhould be each tranſplanted into a ſmall Pot filled with light ſandy Earth, and plunged into the Hot-bed again, obſerving to ſcreen them from the Sun, until they have taken Root; after which time they muſt have Air and Water, in proportion to the Warmth of the Seaſon. When the Plants have filled theſe ſmall Pots with their Roots, they ſhould be carefully taken out, and their Roots trimmed, and put into larger Pots, and plunged into the Hot-bed again. In Winter theſe Plants muſt be removed into the Stove, and placed in the Bark-bed, where they ſhould be treated after the manner directed for the *Guajava*; with which Management theſe Plants will ſucceed.

The Seeds of this Plant may be obtain'd from *Tholouſe* or *Leghorn*, and may be ſown upon old Walls and Buildings, where they will inſinuate their Roots between the Bricks, and endure for many Years. The Buds of theſe Flowers, before they open, are pickled for Eating.

BEAN-CAPER; *vide* Fabago.

CAPREOLATE *Plants*; [of *Capreolus*, L. the Tendril of a Vine.] Such Plants as twiſt and climb upon others by means of Tendrils.

CAPRIFOLIUM; [takes its Name of *Caper*, a *Goat*, and *Folium*, a *Leaf*, Lat. becauſe Goats eat the tender Leaves of this Plant.] Honeyſuckle.

The *Characters* are ;

It hath a climbing Stalk, which twiſts itſelf about whatſoever Tree ſtands near it: The Flowers are tubulous and oblong, conſiſting of one Leaf, which opens toward the Top, and is divided into two Lips; the uppermoſt of which is again divided into two, and the lowermoſt into many Segments; the Tube of the Flower is bent, ſomewhat reſembling a Huntſman's Horn: They are produc'd in Cluſters, and are very ſweet.

The *Species* are ;

1. Caprifolium *non perfoliatum, floribus albis.* The wild or *Engliſh* white Honey-ſuckle.
2. Caprifolium *non perfoliatum, flore interius albo, rubro externe. Boerh. Ind.* The *Engliſh* red Honeyſuckle.
3. Caprifolium *non perfoliatum, foliis ſinuoſis. Tourn.* Oak-leav'd wild Honeyſuckle.
4. Caprifolium *non perfoliatum foliis ſinuoſis & variegatis.* The ſtrip'd Honeyſuckle with cut Leaves.
5. Caprifolium *non perfoliatum, foliis ex luteo variegatis.* The common Honeyſuckle with yellow ſtrip'd Leaves.
6. Caprifolium *Italicum perfoliatum præcox. Broſſ.* The *French* or early white Honeyſuckle.
7. Caprifolium *Italicum. Dod.* The *Italian* Honeyſuckle.
8. Caprifolium *Germanicum, flore rubello, ſerotinum. Broſſ.* Late red Honeyſuckle.
9. Caprifolium *Germanicum, floribus ſpecioſius. Dutch* Honeyſuckle.
10. Caprifolium *perfoliatum ſemper-virens floribus ſpecioſius.* Evergreen Honeyſuckle.

The firſt, ſecond and third Sorts of *Honeyſuckles* are found growing in the Hedges, in many Parts of *England*: Indeed, the third Sort is ſeldom found, and I believe is no more than an accidental Variety of the two former. I found one Plant of this Kind in the Woods near *Dulwich*, which I planted in the Phyſick Garden, where it now grows, and many of the Branches ſtill continue to produce indented Leaves; but the extreme Parts of the Tree, and all the vigorous Shoots, produce whole Leaves; ſo that the Variation from the common Sort is but ſmall. The two ſtrip'd Sorts are alſo Varieties of the common, one having whole, the other indented Leaves. The early white, *Italian*, late Red, and *Dutch* Sorts, are Foreigners; but have been more cultivated in the Nurſeries about *London*, than thoſe which are of our own Growth, and are much commoner in the Gardens than thoſe. The early white is the firſt Sort that flowers, commonly beginning in *April*; this is ſucceeded by the *Italian*: Then the *Dutch* and late Red Sorts follow; the latter of which, during the time of flowering, is the moſt beautiful of all the Kinds; for its Flowers are produced in very cloſe Bunches, and every Shoot of the Tree produces many Bunches, which flowering all together, renders it a very fine Shrub: but this ſeldom laſts more than a Fortnight in Beauty; whereas the *Dutch* Sort, which produces its Bunches but thinly (its Branches growing more diffuſed) continues flowering until prevented by froſty Weather. The Evergreen *Honeyſuckle* begins to produce its Flowers at the Beginning of *June*, and often continues flowering 'till *Michaelmas*, which, together with its evergreen Leaves, renders it a very valuable Shrub.

All theſe Sorts of *Honeyſuckles* are propagated by laying down their Branches in the *Spring*; which by *Michaelmas* following (if they have been ſupply'd with Water) will have taken Root, ſo as to be fit to remove, which ſhould be into Nurſery-beds, for a Year or two the better to train them up, either for Headed-plants, or for Creepers to plant againſt Trees, Walls, Pales, *&c.* which in two Years Time, at moſt, will be fit for any of thoſe Purpoſes; or they may be propagated by planting Cuttings of the young Shoots, either at *Michaelmas*, or early in the *Spring* of the Year, in a ſhady Border, where they may continue 'till the *Michaelmas* following, when they may be tranſplanted into Nurſery-beds, (as was before directed): But the evergreen *Honeyſuckle* is difficult to increaſe this Way, therefore it would be better to propagate it by *Layers*.

Theſe Shrubs are very great Ornaments to ſmall Quarters of flowering Shrubs, when train'd up to regular Heads, and the different Varieties being intermix'd therewith: Their long Continuance in Flower, together with the Beauty and Sweetneſs of their Flowers, renders them as valuable Shrubs for ſuch Purpoſes as any we have; and they are no leſs valuable for planting againſt the Stems of old Trees in Groves or Avenues, where, if they are not too much overſhaded by the Trees, they will thrive and flower exceedingly.

The beſt Seaſon for cutting theſe Trees, to keep them in a regular Form, is about *Michaelmas*, ſoon after they have done flowering, that their Wounds may heal before Winter: And this Work is beſt perform'd with a Knife, obſerving to cut behind a Leaf-Bud; for how long ſoever the Shoot is left beyond, it decays down to the Bud, and thereby becomes unſightly. They are all extreme hardy, except the Evergreen, which is ſuppos'd to be an *American* Plant; and is ſometimes, in very ſevere Winters, apt to ſuffer by the Froſt, if planted in a Situation too much expos'd.

CAPSICUM; [takes its Name of *Capſa*, Lat. a Cheſt, becauſe the Seeds of this Plant are included, as it were, in a little Cheſt; or elſe of κάπτω, to *bite*, becauſe it is a burning pungent Plant: It is alſo call'd, *Piper Indicum Americanum Braſilianum*, from its very ſharp Taſte; for if you eat the raw Fruit, the hot biting Taſte will laſt in the Mouth the whole Day, nor can it eaſily be got out] *Guiney* Pepper.

The *Characters* are ;

The Flowers conſiſt of one Leaf, and are expanded like thoſe of Nightſhade; the Fruit is ſoft, fleſhy, and membraneous, and divided into two or more Cells, in which are contained many flat Kidney-ſhap'd Seeds.

The *Species* are ;

1. Capsicum *ſiliquis longis propendentibus. Tourn.* Capſicum with long hanging Pods.
2. Capsicum *ſiliquis recurvis. Dod.* Capſicum with long Pods which turn up at the End.
3. Capsicum *latifolium, mali Æthiopici fructu magno compreſſo ſtriato, Americanum. Pluk.* Broad-leav'd Capſicum, with long compreſs'd ſtriated Pods, commonly call'd, *Bonnet Pepper.*
4. Capsicum *Africanum, fructu pyramidali pendulo rugoſiſſimo. African* Capſicum, with pyramidal rough hanging Pods.
5. Capsicum *Africanum, fructu pyramidali rugoſiſſimo, plerumque erecto. African* Capſicum, with pyramidal rough Pods, for the moſt part growing erect.
6. Capsicum *fructu non acri, rugoſo longo pendente rubro. Teſochilli. Hern.* Capſicum with long hanging red Pods, which are not hot.
7. Capsicum *fructu cordiformi, plerumque nutante rubro.* Capſicum with Heart-ſhap'd red Pods, for the moſt part hanging downwards.
8. Capsicum *fructu pyramidato craſſo, plerumque erecto, rubro.* Capſicum with pyramidal thick red Pods, for the moſt part growing upright.
9. Capsicum *fructu oblongo nunc erecto, nunc nutante, rubro.* Capſicum with oblong red Pods, growing ſometimes erect, and ſometimes hanging.
10. Capsicum *fructu rotundo majore, nunc erecto, nunc nutante, rubro.* Capſicum with large round red Pods, growing ſometimes erect, and ſometimes hanging.
11. Capsicum *fructu flavo pyramidato oblongo, nunc erecto, nunc nutante.* Capſicum with oblong pyramidal yellow Pods, growing ſometimes erect and ſometimes hanging.
12. Capsicum *fructu cordiformi, nunc erecto, nunc nutante, flavo.* Capſicum with Heart-ſhap'd yellow Fruit, growing ſometimes erect, and ſometimes hanging.
13. Capsicum *fructu olivario erecto.* Upright Olive-ſhap'd Capſicum.
14. Capsicum *fructu parvo pyramidali erecto rubro. Sloan.* Capſicum with ſmall red Pods growing erect, call'd by the Inhabitants of the *Weſt-Indies*, *Barbary*-Pepper.
15. Capsicum *fructu parvo rotundo acerrimo. Sloan.* Capſicum with ſmall round Pods which are very hot, call'd by the Inhabitants of the *Weſt-Indies*, Bird-Pepper.
16. Capsicum *Americanum, fructu rotundo Ceraſorum forma. Pluk. American* Capſicum, with round Cherry-ſhap'd Fruit.
17. Capsicum *Americanum, latifolium, fructu oblongo erecto candido.* Broad-leav'd *American* Capſicum, with oblong white Pods growing erect.
18. Capsicum *fructu maximo oblongo rugoſo, plerumque nutante, rubro.* Capſicum with large oblong red rough Pods, for the moſt part hanging downwards.

Theſe Sorts of *Capſicums* are ſown in many curious Gardens with other annual Plants, in Hot-beds, and require to be treated after the ſame Manner as was directed for the *Amaranthus*, and do, in the Autumn Seaſon, make a very pretty Diverſity, being intermix'd therewith: They are all tolerably hardy, and may be planted abroad, towards the latter End of *May*, or the Beginning of *June*, either in Pots or open Borders, where they will ripen their Fruits very well, except the 3d, 13th, 14th, 15th, 16th, and 17th Sorts, which are tenderer, and muſt be brought forward under Glaſſes, otherwiſe their Fruit will not come to good: The 13th, 14th, and 15th Sorts will remain for ſeveral Years, and form handſome Shrubs, if you take proper Care to preſerve them in the Stove in the

Winter; during which Seaſon their Fruits will remain and ripen, and appear very beautiful. Indeed, I believe, all the Sorts may be preſerv'd over the Winter, were we to take off a Part of their Fruits, before they are grown ſo big as to exhauſt the Strength of the Plant, and obſerve to houſe them in time: But as they perfect their Fruit ſo eaſily in one Summer, it is ſeldom practis'd but with thoſe Sorts that do not ſo readily ripen their Seeds.

The Fruit of theſe Plants, tho' at preſent of no great Uſe in *England*, yet affords one of the wholeſomeſt Pickles in the World, if they are gather'd young before their Skins grow tough. The Inhabitants of the *Weſt-Indies* eat great Quantities of this Fruit raw, not only while it is green, but alſo when it is fully ripe; at which time it is ſo very acrid as to cauſe an extraordinary great Pain in the Mouth and Throat of ſuch Perſons as are not accuſtom'd to eat of it.

The Inhabitants of the *Weſt-Indies* make great Uſe of the *Bird-Pepper*, which they dry and beat to a Powder, and mix with other Ingredients, which they keep by them at all times for Sauce, and uſe it inſtead of Pepper; of which they ſend ſome of theſe Pepper-pots to *England*, by the Name of *Cayan Butter* or *Pepper-Pot*, and are by ſome of the *Engliſh* People mightily eſteem'd.

CAPSULATE Pods; [of *Capſa*, Lat. a *Cheſt*] are the little ſhort Seed-veſſels of Plants.

CAPSULATED; incloſ'd in any thing, as a Walnut is in its green Huſk.

CARACALLA; *vide* Phaſeolus.

CARDAMINDUM; *vide* Acriviola.

CARDAMINE; [takes its Name of *Cardanum*, which is call'd *Naſturtium*; hence it is a ſmall Species of *Naſturtium*; or of κάρδαμον quaſi καρήδαμον, becauſe it diſturbs the Head; it is call'd the *Impatient Herb*, becauſe being touch'd, it diſcharges its Seeds, as it were, with a Spring.] Ladies Smock.

The *Characters* are;

The Flower conſiſts of four Leaves; which are ſucceeded by narrow Pods, which when ripe, roll up, and caſt forth their Seeds; the Leaves are for the moſt part wing'd.

The *Species* are;

1. CARDAMINE *pratenſis, magno flore purpuraſcente. Tourn.* Common Ladies Smock with purpliſh Flowers.
2. CARDAMINE *pratenſis, magno flore albo. Tourn.* Common Ladies Smock with white Flowers.
3. CARDAMINE *pratenſis magno flore pleno. Tourn.* The Double Ladies Smock.
4. CARDAMINE *impatiens, vulgo Sium minus. Ger. Emac.* Impatient Ladies Smock.
5. CARDAMINE *impatiens altera hirſutior. Raii Syn.* The other rough impatient Ladies Smock.
6. CARDAMINE *flore majore, elatior. Tourn.* Taller Ladies Smock, with a larger Flower.
7. CARDAMINE *Sicula, foliis fumariæ. Tourn. Sicilian* Ladies Smock, with Fumitary-leaves.
8. CARDAMINE *montana, aſari folio. Tourn.* Mountain Ladies Smock, with an Aſarabacca-leaf.
9. CARDAMINE *Alpina minor, reſedæ folio. Tourn.* Small Ladies Smock of the *Alpes*, with a baſe wild Rocket-leaf.
10. CARDAMINE *hirſuta, chelidonii folio, flore purpuraſcente. Tourn.* Hairy Ladies Smock, with a Celandine-leaf, and purpliſh Flower.
11. CARDAMINE *glabra, chelidonii folio. Tourn.* Smooth Ladies Smock, with a Celandine-leaf.
12. CARDAMINE *Alpina prima trifolia. Cluſ.* The firſt three-leafed Ladies Smock of the *Alpes*.
13. CARDAMINE *Græca, chelidonii folio rarius & profundius inciſo, flore albo. Tourn. Cor. Greek* Ladies Smock, with a Celandine-leaf, that has but few and deep Jags, and a white Flower.

The two firſt Sorts are common in moſt of the moiſt Meadows in *England*; they flower the Beginning of *May*; and altho' there is no great Beauty in thoſe Flowers, yet I thought proper to mention them, in order to introduce the third Sort, which is a very beautiful Plant, continuing a long Time in Flower, and is a very proper Plant for cold North Borders, or a wet Soil, where few others will grow; and hereby we may render the pooreſt and worſt Soil productive of Beauties, did we but carefully attend to the adapting proper Plants for it, and not endeavour to force it to produce Things which require a quite contrary Soil. The firſt Sort is ſometimes uſed in Medicine.

The fourth and fifth Sorts grow wild in *England*; but are ſometimes allowed a Place in Gardens for Variety-ſake. When the Seeds of theſe Plants are ripe, the Pods burſt on the firſt Touch, and ſcatter the Seeds all around. If theſe Plants are put in a ſhady Border, and permitted to ſhed their Seeds, they will maintain themſelves without any Care.

The ſixth Sort grows in marſhy Places, and in ſtanding Waters; ſo is rarely kept in Gardens.

The ſeventh Sort is not a Native of *England*, yet will endure the ſevereſt Cold of this Climate in a warm Border; where, if it is permitted to ſhed its Seeds, it will maintain its Place without any farther Care.

The other Sorts are Natives of the *Alpes* and *Pyrenean* Mountains (except the laſt, which was diſcovered by Dr. *Tournefort* in *Greece*). They are all extremely hardy: their Seeds ſhould be ſown ſoon after they are ripe, in a moiſt ſhady Situation, where the Plants will ſoon appear, and will require no other Care, but to clear them from Weeds; and if their Seeds are permitted to ſcatter, the Plants will come up better, than if ſown. Theſe Varieties are preſerved in botanic Gardens, and ſome of them merit a Place in ſome ſhady Part of every curious Garden, for their odd Manner of caſting forth their Seeds on the ſlighteſt Touch, when the Pods are ripe; which often ſurpriſes Strangers, who attempt to gather the Seeds.

CARDIACA; [of Καδίρα, *Gr.* the *Heart.*] Mother-wort.

The *Characters* are;

It hath a labiated Flower conſiſting of one Leaf, whoſe upper Lip is imbricated (with Pieces laid one over another in the manner of Tiles) and is much longer than the under Lip, which is cut into three parts. Out of the Flower-cup ariſes the Pointal, attended with four Embryo's, which afterwards become ſo many angular Seeds. To which may be added, the Flower-cup is beſet with ſmall Spines.

The *Species* are;

1. CARDIACA. *J. B.* 3. 320. Common Motherwort.
2. CARDIACA *flore albo. Tourn.* Motherwort with a white Flower.
3. CARDIACA *criſpa. Raii Hiſt.* Curled Motherwort.

Theſe Plants are preſerved in botanic Gardens for the ſake of Variety. The firſt is often found wild in *England*; but it is only near Gardens, from whence it was ejected. The ſecond is a Variety of the firſt, from which it only differs in the Colour of the Flower. The third Sort differs from the two former, in having fine curled Leaves.

All theſe are very hardy Plants, which will ſow themſelves where-ever they are introduced, ſo as to become Weeds in the Place. The Seeds of theſe Plants may be ſown the Beginning of *March*, on almoſt any Soil, or in any Situation; where the Plants will come up in *April*, and, if kept clear from Weeds, will thrive exceedingly. When they are large enough to tranſplant, they ſhould be removed, and planted eighteen Inches or two Feet aſunder, becauſe they will grow pretty large. If the Weather ſhould prove dry, when they are tranſplanted, they ſhould be watered, until they have taken new Root; after which time they will require no farther Care, than to keep them clear from Weeds; and the ſecond Year they will flower, and produce ripe Seeds. The firſt Sort, being a medicinal Plant, is pretty much cultivated in the Phyſicgardens near *London*, from whence the Markets are ſupplied with the Herb. The other two Sorts are only preſerved in botanic Gardens for the Sake of Variety.

CARDINALS FLOWER. *Vide* Rapuntium.

CARDUUS. Thiſtle.

The *Characters* are;

The Leaves grow alternately on the Branches, and are prickly, and the Heads are for the moſt part ſquamoſe and prickly.

The *Species* are;

1. CARDUUS *albis maculis notatus, vulgaris. C. B.* The milky or holy Thiſtle.
2. CARDUUS *nutans. J. B.* The muſk or nodding Thiſtle.
3. CARDUUS *eriocephalos. Dod.* The woolly-headed Thiſtle.
4. CARDUUS *galactites. J. B.* 3. 54. The milky Thiſtle.
5. CARDUUS *humilis alatus, ſive Carduus Mariæ, annuus, folio lituris obſcuris notato. H. Cath.* Dwarf annual Ladiesthiſtle, with winged Stalks, and dark ſpotted Leaves.

6. CARDUUS *tomentoſus, acanthi folio, vulgaris. Tourn.* Common Cotton Thiſtle.

7. CARDUUS *ſtellatus, ſive Calcitrapa. J. B.* Common Star-thiſtle.

8. CARDUUS *ſtellatus, ſive Calcitrapa, flore albo. H. R. Par.* Star-thiſtle with a white Flower.

9. CARDUUS, *ſeu Polyacantha vulgaris. Tourn.* The ſuppoſed true Fiſh-thiſtle.

10. CARDUUS *Creticus tomentoſus, acanthi folio, flore magno purpuraſcente. Tourn. Cor.* Woolly Thiſtle of *Candy*, with an Acanthus Leaf, and a large purpliſh Flower.

Theſe Sorts of Thiſtles grow wild in many Parts of *England*; the firſt commonly upon the Sea Coaſts, but the ſecond uſually upon arable Land in many Places; the laſt is leſs common than either of the former, being found but in few Places in *England*. Theſe, and all the other Sorts of Thiſtles, may be cultivated by ſowing their Seeds in the Spring in almoſt any Soil, and will flower and ſeed the ſecond Year, and ſoon after periſh, moſt of them being biennial Plants: The firſt Sort is ſometimes uſed in Medicine, and is call'd in the Diſpenſatory *Carduus Mariæ*.

The fourth Sort grows in *Spain*, *Italy*, and the South of *France*; but will not endure the Cold of our Winters, unleſs in a dry Soil, and a warm Situation.

The fifth Sort is a Native of *Sicily*; but if once planted in a Garden, and ſuffered to ſhed its Seed, will maintain its Place.

The ſixth Sort is very common upon the Sides of dry Banks, and other uncultivated Places in diverſe Parts of *England*. Of this Kind there are a great Variety in *France*, *Spain*, *Italy*, and other warm Countries: many of which have been introduced into the botanic Gardens for the ſake of Variety; but are not allowed a Place in any other Gardens.

The ſeventh Sort is found on Dunghils, and the Sides of Banks in ſeveral Parts of *England*. This Plant is greatly uſed in *France*, as a medicinal Herb; and is judged febrifugous, vulnerary, and aperitive: of late Years it has been introduced amongſt the medicinal Plants in *England*; but the Virtues are not ſo generally known, as in *France*, where it has been long in Uſe.

All theſe Plants delight to grow on barren uncultivated Places; ſo whoever hath a mind to cultivate any of the Species, ſhould ſow their Seeds on a Bed of light undunged Earth in the Spring of the Year, where they are deſigned to remain; for they do not thrive ſo well, when they are tranſplanted. When the Plants are come up, they ſhould be thinned, ſo as to leave them eighteen Inches or two Feet aſunder; and if they are kept clear from Weeds, it is all the Culture which they will require. The ſecond Year they will flower in *June* and *July*, and in *Auguſt* they will perfect their Seeds, and the Roots will ſoon after decay; ſo that to have a Succeſſion of theſe Plants, their Seeds muſt be ſown every Year.

The ninth Sort is ſomewhat tenderer than the others; ſo ſhould have a warmer Situation; otherwiſe it will be deſtroyed, if the Winter ſhould prove ſevere. This doth not ſpread ſo much as the other Kinds; but will grow upright to the Height of four or five Feet; and having Leaves regularly placed on the Stalks, from the Ground to their Heads, makes an agreeable Appearance, and merits a Place in a Garden, for the ſake of Variety.

CARDUUS BENEDICTUS; *vide* Cnicus.

CARDUUS FULLONUM; *vide* Dipſacus.

CARLINA, The Carline Thiſtle.

The *Characters* are;

It hath for the moſt part a radiated Flower, from whoſe Diſk ariſe many Florets, which reſt upon the Embryo's; but the plain Petals, which ariſe from the Crown, have no Embryo's fixed to them: the Flower-cup is large and prickly, incloſing the Embryo's. Theſe Embryo's afterward become Seeds, which have a Down adhering to them, and each is ſeparated by an imbricated Leaf.

The *Species* are;

1. CARLINA *acaulos, magno flore albo. C. B.* Carline Thiſtle without Stalks, and a large white Flower.

2. CARLINA *acaulos, magno flore purpureo. C. B.* Carline Thiſtle without Stalks, and a large purple Flower.

3. CARLINA *ſylveſtris vulgaris. Cluſ.* Common wild Carline Thiſtle.

4. CARLINA *acaulos, flore magno, radice perenni, Montis Aurei. H. R. Par.* Perennial Carline Thiſtle without Stalks, of *Mount d'Or*.

5. CARLINA *acaulos gummifera. C. B. P.* Gum-bearing Carline Thiſtle without Stalks, commonly called the white Chameleon.

6. CARLINA *cauleſcens, magno flore albicante. C. B. P.* Stalky Carline Thiſtle, with a large whitiſh Flower.

7. CARLINA *cauleſcent, magno flore rubente. C. B. P.* Stalky Carline Thiſtle, with a large reddiſh Flower.

8. CARLINA *polycephalus alba. C. B. P.* Many-headed white Carline Thiſtle.

9. CARLINA *ſylveſtris, flore aureo, perennis. H. L.* Wild perennial Carline Thiſtle, with a golden Flower.

10. CARLINA *ſylveſtris minor Hiſpanica. Cluſ. H.* Leſſer wild *Spaniſh* Carline Thiſtle.

11. CARLINA *patula, atractylidis folio & facie. Tourn.* Low ſpreading Carline Thiſtle, with a Leaf and the Face of Diſtaff Thiſtle.

12. CARLINA *umbellata Apula. Tourn.* Umbellated Carline Thiſtle of *Apulia*.

Theſe Plants grow in the South of *France*, in *Spain*, and in *Italy*: the third Sort grows wild in *England*, upon chalky Hills, and on uncultivated Places.

All theſe Plants are preſerved by the Curious in Botany, for the ſake of Variety; but they are ſeldom introduced into other Gardens, as they are Plants of no great Beauty, nor are they of any Uſe, (except the fifth Sort, which is placed in the Catalogue of Simples annexed to the College Diſpenſatory, but is rarely ordered in Medicine) ſo far as I could ever diſcover: yet, as they are ſometimes cultivated by curious Perſons, ſo it was thought proper to enumerate their ſeveral Varieties.

They may all be propagated by ſowing of their Seeds in the Spring on a Bed of freſh undunged Earth, where they are deſigned to remain; for, as they ſend forth tap Roots, ſo they will not bear tranſplanting ſo well as moſt other Plants. When the Plants appear above-ground, they ſhould be carefully weeded; and, as they grow in Size, ſo they ſhould be thinned, where they are too cloſe, leaving them about ten Inches or a Foot aſunder. The ſecond Year moſt of theſe Plants will flower: but, unleſs the Summer proves dry, they rarely produce good Seeds in *England*; and as moſt of them decay ſoon after they have flowered, ſo it is pretty difficult to maintain theſe Plants in this Country.

CARNATION; *vide* Caryophillus.

CARPINUS; [ſo call'd of *Carpere*, Lat. *to crop*, becauſe it may be eaſily cropp'd, or its Wood is eaſily cleft.] The Hornbeam or Hardbeam Tree.

The *Characters* are;

It hath Leaves like the Elm *or* Beech Tree: *The Katkins (or Male-flowers) are plac'd at remote Diſtances from the Fruit on the ſame Tree; and the outward Shell of the Fruit is winged.*

The *Species* are;

1. CARPINUS. *Dod.* The common Hornbeam Tree.

2. CARPINUS *foliis ex luteo variegatis.* The ſtrip'd Hornbeam.

3. CARPINUS *ſeu Oſtrya, Ulmo ſimilis, fructu racemoſo, Lupulo ſimilis. C. B.* The Hop Hornbeam.

4. CARPINUS *Virginiana floreſcens. Pluk.* The Virginian flowering Hornbeam.

The firſt of theſe Trees is often cultivated in the Nurſeries to make Hedges for Wilderneſſes and Orangeries; but of late it hath not been ſo much uſed for that Purpoſe, the decay'd Leaves of the Tree continuing on all the Winter, as do thoſe of the *Oak*, rendering them very unſightly in a Pleaſure-Garden, which, together with the perpetual Litter their Leaves make, have almoſt brought them into Diſuſe for this Work, unleſs in large Wilderneſſes, where the Hedges are train'd up to a great Height, for which Purpoſe there is no Tree more uſeful, it being a very tonſile Plant, and may be kept thick from the Bottom to the Height of eighteen or twenty Feet, and will reſiſt the Violence of ſtrong Winds the beſt of any of the deciduous Trees, and is of ſpeedy Growth. The Timber of this Tree is very tough and flexible, and is of excellent Uſe to the Turners, as alſo for making Millcogs, Heads of Beetles, &c. and is very good Fire-wood.

Theſe Trees may be rais'd from the Seeds, which ſhould be ſown early in the *Autumn* in a ſhady Situation, where they will remain in the Ground until *Spring*, and often till the ſecond Year before they appear; for which Reaſon it is generally propagated by Layers, which is the moſt expeditious Method: The Layers ſhould be laid in *Autumn*, and will have taken ſufficient Root to be tranſplanted the *Autumn* following; at which Time they ſhould be tranſplanted into a Nurſery for two or three

Years, where, if they are deſign'd for Hedges, their under Branches ſhould not be taken off, but the Trees train'd flat for that Purpoſe. Theſe Trees are very proper to make Hedges round the Quarters of Exotick Trees and Shrubs; their Leaves abiding till the Spring before they fall off, will greatly fence off the cold Winds from the Quarters, and what Leaves do fall away in *Autumn* ſhould be ſuffer'd to remain upon the Surface of the Ground until Spring, which will keep the Froſt from penetrating ſo deep into the Ground as it would were the Ground intirely bare.

This Tree will grow upon cold barren expos'd Hills, and in ſuch Situations that few other Trees will, and make large Timber Trees, ſo that it may be cultivated to great Advantage in ſuch Places.

The *Hop-Hornbeam* ſheds its Leaves in Winter, with the *Elm*, and other deciduous Trees. This Tree, though but lately known in *England*, yet is very common in *Germany*, growing promiſcuouſly with the common Sort. This is much preferable to the common Sort for Hedges in a Pleaſure-Garden, upon the account of its quitting its Leaves, with other Trees, and thereby doth not make ſo much Litter in the Spring as the other, and will cut full as well.

The *Virginian* flowering *Hornbeam* is ſtill leſs common than the laſt, and only to be ſeen in curious Gardens; it is equally as hardy as the other, and may be increas'd by *Layers*.

CARROTS; *vide* Daucus.

CARTHAMUS; [ſo call'd of καθαίρειν, Gr. *to purge*, becauſe the Seeds of it are Purging.] Baſtard Saffron.

The *Characters* are;

This Plant agrees with the Thiſtle, in moſt of its Characters; but the Seeds of this are always deſtitute of Down.

CARTHAMUS *officinarum flore croceo. Tourn.* Baſtard Saffron or Saf-flower.

This Plant is very much cultivated in many Parts of *Germany* for the Dyers Uſe, and is brought into *England* from thence; it is there ſown in the open Fields in the Spring of the Year; and when come up, they hough it out thin, as we do Turnips, leaving the Plants, about eight or ten Inches diſtant every Way: Theſe Plants, as they grow, divide into a great many Branches, each producing a Flower at the Top of the Shoot, which, when fully blown, they cut or pull off, and dry it, which is the Part the Dyers make uſe of: And this is ſometimes mix'd with Saffron; to which (if it be rightly dry'd, and artfully mix'd) it is ſo alike, as not to be diſtinguiſhed, but by good Judges.

This Plant was formerly cultivated in *England*, particularly in *Glouceſterſhire*, where, I have been informed it ſucceeded very well: Tho' I am ſatisfy'd it muſt be a very good Seaſon if it ripens Seeds well in *England*; for the Flower-Heads are ſo cloſe and compact, that if, in the Seaſon of the Seed's Formation, there happens to be wet Weather, this enters the Boſom of the Florets, and is ſeldom dry'd away before the tender Seeds are deſtroy'd; and altho' the Seeds ſhall many times ſeem very fair and good to outward Appearance, yet, upon breaking them, they are hollow, and deſtitute of Kernels. This Seed is ſometimes uſed Medicine; therefore ſuch People as purchaſe it for that Purpoſe, ſhould be careful that they be found. The Florets of this Plant (which are the Parts the Dyers uſe) have been ſometimes put into Puddings, to colour them; and at the Time when it was cultivated in *England*, the poorer Sort of People in the Country us'd to gather it for that Purpoſe, until they put in ſuch Quantities into their Puddings, that it purged them, which occaſion'd their leaving it off.

CARUI, [ſo call'd of Κὰρ, Gr. the *Head*, as tho' good for the Head; but others derive the Name from *Caria*, where the Ancients found this Plant.] Caraway.

The *Characters* are;

It hath winged Leaves, which are cut into ſmall Segments, and are placed oppoſite on the Stalks, having no Foot-ſtalk; the Petals of the Flowers are bifid, and ſhap'd like a Heart; the Seeds are long, ſlender, ſmooth, and furrow'd.

The *Species* are;

1. CARUI. *Cæſalp.* The common Caraway.
2. CARUI *ſemine majore. Vaill.* The large ſeeded Caraway.
3. CARUI *foliis tenuiſſimis, Aſphodeli radice. Tourn.* The narroweſt-leav'd Caraway, with Aſphodel Roots.
4. CARUI *Alpinum. C. B.* Alpine Caraway.

The firſt of theſe Sorts is ſometimes found wild in *England*, in rich moiſt Paſtures, eſpecially in *Holland* in *Lincolnſhire*. The other Sorts have been ſent from Abroad, and are only cultivated in curious Gardens of Plants.

Theſe Sorts may be all cultivated by ſowing their Seeds in the Spring of the Yenr in a moiſt rich Soil; and when the Plants are come up, they ſhould be hough'd out to about ſix Inches ſquare, which will greatly ſtrengthen them, and promote their ſeeding plentifully: In the Autumn their Seeds will ripen, at which Time the Plant ſhould be cut up, and laid upon Mats to dry; and then it may be beaten out and dry'd, when it may be put up for Uſe. Theſe Seeds are uſed in Medicine, as alſo in the Confectionary, for making Seed-cakes, *&c.* The firſt Sort only is what's uſed; tho' the Seeds of the ſecond ſeem to be full as good, and are much larger and fairer than the firſt. The other Sorts are only kept in Collections of Plants for the ſake of Variety.

CARYOPHYLLATA; [ſo call'd, becauſe the Root being taken out of the Ground and pounded, early in the Spring, breathes out the fragrant Scent of the *Clove-gilliflower*. It is by the *Italians* call'd *Herba Benedicta*, i. e. *Bleſſed Herb*, on account of its manifold Virtues: We read nothing of this Name among the Ancients; but the Moderns have ſo call'd it. *Boerhaave* ſays, He does not know whether this Plant was known to the Ancients. It is alſo call'd *Sana Mundi*, as tho' it could heal or cleanſe the whole World.] Avens or Herb-Bennet.

The *Characters* are;

It hath pennated (or winged) Leaves ſomewhat like thoſe of Agrimony: The Cup of the Flower conſiſts of one Leaf, which is cut into ten Segments; the Flower conſiſts of five Leaves, which ſpread open in Form of a Roſe; the Seeds are form'd into a globular Figure, each of which hath a Tail to it; the Roots are perennial, and ſmell ſweet.

The *Species* are;

1. CARYOPHYLLATA *vulgaris. C. B.* Common Avens.
2. CARYOPHYLLATA *montana flore luteo magno. J. B.* Mountain Avens with large yellow Flowers.
3. CARYOPHYLLATA *montana purpurea. Ger. Emac.* Mountain Avens with purple Flowers.
4. CARYOPHYLLATA *montana flore luteo nutante. C. B.* Mountain Avens with yellow binding Flowers.
5. CARYOPHYLLATA *Alpina, Chamædryos folio. Hiſt. Oxon.* Mountain Avens with Germander Leaves.
6. CARYOPHYLLATA *vulgaris majore flore. C. B.* Avens with large Flowers.
7. CARYOPHYLLATA *pentaphyllæa. J. B.* Cinquefoil-Avens.
8. CARYOPHYLLATA *Virginiana, albo flore minore radice inodora. H. L. Virginian* Avens with ſmall white Flowers, whoſe Roots have no Scent.

The firſt, third, fourth, fifth, ſixth and ſeventh Sorts are found growing wild in *England*, *Scotland* and *Ireland*; but the ſecond Sort was brought from the *Alps*, and the eighth from *Virginia*: Theſe Sorts may be all cultivated in a Garden, by tranſplanting their Roots from the Places of their Growth, into a moiſt ſhady Part of the Garden, where they will thrive exceedingly; which is the beſt Method to procure them, for their Seeds commonly remain two Years in the Ground before they appear. The firſt Sort (which is that commonly uſed in Medicine) is ſo common in *England*, that it hardly deſerves a Place in a Garden; but the ſecond, third, fourth and ſixth Sorts are worthy a Place in ſome moiſt ſhady Border where few other Things will grow; and ſerve to add to the Variety, eſpecially ſince they require no Care or Trouble in their Culture, but only every *Michaelmas* to divide and tranſplant their Roots.

CARYOPHYLLUS; [ſo call'd, from their having the Scent of *Cloves*] Clove-gilliflowers or Carnations.

The *Characters* are;

It hath an intire oblong, cylindrical, ſmooth Cup, which is indented at the Top; the Petals of the Flower are narrow at Bottom, and broad at the Top, and are for the moſt part lacinated (or cut) about the Edges; the Seed-veſſel is of a cylindrical Figure, containing many flat rough Seeds.

This Genus may be divided into three Claſſes, for the better explaining them to Perſons unacquainted with *Botany*; which alſo will be as neceſſary for the right underſtanding their Culture.

1. **Caryophyllus** *hortenſis.* The Clove-gilliflower or Carnation.
2. **Caryophyllus** *tenuifolius plumarius*, or Pinks.
3. **Caryophyllus** *barbatus*, or Sweet-Williams.

I ſhall treat of theſe three Claſſes ſeparately, that I may the better explain their ſeveral Methods of Culture: And firſt, I ſhall begin with the *Carnation* or *Clove-gilliflower*; theſe the Floriſts diſtinguiſh again into four Claſſes.

The firſt they call *Flakes*; theſe are of two Colours only, and their Stripes are large, going quite through the Leaves.

The ſecond are call'd *Bizarrs*; theſe have Flowers, ſtrip'd or variegated with three or four different Colours.

The third are call'd *Piquettes*; theſe Flowers have always a white Ground, and are ſpotted (or pounced, as they call it) with ſcarlet, red, purple, or other Colours.

The fourth are call *Painted Ladies*; theſe have their Petals of a red or purple Colour on the upper-ſide, and are white underneath.

Of each of theſe Claſſes there are numerous Varieties; but chiefly of the *Piquettes*, which of late Years have been in greater Eſteem than any of the other Kinds. To enumerate the Varieties of the chief Flowers in any one of theſe Claſſes, would be needleſs, ſince every Country produces new Flowers almoſt every Year; ſo that thoſe Flowers which at their firſt raiſing were greatly valu'd, are in two or three Years become ſo common, as to be of little Worth, eſpecially if they are defective in any one Property. Therefore (where Flowers are ſo liable to Mutability, either from the Fancy of the Owner, or that better Kinds are yearly produced from Seeds, which, with good Floriſts, always take Place of older or worſe Flowers, which are turn'd out of the Garden, to make Room for them) it would be but ſuperfluous in this Place to give a Liſt of their Names, which are generally borrow'd either from the Names and Titles of Noblemen, or from the Perſon's Name, or Place of Abode, who rais'd it; I ſhall only beg Leave to mention two or three old deſcrib'd Sorts, by way of Introduction, and ſhall then proceed.

1. **Caryophyllus** *altilis major. C. B.* The Clove-gilliflower.
2. **Caryophyllus** *maximus ruber. C. B.* The large Baſtard Clove-gilliflower.
3. **Caryophyllus** *maximus, alter lato porri folio. H. R. Par.* The broad-leav'd Carnation or Gilliflower.

The firſt of theſe Sorts is the true Clove-gilliflower, which hath been for a long time ſo much in Uſe for making a Cordial Syrup, *&c.* of which there are two or three Varieties commonly brought to the Markets, which differ greatly in their Goodneſs; ſome of them having very little Scent, when compar'd with the true Sort: the large Kind hath been much plentier ſome Years ſince than at preſent: This uſed to burſt the Pods, and their Petals hang loping about in ſuch a manner, that the People did not care to buy them in the Market, which was the Reaſon it hath not been cultivated ſo much of late. The third Sort is only to be found in ſuch ſmall Gardens as raiſe great Quantities of theſe Flowers from Seed, to ſupply the Markets in the Spring of the Year: This being a very hardy Kind, and their Leaves being ſo broad, and the Plants ſo vigorous, that the People who are wholly unacquainted with theſe Flowers, make choice of theſe as the moſt promiſing Plants; whereas they ſeldom have more than four or five Leaves in a Flower, and thoſe are very ſmall, and ill-colour'd: The firſt of theſe, *viz.* the Clove-gilliflower, is worthy of a Place in every good Garden; but of late there have been ſo many new Kinds produc'd from Seeds, which are very fine and large, that moſt of the old Sorts have been excluded the Gardens of the Floriſts.

Theſe Flowers are propagated either from Seeds, (by which new Flowers are obtain'd) or from Layers, for the Increaſe of thoſe Sorts which are worthy maintaining: But I ſhall firſt lay down the Method of propagating them from Seed, which is thus:

Having obtain'd ſome good Seeds, either of your own ſaving, or from a Friend that you can confide in; in the Beginning of *April*, prepare ſome Pots, or Boxes (according to the Quantity of Seed you have to ſow); theſe ſhould be filled with freſh light Earth, mix'd with very rotten Neats Dung, which ſhould be well incorporated together; then ſow your Seeds thereon, (but not too thick) covering it about a Quarter of an Inch with the ſame light Earth, placing the Pots or Caſes ſo as to receive the Morning Sun only, till eleven of the Clock, obſerving alſo to refreſh the Earth with Water ſo often as it may need it: In about a Month's Time your Plants will come up, and, if kept clear from Weeds, and duly water'd, will be fit to be tranſplanted in the Beginning of *June*; at which Time you ſhould prepare ſome Beds (of the ſame Sort of Earth as was directed to ſow them in) in an open airy Situation, in which you ſhould plant them at about three Inches ſquare, obſerving to water and ſhade them, as the Seaſon may require, being careful alſo to keep them clear from Weeds: In theſe Beds they may remain until the Beginning of *Auguſt*, by which Time they will have grown ſo large as alſo to meet each other; then prepare ſome more Beds of the like good Earth, (in Quantity proportionable to the Flowers you have rais'd) in which you ſhould plant them at ſix Inches Diſtance each Way, and not above four Rows in each Bed, for the more conveniently laying ſuch of them as may prove worthy preſerving; for in theſe Beds they ſhould remain to flower.

The Allies between theſe Beds ſhould be two Feet wide, that you may paſs between the Beds to weed and clean them. When your Flowers begin to blow, you muſt look over them to ſee if any of them profer to make good Flowers; which ſo ſoon as you diſcover, you ſhould lay down all the Layers upon them: Thoſe which are well mark'd, and blow whole without breaking their Pods, ſhould be reſerv'd to plant in Borders, to furniſh you with Seed; and thoſe which burſt their Pods, and ſeem to have good Properties, ſhould be planted in Pots, to try what their Flowers will be, when manag'd according to Art: And it is not till the ſecond Year that you can pronounce what the Value of a Flower will be, which is in Proportion to the Goodneſs of its Properties: Which, that you may be well acquainted with what the Floriſts call good Properties, I ſhall here ſet down.

1. The Stem of the Flower ſhould be ſtrong, and able to ſupport the Weight of the Flower without hanging down.
2. The Petals (or Leaves) of the Flower ſhould be long, broad, and ſtiff, and pretty eaſy to expand, or (as the Floriſts term 'em) ſhould be free Flowers.
3. The middle Pod of the Flower ſhould not advance too high above the other Part of the Flower.
4. The Colours ſhould be bright, and equally mark'd all over the Flower.
5. The Flower ſhould be very full of Leaves, ſo as to render it, when blown, very thick and high in the Middle, and the Outſide perfectly round.

Having made choice of ſuch of your Flowers as promiſe well for the large Sort, theſe you ſhould mark ſeparately for Pots, and the round whole blowing Flowers for Borders; you ſhould pull up all ſingle Flowers, or ſuch as are ill-colour'd and not worth preſerving, that your good Flowers may have the more Air and Room to grow ſtrong; theſe being laid, ſo ſoon as they have taken Root, (which will be ſome Time in *Auguſt*) they ſhould be taken off, and planted out, thoſe that blow large, in Pots, and the other in Borders, (as hath been already directed.) But I ſhall now proceed to give ſome Directions for propagating theſe Flowers by *Layers*, and the neceſſary Care to be taken, in order to blow them fair and large.

The beſt Seaſon for laying theſe Flowers is in *June*, as ſoon as the Shoots are ſtrong enough for that Purpoſe, which is perform'd in the following Manner: After having ſtript off the Leaves from the lower-part of the Shoot intended to be layed, make choice of a ſtrong Joint about the middle Part of the Shoot, (not too near the Heart of the Shoot, nor in the hard Part next the old Plant) then with your Penknife make a Slit in the middle of the Shoot from the Joint upwards half way to the other Joint, or more, according to their Diſtance, then with your Knife cut the Tops of the Leaves, and alſo cut off the ſwelling Part of the Joint where the Slit is made, (which might otherwiſe prevent their puſhing out Roots); and having looſened the Earth round the Plant, and, if need be, rais'd it with freſh Mould, ſo that it may be level with the Shoot intended to be layed, leſt by forcing down the Shoot you ſplit it off, then with your Finger make a hollow Place in the Earth, juſt where the Shoot is to come, and with your Thumb and Finger bend the Shoot gently into the Earth, obſerving to keep the Top as upright as poſſible, that the Slit may be open; and being provided with forked Sticks for that Purpoſe, thruſt it into the Ground, ſo that the forked-part may take hold of the *Layer*, in order to keep it down in its proper Place; then gently cover the Shank of the *Layer* with the ſame Sort of Earth, giving it a gentle watering, to ſettle the Earth about it, obſerving to repeat the ſame as often as is neceſſary, in order to promote their rooting. In about five or ſix Weeks after this, the *Layers* will have taken Root ſufficient to be tranſplanted; againſt which Time you ſhould be provided with proper Earth for them, which may be compos'd after the following manner.

Make choice of ſome good Up-land Paſture, or a Common that is of a hazel Earth, or light ſandy Loam; dig from the Surface of this your Earth about eight Inches deep, taking all the Turf with it, let this be laid in a Heap to rot and mellow, turning it once a Month, that it may ſweeten; then mix about a third-part of rotten Neats-dung, or, for want of that, ſome rotten Dung from a Cucumber or Melon-bed; let this be well mix'd together; and if you can get it Time enough beforehand, let them lie mix'd ſix or eight Months before it is uſed, turning it ſeveral Times, the better to incorporate their Parts.

Obſerve, That altho' I have mention'd this Mixture as the beſt for theſe Flowers, yet you muſt not expect to blow your Flowers every Year equally large, in the ſame Compoſition: Therefore, ſome People who are extremely fond of having their Flowers ſucceed well, alter their Compoſitions every Year, in this Manner, *viz.* one Year they mix the freſh Earth with Neats-dung, which is cold; the next Year with rotten Horſe-dung, which is of a warmer Nature, adding thereto ſome white Sea-ſand, to make the Earth lighter.

But for my part, I ſhould rather adviſe the planting two or three *Layers* of each of your beſt Kinds in a Bed of freſh Earth not over-dung'd; which Plants ſhould only be ſuffer'd to ſhew their Flowers, to prove them right in their Kind; and when you are ſatisfied in that Particular, cut off the Flower Stems, and don't ſuffer them to ſpend the Roots in blowing; by which means you'll greatly ſtrengthen your *Layers*. And it is from theſe Beds I would make choice of ſome of the beſt Plants for the next Year's blowing, always obſerving to have a Succeſſion of them yearly; by which means you may blow every Year fine, ſuppoſing the Seaſon favourable: For it is not reaſonable to ſuppoſe that the *Layers* taken from ſuch Roots as have been exhauſted in producing large Flowers, and have been forc'd by Art beyond their natural Strength, ſhould be able to produce Flowers equally as large as their Mother-Root did the Year before, or as ſuch *Layers* as are freſh from a poorer Soil, and in greater Health, can do. But this being premis'd, let us proceed to the potting of theſe *Layers*, which (as I ſaid before) ſhould be done in *Auguſt*.

The common Method uſed by moſt Floriſts, is, to plant their *Layers*, at this Seaſon, two in each Pot, (the Size of which Pots are about nine Inches over in the Clear at the Top); in theſe Pots they are to remain for Bloom; and therefore, in the Spring of the Year, they take off as much of the Earth from the Surface of the Pots as they can, without diſturbing their Roots, filling the Pots up again with the ſame good freſh Earth as the Pots were before fill'd with. But there is ſome Difficulty in ſheltering a great Quantity of theſe Flowers in Winter, when they are planted in ſuch large Pots, which in moſt Winters they will require, more or leſs; my Method therefore is, to put them ſingly into Halfpenny Pots in Autumn, and in the Middle of *October* to ſet theſe Pots into a Bed of old Tanners-bark which has loſt its Heat, and cover them with a common Frame (ſuch as is uſed for raiſing Cucumbers and Melons); and in one of theſe Frames, which contains three Lights, may be ſet an hundred and fifty of theſe Pots: In theſe Frames you may give them as much free Air as you pleaſe, by taking off the Lights every Day when the Weather is mild, and putting them on in bad Weather, and great Rains: And if the Winter ſhould prove ſevere, it is but only covering the Glaſſes with Mats, Straw, or Peaſe-haulm, which will effectually preſerve your Plants in the utmoſt Vigour.

In the Middle of *February*, if the Seaſon is good, you muſt tranſplant theſe Layers into Pots for their Bloom (which ſhould be about ſeven Inches over at the Top in the Clear); in the doing of which, obſerve to put ſome Pot-ſherds or Oyſter-ſhells over the Holes in the Bottoms of the Pots to keep the Earth from ſtopping them, which would detain the Water in the Pots to the great Prejudice of the Flowers; then fill theſe Pots about half way with the ſame good Compoſt as was before directed, and ſhake the Plants out of the ſmall Pots with all the Earth about the Roots; then, with your Hands, take off ſome of the Earth round the Outſide of the Ball, and from the Surface, placing one good Plant exactly in the Middle of each Pot, ſo that it may ſtand well as to Height, *i. e.* not ſo low as to bury the Leaves of the Plant with Earth; nor ſo high that the Shank may be above the Rim of the Pot; then fill the Pot up with the Earth before-mention'd, cloſing it gently to the Plant with your Hands, giving it a little Water, if the Weather is dry, to ſettle the Earth about it; then place theſe Pots in a Situation where they may be defended from the North Wind, obſerving to give them gentle Waterings, as the Seaſon may require.

In this Place they may remain till about the Middle of *April*, at which Time you ſhould prepare a Stage of Boards to ſet the Pots upon, which ſhould be ſo order'd, as to have little Ciſterns of Water round each Pot, to prevent the Inſects from getting to your Flowers in their Bloom; which if they are ſuffer'd to do, will mar all your Labour, by deſtroying all your Flowers in a ſhort Time: The chief and moſt miſchievous Inſect in this Caſe, is, the Earwig, which will gnaw off all the lower Parts of the Petals of the Flowers, (which are very ſweet) and thereby cauſe the whole Flower to fall to Pieces: But ſince the making one of theſe Stages is ſomewhat expenſive, and not very eaſy to be underſtood by ſuch as have never ſeen them, I ſhall therefore deſcribe a very ſimple one, which I have uſed for ſeveral Years, which anſwers the Purpoſe full as well as the beſt and moſt expenſive one can do: Firſt, prepare ſome common flat Pans, about a Foot over, and three Inches deep; place theſe two and two oppoſite to each other, at about two Feet Diſtance; and at every eight Feet in length-ways, two of theſe Pans; in each of theſe whelm a Flower-pot, which ſhould be about ſix Inches over at the Top, upſide-down, and lay a flat Piece of Timber, about two Feet and a half long, and three Inches thick, croſs from Pot to Pot, till you have finiſh'd the whole Length of your Stage; then lay your Planks lengthways upon theſe Timbers, which will hold three Rows of Planks for the Size-pots which were order'd for the *Carnations*: And when you have ſet your Pots upon the Stage, fill the flat Pans with Water, always obſerving, as it decreaſes in the Pans, to repleniſh it, which will effectually guard your Flowers againſt Inſects.

This Stage ſhould be plac'd in a Situation open to the South-Eaſt, but defended from the Weſt Winds, but ſhould not be too near Trees, Walls, nor Buildings. About this Time, *viz.* the Middle of *April*, your Layers will begin to ſhoot up for Flower; you muſt therefore be provided with ſome ſquare Deal Sticks about four Feet and a half long, which ſhould be thicker toward the Bottom, and planed off taper at the Top: Theſe Sticks ſhould be carefully ſtuck into the Pots as near as poſſible to the Plant without injuring it; then with a ſlender piece of Baſs-mat faſten the Spindle to the Stick to prevent its being broke: This you muſt often repeat, as the Spindle advances in Height; and alſo obſerve to pull off all ſide Spindles as they are produc'd, and never let more than two Spindles remain upon one Root, nor above one, if you intend to blow exceeding large. Toward the Beginning of *June* your Flowers will have attain'd their greateſt Height, and their Pods will begin to ſwell, and ſome of the earlieſt begin to open on one Side: you muſt therefore obſerve to let it open in two other Places at equal Angles: This muſt be done ſo ſoon as you perceive the Pod break, otherwiſe your Flower will run out on one Side, and be paſt recovering, ſo as to make a complete Flower in a ſhort time; and in a few Days after the Flowers begin to open, you muſt cover them with Glaſſes which are made for that purpoſe, in the following manner:

Upon the Top of the Glaſs, exactly in the Center, is a Tin Collar or Socket about three Fourths of an Inch ſquare, (this is for the Flower-ſtick to come through); to this Socket are ſoldered eight Slips of Lead at equal Diſtances, which are about ſix Inches and a half long, and ſpread open at the Bottom about four Inches aſunder; into theſe Slips of Lead are faſten'd Slips of Glaſs, cut according to the Diſtances of the Lead, which when they are fix'd in, are border'd round the Bottom with another Slip of Lead quite round, ſo that the Glaſs hath eight Angles with the Socket in the Middle, and ſpread open at the Bottom about eleven Inches.

When your Flowers are open enough to cover with theſe Glaſſes, you muſt make a Hole through your Flower-ſtick exactly to the Height of the under part of the Pod, through which you ſhould put a Piece of ſmall Wire about ſix Inches long, making a Ring at one End of the Wire to contain the Pod, into which Ring you ſhould fix the Stem of the Flower; then cut off all the Tyings of Baſs, and thruſt the Stem of the Flower ſo far from the Stick, as may give convenient Room for the Flower to expand without preſſing againſt the Stick; to which Diſtance you may fix it by turning your Wire ſo as not to draw back thro' the Hole; then make another Hole thro' the Stick, at a convenient Diſtance above the Flower, thro' which you ſhould put a Piece of Wire, an Inch and a half long, which is to ſupport the Glaſſes from ſliding down upon the Flowers; and be ſure to obſerve, that the Glaſſes are not plac'd ſo high as to admit the Sun and Rain under them to the Flowers, nor ſo low as to ſcorch their Leaves with the Heat. At this time alſo, or a few Days after, as you ſhall judge neceſſary, you ſhould cut ſome ſtiff Paper, Cards, or ſome ſuch Thing, into Collars about four Inches over, and exactly round, cutting a Hole in the Middle of it about three Fourths of an Inch Diameter, for the Bottom of the Flower to be let through; then place theſe Collars about them to ſupport the Petals of the Flower from hanging down: This Collar ſhould be plac'd withinſide the Calyx of the Flower, and ſhould be ſupported thereby: Then obſerve from Day to Day what Progreſs your Flowers make; and if one Side comes out faſter than the other, you ſhould turn the Pot about, and ſhift the other Side towards the Sun; and alſo if the Weather proves very hot, you ſhould ſhade the Glaſſes in the Heat of the Day with Cabbage-leaves, *&c.* to prevent their being ſcorch'd, or forc'd out too ſoon; and when the middle Pod begins to riſe, you ſhould take out the Calyx thereof with a Pair of Nippers made for that Purpoſe; but this ſhould not be done too ſoon, leſt the middle part of the Flower ſhould advance too high above the Sides, which will greatly diminiſh the Beauty of it: And you ſhould alſo obſerve whether there are more Leaves in the Flower than can properly be expanded for Want of Room; in which Caſe you ſhould pull out ſome of the lowermoſt or moſt unlikely Leaves to ſpread, drawing out and expanding the others at the ſame time: And when your Flowers are fully blown, if you cut them off, you ſhould put on a freſh Collar of ſtiff Paper, which ſhould be cut exactly to the Size of the Flower, ſo that it may ſupport the Petals to their full Width, but not to be ſeen wider than the Flower in any Part: When this is put on, you muſt draw out the wideſt Leaves to form the Outſide of the Flower, which altho' they ſhould be in the Middle, (as it often happens) yet by removing the other Leaves they may be drawn down, and ſo the next longeſt Leaves upon them again, that the whole Flower may appear equally globular without any hollow Parts. In the doing of this, ſome Floriſts are ſo curious as to render an indifferent Flower very handſome; and on this depends, in a great meaſure, the Skill of the Artiſt to produce large fine Flowers.

During the flowering Seaſon, particular Care ſhould be taken not to let them ſuffer for want of Water, which ſhould by no means be raw Spring-water; nor do I approve of Compound-waters, ſuch as are inrich'd with various Sorts of Dung, but the beſt and moſt natural Water is that of a fine ſoft River; next to that is Pond-water or Standing-water; but if you have no other but Spring-water, it ſhould be expos'd to the Sun or Air two Days before it is uſed, otherwiſe it will give the Flowers the Canker, and ſpoil them. Thus having been full in the Culture of this noble Flower, I ſhall juſt mention that of the *Pink*, which differs not in the leaſt from that of the *Carnation* in its manner of propagating, but only requires much leſs Care, and need not be potted, growing full as well in good Borders, where they make as elegant a Shew during their Seaſon of Flowering, as any Plant whatever, and afford as agreeable a Scent. The Varieties of theſe are,

The *Damask Pink*, *White Shock*, *Scarlet*, *Pheaſant's-ey'd Pink*, of which there are great Varieties, both with ſingle and double Flowers, the *Old Man's Head*, and the *Painted Lady Pinks*, with ſeveral others. Theſe may be propagated by *Layers* as the *Carnations*, and many of them by Cuttings planted in *July*, or from Seeds, by which Method new Varieties may be obtain'd. The manner of ſowing theſe Seeds being the ſame with the *Carnations*, I ſhall refer back to that, to avoid Repetition, and ſhall proceed to the *China Pink*, which is a Flower of later Date amongſt us than any of the former; which altho' it hath no Scent, yet for the great Diverſity of beautiful Colours which are in theſe Flowers, with their long Continuance in Flower, do merit a Place in every good Garden.

1. CARYOPHYLLUS *Sinenſis ſupinus, leucoii folio, flore vario. Tourn.* The variable *China* or *Indian* Pink.
2. CARYOPHYLLUS *Sinenſis ſupinus, leucoii folio, flore pleno. Boerh. Ind.* The double *China* Pink.

There is a great Variety of different Colours in theſe Flowers, which vary annually as they are produc'd from Seeds, ſo that in a large Bed of theſe Flowers, ſcarcely two of them are exactly alike, and their Colours in ſome are exceeding rich and beautiful; we ſhould therefore be careful to ſave the Seeds from ſuch Flowers only that are beautiful, for they are very ſubject to degenerate from Seeds.

And the Seeds of the double Sort will produce many double Flowers again; but the Seeds of the ſingle will ſcarcely ever produce a double Flower.

Theſe Flowers are only propagated by Seeds, which ſhould be ſown toward the End of *March*, in a Pot or Box of good light Earth, and ſet under a Glaſs to forward its Vegetating; giving it Water as often as you ſhall ſee neceſſary, and in about a Month's Time your Plants will come up, and be of ſome Bigneſs; you muſt therefore expoſe them to the open Air, and in a ſhort Time after prepare ſome Beds of good freſh Earth, (not too ſtiff) in which you may prick out theſe Plants, about three Inches ſquare, obſerving to water and ſhade them, as the Seaſon may require.

In thoſe Beds they may remain until the Middle of *June*, at which Time you may remove and plant them in the Borders of the Pleaſure-garden, being careful to preſerve as much Earth to their Roots as poſſible; and in a Month's Time after they will begin to flower, and continue until the Froſt prevent them. About the Middle or latter End of *Auguſt* their Seeds will begin to ripen, at which Time you ſhould look over them once a Week, gathering off the Pods that are changed brown, and ſpread them on Papers to dry, when you may rub out the Seed, and put it up for Uſe. Tho' theſe Plants are uſually term'd Annuals, and ſown every Year; yet their Roots will abide two or three Years, if ſuffer'd to remain, and will endure the greateſt Cold of our Winters, if planted in a dry Soil, and without any Shelter, as I experienc'd *Anno* 1728, at which Time I had a large Bed of theſe Flowers, which was rais'd a Foot above the Level of the Ground; and altho' its Situation was ſuch that the Sun never ſhone upon it from *October* to *March*, yet I had not one Root deſtroyed in the whole Bed, altho' it ſtood open, and without any Care taken of it.

I ſhall now come to the *Sweet-Williams*, where I ſhall firſt give the Names of a few of them, and proceed to their Culture.

1. CARYOPHYLLUS *barbatus hortenſis latifolius. C. B.* The broad-leav'd Sweet William with red Flowers.
2. CARYOPHYLLUS *barbatus hortenſis latifolius, flore variegato. Boerh. Ind.* The broad-leav'd Sweet William with variegated Flowers.
3. CARYOPHYLLUS *barbatus, flore multiplici. C. B.* The double Sweet William with red Flowers, which burſt their Pods.
4. CARYOPHYLLUS *barbatus, flore multiplici roſeo. C. B.* The Roſe-coloured double Sweet William.
5. CARYOPHYLLUS *barbatus hortenſis anguſtifolius. C. B.* The narrow-leav'd Garden Sweet William, *formerly call'd* Sweet Johns.
6. CARYOPHYLLUS *barbatus hortenſis anguſtifolius, flore verſicolore in eodem ramulo. C. B.* The Sweet John, with various colour'd Flowers on the ſame Branch.
7. CARYOPHYLLUS *barbatus hortenſis anguſtifolius, flore pleno roſeo.* The double Roſe-colour'd Sweet John, or *Fairchild*'s Mule.

The ſingle Kinds of theſe Flowers are generally propagated by Seeds, which muſt be ſown in *March* in a Bed of light Earth, and in *May* they will be fit to tranſplant out; at which time you muſt prepare ſome Beds ready for them, and ſet them at ſix Inches Diſtance every way: In theſe Beds they may remain till *Michaelmas*, at which time they may be tranſplanted into the Borders of the Pleaſure-garden or Wilderneſs: Theſe will flower the next Year in *May*, and will perfect their Seeds in *July* or *Auguſt*, which you ſhould ſave from the beſt-colour'd Flowers for a Supply.

They may be alſo propagated by ſlipping their Roots at *Michaelmas*: But this is ſeldom practis'd; ſince their Seedling Roots will always blow the ſtrongeſt, and new Varieties are obtain'd yearly.

The double Kinds are propagated by *Layers*, as the *Carnations*; they love a middling Soil, not too light, nor too heavy or ſtiff; nor too much dung'd, which very often occaſions their rotting: theſe continue flowering for a long time, and are extremely beautiful, eſpecially the *Mule*, which produces two full Blooms of Flowers, one in *May*, and the other in *July*: This is very ſubject to canker and rot away, eſpecially if planted in a Soil over-wet, or too dry, or if watered with ſharp Spring-water: Theſe Flowers being planted in Pots, are very proper to adorn Court-Yards, at the time they are in Flower.

CASIA, Red-berried Shrub-caſia.

The *Characters* are;

It is Male and Female in different Plants: The Male hath Flowers conſiſting of many Stamina or Threads, without any Petals; theſe are always ſteril: The Female Plants, which have no conſpicuous Flower, produce ſpherical Berries, in which are included Nuts of the ſame Form.

The *Species* are;

1. CASIA *poetica Monſpelienſium, an Theophraſti. Lob. Icon.* 433. *Montpelier* Caſia of the Poets, according to *Lobelius*.
2. CASIA *Hiſpanica procerior, myrti folio. Tourn. Spaniſh* Caſia, with a Myrtle Leaf.

The firſt of theſe Plants grows in Plenty by the Road-ſide in *Spain*, and the South of *France*; where it riſes to the Height of three Feet, and becomes ſhrubby. This was ſuppoſed by *Lobel* to be the *Caſia* of the Poets: but it doth not well agree with the Deſcriptions we have of Caſia; by which it ſhould be a ſweet Herb, and proper to be wrought into Garlands; the Leaves ſhould alſo be inclining to White; in neither of which this Plant doth agree. There are ſome Authors, who ſuppoſe the *Caſia* to be the *Thymelæa lini folio* of *Caſpar Bauhin*: but it is very uncertain what Plant it was, which *Virgil*, in his *Georgics*,

Georgics, mentions under that Name; ſince the Epithets applied by him to the Caſia, will not agree with any Plant we at preſent are acquainted with.

The ſecond Sort was diſcovered by Dr. *Tournefort* in his Travels thro' *Spain*: this grows taller than the former Sort, and hath much broader Leaves.

Both theſe Plants may be propagated by Seeds, which ſhould be ſown in Pots or Boxes filled with freſh Earth: the Seeds ſhould be covered about half an Inch thick with the ſame Earth. If they are ſown in the Autumn ſoon after they are ripe, and the Pots or Boxes placed under a Hot-bed Frame, where they may be ſheltered from hard Froſts, the Plants will come up the following Spring: but if they are kept till the Spring before they are ſown, the Seeds will remain in the Ground a whole Year before the Plants will appear; in which Caſe you ſhould place the Pots or Boxes in a ſhady Situation during the Heat of Summer; but in Winter they muſt be removed under a Hot-bed Frame, as was before directed.

When the Plants are come up, they ſhould be kept clear from Weeds, and in dry Weather they muſt be conſtantly watered; but they ſhould remain unremoved until the following Spring. The Pots or Boxes ſhould be placed, during the Summer Seaſon, where they may have the Morning Sun till Ten of the Clock, and be ſcreened from the Sun in the Heat of the Day: but in Winter they muſt be placed under a Hot-bed Frame, to protect them from hard Froſts; for, while the Plants are ſo young, they will not endure great Cold. The following Spring, about the Beginning of *March*, theſe Plants ſhould be carefully taken up out of the Seed-pots, and each planted in a ſeparate ſmall Pot, filled with freſh Earth, that is not over-ſtrong, obſerving to water them to ſettle the Earth to their Roots; and if you place the Pots on a moderate Hot-bed, it will greatly forward the Plants, and be the moſt ſure Method to preſerve them; provided the Bed is not too hot, and you give them a ſufficient Quantity of Air. In this Hot-bed the Plants may remain until the Beginning of *May*, when you ſhould inure them to bear the open Air by degrees; for about the Middle of that Month, they muſt be removed out, and placed where they may have the Morning Sun, as was directed before.

The following Winter theſe Plants ſhould be ſheltered under a Hot-bed Frame again: but they muſt be expoſed to the open Air conſtantly in mild Weather; for they will require only to be protected from ſevere Cold. In the following Spring ſome of the Plants may be ſhaken out of the Pots, (juſt before they begin to ſhoot) and planted in the full Ground in a warm Situation; where they will endure the Cold of our ordinary Winters very well, and in a Year or two will produce their Flowers; which are ſometimes ſucceeded by Seeds, but they are ſeldom ripened in this Country: but as theſe Plants are liable to be deſtroyed in very cold Winters, ſo it will be proper to keep ſome Plants of each Kind in Pots; which may be ſheltered from the Cold, in order to preſerve the Species.

CASSIA.

The *Characters* are;

It hath a cylindrical, long, taper, or flat Pod, which is divided into many Cells by tranſverſe Diaphragms, in each of which is contain'd one hard Seed, which is for the moſt part lodg'd in a clammy black Subſtance which is purgative: The Flowers conſiſt of five Leaves, which are diſpoſ'd in an orbicular Order.

The *Species* are;

1. Cassia *Americana, foliis ſubrotundis acuminatis. Tourn.* The *American* Caſſia with roundiſh-pointed Leaves.

2. Cassia *Americana fœtida, foliis oblongis glabris. Tourn.* The ſtinking *American* Caſſia with oblong ſmooth Leaves.

3. Cassia *ſylveſtris fœtida, ſiliquis alatis. Plum. Nov. Gen.* The wild ſtinking Caſſia with wing'd Pods, *call'd in the Weſt-Indies French* Guava.

4. Cassia *Marylandica, pinnis foliorum obtuſis, radice repente.* Caſſia from *Maryland*, with blunt Leaves, and a creeping Root.

5. Cassia *Bahamenſis, pinnis foliorum mucronatis, anguſtis, calyce floris non reflexo. Mart. Hiſt. Pl. Dec.* 2. Narrow-leav'd Caſſia of the *Bahama Iſlands*, with a reflex'd Cup to the Flower.

6. Cassia *Barbadenſis, pinnis foliorum mucronatis, calyce floris non reflexo. Ibid.* Barbados Caſſia, with a reflex'd Cup, and pointed Leaves.

7. Cassia *Americana fœdita foliis obtuſis. Tourn.* Stinking *American* Caſſia with blunt Leaves.

8. Cassia *Americana, ſiliquis planis. Plum. Nov. Gen.* *American* Caſſia with ſmooth Pods.

9. Cassia *fiſtula Alexandrina. C. B.* The Purging Caſſia, or Pudding-Pipe-Tree.

Theſe Caſſia's are all propagated by Seeds, which muſt be ſown in a Hot-bed in *February*, and afterwards tranſplanted into Pots, which muſt be plung'd into another Hot-bed, and muſt be kept forward, by removing them from one Hot-bed to another (as was directed for the *Amaranths*). Nor ſhould theſe Plants be ever expos'd to the open Air, if we intend to ſee them flower; they muſt therefore be kept in a warm Stove in Winter, and be carefully manag'd: Many of theſe Plants will flower the ſecond Year, and ſome of them produce ripe Seeds with us; nay, ſometimes, many of them will flower the firſt Year, if they were ſown very early, as the fifth, ſixth, ſeventh and eighth Sorts frequently do; but then they are more apt to decay in Winter, than thoſe that do not flower: The fourth Sort will endure the ſevereſt Cold of the Winter in the open Ground, and increaſes plentifully by the Root: This produces Flowers in the Autumn; but our Summers are not warm enough to ripen their Seeds. The ninth Sort grows to be a very large Tree, not only in *Alexandria*, but alſo in the *Weſt-Indies*: This is what produces the purging Caſſia of the Shops, and may be rais'd by ſowing (freſh Seeds taken out of the Pulp) in a Hot-bed in the Spring of the Year, and muſt be manag'd as the other Sorts: This will grow with us to be a handſome Shrub, but muſt be kept in a warm Stove, otherwiſe it will not endure through the Winter. All theſe Caſſia's love a light ſandy Soil, and in warm Weather muſt be frequently water'd. The third Sort will grow to a great Height in one Seaſon, if it be forwarded in Hot-beds; but is with much Difficulty preſerv'd the Winter through: This has flower'd in *England*, but I have not heard of its producing any Seeds.

CASSIDA, [*i. e.* an *Helmet*] Skull-cap.

The *Characters* are;

The Florets are longiſh, one in each Ala of the Leaves: The Upper-Leaf is galeated (like an Helmet*) with two Auricles adjoining; the Under-leaf, for the moſt part, is divided into two: the* Calyx *having a Cover, contains a Fruit reſembling the Heel of a Slipper or Shoe; which Character, ſingly, might be ſufficient to diſtinguiſh it.*

The *Species* are;

1. Cassida *folio meliſſæ, flore purpureo longiore. Boerh. Ind.* Skull-cap with Leaves like Balm, and long purple Flowers.

2. Cassida *Cretica, fruticoſa, folio catariæ, flore albo. T. Cor.* Shrubby Skull-cap from *Crete*, with Leaves like Catmint, and white Flowers.

3. Cassida *Orientalis, altiſſima, urticæ folio. T. Cor.* The talleſt *Eaſtern* Skull-cap, with Leaves like Nettle.

4. Cassida *Orientalis, folio chamædryos, flore luteo. T. Cor.* *Eaſtern* Skull-cap with Germander Leaves, and yellow Flowers.

There are ſeveral other Varieties of this Plant, which are preſerv'd in curious Gardens of Plants; but theſe here mention'd are the moſt beautiful of them, and beſt worth preſerving in curious Gardens, for their Variety.

They may be all propagated by ſowing their Seeds in an open Bed of light Earth in *March*; and when they come up, may be tranſplanted either into Pots, for the Conveniency of ſheltering them in Winter, or into Borders under warm South Walls, where, if the Soil is dry, they will endure our common Winters abroad very well, but in hard Winters they are liable to be deſtroy'd.

The fourth Sort is the hardieſt of them all, as alſo the moſt beautiful; but this ſeldom produces good Seed in our Country: however, it is very eaſy to increaſe this Plant by Cuttings; or from young Plants, which may be obtain'd from the Branches of the old ones which lie near the Ground, and ſtrike out their Roots from the Joints.

The other three Sorts ripen their Seeds tolerably well with Us, from which young Plants may be annually obtain'd, and alſo by parting their Roots; theſe generally die down to the Surface after Seeding, and freſh Shoots ariſe from the Roots at the ſame time, ſo that the Plants are never deſtitute of green Shoots.

CASSINE. The Caſſioberry-Buſh and *South-Sea* Thea.

1. Cassine *veræ perquam ſimilis arbuſcula, Philyreæ foliis antagoniſtis, ex provincia Carolinienſi. Pluck. Mant.* The Caſſioberry-Buſh.

2. CASSINE *vera Floridanorum, arbuſcula baccifera, alaterni ferme facie, foliis alternatim ſitis, tetrapyrene. Pluk. Mant.* The *South-Sea* Thea-Tree; *vulgo.*

The firſt of theſe Trees is hardy, and will endure our ſevereſt Winters in the open Ground, after they are become woody; therefore it will be proper to ſhelter the young Plants two or three Winters while they are young; after which time they may be tranſplanted abroad in ſome well ſhelter'd Situation, upon a light Soil, where they will thrive exceedingly, and in a few Years produce Flowers. This Tree ſeldom grows to be very large, and therefore ſhould be planted among Trees of a middling Growth. The largeſt of theſe Trees which I have as yet ſeen in *England*, is now growing in the Gardens of that curious and learned Botaniſt *Charles Duboiſe*, Eſq; at *Mitcham* in *Surrey*, which is about ten Feet high, and pretty thick in the Stem; this Tree hath ſtood abroad in an open Situation for ſeveral Years, reſiſting the ſevereſt Winters, and hath flower'd many Years; but I don't remember to have heard of its producing any Fruit.

The ſecond Sort is ſomewhat tenderer than the former, and ſhould not be planted in the full Ground, until the Plants have acquir'd a conſiderable Strength; nor ſhould they be planted in a Situation too much expos'd to the cold Winds, and muſt have a dry ſandy Soil: This Sort differs from the former, in the Manner of producing its Leaves, which are placed alternately on the Branches, whereas the other produces its Leaves by Pairs oppoſite to each other. This is an Evergreen, but the Caſſioberry-buſh ſheds its Leaves in Winter.

Theſe Trees are both of them propagated by ſowing their Seeds, (which are obtain'd from *Carolina*, where they grow in great Plenty near the Sea-Coaſts;) they ſhould be ſown in Pots fill'd with light ſandy Earth, and plung'd upon a gentle Hot-bed, obſerving to water it frequently, until you ſee the Plants appear, which is ſometimes in a Month or five Weeks time, and at other times they will remain in the Ground until the ſecond Year; therefore if the Plants ſhould not come up in two Months time, you ſhould remove the Pots into a ſhady Situation, where they may remain till *October*, being careful to keep them clean from Weeds, and now and then in dry Weather giving them a little Water: Then remove theſe Pots into Shelter during the Winter Seaſon, and in the *March* following put them upon a freſh Hot-bed, which will forward the Seeds in their Vegetation.

When the Plants are come up, they ſhould by degrees be expos'd to the open Air, in order to inure them to our Climate; yet don't expoſe them to the open Sun at firſt, but rather let them have the Morning Sun only, placing them for ſome time where they may be ſhelter'd from cold Winds: They ſhould enjoy a Shelter during the two or three firſt Winters; after which, the Caſſioberry-buſh may be planted abroad: But the *South-Sea* Thea ſhould be kept in Pots a Year or two longer, being ſlower of Growth, and will therefore not have Strength enough to reſiſt the Cold when young.

They may alſo be propagated by laying the younger Branches into the Ground in the Spring, which, if kept water'd, will take Root by the ſucceeding Spring, fit for Tranſplantation; otherwiſe they'll be two Years before they take Root. The Caſſioberry-buſh is by much the eaſieſt Plant of the two to ſtrike.

The *Paraguay* or *South-Sea* Thea is accounted by the *Indians* very wholeſome, and (as I have been inform'd by ſeveral worthy Perſons who reſided for ſeveral Years in *Carolina*) is the only Phyſick the *Indians* uſe, and for which, at certain Times of the Year, they come in Droves ſome hundred Miles diſtant, for the Leaves of this Tree (it not being known to grow at any conſiderable Diſtance from the Sea): Where their uſual Cuſtom is, to make a Fire upon the Ground, and putting a great Kettle of Water thereon, they throw into it a large Quantity of theſe Leaves, and immediately ſet themſelves round the Fire, and with a Bowl that holds about a Pint, they begin drinking round large Draughts, which in a very ſhort time vomits them ſeverely; thus they continue Drinking and Vomiting for the ſpace of two or three Days, until they have ſufficiently cleans'd themſelves; then they gather every one a Bundle of the Tree to carry away with them, and retire to their Habitations. But theſe Gentlemen obſerv'd ſomething very extraordinary in the Operation of this Plant, which was, that in Vomiting, it gave them no Uneaſineſs or Pain, but came away in a full Stream from their Mouths, without ſo much as declining their Heads, or the leaſt Reaching.

Monſieur *Frezier* alſo ſays, That the *Spaniards* who live near the Gold Mines in *Peru*, are obliged frequently to drink of the Herb *Paraguay* or *Mate*, to moiſten their Breaſts, without which they are liable to a ſort of Suffocation, from the ſtrong Exhalations which are continually coming from the Mines.

The ſame Author alſo adds, That the Inhabitants of *Lima*, during the Day-time, make much Uſe of the Herb *Paraguay*, which ſome call St. *Bartholomew*'s Herb, who, they pretend, came into thoſe Provinces, where he made it wholeſome and beneficial; whereas before it was venomous: This (he ſays) is brought to *Lima* dry, and almoſt in Powder.

Inſtead of drinking the Tincture or Infuſion apart, as we drink *Tea*, they put the Herb into a Cup or Bowl made of a *Calabaſh*, tipp'd with Silver, which they call *Mate*; they add Sugar, and pour the hot Water upon it, which they drink immediately, without giving it Time to infuſe, becauſe it turns as black as Ink. To avoid drinking the Herb which ſwims at the Top, they make Uſe of a Silver Pipe, at the End whereof is a Bowl full of little Holes; ſo that the Liquor ſuck'd in at the other End is clear from the Herb. They drink round with the ſame Pipe, pouring hot Water on the ſame Herb, as it is drank off. Inſtead of a Pipe, which they call *Bombilla*, ſome part the Herb with a Silver Separator, call'd *Apartador*, full of little Holes. The Reluctancy which the *French* have ſhewn to drink after all ſorts of People, in a Country where many are Pox'd, has occaſion'd the inventing the Uſe of little Glaſs Pipes, which they begin to uſe at *Lima*. This Liquor (he ſays) in his Opinion, is better than *Tea*; it has a Flavour of the Herb, which is agreeable enough: the People of the Country are ſo uſed to it, that even the pooreſt drink it once a Day, when they riſe in the Morning.

The Trade for this Herb (he ſays) is carried on at *Santa Fé*, whither it is brought up the River of *Plate*. There are two Sorts of it; the one call'd *Yerba de Palos*; and the other, which is finer, and of more Virtue, *Yerba de Camini*: The laſt is brought from the Lands belonging to the *Jeſuits*; the great Conſumption of it is between *La Paz* and *Cuzco*, where it is worth half as much more as the other, which is ſent from *Potoſi* to *La Paz*. There come yearly from *Paraguay* into *Peru* above Fifty thouſand *Arrova's*, Twelve Thouſand Hundred Weight of both Sorts, whereof at leaſt one Third is of the *Camini*, without reckoning Twenty-five thouſand *Arrova's* of that of *Palos* for *Chili*. They pay for each Parcel, containing ſix or ſeven *Arrova's*, four Royals for the Duty call'd *Alcavala*, (being a Rate upon all Goods ſold) which, with the Charge of Carriage, being above Six hundred Leagues, doubles the firſt Price, which is about Two Pieces of Eight; ſo that at *Potoſi* it comes to about Five Pieces of Eight the *Arrova*. The Carriage is commonly by Carts, which carry an hundred and fifty *Arrova's* from *Santa Fé* to *Jujuy*, the laſt Town of the Province of *Tucuman*; and from thence to *Potoſi*, which is an hundred Leagues farther, it is carried on Mules.

What this curious Author has obſerved, on there being two Sorts of this Herb, may very well agree with thoſe two Sorts here mention'd, ſince both of them are generally ſuppoſed to agree in their Qualities, tho' one is much preferable to the other; therefore I imagine the *Yerba de Camini* is what we call *Paraguay* or *South-Sea Thea*; and the *Yerba de Palos*, to be our *Caſſioberry Buſh*, the Leaves of which are extreme bitter, eſpecially when taken green from the Tree, and the Taſte is hardly to be gotten out of the Mouth for ſome Hours after chewing a Leaf thereof. But as our Author only ſaw the dried Herb, he could no more diſtinguſh their Difference, than we can the *Thea* brought from *China*; I mean, as to the particular Trees which produce it.

CASTANEA, [takes its Name from *Caſtaneum*, a City of *Magneſia*, where this Tree antiently grew in great Plenty] The Cheſnut-tree.

The *Characters* are;

It hath Male Flowers (or Catkins) which are placed at remote Diſtances from the Fruit on the ſame Tree; the outer Coat of the Fruit is very rough, and has two or three Nuts included in each Huſk or Covering.

The *Species* are;

1. CASTANEA *ſativa. C. B.* The common *or* manured Cheſnut.

2. CASTANEA *ſativa, foliis eleganter variegatis.* The ſtrip'd Cheſnut.

3. CASTANEA *pumilis, Virginiana, racemoſo fructu parvo, in ſingulis capſulis echinato, unico. Baniſt. Pluk. Alm.* The Chinquapin *or* Dwarf *Virginian* Cheſnut.

The firſt of theſe Trees was formerly in greater Plenty amongſt us than at preſent, as may be prov'd by the old Buildings in *London*, which were for the moſt part of this Timber; and in a Deſcription of *London*, written by *Fitz-Stephens*, in

Henry the Second's Time, he ſpeaks of a very noble Foreſt, which grew on the North Part of it: *Proxime* (ſays he) *patet Foreſta ingens, ſaltus numeroſi ferarum, latebræ cervorum, damarum, aprorum, & taurorum ſylveſtrium, &c.* And there are ſome Remains of old decay'd *Cheſnuts* in the old Woods and Chaſes not far diſtant from *London*, which plainly proves, that this Tree is not ſo great a Stranger to our Climate as many People believe it to be, and may be cultivated in *England*, to afford an equal Profit with any of the larger Timber-trees, ſince the Wood of this Tree is equal in Value to the beſt *Oak*, and, for many Purpoſes, far exceeding it; as particularly for making Veſſels for all Kinds of Liquor, it having a Property (when once thoroughly ſeaſon'd) of maintaining its Bulk conſtantly, and is not ſubject to ſhrink or ſwell, as other Timber is too apt to do; and I am certainly inform'd, that all the large Caſks, Tuns, *&c.* for their Wines in *Italy*, are made of this Timber; and it is for that, and many more Purpoſes, in greater Eſteem amongſt the *Italians* than any other Timber whatever. It is alſo very valuable for Pipes to convey Water under Ground, as enduring longer than the *Elm*, or any other Wood: In *Italy* it is planted for Coppice-Wood, and is very much cultivated in Stools, to make Stakes for their Vines: which being ſtuck into the Ground, will endure ſeven Years, which is longer than any other Stakes will do, by near half the Time. The Uſefulneſs of the Timber, together with the Beauty of the Tree, renders it as well worth propagating as any Tree whatever, eſpecially in Avenues or ſmaller Plantations near a Dwelling-houſe.

Theſe Trees are propagated by planting the *Nuts* in *February*, in Beds of freſh undung'd Earth: The beſt *Nuts* for ſowing, are ſuch as are brought from *Portugal* and *Spain*, and are commonly ſold in Winter for Eating: Theſe ſhould be preſerv'd until the Seaſon for ſowing in Sand, where Mice, or other Vermin, can't come to them, otherwiſe they will ſoon deſtroy them: Before you ſet them, it will be proper to put them into Water, to try their Goodneſs, which is known by their Ponderoſity; thoſe of them that ſwim upon the Surface of the Water, ſhould be rejected as good for nothing; but ſuch as ſink to the Bottom, you may be ſure are good.

In ſetting theſe *Seeds*, or *Nuts*, the beſt Way is, to make a Rill with a Hough, (as is commonly practiſed in ſetting *Kidney-Beans)* about four Inches deep, in which you ſhould place the *Nuts*, at about four Inches diſtance, with their Eye uppermoſt; then draw the Earth over them with a Rake, and make a ſecond Rill at about ſix Inches diſtance from the former, proceeding as before, allowing ſix Rows in a Bed, with an Alley between, two Feet broad, for a Conveniency of clearing the Beds, *&c.* When you have finiſh'd your Plantation, you muſt be careful that it is not deſtroy'd by Mice, or other Vermin, which is very often the Caſe, if they are not prevented by Traps, or other Means.

In *April* theſe *Nuts* will appear above Ground; you muſt therefore obſerve to keep them clear from Weeds, eſpecially while young: In theſe Beds they may remain for two Years, when you ſhould remove them into a Nurſery, at a wider Diſtance: The beſt Seaſon for tranſplanting theſe Trees, is either in *October*, or the latter End of *February:* The Diſtance theſe ſhould have in the Nurſery, is three Feet, Row from Row, and one Foot in the Rows: You muſt be careful, in tranſplanting theſe Trees, to take them up without injuring their Roots, nor ſhould they remain long out of the Ground; but if theſe Trees have a downright Tap-Root, it ſhould be cut off, eſpecially if it be intended to remove them again: This will occaſion their putting out lateral Roots, and render them leſs ſubject to miſcarry when they are remov'd for good.

The Time generally allow'd them in this Nurſery, is three or four Years, according to their Growth; during which, you ſhould be careful to keep them clear from Weeds, obſerving alſo to prune off lateral Branches, which would retard their upright Growth; and where you find any that are diſpoſed to grow, either by their upper Bud being hurt, or from any other Accident, you may, the Year after planting (in *March)* cut them down to the lowermoſt Eye next the Surface of the Ground, which will cauſe them to make one ſtrong upright Shoot, and may be afterwards train'd into good ſtrait Trees.

But in doing of this, you muſt be careful not to diſturb their Roots, which, perhaps, might deſtroy them. Theſe Trees require no other Manure than their own Leaves, which ſhould be ſuffer'd to rot upon the Ground; and in the Spring of the Year, the Ground ſhould have a ſlight digging, when this ſhould be buried between their Roots, but not too cloſe to the Trees, which might be injurious to their young Fibres.

After having remain'd three or four Years in the Nurſery, they will be fit for tranſplanting, either in Rows for Avenues to a Houſe, or in Quarters for Wilderneſs Plantations; but if you intend them for Timber, it is by much the better Method to ſow them in Furrows, (as is practiſed for Oaks, *&c.*) and let them remain unremoved; for theſe Trees are apt to have a downright Tap-Root, which being hurt by tranſplanting, is often a Check to their upright Growth, and cauſes them to ſhoot out into lateral Branches, as is the Caſe with the *Oak*, *Walnut*, &c.

Therefore where-ever any of theſe Trees are planted for Timber, they ſhould remain unremoved; but where the Fruit of them is more ſought after, then it is certainly the better Way to tranſplant them; for as tranſplanting is a Check to the luxuriant Growth of Trees, ſo is it a Promoter of their Fructification, as may be evinced by obſerving low ſhrubby *Oaks*, *Walnuts*, &c. which generally have a greater Plenty of Fruit than any of the larger and more vigorous Trees; and the Fruit of ſuch Trees are much ſuperior in Taſte, tho' the Seeds of vigorous Trees are vaſtly preferable for Plantations of Timber; for the weaker Trees being leſs capable to furniſh a Supply of Nouriſhment, and having a greater Quantity of Fruit upon them, to which this muſt be diſtributed, together with their Roots lying near the Surface of the Ground, (by which Means the Juices are better prepared by *Sun*, *Air*, &c. before it enters their Veſſels) it is certain their Juices are better digeſted, and their Fruits better maturated, than thoſe can poſſibly be which grow upon ſtrong vigorous Trees, which have long Tap-Roots running ſeveral Feet deep into the Earth, and ſo conſequently take in vaſt Quantities of crude unprepared Juice, which is buoy'd up to the extreme Parts of the Tree; and theſe ſeldom having many lateral Branches to digeſt and prepare their Juice, by perſpiring or throwing off the crude Part before it enters the Fruits.

And this, I dare ſay, univerſally holds good in all ſorts of Fruit-trees, and is often the Occaſion of the good and bad Qualities of the ſame Sorts of Fruits growing on the ſame Soil.

What has been related about grafting this Tree into the *Walnut*, to promote their bearing, or render their Fruit fairer; or inoculating *Cherries* into the *Cheſnut*, for later Fruit, is very whimſical and ſilly, ſince neither the *Cheſnut* nor *Walnut* will receive its own Kind any other Way than by inoculating, or inarching; and it is the latter only which the *Walnut* can be propagated by; nor was it ever known that any two Trees of a different Genus would take upon each other, ſo as to produce a good Tree; therefore we may juſtly explode all thoſe different Graftings of various Trees upon each other, ſo much talk'd of by the Antients; at leaſt we may ſuppoſe thoſe Trees are not known by the ſame Names now, that they are mention'd by in their Writings; for I have made many Trials upon them, which, altho' perform'd with great Care, and in different Seaſons, yet ſcarcely one of them ſucceeded. But to return:

If you deſign a large Plantation of theſe Trees for Timber, after having twice plough'd the Ground, the better to deſtroy the Roots of Weeds, you ſhould make your Furrows about ſix Feet diſtance from each other, in which you ſhould lay the *Nuts* about ten Inches apart, covering them with Earth about three Inches thick; and when they come up, you muſt carefully clear them from Weeds: When theſe have remain'd three or four Years, (if the *Nuts* ſucceeded well) you will have many of theſe Trees to remove; which ſhould be done at the Seaſons before directed, leaving the Trees about three Feet Diſtance in the Rows; at which Diſtance they may remain for two or three Years more, when you ſhould remove every other Tree, to make Room for the remaining, which will reduce the whole Plantation to ſix Feet ſquare; then cut down every other of theſe Trees (making Choice of the leaſt promiſing) within a Foot of the Ground, in order to make Stools for Poles, which in ſeven Years Time will be ſtrong enough to lop for Hoops, Hop-poles, *&c.* for which Purpoſes they are preferable to moſt other Trees; ſo that every ſeventh Year here will be a freſh Crop, which will pay the Rent of the Ground, and all other incumbent Charges, and at the ſame Time a full Crop of growing Timber left upon the Ground: But as the large Trees increaſe in Bulk, ſo their Diſtance of twelve Feet ſquare will be too ſmall; therefore when they have grown to a Size for ſmall Boards, you ſhould fell every other Tree, which will reduce them to twenty-four Feet ſquare, which is a proper Diſtance for them to remain for good: This will give Air to the Under-wood, (which by this Time would be too much over-hung by the Cloſeneſs of the large Trees) by which means that will be greatly encouraged, and the ſmall Timber fell'd will pay ſufficient Intereſt for the Money at firſt laid out in planting, *&c.* with the Principal alſo; ſo that all the remaining Trees are clear Profit; for the Under-wood ſtill continuing, will pay the Rent of the Ground, and all other Expences; and what a fine Eſtate here will be for a ſucceeding Generation, in about fourſcore Years, I leave every one to judge.

The ſtriped-leaved *Cheſnut* is a beautiful Tree in a Garden, to intermix with various Sorts of Trees, in Clumps, or in Wilderneſs Quarters; where, by the Variety theſe fine ſtriped Trees afford, they greatly add to the Diverſity and Pleaſure of ſuch Plantations. This may be obtained by being budded upon the common *Cheſnut*.

The *Chinquapin* or Dwarf *Virginian Cheſnut*, is, at preſent, very rare in *England*; it is very common in the Woods of *America*, where it ſeldom grows above twelve or fourteen Feet high, and produces great Plenty of *Nuts*, which are for the moſt part ſingle in each outer Coat. This Tree is very hardy, and will reſiſt the ſevereſt of our Winters in the open Ground. The *Nuts* of theſe Trees, if brought from *America*, ſhould be put up in Sand ſo ſoon as they are ripe, and ſent to *England* immediately, otherwiſe they loſe their growing Quality, which is the Reaſon this Tree is at preſent ſo ſcarce with us; for not one Seed in five hundred ſent over ever grew, which was owing to the Neglect of putting them up in this Manner. This Tree will take by inarching upon the common Sort, by which it may not only be propagated, but, I believe, alſo increaſed in Magnitude.

CASTANEA EQUINA. *Vide* Hippocaſtanum.

CASTOREA.

This Plant was ſo named by Father *Plumier*, after a famous Phyſician and Botaniſt, whoſe Name was *Caſtor Durant*.

The *Characters* are;

It hath a perſonated Flower, conſiſting of one Leaf, whoſe upper Lip (or Creſt) is erect; but the Beard (or under Lip) is divided into three Parts; the middle Part is bifid: The Flower-cup afterward becomes a round fleſhy Fruit, incloſing a Shell, in which are contained four angular Seeds.

The *Species* are;

1. Castorea *repens ſpinoſa. Plum.* Prickly creeping Caſtorea.
2. Castorea *racemoſa, flore cœruleo, fructu croceo. Plum.* Branching Caſtorea, with a blue Flower, and a ſaffron-coloured Fruit.

The firſt of theſe Plants hath trailing Branches, which will creep on the Ground, if they are not ſupported; for in the Places where it grows wild, it rambles over whatever Plants grow near it. The Branches are cloſely beſet with Spines, ſomewhat like the common Bramble, ſo that it renders the Places of its Growth very difficult to paſs.

The ſecond Sort grows to the Height of ten or twelve Feet, and becomes woody: This ſends forth many Branches, at the Extremity of which there are Bunches of blue Flowers of an agreeable Scent; which are ſucceeded by ſaffron-coloured Berries, growing in Cluſters like Bunches of Currants.

Theſe Plants are Natives of the warmeſt Parts of *America*, and were firſt diſcovered by Father *Plumier*, in the *French* Settlements: But my late learned Friend, Dr. *William Houſtoun*, found them in *Jamaica*; from whence he ſent Samples of both Kinds, with their Seeds, into *England*, from which ſome of theſe Plants were raiſed.

They are both propagated by Seeds, which muſt be procured from the Places where they grow naturally; for they ſeldom perfect their Seeds in this Country. Theſe muſt be ſown in ſmall Pots filled with light freſh Earth, and plunged into a moderate Hot-bed of Tanners-bark, obſerving to water them as often as you find the Earth dry: And in the Heat of the Day, the Glaſſes of the Hot-bed ſhould be raiſed, to let the Steam paſs off; but if the Nights are cold, the Glaſſes ſhould be then covered with Mats every Evening, when the Sun is gone off the Bed. In about ſix Weeks the Plants will begin to appear; when you ſhould carefully clean them from Weeds, and frequently refreſh them with Water; and in warm Weather they ſhould have freſh Air admitted to them, that they may get Strength, and not draw up too weak. When the Plants are about two Inches high, they ſhould be carefully taken up, and tranſplanted each into a ſeparate ſmall Pot filled with freſh light Earth, and plunged into the Hot-bed again: then water them, to ſettle the Earth to their Roots; and in the Day-time the Glaſſes ſhould be ſhaded with Mats, until the Plants have taken Root; after which Time they ſhould be conſtantly watered three or four Times a Week, or ſometimes oftener, in very hot Weather; and they muſt have Plenty of Air admitted to them in the Summer Seaſon, otherwiſe they will draw up weak; but in Winter they muſt be placed in the Bark-ſtove, and treated as the Coffee-tree, and ſuch other tender exotic Plants. With this Management they will produce Flowers the ſecond or third Year, and may be contiued for ſeveral Years: and as they retain their Leaves thro' the Year, ſo they will add to the Variety in the Stove.

CATANANCE; [Κατανάγκη, *a violent Allurement to Love*, of κατα and ἀνάγκη, *Neceſſity*; or of καταναγκάζω, *to compel*; ſo call'd, becauſe of an Opinion the Antients had of it, that it was a ſtrong and almoſt invincible Inducement to Amour] Candy Lions-foot.

The *Characters* are;

The Cup of the Flower is ſquamoſe; the Florets which are round the Margin are much longer than thoſe in the Middle of the Flower; the Seeds are wrapt up in a leafy or downy Subſtance within the Cup or outer Covering.

The *Species* are;

1. Catanance *quorundam. Lugd.* True Lions-foot, with Bucks-horn Leaves.
2. Catanance *flore luteo, latiore folio. Tourn.* Broad-leav'd Candy Lions-foot, with a yellow Flower.
3. Catanance *flore luteo, anguſtiore folio. Tourn.* Narrow-leav'd Candy Lions-foot, with a yellow Flower.

The firſt of theſe Plants is a Perennial, and may be propagated by Heads taken off from the Mother Plant, either in Spring or Autumn, which are commonly planted in Pots fill'd with light ſandy Soil, in order to ſhelter them in the Winter from ſevere Froſts; but if they are planted in warm Borders, either under Walls, Pales, or Hedges, and in a moderately dry Soil, they will endure abroad very well. This Plant begins flowering in *May*, and continues till *Auguſt* or *September*, (eſpecially if the Summer is not too dry) and is a pretty Ornament to a Garden, and is eaſily kept within Bounds: It may alſo be propagated by Seeds, which ſhould be ſown in a Border of good light Earth in *March*: And in *May*, when the Plants are come up, they may be either tranſplanted into Pots or Borders, where they are to remain for flowering: but as theſe Seeds ſeldom ripen well in this Country, ſo the former Method is what is chiefly uſed in *England*.

The other two Sorts are Annuals, and therefore only propagated by Seeds, which ripen very well in this Country: The Time for ſowing them is early in *March*, in Beds or Borders of light Earth, which will come up in a Month's Time, and may then be tranſplanted into Borders to flower: Theſe flower in *June*, and perfect their Seeds in *Auguſt* or *September*.

CATAPUTIA Major. *Vide* Ricinus.

CATAPUTIA Minor. *Vide* Tithymalus.

CATARIA, [ſo call'd of *Catus*, Lat. *Cat*; becauſe Cats do not ſuffer this Plant to grow; they are very fond of it, friſk upon it, roll themſelves in it, and eat it, treating it thus out of love till it dies, as Apes who kill their Young by fondling them: Cats eating too much of this Plant grow drunk, which they do, eſpecially, when they go a Catter-wauling. It is alſo call'd *Nepeta*, of *Nepa Scorpio*, becauſe it is very good againſt the Bitings of Scorpions] Cat-Mint, *or* Nepeta.

The *Characters* are;

The Leaves are like thoſe of the Nettle, *or* Betony, *are for the moſt part hoary, and of a ſtrong Scent; the Flowers are collected into a thick Spike; the Creſt of the Flower is broad and bifid: The Lip is divided into three Segments; the middle Segment is broad, and hollow'd like a Spoon, and elegantly crenated on the Edges; each Flower is ſucceeded by four naked Seeds.*

The *Species* are;

1. Cataria *major, vulgaris. Tourn.* Common large Cat-mint.
2. Cataria, *quæ nepeta, minor, folio meliſſæ Turcicæ. H. Cath.* Leſſer Cat-mint, with Leaves like *Turkey* Balm.
3. Cataria *anguſtifolia, major. Tourn.* Narrow-leav'd large Cat-mint.
4. Cataria *Hiſpanica, betonicæ folio anguſtiori, flore cæruleo. Tourn.* Narrow-leav'd *Spaniſh* Cat-mint, with blue Flowers.
5. Cataria *Hiſpanica, betonicæ folio anguſtiori, flore albo. Tourn.* Narrow-leav'd *Spaniſh* Cat-Mint, with white Flowers.
6. Cataria *Luſitanica, erecta, betonicæ folio, tuberoſa radice. Tourn.* Upright *Portugal* Cat-mint, with a tuberoſe Root.
7. Cataria *Luſitanica, erecta, betonicæ folio, fibroſa radice. Tourn.* Upright *Portugal* Cat-Mint, with fibroſe Roots.

8. Cataria *minor, vulgaris. Tourn.* Common ſmall Cat-mint.

All theſe Sorts of *Cat-mint* are propagated by ſowing their Seeds in *February* or *March*, in Beds or Borders of common Earth, and may be afterward tranſplanted into Beds at about a Foot ſquare from each other, leaving a Path between every Bed, (which ſhould be three Feet broad) an Alley of two Feet, to go between to clear them from Weeds, *&c.*

The firſt Sort mention'd is uſed in Medicine: This may alſo be propagated by parting the Roots, either in Spring or Autumn, and will grow in almoſt any Soil or Situation: It flowers in *June*, and the Seeds are ripe in *Auguſt*. This Plant grows wild upon dry Banks in many Parts of *England*.

The other Sorts are alſo very hardy, and may be propagated in the ſame Manner, but require a dry Soil in Winter, otherwiſe they are ſubject to rot: Theſe all ripen their Seeds in *England* very well; and altho' there is no great Beauty in them, yet, for Variety, the two *Portugal* Sorts may have a Place amongſt Plants of the lower Claſs, where, if they are kept in Compaſs, and tied up to Sticks, they will make a tolerable Appearance for a long Time.

CATCH-FLY. *Vide* Lychnis.

CATERPILLARS.

There are ſeveral Kinds of this Inſect, which are very pernicious to a Garden; but there are two Sorts which are the moſt common and deſtructive to young Plants; one of them is that which the white *Butterfly* breeds: It is of a yellowiſh Colour, ſpotted with black, and commonly infeſts the tender Leaves of *Cabbages*, *Colliflowers*, and the *Indian Creſs*: This eats off all the tender Parts of the Leaves, leaving only the Fibres intire; ſo that very often we ſee, in the Autumn Seaſon, whole Gardens of Winter *Cabbages* and *Savoys* almoſt deſtroy'd by them, eſpecially in thoſe which are crowded with Trees, or are near great Buildings: Nor is there any other Method found out to deſtroy them, that I know of, but to pick them off the Plants before they are ſpread from their Neſts; by which Means, tho' perhaps many may be overlook'd, yet their Numbers will be greatly diminiſh'd: But this Work muſt be often repeated during the warm Weather, that the *Butterflies* are abroad, which are continually depoſiting their Eggs, and in a few Days Time will be metamorphoſed to perfect *Caterpillars*: But as theſe for the moſt part feed upon the outer Leaves of Plants, ſo they are more eaſily taken than the other Sort, which is much larger; the Skin is very tough, and of a dark Colour: This is call'd by the Gardeners a *Grub*, and is exceeding hurtful: The Eggs of this Sort of *Caterpillar* are, for the moſt Part, depoſited in the very Heart or Center of the Plant, (eſpecially in *Cabbages*) where after it hath obtain'd its Form, it eats its Way out thro' all the Leaves thereof; and alſo the Dung being lodged between the incloſed Leaves of the *Cabbages*, gives them an ill Scent.

This Inſect alſo burrows juſt under the Surface of the Ground, and makes ſad Havock with young Plants, by eating them thro' their tender Shanks, and drawing them into their Holes. This Miſchief is chiefly done in the Night: Whenever you obſerve this, you ſhould every Morning look over your Plat of Plants; and where-ever you ſee any Plants eat off, ſtir the Ground round about the Place with your Fingers an Inch deep, and you will certainly find them out. This is the only Method I know of deſtroying them.

CATKINS, *or* JULUS.

This is by the Botaniſts call'd, *Flos Amentaceus*: It is an Aggregate of Summits, which are join'd together in Form of a Rope or Cat's-tail, and is the Male Flower of the Trees which produce them, as the *Firrs*, *Pines*, *Cedars*, *Walnuts*, *Birch-tree*, and *Willows*.

CAUCALIS, Baſtard Parſley.

This is one of the Umbelliferous Plants, with oblong Seeds, which are a little furrow'd and prickly: the Petals of the Flower are unequal and Heart-ſhaped.

There are ſeveral *Species* of this Plant preſerved in the Botanick Gardens; but as there is no great Beauty or Uſe in any of them, ſo I ſhall paſs them over with only obſerving, that if any Perſon hath a mind to cultivate them, the beſt Seaſon to ſow their Seeds is in *Autumn*, ſoon after they are ripe; for if their Seeds are kept till *Spring*, they ſeldom produce ripe Seeds again: they are moſt of them Annual, and ſo require to be ſown every Year. We have five or ſix Species of them, which grow wild in *England*.

CAULIFEROUS *Plants*, [of *Caulis*, Lat. *a Stalk*, and *fero, to bear*] Such Plants as have a true Stalk.

CAULIS, is that which riſes ſingle above the Earth, from whence the Leaves or little Branches put forth, as *Jungius* defines it; or it is the upper Part of a Plant ſtretched forth to a Height, ſo that the Fore-parts differ not from the Hind, nor the Right from the Left: In Trees and Shrubs it is called *Caudex*; in Corn *Culmus*; the *Stalk of any Herb*; the Stem, Trunk, or Body of a Tree: *Lat.*

CEDAR of BERMUDAS: *vide* Juniperus.

CEDAR of CAROLINA: *vide* Juniperus.

CEDAR of JAMAICA: *vide* Guazuma.

CEDAR of VIRGINIA: *vide* Juniperus.

CEDRUS LIBANI, the Cedar of Libanus.

The *Characters* are;

It is ever-green; the Leaves are much narrower than thoſe of the Pine-tree, *are many of them produced out of one Tubercle, ſomewhat reſembling a Painter's Pencil; it hath Male Flowers, (or Katkins) which are produced at remote Diſtances from the Fruit on the ſame Tree; the Seeds are produced in Cones, which are large, ſquamoſe, and turbinated.*

Cedrus *magna, ſive Libani, conifera. J. B.* The Cedar of *Libanus* bearing Cones.

Many, I doubt not, will be ſurprized that I ſhould retain the Name of *Cedar* to this Tree, ſince Monſieur *Tournefort* hath placed this with the *Larch-tree*, and the Name *Cedar* being now appropriated to a Berry-bearing Tree; but I have obſerved a material Difference, in the Manner of Flowering and Fructification, between the *Larch* and this Tree: And ſince this is generally believed to be the *Cedar* mention'd in Scripture, ſo, conſequently, if Preference is given to Antiquity, this hath the greateſt Right to the Name: I ſhall therefore beg Leave to diſtinguiſh the other by the Name of *Berry-bearing Cedar*, in the next Article, and for Diſtinction ſake, this may be call'd *Cone-bearing Cedar*.

The Cones of this Tree are brought from the *Levant*, which, if preſerved intire, will continue their Seeds for ſeveral Years: the Time of their ripening is commonly in the *Spring*, and ſo conſequently are near one Year old before we receive them; for which they are not the worſe, but rather the better, the Cones having diſcharged a great Part of their Reſin by lying, and the Seeds are much eaſier to get out of them than ſuch as are freſh taken from the Tree.

The beſt Way to get the Seeds out, is to ſplit the Cones, by driving a ſharp Piece of Iron thro' the Center length-ways, and ſo pull the Seeds out with your Fingers, which you will find are faſten'd to a thin leafy Subſtance, as are thoſe of the *Firr-tree*.

Theſe Seeds ſhould be ſown in Boxes or Pots of light freſh Earth, and treated as was directed for the *Firrs* (to which I refer the Reader); but only ſhall obſerve, that theſe require more Shade in Summer than the *Firrs*, and the ſooner they are planted into the open Ground, the better.

When theſe Plants begin to ſhoot ſtrong, you will always find the leading Shoot incline to one Side; therefore if you intend to have them ſtraight, you muſt ſupport them with Stakes, obſerving to keep the Leader always cloſe tied up, until you have gotten them to the Height you deſign them, otherwiſe their Branches will extend on every Side, and prevent their growing tall.

Theſe Trees are by many People kept in Pyramids, and ſhear'd as Yews, *&c.* in which Form they loſe their greateſt Beauty; for the Extenſion of the Branches are very ſingular in this Tree, the Ends of their Shoots, for the moſt part, declining, and thereby ſhewing their upper Surface, which is conſtantly cloath'd with green Leaves in ſo regular a Manner, as to appear, at ſome Diſtance, like a green Carpet, and theſe waving about with the Wind, make one of the moſt agreeable Proſpects that can be to terminate a *Viſta*, eſpecially if planted on a riſing Ground.

It is Matter of Surprize to me, that this Tree hath not been more cultivated in *England*, than at preſent we find it; ſince it would be a great Ornament to barren bleak Mountains, where few other Trees would grow; it being a Native of the coldeſt Parts of *Mount Libanns*, where the Snow contiuues moſt Part of the Year. And from the Obſervations I have made of theſe now growing in *England*, I find they thrive beſt on the pooreſt Soil: For ſuch of them as have been planted in a ſtrong, rich, loamy Earth, have made but a poor Progreſs, in Compariſon to ſuch as have grown upon a ſtony, meagre Soil. And that theſe Trees are of quick Growth, is evident from four of them now growing in the *Phyſick-Garden* at *Chelſea*, which (as I have been credibly inform'd) were planted there in the Year 1683, and at that time were not above three Feet high; two of which Trees are at this Time, (*viz.* 1736.) upwards of ten Feet in Girt at two Feet above Ground; and their Branches extend more than twenty Feet on every Side their Trunks; which Branches (though produc'd eight or ten Feet above the Surface) do at their Termination hang very near the Ground, and thereby afford a goodly Shade in the hotteſt Seaſon of the Year.

The Soil in which theſe Trees are planted, is a lean hungry Sand, mix'd with Gravel, the Surface of which is ſcarcely two Feet deep before a hard rocky Gravel appears. Theſe Trees ſtand at four Corners of a Pond, which is brick'd up within two Feet of their Trunks, ſo that their Roots have no Room to ſpread on one Side, and ſo conſequently are crampt in their Growth: But whether their ſtanding ſo near the Water may not have promoted their Growth, I can't ſay; but ſure I am, if their Roots had *had* full Scope in the Ground, they would have made a greater Progreſs. I have alſo obſerv'd, that Lopping or Cutting of theſe Trees is very injurious to them, (more, perhaps, than to any other of the Reſinous Trees) in retarding their Growth; for two of the four Trees above-mention'd, being unadviſedly planted near a Green-houſe, when they began to grow large, had their Branches lopp'd, to let the Rays of the Sun into the Houſe, whereby they have been ſo much check'd, as at preſent they are little more than half the Size of the other two.

Theſe Trees have all of them produc'd, for ſome Years, large Quantities of *Katkins* (or Male Flowers); tho' there are but two of them which have as yet produc'd Cones; nor is it above eight or ten Years that theſe have ripen'd the Cones, ſo as to perfect the Seed: But ſince we find that they are ſo far naturaliz'd to our Country, as to produce ripe Seeds, we need not fear of being ſoon ſupply'd with Seeds enough, without depending on thoſe Cones which are brought from the *Levant*; ſince there are many Trees of this Kind in *England*, which in a few Years muſt certainly bear: But I find they are more ſubject to produce and ripen their Cones in hard Winters, than in mild ones; which is a plain Indication that they will ſucceed, even in the coldeſt Parts of *Scotland*, where, as well as in *England*, they might be propagated to great Advantage.

What we find mention'd in Scripture of the *lofty Cedars*, can be no ways applicable to the Stature of this Tree; ſince, from the Experience we have of thoſe now growing in *England*, as alſo from the Teſtimony of ſeveral Travellers who have viſited thoſe few remaining Trees on *Mount Libanus*, they are not inclin'd to grow very lofty, but, on the contrary, extend their Branches very far: To which the Alluſion made by the *Pſalmiſt* agrees very well, when he is deſcribing the flouriſhing State of a People, and ſays, *They ſhall ſpread their Branches like the Cedar Tree.*

Rouwolf, in his *Travels*, ſays, there were not at that Time (*i. e. Anno* 1574.) upon *Mount Libanus* more than 26 Trees remaining, 24 of which ſtood in a Circle; and the other two, which ſtood at a ſmall Diſtance, had their Branches almoſt conſum'd with Age: nor could he find any younger Trees coming up to ſucceed them, tho' he look'd about diligently for ſome: Theſe Trees (he ſays) were growing at the Foot of a ſmall Hill, on the Top of the Mountains, and amongſt the Snow. Theſe having very large Branches, do commonly bend the Tree to one Side, but are extended to a great Length, and in ſo delicate and pleaſant Order, as if they were trimm'd and made even with great Diligence; by which they are eaſily diſtinguiſh'd at a great Diſtance from *Firr-Trees*. The Leaves (continues he) are very like to thoſe of the *Larch-Tree*, growing cloſe together in little Bunches, upon ſmall brown Shoots.

Maundrel, in his *Travels*, ſays, There were but ſixteen large Trees remaining, ſome of which were of a prodigious Bulk, but that there were many more young Trees of a ſmaller Size; he meaſured one of the largeſt, and found it to be twelve Yards ſix Inches in Girt, and yet ſound, and thirty-ſeven Yards in the Spread of its Boughs. At about five or ſix Yards from the Ground it was divided into five Limbs, each of which was equal to a great Tree. What *Maundrel* hath related, was confirmed to me by a worthy Gentleman of my Acquaintance, who was there in the Year 1720, with this Difference only, *viz.* in the Dimenſions of the Branches of the largeſt Tree, which, he aſſur'd me, he meaſur'd, and found to be twenty-two Yards diameter. Now, whether Mr. *Maundrel* meant thirty-ſeven Yards in Circumference of the ſpreading Branches, or the Diameter of them, cannot be determined by his Expreſſions, yet neither of them well agree with my Friend's Account.

Monſieur *le Bruyn* reckons about thirty-five or thirty-ſix Trees remaining upon *Mount Libanus* when he was there, and would perſuade us it was not eaſy to reckon their Number, (as is reported of our *Stonehenge* on *Saliſbury-Plain*.) He alſo ſays, their Cones do ſome of them grow dependent. Which is abundantly confuted by the above-mention'd Travellers, as alſo from our own Experience; for all the Cones grow upon the upper Part of the Branches, and ſtand erect, having a ſtrong woody Central Style, by which it is firmly annex'd to the Branch, ſo as with Difficulty to be taken off; which Central Style remains upon the Branches after the Cone is fallen to Pieces; ſo that they never drop off Whole, as the *Pines* do.

The Wood of this famous Tree is accounted Proof againſt all Putrefaction of Animal Bodies; The Saw-duſt of it is thought to be one of the Secrets uſed by thoſe Mountebanks who pretend to have the embalming Myſtery. This Wood is alſo ſaid to yield an Oil which is famous for preſerving Books and Writings: And the Wood is thought, by my Lord *Bacon*, to continue above a thouſand Years ſound. It is alſo recorded, that in the Temple of *Apollo* at *Utica*, there was found Timber of near two thouſand Years old. And the Statue of the Goddeſs, in the famous *Epheſian* Temple, was ſaid to be of this Material alſo, as was moſt of the Timber-work of that glorious Structure.

This Sort of Timber is very dry, and ſubject to ſplit; nor does it well endure to be faſten'd with Nails, from which it uſually ſhrinks: therefore Pins of the ſame Wood are much preferable.

CEDRUS BACCIFERA. Berry-bearing Cedar.

The *Characters* are;

The Leaves are ſquamoſe, ſomewhat like thoſe of the Cypreſs; the Katkins (or Male Flowers) are produced at remote Diſtances from the Fruit on the ſame Tree; the Fruit is a Berry incloſing three hard Seeds in each.

The *Species* are;

1. Cedrus *folio Cypreſſi, major, fructu flaveſcente.* C. B. The yellow Berry-bearing Cedar.
2. Cedrus *folio Cypreſſi, media, majoribus baccis.* C. B. The *Phœnician* Cedar.

Theſe Trees are propagated by ſowing their Berries (which are brought from the *Streights*) in Boxes of light ſandy Earth, which ſhould be expos'd to the Morning-Sun only during the Summer-Seaſon, but muſt be remov'd into Shelter in Winter. Theſe Seeds ſeldom appearing till the ſecond Year, we ſhould be careful not to diſturb the Earth in the Boxes; and if in the *March* following, we put the Boxes upon a gentle Hot-bed, it will greatly forward their coming up, by which the Plants will be ſtrengthen'd before the following Winter, and ſo more likely to ſtand, tho' it will be adviſeable to ſhelter them at leaſt the two firſt Winters while they are young: The Spring following, after they are come up, you ſhould remove them into ſingle Pots, for their better tranſplanting hereafter. The beſt Seaſon for this Work is in *April*; at which Time, if you make a gentle Hot-bed in ſome cloſe Place ſhelter'd from Winds, and ſet the Pots with the freſh-planted Trees thereon, covering them with Mats for a Month or ſix Weeks, until they are ſettled and have taken freſh Roots; this will be a certain Method to make them ſtrike Root, provided they are carefully taken up without breaking their Roots: In this Place they may remain (if it is not too much expos'd to the Sun) till Autumn; at which Time the Pots ſhould be put under a *Cucumber-Frame*, ſo that in good Weather they may be expos'd to the open free Air; but in froſty, or over-wet Weather, they may be cover'd with the Glaſſes: If theſe Precautions are uſed, in three or four Years Time the Plants will be fit to tranſplant into the full Ground; you ſhould therefore contrive to plant them in a light ſandy Soil, and a Situation that is ſcreen'd from the North-Eaſt Winds, obſerving to ſhake them out of the Pots with all the Earth to their Roots: This ſhould be perform'd in *April* or *May*, always chuſing a moiſt Seaſon; and when you have planted them, lay a little Mulch upon the Surface of the Ground round about their Roots, to prevent the Sun and Wind from entring the Ground ſo as to dry the Fibres of the Roots, giving them ſome Water to ſettle the Earth to their Roots, and repeating the ſame once a Week if the Weather ſhould be dry; and it will be proper to add a little freſh Mulch about theſe Trees in *October*, to keep the Froſt from penetrating to their Roots: This may be repeated the three firſt Winters after planting out, after which

Time they will have taken ſufficient Root in the Ground, ſo as to be able to endure our Cold very well; and it is by the Neglect of this at firſt that many young Trees miſcarry in Winter at their firſt planting Abroad.

Theſe Trees are, at preſent, very rare, and only to be found in ſome curious old Collections; their Seeds having not been brought into *England* of late Years, there are no young Plants to be met with, tho' this Tree will take by Layers; but they will never thrive ſo well as thoſe rais'd from Seeds, and they are commonly two Years before they ſtrike Root.

The Wood of this Tree is of great Uſe in the *Levant*, where they grow to be large Timber, and is by many thought to be the *Shittim Wood* mention'd in the Scripture, of which many of the Ornaments to the famous *Temple* of *Solomon* were made: It is accounted excellent Wood for Carving, as alſo for many Sorts of Utenſils, and is thought to be equal to almoſt any Sort of Timber for Durableneſs.

CEIBA, Silk Cotton-tree, *vulgo*.

The *Characters* are;

It hath a roſaceous Flower, conſiſting of ſeveral Leaves placed in a circular Order; from whoſe Calyx ariſes the Pointal, which afterwards becomes a Fruit ſhaped like a Bottle, divided into five Parts from the Top to the Bottom; in which are contained ſeveral round Seeds wrapped up in a ſoft Down, and faſtened to the five-cornered pyramidal Placenta.

The *Species* are:

1. CEIBA *viticis foliis, caudice aculeato. Plum. Nov. Gen.* The Silk Cotton-tree, with a thorny Stem.
2. CEIBA *viticis foliis, caudice glabro. Plum. Nov. Gen.* The Silk Cotton-tree, with a ſmooth Stem.

Theſe two Trees grow very plentifully both in the *Eaſt* and *Weſt Indies*, where they arrive to a prodigious Magnitude: the Inhabitants of the *Weſt Indies* hollow the Trunks of theſe Trees for the making of their *Canoes*, for which they are chiefly valued. It is reported, that in the Iſland of *Cuba*, in *Columbus*'s firſt Voyage, was ſeen a *Canoe* made of a hollowed Trunk of one of theſe Trees, which was ninety-five Palms long, and capable of containing one hundred and fifty Men. And ſome modern Writers have affirmed, that there are Trees now growing in the *Weſt Indies* ſo large, as ſcarcely to be fathomed by ſixteen Men, and ſo high, that an Arrow can ſcarcely be ſhot to their Tops.

The Wool of theſe Trees is of a dark Colour, and too ſhort to ſpin; ſo that it is little valued: but ſometimes the Inhabitants ſtuff Beds and Pillows with it, tho' it is accounted unwholſome to lie upon. The Inhabitants of the *Weſt Indies* call this *Silk-cotton*; but the ancient *American* Name for this Plant being *Ceiba*, Father *Plumier* hath continued it under that Name, and conſtituted a Genus of it.

Theſe Plants are preſerved in ſome curious Gardens in *Europe*, where they thrive very well, if they are placed in a Bark-ſtove; but as they are Trees of a large Growth, ſo it can hardly be expected to ſee either Fruit or Flowers from them in *England*, ſince they grow to a great Magnitude, before they produce either in their own Country.

Theſe Plants may be raiſed from Seeds, which are eaſily obtained from the *Weſt Indies*; they muſt be ſown on a Hot-bed early in the Spring; and when the Plants are come up, they muſt be each tranſplanted into a ſmall Pot, filled with freſh light Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to water and ſhade them, until they have taken Root; after which they muſt have free Air let into the Hot-bed, in proportion to the Warmth of the Seaſon; for if the Glaſſes are kept too cloſe, the Plants will draw up too weak. They muſt alſo be frequently refreſhed with Water; for they perſpire pretty freely, eſpecially in hot Weather. In a Month or five Weeks Time, theſe ſmall Pots will be filled with the Roots of the Plants: therefore you muſt ſhake the Plants out of them; and after having pared off the outſide Roots, they muſt be put into Pots a Size larger, and plunged again into the Hot-bed, obſerving to manage them as was before directed. When the Plants are grown too tall to remain in the Hot-bed, they muſt be removed into the Bark-ſtove; where, during the Summer Seaſon, they ſhould have a large Share of freſh Air; but in Winter they muſt be kept pretty cloſe: and as the Plants increaſe in Magnitude, ſo they ſhould be ſhifted into larger Pots, that their Roots may have Room to extend. If theſe Rules be duly obſerved, the Plants will, in two or three Years, arrive to the Height of ten or twelve Feet, and be proportionably ſtrong; and being placed among other Plants, which require the ſame Degree of Heat, they add to the Variety.

There are ſome other Sorts of this Tree in the *Spaniſh* Settlements in *America*; and I have raiſed one Sort, which came from *Siam*, whoſe Leaves reſembled thoſe of Marſhmallow, but the Down and Seeds were exactly the ſame as of the common Sorts. Thoſe Pods which I received from *Panama*, were of a different Figure from the common Sorts, as was the Down alſo; for that was in one of a purple Colour, and the other was of a dark Red. The Down of both theſe Sorts are, by the Inhabitants of thoſe Countries, wrought into Garments, and retain their original Colour, ſo that they are never dyed.

CELASTRUS, the Staff-tree, is a Sort of *Alaternus*.

CELERY or **SALARY**, *vulgo*.

This is by the Botaniſts rang'd under the Article of *Apium*, to which I refer the Reader for its Characters.

There are two Sorts of this Plant cultivated in the *Engliſh* Gardens, for Kitchen Uſe, which are,

1. APIUM *dulce, Celeri Italorum. H. R. Par.* Italian Celeri.
2. APIUM *dulce degener, radice rapacea. Jeſſieu.* Celeriack, *vulgo*.

The Seeds of this Plant ſhould be ſown at two different Seaſons, the better to continue it for Uſe through the whole Seaſon without running up to Seed. The firſt Sowing ſhould be in the Beginning of *March*, which ought to be in an open Spot of light Earth, where it may enjoy the Benefit of the Sun: But the ſecond Time of Sowing ſhould be the Beginning of *April*, which ought to be in a moiſt Soil; and if expos'd to the Morning Sun only, it will be ſo much the better; but it ſhould not be under the Drip of Trees.

In about three Weeks or a Month's time after Sowing, the Seed will come up, when you muſt carefully clear it from Weeds; and if the Seaſon prove dry, you muſt frequently water it; and in about a Month or five Weeks after it is up, the Plants will be fit to tranſplant; you muſt therefore prepare ſome Beds of moiſt rich Earth, in which you ſhould prick theſe young Plants, at about three Inches ſquare, that they may grow ſtrong: You muſt alſo obſerve, in drawing theſe Plants out of the Seed-Beds, to thin them where they grow too thick, leaving the ſmall Plants to get more Strength before they are tranſplanted, by which Means one and the ſame Seed-Bed will afford three different Plantings, which will accordingly ſucceed each other for Uſe.

You muſt obſerve, if the Seaſon proves dry, to keep it diligently water'd after 'tis tranſplanted, as alſo to clear the Seed-Beds from Weeds; and after every drawing, keep them duly water'd, to encourage the ſmall Plants left therein.

The Middle of *June* ſome of the Plants of the firſt Sowing will be fit to tranſplant for Blanching, which, if poſſible, ſhould be put into a moiſt, rich, light Soil, upon which this firſt planted *Celery* will often grow to be twenty Inches long in the clean blanch'd Parts, which upon a poor or dry Soil ſeldom riſes to be ten Inches.

The Manner of tranſplanting it is as follows; After having clear'd the Ground of Weeds, you muſt dig a Trench by a Line about ten Inches wide, and eight or nine Inches deep, looſening the Earth in the Bottom, and laying it level; and the Earth that comes out of the Trench ſhould be equally laid on each Side the Trench, to be ready to draw in again to earth the *Celery* as it advances in Height: Theſe Trenches ſhould be made at three Feet Diſtance from each other; then plant your Plants in the Middle of the Trench, at about ſix Inches Diſtance in one ſtrait Row, having cut off the Tops of the long Leaves, as alſo trimm'd their Roots, obſerving to cloſe the Earth well to their Roots, and to water them plentifully until they have taken freſh Root; after which time it will be needleſs, except in dry Soils, or very dry Seaſons: As theſe Plants advance in Height, ſo you muſt obſerve to draw the Earth on each Side cloſe to them, being careful not to bury their Hearts, nor ever to do it but in dry Weather, otherwiſe the Plants will rot.

When your Plants have advanc'd a conſiderable Height above the Trenches, and all the Earth which was laid on the Sides thereof, hath been employ'd in earthing them up; you muſt then make uſe of a Spade to dig up the Earth between the Trenches, which muſt alſo be made uſe of for the ſame Purpoſe, continuing from time to time to earth it up, until it is fit for Uſe.

The firſt of your planting out will, perhaps, be fit for Uſe a little after Midſummer, and ſo this will be ſucceeded by the after Plantations, and, if rightly manag'd, will continue till *April* or *May*; but you ſhould obſerve, after the ſecond or third planting out, to plant the After-crop in a drier Soil, to prevent its being rotted with too much Wet in Winter; and alſo, if the Weather ſhould prove extreme ſharp, you will do well to cover your Ridges of *Celery* with ſome Peaſe Haulm, or ſome ſuch light Covering, which will admit the Air to the Plants: for if they are cover'd too cloſe, they will be very ſubject to rot; by this Means you may preſerve your *Celery* in Seaſon a long time; but you muſt remember to take off the Covering whenever the Weather will permit, otherwiſe it will be apt to cauſe the *Celery* to pipe and run to Seed: The *Celery*, when fully blanch'd, will not continue good above three Weeks or a Month before it will rot or pipe; therefore, in order to continue it good, you ſhould have, at leaſt, ſix or ſeven different Seaſons of planting; ſo that if it be only intended to ſupply a Family, there need not be much planted at each Time; but this muſt be proportion'd according to the Quantity requir'd.

The other Sort of *Celery*, which is commonly call'd *Celeriack*, is to be manag'd in the ſame Manner as is directed for the *Italian Celery*, but ſhould not be ſown until the Latter-end of *March*, and is very proper for the two laſt Plantations for blanching, as being much hardier than the *Italian* Sort, and will ſtand until *May* before it begins to pipe, (or run to Seed); by which means you may continue this Plant for uſe almoſt two Months longer than is ordinarily done, and, with ſome Care, it may be continued good thro' the whole Year.

The beſt Method to ſave this Seed, is to make choice of ſome long good Roots of *Celery* that have not been too much blanch'd, and plant them out at about a Foot aſunder in a moiſt Soil, early in the Spring; and when they run up to Seed, keep them ſupported with Stakes, to prevent their being broke down with the Wind: And in *July*, when this Seed begins to be form'd, if the Seaſon ſhould prove very dry, it will be proper to give it a little Water, which will greatly help its producing good Seeds. In *Auguſt* theſe Seeds will be ripe, at which time it ſhould be cut up, in a dry Time, and ſpread upon Cloths in the Sun to dry; then beat out the Seeds, and preſerve it dry in Bags for Uſe.

CELLS of *Plants*, [of *Cellæ*, Lat.] are thoſe Partitions or hollow Places in the Huſks or Pods of Plants in which the Seed is contain'd.

CELTIS, the Lote or Nettle-tree.

The *Characters* are;

The Leaves are ſomewhat like thoſe of the Nettle: *The Flowers conſiſt of five Leaves, which are expanded in Form of a* Roſe, *containing many ſhort* Stamina *(or Threads) in the Boſom: The Fruit grows ſingle in the Boſom of its Leaves, which is a roundiſh Berry.*

The *Species* are;

1. CELTIS *fructu obſcurè purpuraſcente. Tourn.* The dark-purpliſh-fruited Lote or Nettle-Tree.
2. CELTIS *fructu nigricante. Tourn.* The Nettle-Tree with black Fruit.
3. CELTIS *fructu luteo ampliori.* The Nettle-Tree with large yellow Fruit.
4. CELTIS *orientalis, folio ampliore, magno fructu. T. Cor.* The Eaſtern Lote or Nettle-Tree, with larger Leaves and Fruit.
5. CELTIS *orientalis minor, foliis minoribus & craſſioribus, fructu flavo. T. Cor.* Smaller Lote or Nettle-Tree, with ſmaller and thicker Leaves, and yellow Fruit.
6. CELTIS *Americana, folio citri ſubtus aureo, fructu rubro. Plum. American* Lote or Nettle-Tree, with a Citron-leaf, and a red Fruit.

The firſt of theſe Trees was originally brought from *Virginia*, but is found to thrive very well in our Climate; there being ſeveral large Trees of this Kind in the Gardens of curious Planters, but particularly one in the Garden which formerly belong'd to *John Tradeſcant* at *South-Lambeth* near *Vaux-Hall* in *Surry*, and another in the *Phyſick-Garden* at *Chelſea*, both which are large Trees, and the latter produces ripe Fruit annually, from whence ſeveral young Trees have been rais'd. The ſecond Sort, tho' a Native of *Europe*, yet is leſs common in *England* than the former, and only to be ſeen in ſome curious Collections of Trees, particularly in the Gardens of the late Dr. *Uvedale* at *Enfield*, where there is one large Tree remaining.

The third Sort is probably a Native of *America* alſo; this Tree hath been many Years growing in *Devonſhire*, where are ſeveral large ones, which have produced ripe Seeds, from whence the Gardens near *London* were ſupply'd with young Plants.

Theſe are all of them very hardy, enduring the ſevereſt of our Winters in *England* very well, and grow to be large Trees; they may be propagated either from Layers, or by Seeds: The Layers are commonly two Years before they take Root ſufficient for tranſplanting; and if they are not frequently water'd, will rarely take Root. The beſt Time for tranſplanting theſe Trees is in *March*, juſt before they begin to put out, obſerving to mulch their Roots, and water them well until they have taken Root. This Tree ſeems to thrive beſt upon a moiſt Soil, tho' it will grow tolerably well upon almoſt any Soil, when it is well fix'd therein.

The Seeds of this Tree ſhould be ſown in the Spring of the Year, ſoon after they are ripe, which is commonly in *January*, and the Ground kept clear from Weeds, but not ſtir'd; for the Seeds ſeldom appear before the ſecond Spring: Therefore the beſt Method is, to ſow them in Boxes, and manage them as was directed for the *Berry-bearing Cedar*; to which I refer the Reader, to avoid Repetition.

Theſe Trees are very uſeful in forming Clumps, or for planting of Amphitheatres of various Kinds of deciduous Trees; for the Heads of theſe naturally grow very thick and regular, and their Leaf is of a deep pleaſant Green Colour, making a very good Diverſity amongſt other Kinds: And altho' it is none of the earlieſt Trees in putting out in the Spring of the Year, yet it recompenſeth for this Defect, by its long Continuance in the Autumn, retaining its Leaves in perfect Vigour, when few other deciduous Trees have any Leaves left upon them.

The Fruit of this Tree is not ſo tempting with Us, as is ſtory'd it was to the Companions of *Ulyſſes*: But the Wood is reckon'd to be of a very durable Nature, and is commonly us'd to make Pipes, and other Wind-Inſtruments, and its Root is very proper to make Hafts for Knives, and other Tools; and it is reported, that they were held in great Eſteem by the *Romans*, for their incomparable Beauty and Uſe.

The fourth and fifth Sorts were diſcovered by Dr. *Tournefort* in his Travels, who ſent their Fruits to the Royal Garden at *Paris*; where they were raiſed, and have ſince been diſtributed to many curious Gardens in *Europe*. Theſe two Sorts are as hardy as the firſt three, ſo that they will endure the ſharpeſt Winters in the open Air, eſpecially when they have acquired ſufficient Strength; for many of theſe Trees may ſuffer by Cold, when they are very young, tho' afterwards they are capable of reſiſting the ſevereſt Cold of this Country.

The fourth Sort will make large Trees, and are proper to range with the other Sorts; but the fifth never grows very large: This will produce Fruit in a few Years after planting, by which it may eaſily be propagated; for the Plants will generally come up the firſt Year, whereas thoſe of the other Sorts ſeldom appear until the ſecond. Theſe Seeds may be ſown in Pots or Boxes filled with light freſh Earth, early in the Spring, and placed where they may have the Morning Sun. In dry Weather they muſt be conſtantly watered, and they muſt always be kept clear from Weeds. At *Michaelmas* the Pots ſhould be removed under a South Wall; and if the Winter ſhould prove very ſevere, it will be proper to ſcreen the Plants with Glaſſes; otherwiſe, being very young, they may be deſtroyed. The following Spring, juſt before the Plants begin to put out, they ſhould be tranſplanted either into ſmall Pots, or into a Nurſery-bed, obſerving, if the Spring ſhould prove very dry, to water them conſtantly, and lay ſome Mulch about their Roots, to prevent the Sun and Air from penetrating to their Roots; and be careful to clear them from Weeds the following Summer. In this Bed they may remain two Years, in which Time they will have acquired Strength enough to be tranſplanted where they are to remain. The beſt Seaſon for removing of them is juſt before they begin to ſhoot, obſerving to water them in dry Weather, and lay ſome Mulch about their Roots, as was before directed. After the Plants are well rooted, they will require no farther Care, but to keep them clear from Weeds, and prevent their being overſhaded with other Trees.

The ſixth Sort was diſcovered by Father *Plumier* in *America*: This is a tender Plant, and will not live out of a Stove in this Country. It may be propagated by Seeds, which muſt be procured from the *Weſt Indies* (for it hath never produced Fruit in *Europe*): The Seeds ſhould be ſown in Pots filled with light freſh Earth, and plunged into a Hot-bed of Tanners-bark: Theſe Pots muſt be conſtantly watered, and in the middle of the Day, when the Weather is mild, the Glaſſes of the Hot-bed ſhould be raiſed to admit freſh Air, and to let the Steam of the Bed paſs off. When the Plants are come up about two Inches high, they ſhould be each tranſplanted into a ſeparate ſmall Pot, filled with light rich Earth, and plunged again into the Hot-bed, obſerving to ſhade the Glaſſes every Day, until the Plants have taken Root; as alſo to water them duly, as you perceive the Earth to dry. During the Heat of Summer, the Plants muſt have a large Share of freſh Air every Day; but at *Michaelmas* they muſt be removed into the Bark-ſtove, and managed as the Coffee-Trees, and other tender exotic Plants; where they will thrive very well, and having ſtrong ſhining Leaves, will make an agreeable Variety.

CENTAURIUM MAJUS. [This Plant takes its Name of the Centaur *Chiron*, who is ſaid to have been heal'd of the Wound in his Foot thereby. It is alſo call'd *Rhaponticum*; becauſe it is by many thought to be the Purging *Rhaponticum*.] The greater Centaury.

The *Characters* are;

It is one of the Plantæ Capitatæ, *(or, of thoſe Plants whoſe Flowers are collected into a Head, as the* Thiſtle, *&c.) and hath a perennial Root: Their Leaves are without Spines, and are ſaw'd on their Edges: The Cup of the Flower is ſquamoſe, but hath no Spines; the Florets are large and ſpecious.*

The *Species* are;

1. CENTAURIUM *majus, folio helenii incano. Tourn.* Greater Centaury, with hoary Leaves like thoſe of Elecampane.
2. CENTAURIUM *folio cinaræ. Cornut.* Greater Centaury, with Artichoke Leaves.
3. CENTAURIUM *majus Alpinum luteum. C. B.* Greater yellow Centaury of the *Alps*.
4. CENTAURIUM *majus, folio in lacinias plures diviſo. C. B.* Greater Centaury with cut Leaves.
5. CENTAURIUM *majus, alterum laciniatum, purpuraſcente flore. H. R. Par.* Another cut-leav'd Centaury with purpliſh Flowers.
6. CENTAURIUM *majus Orientale erectum glaſti folio, flore luteo. T. Cor.* Greater Eaſtern Centaury with Leaves like Woad, and yellow Flowers.
7. CENTAURIUM *majus Africanum acaulon, cinaræ folio. Jeſſieu.* Greater *African* Centaury without Stalks, and Leaves like the Artichoke.

There are ſeveral other *Species* of this Plant cultivated in ſome of the Botanick Gardens Abroad; but theſe here mention'd are what we have at preſent in the *Engliſh* Gardens.

They are all of them propagated either by ſowing their Seeds, or parting their Roots: The latter of which is moſt commonly practis'd in *England*, (their Seeds ſeldom ripening in our Country.) The beſt Seaſon for this Work is either in *October* or *February*.

When you have a mind to increaſe any of theſe Plants, you ſhould open the Ground about their Roots, and clear them of the Earth: Then, where you find any of the Side Heads, which will part with Roots to them, you ſhould carefully force them off; which when you have done, you muſt lay the Earth up again to the old Plant, ſettling it cloſe with your Hands; and if the Ground is dry, give it a little Water: And having prepar'd a proper Place for the young Plants, which ſhould be in a dry ſandy Soil, and a warm Situation, you may either plant them in Beds, at about a Foot ſquare, or at Diſtances in the Borders of large Gardens, by way of Ornament; which altho' the Flowers have no very great Beauty, yet the regular Growth of the Plants, together with their long Continuance in Flower, render them worthy of a Place in all large Gardens.

The Seaſon for ſowing the Seeds of any of theſe *Species*, is in *March*, in an open Bed of common light Earth; and in *May*, when the Plants are come up, they may be tranſplanted into Nurſery-beds until *Michaelmas*; by which Time they will have gotten Strength enough to tranſplant into any other Parts of the Garden where you deſign them to remain.

The third, ſixth, and ſeventh Sorts are the moſt valuable for a Pleaſure-Garden, as being leſs ſubject to grow rude and ungovernable; and their Flowers are of a long Duration. The third Sort is the largeſt of the three, and ſhould be planted in the Middle of large Borders, where they will look very handſome.

The fourth Sort is uſed in Medicine, and therefore deſerves to be cultivated in Phyſick-Gardens: Nor is it unpleaſant in any Garden. The firſt and ſecond Sorts may be admitted for a Variety in large Gardens, to fill empty Borders, where the Difference of their Leaves and Flowers will appear very well amongſt Plants of larger Growth. Theſe Plants begin to produce their Flowers in *June*, and continue moſt part of *July*, but very rarely produce ripe Seeds in this Country.

CENTAURIUM MINUS. [This is call'd *Fel Terræ*, becauſe of its great Bitterneſs.] Leſſer Centaury.

The *Characters* are;

The Leaves grow by Pairs, oppoſite to each other; the Flower conſiſts of one Leaf, is Funnel-ſhap'd, and divided into five acute Segments; theſe grow on the Tops of the Stalks in Cluſters; the Seed-veſſel is of a cylindrical Form, and is divided into two Cells, in which are contain'd many ſmall Seeds.

The *Species* are;

1. CENTAURIUM *minus. C. B.* Common leſſer Centaury.
2. CENTAURIUM *minus, flore albo. H. Eyſt.* Leſſer Centaury with white Flowers.
3. CENTAURIUM *luteum perfoliatum. C. B.* Leſſer yellow Centaury, with Leaves ſurrounding the Stalks.
4. CENTAURIUM *minus maritimum Americanum, amplo flore cœruleo. Plum. Cat. American* Sea leſſer Centaury, with a large blue Flower.

The firſt three Plants grow wild in *England*: The firſt is commonly found growing upon dry arable Land, chiefly amongſt Corn. The ſecond is a Variety of the firſt, from which it only differs in the Colour of the Flower: This is ſometimes found with the firſt. The third Sort grows commonly upon chalky Hills in divers Parts of *England*: But neither of theſe Kinds care to grow in a Garden. The only Method that can be taken to cultivate theſe, is to ſow the Seeds as ſoon as they are ripe, in an open well-expos'd Place, and in a poor dry Soil, with which theſe Plants agree: Nor ſhould the young Plants be remov'd, if they come up, but ſuffer'd to remain in the ſame Places for good. The firſt Sort is us'd in Medicine, and is gather'd in the Fields, and brought to Market for that Purpoſe.

The Seeds of the fourth Plant were ſent from *La Vera Cruz* by the late Dr. *William Houſtoun*, who found this Plant in great Plenty upon low ſwampy Grounds, where the Water ſtagnated, at a great Diſtance from the Sea, in the Country about *Vera Cruz*.

This Plant may be propagated by Seeds, which ſhould be ſown early in the Spring on a moderate Hot-bed; and when the Plants are come up, and are ſtrong enough to tranſplant, they ſhould be each put into a ſeparate ſmall Pot filled with light freſh Earth, and placed into a Hot-bed of Tanners-bark, obſerving to ſcreen them from the Sun, until they have taken new Root; after which Time they muſt have a large Share of freſh Air in warm Weather, and they ſhould be frequently refreſhed with Water. With this Management the Plants will produce their beautiful blue Flowers in Autumn; and, if they are removed into the Bark-ſtove, may be preſerved thro' the Winter; ſo that the following Year there may be Hopes of their producing ripe Seeps, whereby the Plant may be preſerved; for it ſeldom continues, after it has perfected Seeds.

CENTINODIUM, is Knot-graſs.

CEPA, the Onion.

The *Characters* are;

It hath an orbicular, coated, bulboſe Root; the Leaves are hollow or pipy; the Stalk is alſo hollow, and ſwells out in the Middle; the Flowers which conſiſt of ſix Leaves, are collected into a ſpherical Head, or Corymbus; the Style of the Flower becomes a roundiſh Fruit, which is divided into three Cells, containing roundiſh Seeds.

The *Species* are;

1. CEPA *oblonga. C. B.* The *Straſburgh* Onion, *vulgo.*
2. CEPA *vulgaris, floribus & tunicis purpuraſcentibus. C. B.* The red *Spaniſh* Onion, *vulgo.*
3. CEPA *vulgaris, floribus & tunicis candidis. C. B.* The white *Spaniſh* Onion, *vulgo.*
4. CEPA *Aſcalonica Matthioli. Boerh. Ind.* The Scallion or Eſcallion.
5. CEPA *ſectilis juncifolia perennis. M. H.* Cives.
6. CEPA *ſectilis major perennis. Welſh* Onion, *vulgo.*
7. CEPA *fiſſilis Matthioli. Lugd.* Ciboule.

There are ſeveral other Sorts of *Onions* of leſſer Note, which are preſerv'd in the Gardens of curious Botaniſts, ſome of which grow wild in *England*: But theſe above-mention'd are the Sorts which are chiefly cultivated for the Kitchen Uſe. The three Sorts firſt mention'd are propagated for Winter Uſe, their Roots being preſerved dry during that Seaſon. Of theſe I ſhall firſt treat.

Theſe three Sorts of *Onions* are propagated by Seeds, which ſhould be ſown at the latter End of *February*, or the Beginning of *March*, in good rich ſandy Ground (but not too thick; the common Quantity of Seed allow'd to ſow an Acre of Ground being eight Pounds) in about a Month or ſix Weeks after ſowing, the *Onions* will be up forward enough to hough; at which

Time (chuſing dry Weather) you ſhould with a ſmall Hough, about two Inches and an half broad, cut up lightly all the Weeds from amongſt the *Onions*; as alſo cutting out the *Onions*, where they grow too cloſe in Bunches, leaving them at this firſt houghing two Inches apart: This, if well perform'd, and in a dry Seaſon, will preſerve the Spot clear of Weeds, at leaſt a Month, at which Time you muſt hough them over a ſecond Time, cutting up all the Weeds, as before, and alſo cutting out the *Onions* to a larger Diſtance, leaving them this Time three Inches aſunder. This alſo, if well perform'd, will preſerve the Ground clean a Month longer, when you muſt hough them over the third and laſt Time.

You muſt now carefully cut up all Weeds, and ſingle out the *Onions* to near four Inches ſquare; by which means they will grow much larger than if left too cloſe. This Time of Houghing, if the Weather proves dry, and it was well perform'd, will keep the Ground clean until the *Onions* are fit to pull up: But if the Weather ſhould prove moiſt, and any of the Weeds ſhould take Root again, you ſhould, about a Fortnight or three Weeks after, go over the Spot, and draw out all the large Weeds with your Hands; for the *Onions* having now begun to bulb, they ſhould not be diſturb'd with a Hough.

Toward the Middle or Latter-end of *July* your *Onions* will have arriv'd to their full Growth, which may be known by their Blades falling to the Ground and ſhrinking; you ſhould therefore, before their Necks or Blades are wither'd off, draw them out of the Ground, cropping off the extreme Part of the Blade, and lay them abroad upon a dry Spot of Ground to dry, obſerving to turn them over every other Day, at leaſt, to prevent their ſtriking freſh Root into the Ground; which they will ſuddenly do, eſpecially in moiſt Weather.

In about a Fortnight's Time your *Onions* will be dry enough to houſe, which muſt be perform'd in perfect dry Weather: In doing of this, you muſt carefully rub off all the Earth, and be ſure to mix no faulty ones amongſt them, which will in a ſhort time decay, and ſpoil all thoſe that lie near them; nor ſhould you lay them too thick in the Houſe, which would occaſion their ſweating, and thereby rot them: Theſe ſhould not be put in a lower Room, or Ground-floor, but in a Loft or Garret; and the cloſer they are kept from the Air the better they will keep: You ſhould at leaſt once a Month look over them to ſee if any of them are decay'd; which if you find, muſt be immediately taken away, otherwiſe they will infect all that lie near them.

The beſt *Onions* for keeping are the *Strasburgh* Kind, which is an oval-ſhap'd Bulb; but this ſeldom grows ſo large as the *Spaniſh*, which is flatter: The white Sort is eſteem'd the ſweeteſt, but theſe Varieties are not laſting; for if you ſave Seeds of white *Onions* only, you will have a Mixture of the red ones amongſt them; nor will the *Strasburgh Onion* keep long to its Kind, but will by degrees grow flatter, as do the large *Portugal Onions*, when planted in our Climate, which, in a Year or two, will be ſo far degenerated as not to be known they were from that Race.

But, in order to preſerve Seeds, you muſt in the Spring make Choice of ſome of the firmeſt, largeſt, and oval-ſhap'd *Onions*, (in Quantity proportionable to the Seed you intend to ſave) and having prepar'd a Piece of good Ground, (which ſhould be well dug, and laid out in Beds about three Feet wide) in the Beginning of *March* you muſt plant your *Onions*, in the following manner: Having ſtrain'd a Line about four Inches within the Side of the Bed, you muſt with a Spade, throw out an Opening about ſix Inches deep the Length of the Bed, into which you ſhould place the *Onions*, with their Roots downward, at about ſix Inches Diſtance from each other; then with a Rake draw the Earth into the Opening again to cover the Bulbs; then proceed to remove the Line again about ten Inches or a Foot farther back, where you muſt make an Opening as before, and ſo again, till the Whole is finiſh'd, ſo that you will have four Rows in each Bed, between which you muſt allow a Space of two Feet for an Alley to go amongſt them to clear them from Weeds, *&c.* In a Month's Time their Leaves will appear above-ground, and many of the Roots will produce three or four Stalks each, you muſt therefore keep them diligently clear'd from Weeds; and about the Beginning of *June*, when the Heads of the Seed begin to appear upon the Tops of the Stalks, you muſt provide a parcel of Stakes about four Feet long, which ſhould be drove into the Ground, in the Rows of *Onions*, at about ſix Feet apart, to which you ſhould faſten ſome Packthread, or ſmall Cord, which ſhould be run on each Side the Stems of the *Onions*, a little below their Heads, to ſupport them from breaking down with the Wind and Rain.

About the Beginning of *Auguſt* the *Onion*-Seed will be ripe, which may be known by its changing brown, and the Cells in which the Seeds are contain'd opening, ſo that if it be not cut in a ſhort time the Seeds will fall to the Ground: When you cut off the Heads, they ſhould be ſpread abroad upon coarſe Cloths in the Sun, obſerving to take it in under Shelter in the Night, as alſo in wet Weather; and when the Heads are quite dry, you muſt beat out the Seeds, which are very eaſily diſcharg'd from their Cells; then having clear'd it from all the Husk, *&c.* after having expos'd it one Day to the Sun to dry, you muſt put it up in Bags to preſerve it for Uſe.

The *Scallion* or *Eſcallion*, is a Sort of *Onion* which never forms any Bulbs at the Roots, and is chiefly uſed in the Spring for green *Onions*, before the other Sorts ſown in *July* are big enough; but this ſort of *Onion*, how much ſoever in uſe formerly, is now ſo ſcarce as to be known to few People, and is rarely to be met with except in curious Botanick Gardens: The Gardeners near *London* ſubſtitute another Sort for this, which are thoſe *Onions* which decay and ſprout in the Houſe: Theſe they plant in a Bed early in the Spring, which in a ſhort Time will grow to be large enough for Uſe: When they draw them up, and after pulling off all the old outer Coat of the Root, they tie them up in Bunches, and ſell them in the Market for *Scallions*.

This true *Scallion* is eaſily propagated by parting the Roots, either in *Spring* or *Autumn*, but the latter Seaſon is preferable, becauſe of their being render'd more fit for Uſe in the *Spring*: Theſe Roots ſhould be planted three or four together in a Hole, at about ſix Inches Diſtance every Way, in Beds or Borders three Feet wide, which in a ſhort time will multiply exceedingly, and will grow upon almoſt any Soil, and in any Situation; and their being ſo hardy as to reſiſt the ſevereſt of our Winters, and being green and fit for Uſe ſo early in the *Spring*, renders them worthy of a Place in all good Kitchen Gardens.

The *Cives* are a very ſmall Sort of *Onion*, which never produces any Bulbs, nor ſeldom grows above ſix Inches high in the Blade, which is very ſmall and ſlender, and grows in Bunches like the former: This was formerly in great Requeſt for *Sallads* in the Spring, as being ſomewhat milder than thoſe *Onions* which had ſtood through the Winter: Theſe are propagated by parting their Roots like the former, and are alſo very hardy, and will be fit for Uſe early in the Spring.

The *Welſh Onions* are only propagated for Spring Uſe alſo: Theſe never make any Bulb, and are therefore only fit to be us'd green for *Sallads*, *&c.* They are ſown about the End of *July*, in Beds of about three Feet and a half wide, leaving Alleys of two Feet broad to go between the Beds to clean them, and in a Fortnight's Time they will appear above-ground, and muſt be carefully clear'd from Weeds; towards the Middle of *October*, their Blades will die away, ſo that the whole Spot will ſeem to be naked, which hath led many People to dig up the Ground again, ſuppoſing the Crop totally loſt; whereas if they are let ſtand undiſturb'd, they will come up again very ſtrong in *January*, and from that time grow very vigorouſly, reſiſting all Weathers, and by *March* will be fit to draw for young *Onions*, and are, in the Markets, more valu'd than any other Sort at that Seaſon; for they are extremely green and fine, tho' they are much ſtronger than the common *Onion* in Taſte, approaching nearer to *Garlick*, which hath occaſion'd their being leſs eſteem'd for the Table: But as no Winter, however ſo hard, will hurt them, ſo it is proper to have a few of them to ſupply the Table, in caſe the common Sort ſhould be deſtroy'd by Froſts.

The Roots of theſe *Onions*, if planted out at ſix or eight Inches Diſtance in *March*, will produce ripe Seeds in *Autumn*, but 'twill be in ſmall Quantities the firſt Year; therefore the ſame Roots ſhould remain unremov'd, which the ſecond and third Year will produce many Stems, and afford a good Supply of Seeds: Theſe Roots will abide many Years good, but ſhould be tranſplanted and parted every ſecond or third Year, which will cauſe them to produce ſtrong Seeds.

CERASUS; [ſo call'd of *Ceraſus*, a City of *Pontus*, which *Lucullus* having deſtroy'd, he carry'd the *Cherry-Tree* from thence to *Rome*, and call'd it *Ceraſus*, after the Name of the City.] The Cherry-Tree.

The *Characters* are;

It hath large ſhining Leaves; the Fruit grows on long Pedicles (or Footſtalks) and is roundiſh or Heart-ſhap'd; the Stone is ſhort, tumid, and roundiſh.

The *Species* are;

1. CERASUS *ſativa, fructu rotundo, rubro & acido. Tourn.* The common Red or Garden Cherry.

2. CERASUS *ſativa, fructu majori. Tourn.* Large *Spaniſh* Cherry.

3. CERASUS *major, fructu magno cordato rubro.* The Red Heart Cherry.

4. CERASUS *major, fructu magno cordato albo.* The White Heart Cherry.
5. CERASUS *major, fructu magno, cordato ſanguineo.* The Bleeding Heart Cherry.
6. CERASUS *major, fructu cordato nigro.* The Black Heart Cherry.
7. CERASUS *Maialis, fructu duro ſubdulci. Tourn.* The *May* Cherry.
8. CERASUS *major, ac ſylveſtris, fructu ſubdulcis, nigro colore inficiente. C. B.* The Black Cherry or Mazzard.
9. CERASUS *fructu magno rubro turbinato. Tourn.* The Arch-duke Cherry.
10. CERASUS *Sicula, fructu caſtanei coloris. Tourn.* The Yellow *Spaniſh* Cherry, *vulgo.*
11. CERASUS *uno pediculo, plura ferens. J. B.* The *Flanders* Cluſter Cherry.
12. CERASUS *fructu incarnato.* The Carnation Cherry.
13. CERASUS *ſativa, fructu orbiculato nigerrimo micante. Tourn.* The large Black Cherry.
14. CERASUS *racemoſa, ſylveſtris, fructu non eduli. C. B.* The Bird Cherry.
15. CERASUS *racemoſa, ſylveſtris, fructu non eduli rubro. H. R. Par.* The Red Bird or Corniſh Cherry.
16. CERASUS *hortenſis, flore roſeo. C. B.* The Largeſt Double-flower'd Cherry.
17. CERASUS *hortenſis, pleno flore. C. B.* The Double-flower'd Cherry.
18. CERASUS *ſylveſtris, fructu rubro. J. B.* Common Wild Cherry.
19. CERASUS *ſylveſtris ſeptentrionalis Anglica, fructu rubro parvo ſerotino. Raii Hiſt.* The Wild Northern *Engliſh* Cherry, with late ripe Fruit.
20. CERASUS *ſylveſtris, amara, mahaleb putata. J. B.* The Rock or Perſum'd Cherry.
21. CERASUS *hortenſis, foliis eleganter variegatis.* The Cherry Tree with ſtrip'd Leaves.

There are many other Sorts of Cherries cultivated in curious Fruit-Gardens; as, the Amber Cherry, Lukeward, Corone, Gaſcoigne, Morello, &c.

All the Sorts of Cherries which are uſually cultivated in Fruit-Gardens, are propagated by Budding or Grafting the ſeveral Kinds, into Stocks of the Black, or Wild Red Cherries, which are ſtrong Shooters, and of a longer Duration than any of the Garden Kinds. The Stones of theſe two Kinds are ſown in Beds of light ſandy Earth in Autumn, (or are preſerv'd in Sand till Spring, and then ſow'd): When theſe Stocks ariſe, they muſt be carefully weeded; and if in dry Weather you refreſh them with Water, it will greatly promote their Growth. Theſe young Stocks ſhould remain in theſe Nurſery Beds till the ſecond Autumn after ſowing, at which Time you ſhould prepare an open Spot of good freſh Earth, which ſhould be well work'd: But if the Soil is freſh, you'll need no Dung. In this Ground in *October* you ſhould plant out the young Stocks at three Feet Diſtance, Row from Row, and about ten Inches aſunder in the Rows; being careful, in taking them up from their Seed-beds, to looſen their Roots well with a Spade, to prevent their breaking; as alſo to prune their Roots: And if they are inclinable to root downwards, you ſhould ſharpen the Tap-root, to cauſe it to put out lateral Roots: But do not prune their Tops; for this is what by no means they will endure.

The ſecond Year after planting out, if they take to growing well, they will be fit to bud, if they are intended for Dwarfs: but if they are for Standards, they will not be tall enough until the fourth Year; for they ſhould be budded or grafted near ſix Feet from the Ground; for otherwiſe the Graft will not advance much in Height, ſo that it will be impoſſible to make a good Tree from ſuch as are grafted low.

The uſual Way with the Nurſery-Gardeners, is to bud their Stocks in Summer: And ſuch of them as miſcarry, they graft the ſucceeding Spring. (The Manner of theſe Operations will be deſcribed under their proper Heads.) Thoſe Trees where the Buds have taken, muſt be headed off in the Beginning of *March*, about ſix Inches above the Bud: And when the Bud hath ſhot in Summer, if you fear its being blown out by the Winds, you may faſten it up with ſome Baſs, or ſuch ſoft Tying, to that Part of the Stock which was left above the Bud. The Autumn following theſe Trees will be fit to remove. But if your Ground is not ready to receive them, they may remain two Years before they are tranſplanted: In the doing of which, you muſt obſerve not to head them, as is by many practis'd: for this, very often, is immediate Death to them: but if they ſurvive it, they ſeldom recover this Amputation in five or ſix Years.

If theſe Trees are intended for a Wall, I would adviſe the planting Dwarfs between the Standards; ſo that while the Dwarfs are filling the Bottom of the Walls, the Standards will cover the Tops, and will produce a great deal of Fruit: But theſe, as the Dwarfs ariſe to fill the Walls, muſt be cut away, to make room for them: And when the Dwarf-trees do cover the Walls, the Standards ſhould be intirely taken away. But I would adviſe, never to plant *Standard-Cherries* over other Fruit; for there is no other Sort of Fruit that will proſper well under the Drip of *Cherries*.

When theſe Trees are taken up from the Nurſery, their Roots muſt be ſhortned, and all the bruiſed Parts cut off, as alſo all the ſmall Fibres, which would dry, grow mouldy, and be a great Prejudice to the new Fibres in their coming forth; you muſt alſo cut off the dead Part of the Stock which was left above the Bud, cloſe down to the back-part of it, that the Stock may be cover'd. If theſe Trees are deſign'd for a Wall, obſerve to place the Bud directly from the Wall, that the back-part of the Stock that was cut, may be hid from Sight. The Soil that *Cherries* thrive beſt in, is a freſh Hazel Loam: But if the Soil is a dry Gravel, they will not live many Years, and will be perpetually blighted in the Spring.

The Sorts commonly planted againſt Walls, are the *Early-May*, and *May-Duke*, which ſhould have a South-Wall. The *Hearts* and *common Duke* will do upon a Weſt-Wall; and the *Morello* on a North-Wall, which laſt is chiefly planted for preſerving. The *Hearts* are all of them ill Bearers; for which Reaſon they are ſeldom planted againſt Walls: But I am apt to believe, if they were grafted upon the *Bird-Cherry*, and manag'd properly, that Defect might be remedy'd; for this Stock (as I am inform'd) will render *Cherries* very fruitful; and having the ſame Effect on *Cherries*, as the *Paradiſe* Stock hath on *Apples*, they may be kept in leſs Compaſs, which is an Experiment well worth the Trial.

Your Trees, if planted againſt a Wall, ſhould be placed fourteen Feet aſunder, with a Standard-tree between each Dwarf: This will be found a reaſonable Diſtance, when we conſider that *Cherry-Trees* will not extend themſelves ſo far as *Apricocks*, and many other Sorts of Fruit.

In pruning theſe Sorts of Fruits, you ſhould never ſhorten their Shoots; for the moſt part of them produce their Fruit-buds at their extreme Part, which, when ſhortned, are cut off: Their Branches ſhould be therefore train'd in at full Length horizontally, obſerving in *May*, where there is a Vacancy in the Wall, to ſtop ſome ſtrong adjoining Branches, which will occaſion its putting out two or more Shoots; by which Means, at that Seaſon of the Year, you may always get a Supply of Wood for covering the Wall: And at the ſame time ſhould all fore-right Shoots be diſplac'd by the Hand; for if they are ſuffer'd to grow till Winter, they will not only deprive the bearing Branches of their proper Supply of Nouriſhment; but, when they are cut out, it occaſions the Tree to Gum in that Part; (for *Cherries* bear the Knife the worſt of any Sort of Fruit-Trees): but be careful not to rub off the *Fides* or Spurs, which are produc'd upon the two and three Years old Wood; for it is upon theſe that the greateſt Part of the Fruit are produc'd; which *Fides* will continue fruitful for ſeveral Years. And it is for want of duly obſerving this Caution, that *Cherry-Trees* are often ſeen ſo unfruitful, eſpecially the *Morello*, which, the more it is cut, the weaker it ſhoots; and at laſt, by frequent pruning, I have known a whole Wall of them deſtroy'd; which, if they had been ſuffer'd to grow without any pruning, might probably have liv'd many Years, and produc'd large Quantities of Fruit.

Cherry-Trees are alſo planted for Orchards in many Parts of *England*, particularly in *Kent*, where there are large Plantations of theſe Trees: The uſual Diſtance allow'd for their ſtanding, is forty Feet ſquare, at which Space they are leſs ſubject to Blight, than when they are cloſer planted; and the Ground may be till'd between them almoſt as well as if it were intirely clear, eſpecially while the Trees are young; and the often ſtirring the Ground, provided you do not diſturb their Roots, will greatly help the Trees; but when they are grown ſo big as to overſhadow the Ground, the Drip of their Leaves will ſuffer very few Things to thrive under them. Theſe Standard Trees ſhould be planted in a Situation defended as much as poſſible from the ſtrong Weſterly Winds, which are very apt to break their tender Branches; this occaſions their Gumming, and is very prejudicial to them.

The Sorts beſt approved for an Orchard, are the *Common Red* or *Kentiſh Cherry*, the *Duke*, and *Lukeward*, all which are plentiful Bearers. But Orchards of theſe Trees are now ſcarcely worth planting, except where Land is very cheap; for the Uncertainty of their Bearing, with the Trouble in gathering the Fruit, together with the ſmall Price it commonly yields, have occaſion'd the deſtroying many Orchards of this Fruit in *Kent*, within a few Years paſt.

This Fruit was brought out of *Pontus*, at the Time of the *Mithridatick* Victory, by *Lucullus*, in the Year of the City 680, and were brought into *Britain* about 120 Years afterwards, which was *An. Dom.* 55, and were ſoon after ſpread through moſt Parts of *Europe*; it being generally eſteem'd for its Earlineſs, as being one of the firſt of the Tree-Fruit that appears to welcome in the approaching Fruit-ſeaſon.

This Sort of Fruit hath been by many People grafted upon the *Laurel*, to which it is a *Congener*: But what Effect it hath either in the Growth of the Tree, or its Fruit, I have not been yet able to underſtand; tho' this Practice is as old as *Pliny*, who ſays it gives the Fruit a very pleaſant Bitterneſs.

The two Sorts of *Bird Cherries* are very fine flowering Trees, and are commonly propagated in the Nurſeries, to intermix with *Lilac's*, *Laburnum's*, and other flowering Trees of larger Growth, where, by their Variety, they greatly diverſify the Proſpect. Theſe are alſo, by ſome, us'd for Stocks, to bud and graft the moſt generous Kinds of *Cherries* on; by which means they are render'd more fruitful, and of leſſer Growth: Theſe two Sorts are propagated by laying down their tender Branches in Autumn, which in one Year's time will have taken Root, and may be remov'd into a Nurſery, for any of the above-mention'd Purpoſes.

The two Sorts of *Double-flowering Cherries* are alſo propagated for the Beauty of their Flowers, which, of the very double Kind, are extremely fine, the Flowers being as double and large as a *Cinnamon-Roſe*, and theſe being produced in large Bunches on every Part of the Tree, renders it one of the moſt beautiful Trees of the Spring. The other Sort, which is leſs double, will often produce ſome Fruit, which the very double Sort doth not; but this Defect is ſufficiently recompens'd in the Beauty of its Flowers. Theſe are propagated by Budding or Grafting them on the *Black* or *Wild Cherry* Stock, and are proper to intermix with the larger Sort of flowering Trees.

The *Wild Northern Cherry* is of no Uſe or Beauty, and is only preſerved by the Curious, in Collections of the different Sorts of Trees; as is alſo the *Machaleb* or *Perfum'd Cherry*, which is a free Shooter, and perhaps may ſerve for Stocks to improve the other Kinds of *Cherries*, as growing well in almoſt any Soil; but there is neither Uſe nor Beauty in the Flowers or Fruit of it. The *Strip'd-Leav'd Cherry* is proper in a Collection of variegated Trees, as adding to the Variety.

CERATIA; *vide* Siliqua Edulis.

CEREFOLIUM: *vide* Chærefolium.

CEREUS. The Torch-Thiſtle.

Theſe are all *American* Plants, where the Fruit are eaten as Figs: They lie in the Way in great Plenty, and being thorny, are injurious to thoſe who paſs among them naked. The eleventh as to its outward Shew, ſeems to be no very rare or curious Plant, but it has a very fine Flower, which beginning to open itſelf about the Evening, falls after Midnight: and hence it is call'd, 'Ελεοφυγὰς, i. e. *ſhunning the Sun.* The tenth Sort bears Figs of a moſt delicate Taſte; it is call'd *Cereus*, becauſe it is, as it were, a kind of *Taper* or *Torch*, which the Servants carry o' Nights before their Maſters.

Not that it is call'd ſo from its Reſemblance to a *Torch*, but becauſe, when theſe Plants have been cut down, and dry'd upon the Ground, they dip them into Oil, and burn them as *Torches*, for which Purpoſe they ſerve very well.

The *Characters* are;

It hath no Leaves; the Stems are thick and ſucculent; are angular and furrow'd, each Angle being arm'd with ſharp Spines, which are produc'd in Cluſters; the Flowers conſiſt of many flat Leaves, which expand themſelves ſomewhat like a Marygold: *In the Centre of the Flower is produc'd a great Number of Stamina (or Threads) which appear very ſpecious; the Fruit, which is fleſhy, ſoft, and like to that of the* Indian Fig, *is produc'd from the Side of the Plant, without any Footſtalk, immediately under the Flower.*

The *Species* are;

1. CEREUS *erectus altiſſimus Syrinamenſis. Par. Bat.* The large upright Torch-Thiſtle from *Surinam*.

2. CEREUS *erectus quadrangulus, coſtis alarum inſtar aſſurgentibus. Boerh. Ind.* The four-corner'd upright Torch-Thiſtle.

3. CEREUS *erectus, fructu rubro non ſpinoſo, lanuginoſus lanugine flaveſcente. Par. Bat.* The upright Torch-Thiſtle, with yellow Down and red Fruit without Spines.

4. CEREUS *erectus craſſiſſimus maxime anguloſus, ſpinis albis pluribis longiſſimis, lanugine flava. Boerh. Ind.* The largeſt upright Torch-Thiſtle, with large Angles and white Spines, having a yellow Down on the Top.

5. CEREUS *erectus gracilis, ſpinoſiſſimus ſpinis flavis, polygonus, lanugine alba palleſcente. Boerh. Ind.* The leſſer upright Torch-Thiſtle, with many Angles and yellow Spines, with a white Down on the Top.

6. CEREUS *erectus gracilior, ſpinoſiſſimus ſpinis albis, polygonus. Boerh. Ind.* The leſſer upright Torch-Thiſtle, with white Spines.

7. CEREUS *altiſſimus, gracilior, fructu extus luteo, intus niveo, ſeminibus nigris pleno. Sloan. Cat.* The leſſer upright Torch-Thiſtle, with Fruit on the Outſide yellow, and white within, and full of black Seeds.

8. CEREUS *maximus, fructu ſpinoſo rubro. Par. Bat.* The greateſt Torch-Thiſtle, with red prickly Fruit.

9. CEREUS *ſcandens minor trigonus articulatus, fructu ſuaviſſimo. Par. Bat.* The leſſer triangular creeping, jointed Torch-Thiſtle, with the ſweeteſt Fruit, *commonly call'd* in *Barbadoes*, the True prickly Pear.

10. CEREUS *criſtatus erectus, foliis triangularibus, profunde canaliculatis. Pluk. Phyt.* The creſted triangular Torch-Thiſtle, with deep Furrows.

11. CEREUS *ſcandens minor polygonus articulatus. Par. Bat.* The leſſer creeping, jointed Torch-Thiſtle, with many Angles.

12. CEREUS *minimus articulatus polygonus ſpinoſus. Boerh. Ind.* The leaſt prickly jointed Torch-Thiſtle with many Angles.

The firſt Sort is the hardieſt, as alſo the moſt common in *England* of any of theſe Sorts, and may be preſerv'd in a good Green-houſe without any artificial Heat, provided the Froſt is kept intirely out, and the Plant kept very dry all the Winter, for Wet is the greateſt Enemy to theſe Plants.

The 2d, 3d, 4th, 5th, 6th, 7th and 8th Sorts are ſomewhat tenderer, and will require a little artificial Warmth in very bad Weather; therefore theſe ſhould be plac'd in a Stove, which is kept up to the temperate Heat, mark'd on Mr. *Fowler*'s *Thermometers*: Theſe muſt alſo have very little Water in the Winter Seaſon.

The 9th Sort is, by the Inhabitants of *Barbadoes*, train'd up againſt their Houſes, for the Sake of its Fruit, which is about the Bigneſs of a *Bergamot-Pear*, and of a moſt delicious Flavour. This, with the 10th, 11th and 12th Sorts, are very tender, and require a very warm Stove to preſerve them: Theſe ſhould be plac'd againſt the Walls of the Stove, into which they will inſinuate their Roots, and extend themſelves to a great Length, and with a little Help, in faſtening them to the Wall here and there, may be led up about the Cieling of the Houſe, where they will appear very handſome. And the 11th Sort, when arriv'd to a ſufficient Strength, will produce many exceeding large, beautiful, ſweet-ſcented Flowers; but they are (like all the Flowers of theſe Kinds) of a very ſhort Duration, ſcarcely continuing full blown twelve Hours; nor do the ſame Flowers ever open again, when once clos'd: Theſe Flowers open in the Afternoon, and before the next Morning ſhut up again.

I don't remember to have heard of any of the other Sorts (except the firſt and ſeventh) which have produc'd Flowers in *Europe*; tho' it is to be hop'd, that when they are arriv'd to a ſufficient Strength, they will flower as well as thoſe two; but at preſent, the Plants of the other Sorts are but young, having been in *England* but a few Years. The firſt Sort ſeldom produces its Flowers until arriv'd to a conſiderable Age, unleſs by ſome Accident, which many times occaſions their flowering ſooner than they are commonly inclin'd to. Of this Kind, there was a very large Plant in the *Royal Garden* at *Paris*, which was upward of thirty Feet high, and had produc'd Flowers for ſeveral Years; but by the Severity of the Winter (*Anno* 1728) was deſtroy'd. There was alſo another in the *Phyſick Garden* at *Leyden*, which, in the Year 1727, when I was there, was above twenty Feet high, and had a great Number of Flowers upon it; but I don't know of any in *England* that are above twelve or fourteen Feet high, tho' there have been many which have flower'd within a few Years paſt. The ſeventh Sort has produced ripe Fruit in the *Phyſick Garden* at *Chelſea*, but it was very ill-flavoured, nor have the Flowers much Beauty, being of a whitiſh green Colour.

Theſe are all propagated by Cuttings, ſo that if you intend to increaſe the Number of them, you muſt cut off their Stems, at what Length you pleaſe: Theſe ſhould be laid in a dry Place to heal, at leaſt ten Days or a Fortnight before they are planted; but if they lie three Weeks, it is much the better, and they will be in leſs Danger of miſcarrying.

Theſe Cuttings ſhould be planted in ſmall Pots, fill'd with light ſandy Earth, with a Mixture of Lime-rubbiſh, laying ſome Stones in the Bottom of the Pots to drain off the Moiſture; then place the Pots into a gentle Hot-bed of Tanner's-bark, to facilitate their rooting, giving them once a Week a gentle Watering.

The beſt Seaſon for this Work is in *June* or *July*, that they may have time to root before Winter: Toward the Middle of *Auguſt* you muſt begin to give them Air by Degrees, to harden them againſt Winter, but they ſhould not be wholly expos'd to the open Air or Sun: At the End of *September* they muſt be remov'd into the Stove where they are to abide the Winter: during which Seaſon, you muſt be very careful not to let them have much Water, and always obſerve to place the young Plants, for the firſt Winter, in a little warmer Situation than the older Plants, as being ſomewhat tenderer.

Theſe Plants ſhould always have a dry Situation in Winter; for as they imbibe the greateſt Part of their Nouriſhment from the circumambient Air, ſo if this be too replete with moiſt Particles, it will occaſion their rotting. Theſe Plants ſhould none of them be expos'd abroad, not even in the Midſt of Summer; for great Rains, which often happen at that Seaſon, are very injurious to them: The firſt eight Sorts ſhould be therefore plac'd ſo as to enjoy a free Air in the Summer, but at the ſame time ſcreen'd from Rains and great Dews; it will therefore be much the better Method to ſet them in an open Glaſs-ſtove, where the Windows may be ſet open in good Weather, and ſhut in cold or wet. The other four Sorts muſt not be expos'd too much to the open Air, even in the hotteſt Seaſon, eſpecially if you deſign to have them flower; and in Winter they ſhould be kept very warm, and have no Water given them.

When you have once cut off the Tops of any of theſe Plants, in order to increaſe them, the lower Parts will put forth freſh Shoots from their Angles, which when grown to be eight or nine Inches long, may alſo be taken off to make freſh Plants, and by this means the old Plants will continually afford a ſupply, ſo that you never need cut off above one Plant of a Sort, which you ſhould preſerve for a Breeder.

Theſe Plants being ſucculent, they will bear to be a long time out of the Ground; therefore whoever hath a mind to get any of them from the *Weſt-Indies*, need give no other Inſtructions to their Friends, but to cut them off, and let them lie two or three Days to dry; then put them up in a Box with dry Hay or Straw, to keep them from wounding each other with their Spines; and if they are two or three Months on their Paſſage, they will keep very well, provided no Wet get to them.

CERINTHE; [Κηρινθὴ of Κηρὸς, Gr. *Wax*; becauſe the Bees in the Summer-time, while they are making their Honey-combs, do from this Plant, of which they are great Lovers, extract a Juice wherewith they make their Wax] Honey-wort.

The *Characters* are;

It hath glaucous deep-green Leaves, which are for the moſt part beſet with Prickles; the Flowers are cylindrical, conſiſting of one Leaf, in Shape like thoſe of Comfrey, *and are pendulous; each Flower is ſucceeded by two oblong naked Seeds.*

The *Species* are;

1. Cerinthe *quorundam, major, verſicolore flore. J. B.* The larger Honey-wort, with party-colour'd Flowers.
2. Cerinthe *quorundam, major, ſpinoſo folio, flavo flore. J. B.* The large Honey-wort, with prickly Leaves and yellow Flowers.
3. Cerinthe *quorundam, major, flore ex rubro-purpuraſcente. J. B.* The large Honey-wort, with reddiſh purple Flowers.
4. Cerinthe *quorundam, minor, flavo flore. J. B.* The leſſer Honey-wort, with yellow Flowers.
5. Cerinthe *folio non maculato, viridi. C. B.* Honey-wort, with deep-green Leaves, without Spots.
6. Cerinthe *flore verſicolore, ex albo & rubro. Boerh. Ind.* Honey-wort, with red and white party-colour'd Flowers.
7. Cerinthe *flore verſicolore ex albo & purpureo. Boerh. Ind.* Honey-wort, with purple and white party-colour'd Flowers.

The ſeveral Varieties of this Plant are propagated by Seeds, which ſhould be ſown ſoon after they are ripe, for if they are kept till Spring, the growing Quality of them is often loſt; the Plants are hardy, and if the Seeds are ſown in a warm Situation, they will endure the Winter's Cold very well without Shelter: Theſe *Autumnal* Plants alſo are much ſurer to produce ripe Seeds than thoſe which were ſown in the *Spring*, which are generally late in the Seaſon before they flower, and conſequently, if the *Autumn* ſhould not prove very warm, their Seeds would not be perfected.

Theſe Plants are pretty Varieties for large Borders in Gardens, where, if they are ſuffer'd to drop their Seeds, the Plants will ariſe without any farther Care; ſo that when a Perſon is once furniſh'd with the ſeveral Varieties, he need be at no more Trouble than to allow each of them a reſpective Place, where it may remain, and ſow its ſelf: And with this Culture there is a greater Certainty of preſerving the Sorts than in any other Management; nor will they perhaps be entirely loſt in this Way, if it ſhould happen, that the Seaſon ſhould prevent its maturating the Seed, (as it ſometimes proves); for when great Quantities of the Seeds have ſcatter'd upon the Ground, ſome of them will be buried ſo deep, in ſtirring the Earth, as not to grow the firſt Year; which upon being turn'd up to the Air, the ſucceeding Year, will come up as well as new Seeds.

CETERACH; *vide* Aſplenium.

CHÆROPHYLLUM; χαιρόφυλλον, of χαίρω *to rejoice*; and φύλλον, Gr. a *Leaf*, becauſe the Leaves being drank, do exhilarate and chear melancholy Perſons; it is alſo call'd *Cerefolium*, as though *Ceres*'s Leaves, becauſe this Plant ſerves the Table, where, in old Time, the Goddeſs *Ceres* did preſide.

The *Characters* are;

It is an Umbelliferous Plant, whoſe Leaves are divided into many Segments; the Petals of the Flower are bifid, and heart-ſhap'd, and each Flower is ſucceeded by two long Seeds, which are not furrow'd.

The *Species* are;

1. Chærophyllum *ſativum. C. B.* Garden or manur'd Chervil.
2. Chærophyllum *ſylveſtre, perenne, Cicutæ folio. Tourn.* Wild Perennial Chervil or Cow-weed.

The firſt of theſe *Species* is cultivated in the Kitchen-garden for *Sallads*, &c. The Seeds of this Plant ſhould be ſown in Autumn, ſoon after it is ripe, or very early in the Spring, otherwiſe it very often miſcarries; and as the Plant is annual, if it have a cool ſhady Spot of Ground allotted for it, and be ſuffer'd to ſow its ſelf, it will thrive better than when cultivated by Art.

The ſecond Sort grows wild upon moſt dry Banks and Hedge-ſides near *London*.

CHAMÆCERASUS: of χαμαὶ, *the Ground*; and χέρασος, Gr. *a Cherry-Tree*; as if we ſhould ſay, a *Dwarf-Cherry*] Upright Honey-ſuckle, *vulgo*.

The *Characters* are;

It is a Shrub growing upright to the Height of eight or nine Feet; whoſe Flowers conſiſt of one Leaf, which open towards the Top like two Lips, ſomewhat after the manner of the Honey-ſuckle. Theſe Flowers are ſucceeded by Berries ſomewhat like ſmall Cherries; *two of which are, for the moſt part, produc'd upon one Pedicle.*

The *Species* are;

1. Chamæcerasus *dumetorum, fructu gemino rubro. C. B.* The upright red-berried, or Fly-honeyſuckle, *vulgo*.
2. Chamæcerasus *Alpina, fructu gemino rubro, duobus punctis notato. C. B.* The greater upright red-berried Honey-ſuckle.
3. Chamæcerasus *montana, fructu ſingulari cœruleo. C. B.* The upright blue-berried Honeyſuckle.

Theſe Shrubs are very proper Ornaments for Wilderneſs Quarters, to intermix with others which are nearly of the ſame Growth, where by the Diverſity of their Leaves, and their regular Growth, they appear very well.

They are propagated by laying their tender Branches, which in one Year will have good Roots, and may be ſafely tranſplanted either into Nurſeries, or where they are intended to remain. The beſt Seaſon for this Work is in the Spring, before they begin to ſhoot: They may alſo be increas'd by planting Cuttings in the Autumn, in an Eaſt Border, where they may be defended from the great Heat of the Mid-day Sun, and carefully water'd in dry Weather: But theſe will ſcarcely have Roots fit to bear tranſplanting in leſs than two Years; and the blue-berried Kind is pretty difficult to take Root from Cuttings; therefore that ſhould always be propagated by Layers, if poſſible; which in laying ſhould be ſlit at the Joint, as is done in laying *Carnations*, which will greatly facilitate their ſtriking out Roots.

There are ſome other *Species* of this Shrub in the curious Botanick Gardens abroad, particularly in that admirable Collection of *Trees* and *Shrubs* in the Garden of the learned Dr. *Boerhaave*, near *Leyden* in *Holland*, where, amongſt a great Variety of other uncommon Trees, (perhaps more than in any one Garden in *Europe*, and which have been all collected together at the ſole Expence of the worthy Poſſeſſor) which that curious Gentleman was pleas'd to ſhew me, I obſerv'd two or three Sorts of this Tree which I had never before ſeen.

The firſt and ſecond Sorts are of quicker Growth than the third, and will, in a few Years, riſe to the Height of ſix or ſeven Feet; whereas the third ſeldom riſes above four or five Feet high with us.

CHAMÆCISTUS. *Vide* Helianthemum.

CHAMÆCLEMA; [of χαμαὶ, *low*, and κλῆμα, *to climb*, i. e. *Dwarf-climber*; or rather] *Hedera Terreſtris*, or Ground-Ivy.

The *Characters* are;

The Shoots trail upon the Ground, and emit Roots from almoſt every Joint, which faſten themſelves into the Earth; the Leaves are roundiſh, thick, rough, and are crenated on the Edges; the Helmet of the Flower is roundiſh, bifid, and reflex'd; the Beard (or lower Lip) is trifid, or cut into three Segments; the middle Segment is broad, and bifid; and the Flowers are produc'd at the Joints of the Shoots.

The *Species* are;

1. CHAMÆCLEMA *vulgare. Boerh. Ind.* Common Ground-Ivy, or Gill-go-by-Ground.
2. CHAMÆCLEMA *minus. Boerh. Ind.* Leſſer Ground-Ivy.
3. CHAMÆCLEMA *vulgare, foliis profunde inciſis.* Common Ground-Ivy, with deep-cut Leaves.
4. CHAMÆCLEMA *minus, foliis ex albo variegatis.* The leſſer Ground-Ivy, with variegated Leaves.

The two firſt Sorts grow wild in moſt Parts of *England*, upon the Sides of Banks and Foot-ways, and are promiſcuouſly gather'd by the Herb-women, and brought to the Market for medicinal Uſes. The third Sort is a Variety of the firſt, which for three or four Years held its Difference in the *Phyſick-Garden.* The fourth Sort is a Variety of the ſecond, which conſtantly continues, if it be not planted in too rich a Soil: This is a pretty Variety amongſt other variegated Plants, and increaſes faſt enough by its trailing Branches.

CHAMÆCYPARISSUS. *Vide* Santolina.

CHAMÆDAPHNE. *Vide* Ruſcus.

CHAMÆDRYS; [Χαμαίδρυς, of χαμαὶ, *Dwarf*, and Δρῦς, an *Oak*, i. e. *Dwarf-Oak.*] Germander.

The *Characters* are;

It hath ſmall thick Leaves, which are laciniated ſomewhat like thoſe of the Oak; *the Flowers (which are produced at the Wings of the Leaves) are labiated; the* Stamina *or Threads ſupply the Place of the* Creſt, *or Upper-Lip; the Beard or Lower-Lip of the Flower is divided into five Parts; the middle Segment (which is largeſt) is hollow like a Spoon, and ſometimes divided into two Parts; the Cup of the Flower is fiſtulous.*

The *Species* are;

1. CHAMÆDRYS *major repens. C. B.* The Greater Creeping Germander.
2. CHAMÆDRYS *minor repens. C. B.* The ſmaller Creeping Germander.
3. CHAMÆDRYS *laciniatis foliis. Lob.* Germander with cut Leaves.
4. CHAMÆDRYS *Hiſpanica tenuifolia multiflora. H. R. Par.* Narrow-leav'd *Spaniſh* Germander, with many Flowers.
5. CHAMÆDRYS *Alpina fruteſcens, folio ſplendente. Tourn.* Shrubby Germander of the *Alps*, with ſhining Leaves.
6. CHAMÆDRYS *fruticoſa Cretica, purpureo flore. Tourn.* Shrubby Germander of *Crete*, with a purple Flower.
7. CHAMÆDRYS *multifida ſpinoſa odorata. Vir. Luſit.* Prickly Sweet-ſmelling Germander, with Leaves divided into many Parts.

There are ſeveral other Varieties of this Plant, which are preſerv'd in the curious Gardens of Plants Abroad; but theſe mention'd are the principal Sorts to be found in the *Engliſh* Gardens. Theſe may be propagated, by ſowing their Seeds in the Spring in a Bed of freſh Earth in an open Situation; and when the Plants are come up, they may be tranſplanted either into ſmall Pots, or in Borders where they are intended to remain.

The ſixth and ſeventh Sorts ſhould have the Shelter of a Wall, Hedge, or Pale, to protect them from the North and Eaſt Winds, which are ſometimes deſtructive to them, if too much expos'd thereto. Theſe Sorts may alſo be increas'd, by planting their Cuttings in a ſhady Border, in *May* or *June*; which, if ſupply'd with Water in dry Weather, will take Root very well in about three Months Time, when they may be remov'd with Safety where they are deſign'd.

The third Sort is a biennial Plant, rarely abiding after it hath perfected its Seeds: This ſhould be ſown in a Border which is ſcreen'd from the cold Winds; and when the Plants are come up, they may be tranſplanted to a greater Diſtance in the ſame well-ſhelter'd Border: and the Spring following, the Plants will flower, and ſoon after will perfect their Seeds; which, if permitted to ſcatter upon the Ground, will ariſe of themſelves, without any more Trouble, and need only to be tranſplanted where the Plants are intended to remain.

The firſt and ſecond Sorts are very hardy, and propagate themſelves very faſt by their creeping Roots, which, if ſuffer'd to ſpread, as they are naturally inclin'd, will in a ſhort Time cover a large Spot of Ground: Therefore they ſhould be planted at a good Diſtance, and remov'd every Spring or Autumn, to prevent their over-running the Ground.

The ſecond Sort is preſcrib'd in the laſt *College Diſpenſatory*: But the firſt is our common Sort in *England*, which is what the Markets are ſupply'd withal: the ſecond being to be found only in curious Gardens of Plants.

CHAMÆLÆA; [Χαμαιλαῖα, of χαμαὶ, *low*, and 'Ελαία, an *Olive-Tree*, as tho' the *low Olive-Tree*, becauſe this Plant reſembles that Tree. It is alſo call'd *Chamælæa Tricoccos*, becauſe it bears three Seeds join'd together.] Widow-Wail.

The *Characters* are;

It hath a Flower conſiſting of one Leaf, which is deeply divided into three Parts; the Cup of the Flower is alſo of one Leaf, divided into three Segments; the Fruit conſiſts of three hard Berries cloſely joined together, in each of which is contain'd one oblong Seed; to which may be added, It hath the Appearance of a Shrub, and the Leaves are ſmall and oblong.

There is but one *Species* of this Plant in the *Engliſh* Gardens, which is;

CHAMÆLÆA *tricoccos. C. B.* The Widow-Wail.

This is a Shrub of low Growth, ſeldom ariſing above two or three Feet in Height with us, and is ſomewhat tender; therefore ſhould (if planted abroad) have a warm Poſition, and a dry Soil: It is uſually preſerv'd in Green-houſes in the Winter; but I find it will endure the Cold of our common Winters in the open Ground, if defended from the cold Winds.

This Plant is propagated by ſowing the Seeds, ſoon after they are ripe, in a Pot or Tub of Earth, which ſhould be ſhelter'd from Froſts in Winter, and the Earth ſuffer'd to remain undiſturb'd till the ſecond Year, when the Seeds will ariſe; which to promote, if you place the Pot into a gentle Hot-bed, it will greatly forward the Growth of the Plants. When the Plants are come up about ſix or eight Inches high, they may be tranſplanted ſingly into ſmall Pots, and ſcreen'd from the Sun until they have taken freſh Root: After which Time they ſhould be expos'd to the open Air; but for the two firſt Winters, while young, ſhould be ſhelter'd under a common Hot-bed Frame: But afterwards they may be turn'd out of the Pots into the full Ground, under a Wall, *&c.* (as was before directed) where they will abide very well. This Plant hath no great Beauty; nor do I know any Uſe made of it in *England*; and is only preſerv'd in curious Collections of Plants, for Variety-ſake.

CHAMÆMELUM, [Χαμαίμηλον, of χαμαὶ, and Μῆλον, an *Apple*; ſo call'd, becauſe it has the Scent of an Apple.] Camomile.

The *Characters* are;

It hath a fibroſe Root; the Cup of the Flower is ſquamoſe, which expands and appears like many Leaves; the Flowers are for the moſt part radiated; the Petals of the Flower are white, and the Diſk yellow; the Leaves are cut into five Segments.

The *Species* are;

1. CHAMÆMELUM *odoratiſſimum repens, flore ſimplici. J. B.* Sweet-ſcented creeping Camomile.
2. CHAMÆMELUM *repens odoratiſſimum perenne, flore multiplici. J. B.* Sweet-ſcented creeping Camomile, with double Flowers.
3. CHAMÆMELUM *vulgare amarum. J. B.* Common bitter Camomile.
4. CHAMÆMELUM *fœtidum. C. B.* Stinking Camomile or *May*-Weed.
5. CHAMÆMELUM *majus, folio tenuiſſimo, caule rubente. H. R. Par.* Larger Camomile, with narrow-cut Leaves, and reddiſh Stalks.
6. CHAMÆMELUM *leucanthemum Hiſpanicum, magno flore. C. B. Spaniſh* Camomile, with large Flowers.
7. CHAMÆMELUM *Chium vernum, folio craſſiori, flore magno. T. Cor.* Spring Thick-leav'd Camomile of Chio, with large Flowers.
8. CHAMÆMELUM *Orientale incanum, folio millefolii. T. Cor. Eaſtern* Camomile, with hoary narrow Leaves.
9. CHAMÆMELUM *Luſitanicum latifolium, ſive coronopi folio. Breyn.* Broad-leav'd *Portugal* Camomile.
10. CHAMÆMELUM *Æthiopicum lanuginoſum, flore albo. Breyn. Ethiopian* woolly Camomile, with a white Flower.
11. CHAMÆMELUM *Æthiopicum lanuginoſum, flore luteo. Boerh. Ind. Ethiopian* woolly Camomile, with a yellow Flower.
12. CHAMÆMELUM *Orientale, foliis pinnatis. T. Cor. Eaſtern* Camomile, with pennated Leaves.

There are ſeveral other Varieties of this Plant which are kept in curious *Botanick* Gardens; but theſe here mention'd are the principal Sorts we have at preſent in the *Engliſh* Gardens.

The firſt Sort is the common *Camomile* of the Shops, and is the only Kind which is propagated for Uſe in the *Engliſh* Gardens: This was formerly in great Requeſt for making of green Walks; but as it is very ſubject to rot in Winter, eſpecially when grown pretty thick, whereby the Walks planted therewith will have many bare Patches, and are thereby render'd very unſightly, it hath occaſion'd the Diſuſe of it for thoſe Purpoſes of late Years; but it is ſtill cultivated in *Phyſick* Gardens for medicinal Uſe, though it grows wild in great Plenty on moſt of the large Commons, or Heaths near *London*.

The ſecond Sort is preſerv'd in Gardens for the Variety of its very double Flowers; but is not ſo good for medicinal Uſes as the common, tho' at preſent it is more generally us'd.

There is alſo another Variety of this Plant, which is ſometimes found wild amongſt the common, that hath naked Flowers, being intirely deſtitute of *Petals*, or Flower-leaves.

Theſe three Sorts are eaſily propagated in a Garden, by parting their Roots, and planting them about eight or ten Inches diſtant every Way, for they are great Spreaders, eſpecially when planted in a good Soil. The beſt Seaſon for this Work is in *March*: They all thrive beſt in a poor Soil.

The third, fourth, and fifth Sorts are common Plants, in moſt Parts of *England*, and are rarely preſerv'd in Gardens, unleſs it be in publick *Botanick* Gardens, to increaſe the Number of Varieties.

The other Sorts, tho' Strangers in our Climate, yet will do very well if ſown in the Spring of the Year in an open Bed of freſh Earth, (except the tenth and eleventh Sorts, which are ſomewhat tender, and ſhould be firſt rais'd in a moderate Hot-bed, and may afterwards be tranſplanted abroad, where they will flower, and ripen their Seeds very well): They are moſt of them Annuals, therefore ſhould either be ſown every *Spring*, or their Seeds ſuffer'd to ſow themſelves, whereby the Labour may be ſav'd of preſerving their Seeds; and the Plants which ariſe from their Seeds in *Autumn*, if they ſtand the Winter, will flower early the ſucceeding Summer, and perfect their Seeds better than if ſown in the Spring.

Theſe Varieties are very proper for all curious Collections of Plants, but are ſeldom preſerv'd in Gardens for Uſe or Pleaſure.

CHAMÆMESPILUS; *vide* Meſpilus.

CHAMÆMORUS; [of χαμαὶ, and *Morum*, Lat. a *Mulberry*] Cloud-Berries, or Knot-Berries.

The *Characters* are;

It hath a pentapetalous Flower; the Fruit is compos'd of many Acini, *in Form of the* Mulberry.

There is but one *Species* of this Plant known in *England*, which is;

CHAMÆMORUS. *Cluſ. Hiſt.* Cloud-Berries, *vulgo*.

This Plant is found upon the Tops of the higheſt Hills in the North-part of *England*, but can't be cultivated in a Garden by any Art.

CHAMÆNERION; of Χαμαὶ, *Dwarf*, and Νήριον *a Roſe Bay*. *Geſner* calls this Plant *Filius ante Patrem*, i. e. *the Son before the Father*; becauſe, as it is well known, in other Plants the Flower is always prior to the Ovary: But this Fruit always appears before the Flower; but yet it is not before the Flower; for the Tube of the Ovary equally riſes among the *Stamina* of the Flower, and hence are equally fecundated, as in other Plants.

The *Characters* are;

The Calyx of the Flower conſiſts of four Leaves, which are long, ſlender, and are expanded; the Flowers are roſaceous, and conſiſt of four Leaves, which are ſucceeded by long ſquare Cods, which, when ripe, open into four Cells; in each of which are contain'd many downy Seeds.

The *Species* are;

1. CHAMÆNERION *villoſum, magno flore purpureo. Tourn.* Great hairy codded Loſeſtriſe, or Willow-Herb; *called alſo* Codlings and Cream.
2. CHAMÆNERION *latifolium vulgare. Tourn.* Broad-leav'd Willow-Herb, or Roſebay, *commonly called* French Willow.
3. CHAMÆNERION *latifolium vulgare, flore albo. Tourn.* Broad-leav'd Willow-Herb, or Roſebay, with white Flowers.

The firſt Sort is found very common by the Sides of Ditches in moſt Parts of *England*; but notwithſtanding its commonneſs, may be admitted into a large Garden, eſpecially if there happens to be a moiſt Place where few other Things will thrive, here this Plant will produce fair Flowers for two Months ſucceſſively.

The other two Sorts afford fine Spikes of beautiful Flowers, and deſerve a Place in ſome remote Corner of the Garden, for the Uſe of their Flowers to furniſh Baſons for Halls, Parlours, &c. but muſt not be planted amongſt other Flowers, for their Roots ſpread very far under the Surface of the Ground, and would thereby ſoon over-run and deſtroy whatever Flowers grew near them; nor ſhould they be permitted to ripen their Seeds, which will ſpread all over the Garden, and become very bad Weeds; the Stalks therefore ſhould be cut down before the Seeds are ſpread abroad by the Wind.

Theſe Sorts multiply faſt enough by Off-ſets, which may be planted either in *Spring* or *Autumn*, in any ſhady Part of the Garden, where they will thrive in almoſt any Soil, but beſt in that which is moiſt.

There are ſeveral other Varieties of this Plant, many of which are found wild in *England*, which are unworthy of a good Garden; therefore I ſhall omit mentioning them in this Place.

CHAMÆPITYS; [Χαμαιπίτυς, of χαμαὶ, and πίτυς, *a Pine-tree*, q. d. *Humble Pine*, becauſe the Leaves of this Plant reſemble the *Pine*.] Ground-Pine.

The *Characters* are;

The Leaves are narrow and trifid; the Flower is labiated: the Place of the Galea, or Creſt of the Flower, is ſupplied with little Teeth; the Beard (or lower Lip) is divided into three Parts, the middle Segment being again ſplit into two Parts; the Flowers rarely grow in Whorles, (as do moſt of this Tribe of Plants) but one or two Flowers are produc'd at the Wings of the Leaves.

The *Species* are ;

1. CHAMÆPITYS *lutea, vulgaris, ſive folio trifido.* *C. B.* Common yellow Ground-Pine.

2. CHAMÆPITYS *moſchata, foliis ſerratis, an prima Dioſcoridis.* *C. B.* Muſk Ground-Pine, with ſerrated Leaves.

There are ſeveral other Varieties of theſe Plants mention'd in Foreign Catalogues, but theſe two Sorts are all that I have ſeen growing in *England*.

The firſt Sort is found growing wild upon chalky Lands in many Parts of *England* : This may be cultivated in a Garden, if the Seeds are ſown ſoon after they are ripe ; for if it be kept till Spring, it ſeldom riſes well ; and if it doth come up, the Seeds are ſeldom perfected by Spring-Plants. This Sort is uſed in Medicine.

The ſecond Sort is preſerv'd in curious Gardens of Plants, but is ſeldom to be found in Pleaſure-Gardens, it being a Plant of no great Beauty : This is alſo an Annual, and may be cultivated in the ſame Manner with the former ; they both thrive beſt in a dry undung'd Soil.

CHAMÆRHODODENDRON, Sweet Mountain Roſe.

The *Characters* are ;

It hath a tubulous Flower conſiſting of one Leaf, ſhaped ſomewhat like a Funnel ; from whoſe Cup ariſes the Pointal, fixed like a Nail in the hinder Part of the Flower, which afterwards becomes an oblong Fruit, divided into five Cells, in which are contained many very ſmall Seeds.

The *Species* are ;

1. CHAMÆRHODODENDRON *Alpinum glabrum.* *Tourn.* Smooth Mountain Roſe of the *Alpes*.

2. CHAMÆRHODODENDRON *Alpinum villoſum.* *Tourn.* Hairy Mountain Roſe of the *Alpes*.

3. CHAMÆRHODODENDRON *Alpinum ſerpillifolium.* *Tourn.* Mountain Roſe of the *Alpes*, with a Mother of Thyme Leaf.

4. CHAMÆRHODODENDRON *Indicum, flore amplo coccineo.* *Tourn.* *Indian* Mountain Roſe, with a large ſcarlet Flower.

The firſt, ſecond, and third Sorts grow wild on the *Alpes*, as alſo upon ſeveral Hills in *Germany* and *Auſtria* ; but are with great Difficulty preſerved in Gardens in this Country. The beſt Method to cultivate theſe Plants is, to put them in Pots filled with freſh loamy Earth, and place them in a ſhady Situation, obſerving to water them conſtantly in dry Weather, otherwiſe they will ſoon decay ; for in their natural Situation they have frequent Rains, and very great Dews, whereby the Ground is kept continually moiſt ; ſo that, when theſe Plants are tranſplanted into a drier Situation, if they are not duly watered, they are ſoon deſtroyed.

They may be propagated by laying down their tender Branches early in the Spring, which, if duly watered, will take Root by the following Spring ; when they ſhould be ſeparated from the old Plants, and tranſplanted, either into Pots filled with freſh loamy Earth, or into ſome ſhady moiſt Border ; where, if they are duly watered in dry Weather, they will thrive, and produce their Flowers ; but they will not perfect their Seeds in this Country.

The fourth Sort is very tender ; therefore muſt be placed in a warm Stove in the Winter, otherwiſe it will not live in this Country. This Kind may be propagated by laying down the tender Branches, which will take Root in one Year, provided, they are duly watered : then they may be taken off from the old Plant, and each planted into a ſeparate ſmall Pot filled with freſh loamy Earth ; and if the Pots are placed in a moderate Hot-bed of Tanners-bark, and the Glaſſes ſhaded in the Heat of the Day, until the Plants have taken new Root, it will be a very ſafe Method to preſerve them, and will greatly promote their Growth.

The ſecond Year after theſe Layers are taken from the old Plants, they will produce Flowers, and continue ſo to do every Year after. Theſe Plants may be placed abroad in Summer ; but they muſt not be taken out of the Stove till the middle of *June*, and muſt be placed where they may be well defended from ſtrong Winds ; otherwiſe they will loſe their Leaves in Summer, which will prevent their flowering : nor ſhould they remain abroad too late in Autumn ; for if they remain ſo late as to be pinched by morning Froſts, they ſeldom ſurvive it ; for when the upper Leaves, and tender Shoots are nipped, the Shoots will decay ſoon after, and the whole Plant be ſoon deſtroyed. In Summer theſe Plants require to be plentifully watered ; but in Winter they ſhould not have too large Quantities, but muſt be frequently refreſhed.

CHAMÆRIPHES ; *vide* Palma.

CHAMÆRUBUS ; *vide* Rubus.

CHAMÆSYCE ; *vide* Tithymalus.

CHELIDONIUM Majus. The greater Celandine.

The *Characters* are ;

The Cup of the Flower conſiſts of two Leaves, which ſoon fall away ; the Flower hath four Leaves, which are expanded in Form of a Croſs ; the Ovary in the Baſe of the Flower, is ſurrounded by many Stamina *(or Threads) ; the Flowers ſoon fall away, and are ſucceeded by many bivalve Pods, which contain many ſmall round Seeds : And the whole Plant is full of a yellow hot Juice.*

The *Species* are ;

1. CHELIDONIUM *majus, vulgare.* *C. B.* Common Great Celandine.

2. CHELIDONIUM *majus, foliis quernis, flore laciniato.* *Mor. Hiſt.* Greater Celandine, with Leaves like the Oak, and laciniated Flowers.

3. CHELIDONIUM *majus, foliis & flore minutiſſime laciniatis.* *H. R. Par.* Greater Celandine, with fine cut Leaves and Flowers.

4. CHELIDONIUM *maximum Canadenſe acaulon.* *Corn.* Large *Canada* Celandine, without Stalks, *commonly called* Pocone.

The firſt Sort grows wild upon dry Banks and Walls in moſt Parts of *England*, and is brought to the Markets by the Herb-women, who gather it for Medicinal Uſe.

The ſecond Sort hath been found wild in ſome particular Places in *England*, particularly at *Wimbleton* in *Surry* : This Sort conſtantly retains its Difference when cultivated in a Garden, and ſown yearly ; the Seeds of this never producing any Plants of the common Sort amongſt them.

The third Sort is only to be found in curious Botanick Gardens, where it is preſerv'd for its Variety.

The fourth Sort was brought from *America* ; and altho' ſtiled *Canada* in its Title, yet is found in divers Parts of the Continent, as in *Virginia*, *Carolina*, *New-England*, &c. from whence I have received Plants of this Kind, which I find will endure our ſevereſt Winters in the open Ground, if planted near a Wall, Pale, *&c.* to defend it from the cold Winds. This flowers in *April*, and perfects its Seeds in *June* ; from which new Plants may be obtain'd, if ſown ſoon after it is ripe : But the eaſieſt Method to propagate this Plant, is by parting the Roots in *March*, which increaſe very faſt in a moiſt Soil.

The other Varieties may all be propagated by ſowing their Seeds ſoon after they are ripe, in any Corner of the Garden ; where, if ſuffer'd to caſt their Seeds, they will always furniſh a plentiful Stock of young Plants, without any farther Trouble.

CHELIDONIUM Minus ; [of χελιδὼν, *Gr. a Swallow* : The Poets having feign'd concerning this Plant, that it takes its Name from the Uſe which Swallows make of it ; for they tell us, that Swallows apply the Leaves of *Chelidony* to the Eyes of their young ones which are hatch'd blind, and by that means open them ; but 'tis certain from Natural Hiſtory, that all young Birds, when they are firſt excluded the Shell, have their Eyes cover'd with a Sort of a thin Membrane, as it is after ſome ſort in a human *Fœtus*, becauſe the Humours are not ſufficiently clear and pellucid, but turbid] Pilewort or leſſer Celandine.

The *Characters* are ;

It hath a grumoſe or granuloſe Root ; the Leaves are roundiſh ; the Flower-ſtalks trail upon the Ground ; the Cup of the Flower conſiſts of three Leaves ; the Flowers are roſaceous, conſiſting of five or more Leaves ; the Ovary becomes a globular Fruit, after the manner of the Ranunculus.

The *Species* are ;

1. CHELIDONIUM *minus.* *Dod.* The leſſer Celandine or Pilewort.

2. CHELIDONIUM *minus, flore pleno.* *Camer.* The leſſer Celandine, with double Flowers.

The firſt Sort grows wild by the Sides of Ditches, and in moiſt Meadows, in almoſt every Part of *England*, ſo that 'tis rarely kept in a Garden.

The ſecond Sort is a Variety of the firſt, which hath been found in the Meadows, and tranſplanted into ſeveral curious Gardens, where it continues to produce very double Flowers, and is, for Variety, worthy of a moiſt ſhady Border in the beſt Gardens: They both propagate themſelves by Roots very faſt, ſo that there needs no more Care with them than the firſt tranſplanting ſome Roots of the Sort you would preſerve, into ſome ſhady moiſt Spot of Ground, letting them remain undiſturb'd, and in a ſhort time they will furniſh a ſufficient Supply of Roots.

CHELONE, [Χελώνη, Gr. a *Tortoiſe.*]

The *Characters* are;

It hath a ſhort, green, ſquamoſe Calyx; the Flower conſiſts of one Leaf, which is divided into two Lips; the Galea *(or Creſt) is ſomewhat like the Head of a* Tortoiſe; *the Beard (or lower Lip) is extended beyond the Creſt, and is bifid; the Flower is ſucceeded by a Fruit which is in Shape like that of the* Fox-glove, *and is divided into two Cells, in which are contain'd many flat Seeds, that are furbelow'd on the Edges.*

There is but one *Species* of this Plant at preſent known in the *Engliſh* Gardens, which is,

Chelone, *Acadienſis, flore albo. Tourn.* White-flowering Chelone of *Acadia.*

Tho', by the Title of this Plant, it is ſuppos'd a Native of *Acadia* only, yet hath it been brought from divers Parts of *America*; and 'tis very probable may be found in moſt Parts of *North America*, as *Virginia*, *Maryland*, *New-England*, &c. From the two laſt mentioned Places ſeveral Plants have been ſent to *England* by ſome curious Perſons of thoſe Countries.

This Plant is very hardy, enduring our ſevereſt Cold in the open Ground: It is propagated by parting the Roots in the Spring, which increaſe very faſt under the Surface of the Earth; therefore it ſhould not be planted amongſt other curious Plants or Flowers, leſt, by its ſpreading Roots, it ſhould overbear and deſtroy them. It dies to the Surface every Winter, and ariſes again the ſucceeding Spring, producing its Flowers in *Auguſt*, and ripens its Seeds in *October*; which altho' it ſeems to be perfectly good almoſt every Year, yet I could never procure one ſingle Plant from all the Seeds I have yet ſown, either of my own ſaving, or ſuch as have been brought from Abroad.

CHENOPODIO-MORUS, [Χηνοπόδιον, of χὴν χηνὸς, a *Gooſe*, and ποῦς, a *Foot*, Gr. and *Morus*, a *Mulberry:* Becauſe the Leaves reſemble a Gooſe Foot; and the Fruit, that of a Mulberry] Mulberry Blight.

The *Characters* are;

The whole Plant hath the Appearance of a Blight; *but the Fruit is ſucculent, and in Shape like a* Mulberry *or* Strawberry.

The *Species* are;

1. Chenopodio-morus *major. Boer. Ind.* Great Mulberry Blight, *commonly called* Strawberry Spinage.
2. Chenopodio-morus *minor. Boerh. Ind.* Leſſer Mulberry Blight, *commonly called* Berry-bearing Orach.

Theſe two Plants are pretty Varieties in a Garden, being very proper to plant in Pots, to intermix with other annual Plants to adorn Court-yards, during the Summer and Autumn Seaſons; where (if the Plants are regularly train'd up to Sticks while young) their Fruit, with which every Part of the Plant will be fill'd doth make a very good Appearance.

Theſe Plants are propagated by ſowing their Seeds in the Spring in a gentle Hot-bed; and when the Plants are ſtrong enough to be tranſplanted, they may be planted in Pots of rich Earth, and expos'd to the open Air, giving them frequent Waterings, as the Seaſon may require; and as they advance in Height, they ſhould be kept ty'd up cloſe to Sticks, trimming off all the Side-branches: which, if permitted to remain on, would prevent the Plant from advancing in Height.

The Fruit of theſe Plants, if ſuffered to fall to the Ground, will come up again in the Autumn; which Plants, if potted, and ſhelter'd from ſevere Froſts, in a common Hot-bed Frame, will grow much larger than thoſe ſown in the Spring, and flower and produce their Fruit much earlier in the Seaſon: So that, by having Plants of both Seaſons, they may be continued in Beauty thro' the greateſt Part of the Summer and Autumn.

CHENOPODIUM, [Χηνοπόδιον, Gr.] Gooſe-foot or Wild Orach.

The *Characters* are;

The Seeds are ſingle and globoſe in ſome Species, *but in others they are compreſs'd; the Cup of the Flower is quinquifid (or divided into five Parts); the Leaves grow alternately upon the Stalks between the Seeds.*

The *Species* are;

1. Chenopodium *fœtidum. Tourn.* Stinking Orach.
2. Chenopodium *lini folio villoſo. Tourn.* Flax-leav'd Orach, *commonly called* Summer-Cypreſs or Belvedere.
3. Chenopodium *Ambroſioides, folio ſinuato. Tourn.* Cut-leav'd Orach, *commonly called* Oak of Jeruſalem.
4. Chenopodium *Ambroſioides Mexicanum. Tourn. Mexican* Orach, *commonly called* Oak of Cappadocia.
5. Chenopodium *Ambroſioides Mexicanum fruticoſum. Boerh. Ind.* Shrubby *Mexican* Orach.

The firſt of theſe Sorts is very common upon Dunghils, and in Gardens, in moſt Parts of *England:* It is ſeldom cultivated, except in ſome Phyſick Gardens: for the Markets in *London* are ſupplied with it by the Herb-women, who gather it wild.

The ſecond Sort is ſometimes cultivated in Gardens; 'tis a beautiful Plant, which naturally is diſpos'd to grow very cloſe and thick, and in as regular a Pyramid as if cut by Art. The Leaves are of a pleaſant Green: And were it not for that, it hath ſo much of the Appearance of a Cypreſs Tree, that at ſome Diſtance it might be taken for the ſame, by good Judges. The Seeds ſhould be ſown in Autumn: And in the Spring, when the Plants are come up, they may be planted into Pots of good Earth, and kept ſupplied with Water, in dry Weather: Theſe Pots may be intermix'd with other Plants, to adorn Court-yards, *&c.* where they will appear very handſome, until their Seeds begin to ſwell and grow heavy, which weigh down and diſplace the Branches: At which Time the Pots ſhould be remov'd to ſome abject Part of the Garden, to maturate their Seeds; which, if permitted to fall upon the Ground, will come up the next Spring: So that you need be at no more Trouble in propagating theſe Plants, but only to tranſplant them where you intend they ſhould grow.

The third Sort was formerly uſed in Medicine: But altho' it ſtill continues in the Catalogue of Simples annex'd to the *London Diſpenſatory*, yet is very ſeldom us'd at preſent. This Plant may be propagated by ſowing the Seeds in an open Border of good Earth in the Spring, where it will perfect its Seed in Autumn; which, if permitted to ſhed upon the Ground, will ariſe as the former.

The fourth and fifth Sorts were brought from *America*, where the Seeds are call'd *Worm-Seed*; I ſuppoſe, from ſome Quality contain'd in it, which deſtroys Worms in the Body.

The fourth Sort is propagated by ſowing the Seeds in the Spring (as the before-mention'd Sorts); and will perfect its Seed in Autumn; after which, the Plant decays to the Ground: But if the Root be preſerv'd in Shelter under a Hot-bed Frame, it will put forth again in the ſucceeding Spring.

The fifth Sort grows to be a ſmall Shrub, ariſing ſometimes to the Height of five or ſix Feet, and becomes woody. This may be propagated by planting Cuttings in a ſhady Border during any of the Summer Months; which ſhould be ſhaded until they have taken Root, and that will be in a Month's Time, or leſs: Then they ſhould be planted into Pots, that they may be ſhelter'd in the Winter under a Frame, where they will abide the Cold very well, being ſomewhat hardy, tho' they will not ſtand in the open Air. There is no great Beauty in theſe two Plants; but they are preſerv'd in Gardens, becauſe of the ſtrong Smell of their Leaves.

CHERRY-LAUREL. *Vide* Lauro-ceraſus.

CHERRY-TREE. *Vide* Ceraſus.

CHERVIL. *Vide* Chærefolium.

CHESNUT. *Vide* Caſtanea.

CHIVES, are the fine Threads of Flowers, or the little Knobs which grow on the Tops of theſe Threads.

CHIVES *Tipt with Pendants*, are the *Apices* of Flowers, having *Farina* hanging and ſhaking at their Points, as the *Tulip*, &c.

CHIVETS, are the ſmall Parts at the Roots of Plants, by which they are propagated.

CHONDRILLA; [of χονδρὸς, Gr. a *Cartilage.*] Gum-Succory.

The *Characters* are;

It hath a cylindrical Cup to the Flower, which is cut almoſt to the Bottom, (in ſeveral Species); the Seeds are oblong and narrow; in other reſpects it is like the Lettuce.

The *Species* are;

1. CHONDRILLA *cærulea altera, cichorei ſylveſtris folio. C. B.* Blue-flower'd Gum-Succory.
2. CHONDRILLA *cærulea laciniata latifolia. C. B.* Blue flower'd Gum-Succory, with broad cut Leaves.
3. CHONDRILLA *juncea viſcoſa arvenſis, quæ prima Dioſcoridis. C. B.* Clammy Gum-Succory, with Shoots like the *Ruſh.*
4. CHONDRILLA *hieracii folio, annua. Tourn.* The annual Gum-Succory, with Hawkweed Leaves.

There are ſeveral other Varieties of this Plant, which are preſerv'd in curious Botanick Gardens, for the ſake of Variety: But as there is very little Beauty in them, ſo they are hardly worth their ſtanding in a Pleaſure-Garden.

But whoever hath a Mind to propagate their ſeveral Species, may ſow their Seeds in an open Bed of common Earth in the Spring, where they will readily come up, and thrive exceedingly; and their Seeds being permitted to ſcatter upon the Ground, will come up and ſoon overſpread a Garden.

The three firſt Sorts are abiding Plants, and increaſe very much by their ſpreading Roots, which, if not confin'd, will in a ſhort time become very troubleſome Weeds in a Garden; as alſo, if their Seeds are ſuffer'd to ripen, they will be blown all over the Garden, and be full as bad as Sow-thiſtles.

CHRISTMAS-FLOWER, or Black Hellebore; *vide* Helleborus.

CHRISTOPHORIANA; [This Herb takes its Name of St. *Chriſtopher.*] Herb-*Chriſtopher.*

The *Characters* are;

The Flower conſiſts of five Leaves, which are plac'd orbicularly, and expand in Form of a Roſe; *in the Center of which ariſes the Ovary, which becomes a ſoft Fruit or Berry, of an oval Shape, and is fill'd with Seeds in a double Row, which for the moſt part adhere together.*

The *Species* are;

1. CHRISTOPHORIANA *vulgaris noſtras, racemoſa & ramoſa. Mor. Hiſt.* Common Herb-*Chriſtopher*, or Bane-berries.
2. CHRISTOPHORIANA *Americana racemoſa, baccis rubris. Mor. Hiſt. American* Herb-*Chriſtopher*, with red Berries.
3. CHRISTOPHORIANA *Americana racemoſa, baccis rubris, longo pediculo inſidentibus. Sarrac. American* Herb-*Chriſtopher*, with red Berries growing on long Foot-ſtalks.

The firſt of theſe Sorts is found in divers Places in *Yorkſhire*, *Cumberland*, *Northumberland*, and other Northern Counties of *England*; but is rarely met with in the Southern Parts, unleſs where it is preſerved in Gardens: This Plant may be propagated by ſowing the Seeds, or parting the Roots: It muſt have a ſhady moiſt Situation, where it will thrive very well.

The ſecond and third Sorts are only preſerv'd in curious Gardens of Plants, and are rarely met with in the *Engliſh* Gardens; they are very hardy, and will endure our Cold very well, if planted in the open Ground.

Theſe are propagated in the ſame manner as the former.

CHRYSANTHEMOIDES OSTEOSPERMON; [of χρυσάνθεμον; of χρυσὸς *Gold*, ἄνθεμος a *Flower*, and εἶδος *Form*, Gr. It is call'd *Oſteoſpermon*, of ὀστέον a *Bone*, and σπέρμα *Seed*, on account of the Hardneſs of its Seed.] Hard-ſeeded Chryſanthemum.

The *Characters* are;

The Leaves grow alternately upon the Branches; the Cup of the Flower is, for the moſt part, ſingle and ſcaly; the Flowers are radiated like a ſmall Sun-Flower; *the Ovary becomes a hard Seed.*

The *Species* are;

1. CHRYSANTHEMOIDES *Oſteoſpermon Africanum odoratum, ſpinoſum & viſcoſum. H. A. African* ſweet-ſcented, hard-ſeeded Chryſanthemum, with prickly Branches and viſcous Leaves.
2. CHRYSANTHEMOIDES *Oſteoſpermon, Africanum, arboreum, foliis populi albæ. Boerh. Ind. African* hard-ſeeded Tree-Chryſanthemum, with Leaves like the white Poplar.
3. *An.* CHRYSANTHEMOIDES, *quod Chryſanthemum ex inſulis Caribæis, leucoii incanis & ſericeis foliis, argenteis, craſſis. Pluk. Boerh. Ind.* Hard-ſeeded Chryſanthemum from the *Caribbee* Iſlands, with thick whitiſh Leaves.
4. *An.* CHRYSANTHEMOIDES, *quod Chryſanthemum Bermudenſe, leucoii foliis virentibus craſſis. Pluk.* Hard-ſeeded Chryſanthemum from *Bermudas*, with thick green Leaves.
5. *An.* CHRYSANTHEMOIDES, *quod Chryſanthemum Americanum, foliis virentibus, craſſis & dentatis. American* hard-ſeeded Chryſanthemum, with thick deep green Leaves indented on the Edges.

Theſe Plants are all of them propagated by planting their Cuttings in a Bed of rich Earth in any of the Summer Months, obſerving to ſcreen them from the Heat of the Sun until they have taken Root, which will be in about ſix Weeks or two Months after planting; at which time they ſhould be tranſplanted into Pots fill'd with light ſandy Earth, and ſet in a ſhady Place until their Roots are fix'd to the new Earth; then they may be expos'd to the open Air till *October*, at which time they ſhould be hous'd, with *Oranges*, *Myrtles*, &c. giving them as much free Air in mild Weather as is poſſible, by opening the Windows of the Green-houſe, and obſerving to refreſh them pretty often, for they all require in mild Weather much Water.

The three firſt mention'd Sorts are very hardy, and will endure to ſtand in a cold Green-houſe, with *Myrtles* and *Amomum Plinii's*, where if they are only protected from freezing, it will be ſufficient: But the two laſt mentioned having very ſucculent Branches, muſt have a warmer Poſition; for upon the leaſt Froſt touching their Branches, they are very apt to rot and decay.

Theſe Plants continue flowering the moſt Part of the Winter Seaſon, which renders them valuable, becauſe at that Time we have few other Plants which produce Flowers; and altho' theſe Flowers are not very beautiful, yet at that Seaſon every thing which appears like a Flower is acceptable, as putting us in Hopes of a ſucceeding Spring, when almoſt every thing without Doors is depriv'd of its former Verdure and Beauty.

CHRYSANTHEMUM; [χρυσάνθεμον, *Gr.* from χρυσὸς *Gold*, and ἄνθεμος a *Flower*; which is to ſay, *Golden Flower.*] Corn Marygold.

The *Characters* are;

It hath an annual Root; the Cup of the Flower is hemiſpherical, and ſcaly; the Flowers are radiated; the Rays being for the moſt part of a yellow Colour, and the Seeds are furrow'd.

The *Species* are;

1. CHRYSANTHEMUM *flore partim candido, partim luteo. C. B.* White Corn-Marygold, or Chryſanthemum.
2. CHRYSANTHEMUM *folio matricariæ, flore albo pleno. H. C.* The double white Chryſanthemum, or Corn-Marygold.
3. CHRYSANTHEMUM *Creticum luteum. H. Eyſt.* The yellow Chryſanthemum, or Corn-Marygold.
4. CHRYSANTHEMUM *folio matricariæ, flore luteo pleno. Boerh. Ind.* The double yellow Chryſanthemum, or Corn-Marygold.
5. CHRYSANTHEMUM *Creticum, petalis florum fiſtuloſis. Tourn.* The Quill-leav'd Chryſanthemum, or Corn-Marygold.

There are ſeveral other Varieties of this Plant; but as they are of leſs Note than theſe mention'd, and only preſerv'd in curious *Botanick* Gardens for their Variety, ſo I ſhall omit mentioning them in this Place.

Theſe Plants are all propagated by ſowing their Seeds in the Spring upon a gentle Hot-bed, in order to have them early; otherwiſe they will come up as well, if ſown in the open Ground: When the Plants are come up, they ſhould be tranſplanted into Nurſery-beds, at about ten Inches aſunder every way, where they may remain until they ſhew their Flowers, at which time you may tranſplant all thoſe which have double Flowers, either into Pots or Borders, to adorn the Pleaſure-Garden or Court-Yard. The ſingle ones may be pull'd up firſt, and caſt away as good for nothing, which will make room for the better, taking up the double ones, with a large Ball of Earth to their Roots, otherwiſe they will not bear removing when ſo far advanc'd. If theſe Plants are ſet in the full Ground, they will grow very large; therefore they ſhould be planted only in very large Borders, and not too near other Flowers, leſt by their over-bearing them they ſhould be deſtroy'd: But they are much handſomer when confin'd in Pots, provided they are conſtantly water'd; for by this means their Roots are kept within Compaſs, and the Plants ſeldom grow ſo large, but produce a greater Quantity of Flowers.

In ſaving the Seeds of theſe Plants, you ſhould always make choice of the very double Flowers, which will certainly produce a much greater Quantity of double Flowers the next Year, than would the Seeds of ſingle or half double Flowers; tho', if the Seeds are taken from the very beſt Flowers, they will degenerate, and bring ſome ſingle Flowers amongſt them: Therefore, to avoid this Diſappointment, the better Method is, when you have gotten ſome fine double Kinds of theſe Plants of both Colours, to take off ſome Cuttings of each Kind towards the latter End of *Auguſt*, or the Beginning of *September*, and plant them pretty cloſe, in Pots fill'd with common freſh Earth, ſetting them in a ſhady Place, and obſerving to water them frequently: Theſe Cuttings will, in a Month's time, ſtrike out Roots, and begin to grow; you muſt therefore remove the Pots into an open Situation, obſerving, as before, to refreſh them with Water, (which muſt now be done gently, that the young Plants may not grow too vigorous before Winter): In this Place they may remain until the latter End of *October*, when you ſhould place the Pots into a common Hot-bed Frame, that they may be ſcreen'd from ſevere Froſts, which would deſtroy them; but obſerve to take the Glaſſes off every Day, when the Weather will permit; otherwiſe the Plants will draw up and be very tender, ſo that upon the leaſt Impreſſion of Cold they will ſuffer very much; as alſo by being ſhut up cloſe, they would be ſubject to rot by the damp Air which ſurrounds them.

In the Spring theſe Plants may be tranſplanted out either into ſeparate Pots or Borders, as before directed, where they will flower early; and hereby you will be ſure to have the Sorts right, according to the Plants which the Cuttings were taken from.

CHRYSOSPLENIUM; [χρυσοσπλήνιον, of χρυσὸς *Gold*, and σπλὴν *the Spleen*, q. d. a *Plant* the Flowers of which are of a golden Colour, and good againſt Diſeaſes of the Spleen.] Golden Saxifrage.

The *Characters* are;

It hath a perennial fibroſe Root; the Calyx (or Flower-cup) is divided into four Parts; the Flower hath no viſible Petals, but hath eight Stamina, *or Threads, which ſurround the Ovary; the Pointal becomes a membraneous Veſſel, which is forked and bivalve, incloſing many ſmall Seeds.*

The *Species* are;

1. CHRYSOSPLENIUM *foliis amplioribus auriculatis. Tourn.* Golden Saxifrage, with large-ear'd Leaves.
2. CHRYSOSPLENIUM *foliis pediculis oblongis inſidentibus. Raii Syn.* Golden Saxifrage, with Leaves ſtanding on long Footſtalks.

Theſe two Plants are found growing wild in many Parts of *England*, upon marſhy Soils and Bogs, as alſo in moiſt ſhady Woods, and are ſeldom propagated in Gardens: where, if any Perſon have Curioſity to cultivate them, they muſt be planted in very moiſt ſhady Places, otherwiſe they will not thrive.

CIBOULS, or CHIBOULS; theſe are alſo cultivated by parting their Roots in Autumn, as was directed for *Eſcallions*, and to which they are nearly allied; but the great Diverſities of theſe Kinds, which were formerly cultivated in Kitchen Gardens, are now almoſt wholly neglected, it being found to little Purpoſe the propagating ſo many Kinds, when two or three will anſwer all the Purpoſes full as well.

CICER; [This Plant is call'd *Cicer*, of Κίκυς *Strength*; becauſe it is ſaid to ſtrengthen: It is alſo call'd *Arietana*, becauſe the Seeds of it reſemble the Head of a Ram.] Chiches, or Chick-Peaſe.

The *Characters* are;

It hath a Pea-ſhap'd (or papilionaceous) Flower, which is ſucceeded by ſhort ſwelling Pods; ſomewhat like the inflated Bladder of a Fiſh; the Seeds are ſhap'd ſomewhat like a Ram's Head.

The *Species* are;

1. CICER *ſativum, flore candido. C. B. P.* Garden Chiches, with a white Flower.
2. CICER *ſativum, ſemine rufo. C. B.* Manured Chiches, with reddiſh Seeds.
3. CICER *ſativum, ſemine nigro. C. B.* Manured Chiches, with black Seeds.
4. CICER *ſativum, flore ex rubro purpuraſcente, ſemine rubro. C. B.* Manured Chiches, with purpliſh red Flowers, and red Seeds.

There are ſome other Varieties of this Plant preſerved in curious Botanick Gardens abroad: but theſe here enumerated are the common Sorts, which are cultivated in the Kitchen-Gardens in *France*, *Italy*, *Spain*, &c. and, I believe, are all Seminal Varieties, which alter and change the Colour of their Flowers and Seeds, as do the common Garden-Beans.

This Plant is ſeldom cultivated in *England*, except in particular Gardens: nor do I think it worth planting for Uſe where Peas will do well, which are ſo much preferable for Goodneſs, and much greater Bearers, producing above double the Quantity upon the ſame Ground: but in warmer Countries, where our delicate Sorts of Peas ſeldom thrive well, theſe may ſupply their Place; and, perhaps, in thoſe Countries they are much more fruitful than with us.

The Seeds of theſe *Chiches* ſhould be ſown in *March*, in an open Situation, and upon a warm dry Soil, in Rows about two Feet aſunder, and as thick as Peas are uſually ſown in the Rows: When the Plants are come up, the Ground muſt be hough'd, and the Plants earth'd, as is practiſed for common Peas, to which this Plant agrees very well in its Culture. In *June* and *July* it will flower, and its Seeds will be ripe in *Auguſt* and *September*.

The People in *France* and *Italy* preſerve them for boiling in the Winter Seaſon, as we do our White and Grey Peas, to which theſe are ſomewhat akin.

CICHORIUM, [Χιχώριον, or κικόριον, of κιχέω, *I find*, becauſe it is found every-where in walking; or as others ſay, of κίω, *I go*, and χῶρος, *a Place*:] Succory.

The *Characters* are;

It is one of the Milky Plants, with a plain radiated Flower; the Flowers are produced from the Sides of the Branches, at the ſetting off of the Branches upon ſhort Foot-ſtalks; the Cup of the Flower is like a contracted Seed-veſſel; the Seeds are angular, umbilicated, and in Shape ſomewhat like a Wedge.

The *Species* are;

1. CICHORIUM *latifolium, ſive Endivia vulgaris. Tourn.* Common Broad-leav'd Endive.
2. CICHORIUM *anguſtifolium, ſive Endivia vulgaris. Tourn.* Common narrow-leav'd Endive.
3. CICHORIUM *criſpum. Tourn.* Curled Endive.
4. CICHORIUM *criſpum, anguſtifolium. Boerh. Ind.* Narrow-leav'd curled Endive.
5. CICHORIUM *ſylveſtre, ſive officinarum. C. B.* Wild Succory.

The firſt and ſecond Sorts of *Endive* are now wholly diſuſed in the Kitchen-Gardens, as being vaſtly inferior to the curled Kinds, which are by much the larger and handſomer Heads.

The Seaſons for ſowing their Seeds are in *May*, *June*, and *July*, at four or five different Times; for that which is firſt ſown is very ſubject to run to Seed, eſpecially if the Autumn prove warm and dry: but however, it is neceſſary to have a little ſown in the Decreaſe of the Moon in *May*, for the firſt Crop; and again in *June*, the Middle or latter End; and for the laſt Crop, about the Middle of *July*. Theſe Seeds ſhould be ſown in an open Situation, and a good rich Soil, but not too thick. When the Plants are come up, and grown to be about two Inches high, they muſt be tranſplanted into another good open Spot of Ground, at about ten Inches diſtant every Way, obſerving to trim off the Tops of the largeſt Leaves with your Knife before you plant them; as alſo to water them conſtantly every other Evening, until they have taken freſh Root: After which Time they will need no other Care, but to keep them clean from Weeds, until they have ſo ſpread as almoſt to meet and cover the Ground.

Then you ſhould provide a Parcel of ſmall Oſier Twigs (or Baſs-Mat) to tie up ſome of the largeſt to blanch; which ſhould be done in a dry Afternoon, when there is neither Dew nor Rain to moiſten the Leaves in the middle of the Plants, which would occaſion their rotting ſoon after their being ty'd up. The Manner of doing it is as follows; *viz.* You muſt firſt gather up all the inner Leaves of the Plant, in a regular Order, into one Hand, and then take up thoſe on the Outſide that are ſound, pulling off, and throwing away all the rotten and decay'd Leaves; obſerving to place the outſide Leaves all round the middle ones, as near as poſſible to the natural Order of their Growth, ſo as not to croſs each other: Then having got the whole Plant cloſe up in your Hand, tie it up with the Twig, *&c.* at about two Inches below the Top, very cloſe; and about a Week after go over the Plants again, and give them another Tie about the middle of the Plant, to prevent the Heart-Leaves from burſting out on one Side; which they are ſubject to do, as the Plants grow, if not prevented this Way.

In doing of this you need only tie up the largeſt Plants firſt, and ſo go over the Piece once a Week, as the Plants increaſe their Growth; by which means you will continue the Crop longer than if they were all ty'd up at one Time: For when they are quite blanch'd, which will be in three Weeks or a Month after tying, they will not hold ſound and good above ten Days or a Fortnight, eſpecially if the Seaſon proves wet: Therefore it is that I would adviſe to ſow at four different Seaſons, that you may have a Supply as long as the Weather will permit. But in order to this, you muſt tranſplant all the Plants of the laſt ſowing under warm Walls, Pales, or Hedges, to ſcreen the Plants from Froſt: And if the Winter ſhould prove very ſharp, you ſhould cover them with ſome Peas-haulm, or ſuch other light Covering, which ſhould be conſtantly taken off in mild Weather: Theſe Borders ſhould alſo be as dry as poſſible; for theſe Plants are very ſubject to rot, if planted in a moiſt Soil in Winter.

Altho' I before directed the tying up of the Plants to blanch them, yet this is only to be underſtood for the two firſt Sowings; for after *Michaelmas*, when the Nights begin to be froſty, thoſe Plants which are ſo far above-ground will be liable to be much prejudiced thereby; therefore the beſt Method is, to take up your Plants of the latter Sowings in a very dry Day, and with a large flat-pointed Dibble, plant them into the Sides of Trenches of Earth, which are laid very upright, ſide-ways, towards the Sun, with the Tops of the Plants only out of the Ground, ſo that the haſty Rains may run off, and the Plants be kept dry, and ſecured from Froſts.

The Plant thus planted, will be blanched fit for Uſe in about three Weeks Time; after which it will not keep good long: You ſhould therefore keep planting ſome freſh ones into Trenches every Fortnight at leaſt, that you may have a Supply: And thoſe which were laſt tranſplanted out of the Seed-beds, ſhould be preſerv'd till *February* or *March*, before they are planted to blanch; ſo that from this you may be ſupply'd until *April*, or later, according to the Seaſon: For at this laſt planting into the Trenches it will keep longer than in Winter; the Days growing longer, and the Sun advancing with more Strength, dries up the Moiſture much ſooner than in Winter, which prevents the rotting of theſe Plants.

When your *Endive* is blanch'd enough for Uſe, you muſt dig it up with a Spade; and after having clear'd it from all the outſide green and decay'd Leaves, you ſhould waſh it well in two or three different Waters, to clear it the better from Slugs and other Vermin, which commonly ſhelter themſelves amongſt the Leaves thereof; and then you may ſerve it up to the Table with other Sallading.

But in order to have a Supply of good Seeds for the next Seaſon, you muſt look over thoſe Borders where the laſt Crop was tranſplanted, before you put them into the Trenches to blanch; and make choice of ſome of the largeſt, ſoundeſt, and moſt curled Plants, in Number according to the Quantity of Seeds required: For a ſmall Family, a dozen good Plants will produce enough Seeds; and for a large, two Dozen, or thirty Plants.

Theſe ſhould be taken up and tranſplanted under a Hedge or Pale at about eighteen Inches diſtant, in one Row about ſix Inches from the Hedge, *&c.* This Work ſhould be done in the Beginning of *March*, if the Seaſon is mild, otherwiſe it may be deferr'd a Fortnight longer. When the Flower-ſtems begin to advance, they ſhould be ſupported with a Pack-thread, which ſhould be faſten'd to Nails drove into the Pale, or to the Stakes of the Hedge, and run along before the Stems, to draw them upright cloſe to the Hedge or Pale; otherwiſe they will be liable to break with the ſtrong Winds. Obſerve alſo to keep them clear from Weeds, and about the beginning of *July* your Seeds will begin to ripen: Therefore, as ſoon as you find the Seeds are quite ripe, you muſt cut off the Stalks, and expoſe them to the Sun upon a coarſe Cloth to dry; and then beat out the Seeds, which muſt be dried, and put up in Bags or Papers, and preſerv'd for Uſe in ſome dry Place. But I would here caution you, not to wait for all the Seeds upon the ſame Plant; for if ſo, all the firſt ripe and beſt of the Seeds will ſcatter and be loſt before the other are near ripe; ſo great a Difference is there in the Seeds of the ſame Plant being ripe.

The *wild Succory*, (of which there are ſome Varieties in the Colour of the Flowers) is ſeldom propagated in Gardens; it growing wild in unfrequented Lanes and Dunghils in divers Parts of *England*, where the Herb-women gather it, and ſupply the Markets for Medicinal Uſe.

CICUTA, properly ſignifies an Hollow intercepted between two Knots, of the Stalks or Reeds of which the Shepherds us'd to make their Pipes; as *Virgil* ſings:

> *Eſt mihi diſparibus ſeptem compacta Cicutis*
> *Fiſtula*———

CICUTA; Hemlock.

The *Characters* are;

The Leaves are cut into many minute Segments; the Petals of the Flower are bifid, Heart-ſhaped, and unequal; the Flower is ſucceeded by two ſhort channelled Seeds.

The *Species* are;

1. Cicuta *major. C. B.* Common or Greater Hemlock.
2. Cicuta *minor, petroſelino ſimilis. C. B.* Leſſer Hemlock, or Fool's Parſley.

There are ſome other Varieties of this Plant, preſerv'd in curious Botanick Gardens; but the two Sorts here mentioned, are what we find wild in *England*.

The firſt Sort grows to a conſiderable Height, and is chiefly found upon the Sides of dry Banks in many Parts of *England*: The Leaves of this Plant are of a ſhining green Colour, and the Stalks are full of purple Spots; by which it is eaſily diſtinguiſh'd from any Plants that reſemble it. This Sort is ſometimes uſed in Medicine; tho' by many People it is thought to have a noxious Quality: But the *Hemlock* of the Antients, which was ſuch deadly Poiſon, is generally ſuppos'd to be very different from this.

The ſecond Sort is of a ſmaller Growth, and ſo like *Parſley*, that ſome unſkilful Perſons have gather'd it, and us'd it as ſuch; by which ſeveral Perſons have ſuffer'd in their Health, and ſome have been deſtroy'd thereby.

Theſe Plants are never propagated in Gardens for Uſe, but are gather'd by the Herb-women in the Fields.

CICUTARIA; [is ſo call'd from its Likeneſs to *Cicuta*.] Baſtard Hemlock.

The *Characters* are;

The Root is large and thick; the Stalks are thick, hollow, and jointed; the Leaves are like the greater Hemlock, *but are thicker; the Seeds are long, thick, gibbous, and ſhaped ſomewhat like a Half-moon, and very much channelled.*

The *Species* are;

1. Cicutaria *latifolia fœtida. C. B.* Broad-leav'd ſtinking Baſtard Hemlock.
2. Cicutaria *fœtidiſſima, foliis atro-virentibus. Jeſſieu.* The moſt ſtinking Baſtard Hemlock, with dark green Leaves.

Theſe two Plants are ſeldom cultivated, unleſs in Botanick Gardens: They are of a very ſtrong rank Smell, and are thought to contain a poiſonous Quality. Whoever hath a mind to cultivate them, ſhould ſow their Seeds in a moiſt Soil in the Spring of the Year; and when the Plants are come up, they ſhould be planted out at about two Feet Diſtance, for they ſpread their Roots and Branches very far on either Side: The ſecond Year after ſowing they will produce ripe Seeds, but the Roots will abide many Years after.

CINARA, The Artichoke. See the Article *Artichoke*.

To this Article muſt be added,

Cinara *ſpinoſa, cujus pediculi eſitantur. C. B. P.* 383. Chardon or Cardoon, *vulgo*.

This Plant is propagated by Seeds, which ſhould be ſown on an open Bed of light rich Earth the Beginning of *March*; and when the Plants appear above-ground, they ſhould be carefully weeded, and in dry Weather often refreſhed with Water. By the Beginning of *May* the Plants will be fit to tranſplant; when you ſhould prepare ſome Beds of light rich Earth, into which they ſhould be tranſplanted, placing them in Rows one Foot aſunder, and eight Inches Diſtance Plant from Plant in the Rows; obſerving to water them conſtantly, until they have taken Root; after which Time they will require little more than to be kept clear from Weeds. About the Middle or latter End of *June*, the Plants will have acquired Strength enough to plant out for good; at which Time you muſt carefully dig a Spot of light rich Ground, into which you ſhould tranſplant the Plants, placing them in Rows at four Feet Diſtance every Way, obſerving to water them, until they have taken Root; after which you muſt keep them very clear from Weeds. In *Auguſt* theſe Plants will be fit to tie up, which muſt be performed in the following Manner: *viz.* You ſhould firſt prepare a Parcel of Hay-bands: Then, in a dry Day, you muſt gather up the Leaves regularly, as they were produced; and having taken them up as cloſe as poſſible without bruiſing them, you muſt faſten the Hay-band round them near the Top, ſo as to keep them up: Then with a Spade you muſt bank up the Earth round the Plants, leaving about ten Inches or a Foot of their Tops uncovered; being careful that the Earth does not get into the Center of the Plants, which would endanger their rooting. As the Plants advance in Height, ſo they muſt be earthed up from Time to Time, in the ſame Manner as is practiſed for *Celery*; by which Means moſt of the Earth between the Plants will be raiſed about them: for if they thrive kindly, they will grow to the Height of three Feet and a half, or four Feet; and will, when taken up for Uſe, be near three Feet in Length, when trimmed from their outer Leaves. And it is in this their Excellency conſiſts; for it is only the tender blanched Part which is valuable.

Thoſe Plants which were firſt tranſplanted out, will be fit for Uſe the Beginning of *September*; but thoſe which were later tranſplanted, will not be fit for Uſe until *October*; and ſome of them will continue until the End of *November*, or the Middle of *December*, provided the Seaſon be favourable; but in very wet Seaſons, or in ſevere Froſts, they often rot and decay.

In order to ſave Seeds of this Plant, you ſhould preſerve ſome of the ſtrongeſt and moſt vigorous Plants, obſerving in ſevere Froſts to cover them lightly with Straw, or Peas-haulm; which ſhould be conſtantly taken off in mild Weather, otherwiſe it will endanger the rotting of the Plants. In the Spring the Earth ſhould be taken from the Plants gradually, that the Stems may advance; and in *June* their Heads will be formed much like a ſmall Artichoke, but full of ſharp Thorns: In theſe Heads the Seeds are contained, and will be ripe in *Auguſt*.

CINERARIA. *Vide* Jacobæa.

CIRCEA; [Is ſaid to be ſo call'd from *Circe*, the famous *Enchantreſs*, ſaid to have inchanted *Ulyſſes* and his Companions: *Boerhaave* ſuppoſes it to be ſo call'd, becauſe the Fruit of this Plant takes hold of Peoples Cloaths, and by this Means draws them to it, as the Enchantreſs *Circe* was wont to do by her Inchantments] Enchanter's Night-ſhade.

The *Characters* are;

It hath a perennial creeping Root; the Leaves which are whole, and ſhaped ſomewhat like thoſe of Night-ſhade, *are placed alternately upon the Branches; the Flower conſiſts of two Leaves, which reſt upon a two-leaved Empalement; the Flowers are ſucceeded by a Pear-ſhaped Fruit, which is burry on the Outſide, and divided into two Cells; in each of which are contained, for the moſt Part, two oblong Seeds.*

The *Species* are;

1. Circea *Lutetiana. Lob. Icon.* Enchanter's Night-ſhade.

2. Circea *minima. Col.* The ſmalleſt Enchanter's Night-ſhade.

The firſt of theſe Plants is very common in moiſt ſhady Places, and under Hedges, in moſt Parts of *England*; but the ſecond hath not been found wild with us, tho' it grows in Plenty in the Woods near the *Hague*, where I gather'd it, and brought it into *England*, where it continues to retain its Difference from the common Sort, notwithſtanding ſome People have ſuppoſed it to be the ſame. They are both great Runners in a Garden; for which Reaſon they ſhould be planted (by thoſe who would keep them for Variety) in ſome abject ſhady Part of the Garden, where few other Things will grow.

CIRCULATION of the Sap. *Vide* Sap.

CIRRI; are thoſe fine Strings, or Hairs, by which ſome Plants faſten themſelves, in order to their Support, as *Ivy*, &c.

CIRSIUM; [is ſo called of Κίρσος, a *Circle*, the fartheſt or laſt Inteſtine, *i. e.* the *Hæmorrhoides*, or Inflammation of the the *Anus*; becauſe it is wont to be uſed to cure that Diſtemper.] Soft or Gentle Thiſtle.

The *Characters* are;

It hath Leaves and Flowers very like thoſe of the Thiſtle; *but the Spines upon the Leaves are ſofter, and the Cup of the Flower is deſtitute of Spines.*

The *Species* are;

1. Cirsium *Anglicum. Ger.* The *Engliſh* Soft or Gentle Thiſtle.

2. Cirsium *Britannicum, Cluſii repens. J. B.* The great *Engliſh* Soft Gentle or Melancholy Thiſtle.

3. Cirsium *maximum, Aſphodeli radice. C. B.* The greateſt *Aſphodel-rooted* Gentle Thiſtle.

4. Cirsium *maculis argenteis notatum. Tourn.* The White-ſpotted Gentle Thiſtle.

There are ſeveral other *Species* of this Plant which are preſerved in curious Gardens of Plants; but as there is little Uſe or Beauty in them, ſo I ſhall paſs them over in this Place.

The two firſt Species here named, grow wild in *England*; the other two are Strangers, and only preſerved for Variety in ſome few Gardens: They may all be propagated by ſowing their Seeds in the Spring, in almoſt any Soil, but they require an open Situation; and when the Plants come up, they ſhould be ſeparated to about two Feet Diſtance, for they ſpread very far, eſpecially the two firſt, which are terrible Creepers underground, and therefore ſhould not be placed near other Plants, leſt they over-bear and deſtroy them. The three firſt Sorts are alſo increaſed by parting their Roots; but the laſt is an Annual, and muſt either be ſown every Spring, or the Seeds ſuffered to ſhed upon the Ground, which will come up without any Trouble.

CISTUS; [is ſo call'd from Κίϛος, or Κίσθος, Gr. *Ivy*, becauſe the Antients believed the Leaves of this Plant did reſemble the *Ground-Ivy*; or becauſe its little ſeminal Veſſel is incloſed in a *Ciſta* or little Cheſt, as it were.] Rock Roſe.

The *Characters* are;

It hath the Appearance of a Tree; the Leaves are produced by Pairs oppoſite upon the Branches; the Cup of the Flower conſiſts of three or five Leaves; the Flower conſiſts of many Leaves, which are expanded in Form of a Roſe, *having Abundance of* Stamina *or Threads in the Middle; from the Center of the Cup ariſes the Ovary, which is rough and hemiſpherical, and becomes a roundiſh or pointed Veſſel, conſiſting of many Cells, in which are contained many ſmall Seeds.*

The *Species* are;

1. Cistus *mas, folio oblongo incano. C. B.* The Male Ciſtus or Rock Roſe, with oblong hoary Leaves.

2. Cistus *mas major, folio rotundiori. J. B.* The greateſt Male Ciſtus, or Rock Roſe, with roundiſh Leaves.

3. Cistus *mas, folio breviori. J. B.* Short-leav'd Male Ciſtus, or Rock Roſe.

4. Cistus *mas, foliis undulatis & criſpis. Tourn.* Male Ciſtus, or Rock Roſe, with waved and curled Leaves.

5. Cistus *ladanifera Monſpelienſium. C. B.* The Gum-bearing Ciſtus, or Rock Roſe of *Montpelier*.

6. Cistus *ladanifera Hiſpanica, ſalicis folio, flore candido. Tourn. Spaniſh* Gum-bearing Ciſtus, or Rock Roſe, with Willow Leaves and white Flowers.

7. Cistus *ladanifera Hiſpanica, ſalicis folio, flore albo, macula punicante inſignito. Tourn. Spaniſh* Gum-bearing Ciſtus, or Rock Roſe, with Willow Leaves, and white Flowers ſpotted with Purple.

8. Cistus *Ledon, latifolium Creticum. J. B.* Sweet broad-leav'd Ciſtus, or Rock Roſe from *Crete*.

9. Cistus *Ledon, foliis populi nigræ, major. C. B.* Large ſweet Ciſtus, or Rock Roſe, with black Poplar Leaves.

10. Cistus *Ledon, foliis populi nigræ, minor. C. B.* Small ſweet Ciſtus, or Rock Roſe, with black Poplar Leaves.

11. Cistus *ladanifera Cretica, flore purpureo. Tourn. Cor.*

Sweet Gum-bearing Ciſtus, or Rock Roſe from *Crete*, with purple Flowers.

The various Kinds of theſe Plants are very great Ornaments to a Garden; their Flowers are produc'd in great Plenty all over the Shrubs, which tho' but of a ſhort Duration, yet are ſucceeded by freſh ones almoſt every Day for above two Months ſucceſſively. Theſe Flowers are many of them about the Bigneſs of a middling Roſe, but ſingle, and of different Colours; the Plant continues green throughout the Year.

The firſt five and the eighth Sort will endure the Cold of our common Winters in the open Ground, provided they are planted in a dry Soil, and in a Situation where they may be ſhelter'd from the cold Winds, and will riſe to the Height of five or ſix Feet, and may be eaſily train'd to form handſome Heads. Theſe being intermix'd with flowering Shrubs of the ſame Growth, in ſmall Wilderneſs Quarters, *&c.* add greatly to the Variety, and their Flowers continuing to ſhew themſelves thro' the greateſt Part of the Summer, renders them worthy of a Place in the beſt Gardens. The other Sorts are commonly preſerv'd in Pots, and hous'd in Winter, tho' I believe moſt of them might be brought to ſtand abroad in Places that are well defended from the Cold.

Theſe Sorts may all be propagated, by ſowing their Seeds upon a gentle Hot-bed, or on a warm Border in the common Ground in *March*; and when the Plants are come up about three Inches high, they ſhould be tranſplanted either into ſmall Pots, or a Border of good light Earth, at about ten Inches Diſtance every Way: If they are planted into Pots, they ſhould be remov'd under a common Hot-bed Frame in Winter, to defend them from the Froſt, which may be hurtful to them while young, if they are not protected from it; but they ſhould have as much open free Air as poſſible in mild Weather, and will require to be often refreſh'd with Water.

In the Spring following, theſe Plants may be turned out of the Pots, with all the Earth preſerv'd to their Roots, and planted in the Places where they are to remain, (for they are bad Plants to remove when grown old) obſerving to give them now and then a little Water, until they have taken freſh Roots; after which Time they will require no farther Care than to train them upright in the Manner you would have them grow: But thoſe Plants which were at firſt planted into a Border in the open Ground, ſhould be arched over, and covered with Mats in froſty Weather, during the firſt Winter, but may be tranſplanted abroad the ſucceeding Spring: In removing of theſe Plants, you ſhould be careful to preſerve as much Earth about their Roots as you can; and if the Seaſon ſhould prove hot and dry, you muſt water and ſhade them, until they have taken freſh Root; after which they will require no other Culture than was before directed.

Theſe Plants may alſo be propagated, by planting Cuttings of them upon a gentle warm Bed in *May* or *June*, keeping them ſhaded with Mats, and frequently refreſhed with Water, until they have taken Root, which will be in about two Months Time; when you may tranſplant them into Pots filled with good freſh light Earth, which ſhould be ſet in a ſhady Place until they have taken Root, and then may be expoſed to the open Sun until *October*, when you ſhould remove them into Shelter the firſt Winter; but the ſucceeding Spring you may plant them abroad, as was before directed for the Seedling Plants.

The ſeventh Sort is by much the moſt beautiful of all theſe *Ciſtus's*: The Flowers, which are as big as a handſome Roſe, are of a fine White, with a deep purple Spot on the Bottom of each Leaf. This Plant alſo abounds with a ſweet glutinous Liquor, which exſudes thro' the Pores of the Leaves in ſo plentiful a manner, in hot Weather, that the Surfaces of the Leaves are coveerd therewith. From this Plant (*Cluſius* thinks) might be gathered great Quantities of the *Laudanum*, which is uſed in Medicine, in the Woods in *Spain*, where he ſaw vaſt Quantities of this Shrub growing.

But it is from the eleventh Sort, which Monſieur *Tournefort* ſays, the *Greeks*, in the *Archipelago*, gather this ſweet Gum: In the doing of which (*Bellonius* ſays) they make uſe of an Inſtrument like a Rake, without Teeth, which they call *Ergaſtiri*: To this are tied many Thongs of raw and untanned Leather, which they rub gently upon the Buſhes, that produce the *Ladanum*, that ſo that liquid Moiſture may ſtick upon the Thongs. After which they ſcrape it off with Knives: This is done in the hotteſt Time of the Day; for which Reaſon, the Labour of gathering this *Ladanum* is exceſſive, and almoſt intolerable, ſince they are obliged to remain on the Mountains for whole Days together, in the very Heat of Summer, or the *Dog-Days*: Nor is there any Perſon almoſt that will undertake this Labour, except the *Greek* Monks.

Monſieur *Tournefort* alſo relates the ſame in his *Travels*, where he ſays, That the Shrubs which produce the *Ladanum* grow upon dry ſandy Hillocks, and that he obſerved ſeveral Country Fellows in their Shirts and Drawers, that were bruſhing the Shrubs with their Whips, the Straps whereof, by being drawn over the Leaves of the Plant, licked up a ſort of odoriferous Balſam ſticking upon the Leaves, which he ſuppoſes to be Part of the nutritious Juice of the Plant which exſudes thro' the Pores of the Leaves, where it remains like a fattiſh Dew, in ſhining Drops as clear as Turpentine.

When the Whips are ſufficiently laden with this Greaſe, they take a Knife, and ſcrape it clean off the Straps, and make it up into a Maſs of Cakes of different Sizes: This is what comes to us under the Name of *Ladanum* or *Labdanum*. A Man that is diligent, will gather three Pounds two Ounces *per* Day, or more, which they ſell for a Crown on the Spot. This Work is rather unpleaſant than laborious; becauſe it muſt be done in the hotteſt Time of the Day, and in the greateſt Calm. And yet the pureſt *Ladanum* is not free from Filth; becauſe the Winds of the preceding Days have blown Duſt upon theſe Shrubs, which, by the glewy Subſtance upon the Surfaces of the Leaves, is thereby detained and mixed therewith. But to add Weight to this Drug, they knead it up with a very fine blackiſh Sand, which is found in thoſe Parts; as if Nature herſelf was minded to teach them how to adulterate this Commodity. It is no eaſy Thing to diſcover this Cheat, when the Sand has been well blended with the *Ladanum*: In order to which you muſt chew it for ſome Time, to find whether it crackles between the Teeth; and if it doth, you muſt firſt diſſolve it, and then ſtrain it, in order to purify away what has been added to it.

CITREUM; [Κιτρία, *Gr.*] The Citron-Tree.

The *Characters* are;

It hath broad ſtiff Leaves like thoſe of the Laurel, but without any Appendix (as hath the Orange); the Flowers conſiſt of many Leaves, which expand in Form of a Roſe; the Cup of the Flower is ſlender and fleſhy, and is divided into five Segments at the Top; the Piſtil of the Flower becomes an oblong, thick, fleſhy Fruit, which is divided into many Cells, is very full of Juice, and contains ſeveral hard Seeds.

The *Species* are;

1. Citreum *vulgare. Tourn.* The Common or ordinary Citron.
2. Citreum *dulci medulla. Tourn.* The Sweet Citron.
3. Citreum *magno fructu. Tourn.* The Large Citron.
4. Citrioides, *vulgo* Citratum *Florentinum, fructu magno, plerumque turbinato, lævi ac ſuavi medulla, cortice odoratiſſimo, foliis longioribus Citro. Hort. Piſſ. Florentine* Citron, with large ſweet Fruit, of a ſweet-ſmelling Kind, and long Leaves.
5. Citrioides, *ſeu* Citratum *Florentinum, fructu mucronato & recurvo, cortice verrucoſo odoratiſſimo. Hort. Piſſ. Florentine* Citron, with a pointed Fruit, which is recurved, and a warted ſweet-ſmelling Kind.
6. Citrioides *ſeu* Citratum *Florentinum, fructu minori, fere rotundo, acriori medulla, cortice odoratiſſimo. Hort. Piſſ. Florentine* Citron with ſmall roundiſh Fruit, with a ſharp Taſte, and ſweet-ſmelling Kind.
7. Citrioides, *ſeu* Citratum *Florentinum odoratiſſimum, fructu prolifero. Hort. Piſſ.* Sweet-ſmelling *Florentine* Citron, with Fruit coming out of each other.

There are ſeveral other Varieties of this Fruit, with which the *Engliſh* Gardens have been ſupply'd from *Genoa*, where is the great Nurſery for the ſeveral Parts of *Europe* for this Sort of Trees: And the Gardeners who cultivate them there, are as fond of introducing a new Variety to their Collection, as the Nurſery-men in *England* are of a new *Pear*, *Apple*, *Peach*, &c. So that the Varieties being annually increaſed, as are many of our Fruits from Seeds, there is like to be no End of the Variety of theſe, nor of the *Orange* and *Lemon-Trees*.

The moſt valuable Kind of theſe Fruits is the fifth, which is in ſo great Eſteem, that the ſingle Fruits are ſold at *Florence* for Two Shillings each, and are ſent as Preſents to the Courts of Princes. This Fruit is not to be had in Perfection in any other Parts of *Italy* but in the Plain between *Piſa* and *Leghorn*: And altho' Trees of this Kind have been tranſplanted from that Spot to divers other Parts of *Italy*, yet they are found to loſe much of that excellent Taſte with which they abound in thoſe Plains.

The ſeveral Sorts of *Citrons* are cultivated much in the ſame manner as the *Orange-Tree*; to which I ſhall refer the Reader, to avoid Repetition: but ſhall only remark, that theſe are ſomewhat tenderer than the *Orange*, and ſhould therefore have a warmer Situation in Winter; otherwiſe, they are very ſubject to caſt their Fruit. They ſhould alſo continue a little longer in the Houſe in the Spring, and be carry'd in again ſooner in the Autumn; as alſo to have a warmer and better-defended Situation in the Summer, though not too much expos'd to the Sun in the Heat of the Day.

And as their Leaves are larger, and their Shoots ſtronger than thoſe of the *Orange*, ſo do they require a greater Plenty of Water in the Summer; and in Winter they ſhould have but little Water at each Time, which muſt be the oftener repeated. The Soil ought to be much the ſame as for the *Orange-Tree*, but not quite ſo ſtrong.

The Common Citron is by much the beſt Stock to bud any of the *Orange* or *Lemon* Kinds upon; it being the ſtraiteſt and freeſt growing Tree. The Rind is ſmoother, and the Wood leſs knotty, than either the *Orange* or *Lemon*, and will take either Sort full as well as its own Kind; which is what none of the other Sorts will do. And theſe Stocks, if rightly managed, will be very ſtrong the ſecond Year after ſowing, and capable to receive any Buds, and will have Strength to force them out vigorouſly; whereas it often happens, when theſe Buds are inoculated into weak Stocks, they frequently die, or remain till the ſecond Year before they put out: And thoſe that do ſhoot the next Spring after budding, are oftentimes ſo weak as hardly to be fit to remain, as being incapable to make a ſtrait handſome Stem, which is the great Beauty of theſe Trees.

CITRUL, *vide* Pepo.

CLARY, *vide* Horminum or Sclarea.

CLAVICLE, [*Claviculus*, Lat.] a Claſper or Tendril.

CLEMATITIS; [Κληματῖτις of Κλῆμα, a *Twig*, or *Claſper*, &c. becauſe it climbs up Trees with Claſpers, like thoſe of Vines. Hence it is alſo call'd *Virgultum ductile*, *Ranunculus obſequoſus*; and alſo *Antrogenomene*, and *Flammula*, as tho' producing a Carbuncle: For the Leaves being bruis'd and apply'd to the Skin, burn it into Carbuncles, as it is in the Peſtilence: and *Flammula*; becauſe if one Leaf be cropp'd in a hot Day in the Summer-ſeaſon, and bruis'd, and preſently put to the Noſtrils, it will cauſe a Smell and Pain like a Flame].

The *Characters* are;

It hath a perennial fibroſe Root; the Leaves grow oppoſite upon the Stalks; the Flowers, which conſiſt for the moſt part of four Leaves plac'd in Form of a Croſs, are naked, having no Calyx; *in the Center of the Flower are many hairy* Stamina *(or Threads) which ſurround the Pointal; the Pointal afterwards becomes a Fruit, in which the Seeds are gathered, as it were, into a little Head, ending in a kind of Plume.*

The *Species* are;

1. Clematitis, *ſive Flammula ſurrecta alba. C. B.* Upright White Climber.
2. Clematitis *cærulea erecta. C. B.* Upright Blue Climber.
3. Clematitis *Hiſpanica ſurrecta altera, & humilior, flore albicante. H. R. Par.* Low *Spaniſh* Climber, with a whitiſh Flower.
4. Clematitis *ſylveſtris latifolia. C. B.* Great Wild Climber or Travellers Joy.
5. Clematitis *ſylveſtris latifolia, foliis non inciſis. Tourn.* Great Wild Climber or Travellers Joy, with undivided Leaves.
6. Clematitis *peregrina, foliis pyri inciſis. C. B. Spaniſh* Climber or Travellers Joy, with cut Leaves.
7. Clematitis *Canadenſis trifolia dentata, flore albo. H. R. Par.* Three-leav'd *Canada* Climber, with a white Flower.
8. Clematitis *cærulea, vel purpurea repens. C. B.* Purple creeping Climber or ſingle Virgins Bower, *vulgo.*
9. Clematitis *cærulea, flore pleno. C. B.* Blue Climber with a double Flower, or double Virgins Bower, *vulgo.*
10. Clematitis *repens rubra. Boerh. Ind.* Red creeping Climber.
11. Clematitis *Orientalis, folio Apii, flore ex viridi flaveſcente, poſterius reflexo. T. C.* Eaſtern Climber, with a Smallage Leaf, and a reflex'd Flower of a greeniſh Yellow.
12. Clematitis *purpurea repens, petalis florum coriaceis. Baniſt. Cat.* Purple creeping Climber, with ſtiff Petals.

The firſt, ſecond and third Sorts die to the Surface of the Ground every Winter; but their Roots are of long Continuance, ariſing again in the Spring. The ſecond and third uſually grow with us about three or four Feet high, and produce great Quantities of Flowers; but the firſt Sort is of humbler Growth, ſeldom riſing above eighteen Inches high, but in other reſpects it is very like the third.

Theſe Plants are propagated either by Seeds, or parting of their Roots: But the former being a tedious Method, (the Plants ſeldom riſing until the ſecond Year after ſowing, and are often two Years more before they flower) the latter is generally practis'd. The beſt Seaſon for parting theſe Roots, is either in *October* or *February*; either juſt before their Branches decay, or before they riſe again in the Spring.

They will grow almoſt in any Soil or Situation: But if the Soil is very dry, they ſhould always be new planted in the Autumn, otherwiſe their Flowers will not be ſo ſtrong: But if the Soil be wet, it is better to defer it until the Spring. The Roots may be cut through their Crowns with a ſharp Knife, obſerving to preſerve to every Off-ſet ſome good Buds or Eyes; and then it matters not how ſmall you divide them, for their Roots increaſe very faſt. But if you part them very ſmall, you ſhould let them remain two Years before they are again remov'd; that the ſecond Year their Flowers may be ſtrong, and the Roots multiply'd in Eyes, which in one Year's Time cannot be obtain'd.

Theſe Plants are extreme hardy, enduring the Cold of our ſevereſt Winters in the open Air; and are very proper Ornaments for large Gardens, either to be planted in large Borders, or intermix'd with other hardy Flower-Roots in Quarters of flowering Shrubs; where, by being plac'd promiſcuouſly in little open Places, they fill up thoſe little Vacancies, and are agreeable enough. They begin to flower about the beginning of *June*, and often continue to produce freſh Flowers until *October*; which renders them valuable, eſpecially ſince they require very little Care in their Culture; for their Roots may be ſuffer'd to remain ſeveral Years undiſturb'd, if we do not want to part them, which will not in the leaſt prejudice them.

The fourth and fifth Sorts are found wild in moſt Parts of *England*, eſpecially the fourth, which grows upon the Sides of Banks, under Hedges, and extends its trailing Branches over the Trees and Shrubs that are near it: This Plant in the Autumn is generally cover'd with Seeds which are collected into little Heads, each of which having, as it were, a rough Plume faſten'd to it, hath occaſion'd the Country People to give it the Name of *Old Man's Beard*. The fifth Sort being no more than an accidental Variety of the fourth, is often found intermix'd therewith.

The ſixth Sort is an *Ever-green*, and altho' it be a Native of a warm Country, yet I find it hardy enough to endure the Cold of our Climate in the open Air: This Plant commonly produces vaſt Quantities of large greeniſh yellow Flowers in the Depth of Winter, (provided it is not retarded by very ſevere Weather); for which Reaſon, together with the Beauty of its verdant green Leaves at that Seaſon, it deſerves a Place in every good Garden.

The ſeventh Sort is very like the fourth, which is our common Sort, from which it only differs in having but three Lobes to each Leaf, whereas ours have five or more.

The eighth and tenth Sorts, which are the moſt common in *Spain* and *Italy*, are at preſent very rare in *England*, being only to be found in curious Botanick Gardens: But the ninth Sort, which is a Variety of the eighth, is propagated in many Nurſeries near *London*, (but particularly in that of Mr. *Chriſtopher Gray*, near *Fulham*; where, amongſt many other curious Exotick Trees and Shrubs, I ſaw this in very great Plenty): This Sort produces very double Flowers in great Quantities all over the Plant, which continue at leaſt two Months, and render it valuable.

The eleventh and twelfth Sorts are alſo uncommon in *England* at preſent: The eleventh was brought from the *Levant* by Monſ. *Tournefort*, the chief Botaniſt to the late King of *France*. The twelfth was brought from *America*, where it is found in divers Parts in great Plenty, but particularly in *Virginia* and *North Carolina*; from whence I have receiv'd Seeds of this Plant, which have grown with me in the *Phyſick* Garden.

The nine laſt-mention'd Sorts are all of them trailing Plants, ſome of them growing to a very great Length, particularly the fourth, fifth and ſeventh Sorts, which ſhould be planted in large Wilderneſs Quarters, near the Stems of great Trees, to which they ſhould be train'd up, where, by their wild Appearance, they will be agreeable enough.

The other Sorts are proper enough to intermix with flowering Shrubs of a middling Growth, where, being faſten'd to ſtrong Stakes, they will riſe about ſix or ſeven Feet high, and produce great Quantities of Flowers. Theſe may alſo be planted to cover Seats in Wilderneſs Quarters, that are deſign'd for Shade; to which Purpoſe theſe Plants are very well adapted, requiring little more Care than to train their Branches regularly at firſt, after which they will maintain themſelves very well.

Theſe Plants are propagated by laying down their tender Branches (as is practis'd for Vines) in the Spring, which in one Year's Time will take Root, and may then be remov'd to the Places where they are deſign'd to remain; which ſhould be done in the Spring, obſerving to lay a little Mulch upon the Surface of the Ground round their Roots, and to water them gently in dry Weather: In two Years after planting they will make very ſtrong Shoots, which ſhould be train'd up to Stakes, that they may not trail upon the Ground, which would ſpoil their flowering, and render them very unſightly. From this Time they will require no farther Care, than to cut out every other Year the decay'd Branches; and in the Spring, to ſhorten ſuch Branches as may have grown too long and rambling for the Places where they are planted.

Theſe alſo may be rais'd from Seeds, which ſhould be ſown either ſo ſoon as ripe, or very early in the Spring, in a Bed of freſh light Earth, or in Pots or Boxes fill'd with ſome Earth, becauſe the Seeds of moſt of theſe Plants remain in the Ground until the ſecond Spring before they appear, eſpecially if they were not ſown in Autumn. When the Plants come up, they muſt be carefully clean'd from Weeds: and in very dry Weather frequently water'd; and in the ſucceeding Spring they ſhould be tranſplanted out into Nurſery-beds, where they may remain two Years longer; by which Time they will have arriv'd at Strength to flower, and may then be remov'd to the ſeveral Places where they are to remain.

CLIMATE; [of Κλίμας, Gr. *an Inclination*] is a Part of the Surface of the Earth bounded by two Circles parallel to the Equator; ſo that the longeſt Day in that Parallel neareſt to the Pole, exceeds the longeſt Day in that Parallel neareſt to the Equator by ſome certain Space of Time, *viz.* half an Hour, till you come to Places ſituate nearly under the Artick Circle; and a whole Hour, or even ſeveral Days, when you go beyond it.

The antient *Greek* Geographers reckon'd only ſeven *Climates* from the Equator towards the North Pole, and denominated them from ſome noted Place, through which the middle Parallel of the *Climate* paſs'd: But the Moderns reckon up twenty-four.

The *Beginning* of the *Climate* is the Parallel Circle, wherein the Day is the ſhorteſt.

The *End* of the *Climate* is that wherein the Day is the longeſt.

The *Climates* therefore are reckon'd from the Equator to the Pole; and are ſo many Bands or Zones, terminated by Lines parallel to the Equator; tho' in Strictneſs there are ſeveral *Climates* in the Breadth of one Zone.

Each *Climate* only differs from its contiguous ones, in that the longeſt Day in Summer is longer or ſhorter by half an Hour in the one Place than the other.

As the *Climates* commence from the Equator, the firſt *Climate* at its Beginning has its longeſt Day preciſely twelve Hours long; at its End twelve Hours and an half: The ſecond, which begins where the firſt ends, *viz.* at twelve Hours and an half, ends at thirteen Hours: And ſo of the reſt, as far as the Polar Circles.

Here what Geographers call *Hour Climates* terminate, and *Month Climates* commence.

As an *Hour Climate* is a Space compriz'd between two Parallels of the Equator, in the firſt of which the longeſt Day exceeds that in the latter by half an Hour; ſo the *Month Climate* is a Space between two Circles parallel to the Polar Circles, whoſe longeſt Day is longer or ſhorter than that of its contiguous one by a Month or thirty Days.

The Antients, who confin'd the *Climates* to what they imagin'd the habitable Part of the Earth, only allow'd of ſeven, as has been ſaid: The firſt they made to paſs through *Meroe*, the ſecond through *Sienna*, the third through *Alexandria*, the fourth through *Rhodes*, the fifth through *Rome*, the ſixth through *Pontus*, and the ſeventh through the Mouth of the *Boriſthenes*.

The Moderns, who have ſail'd farther towards the Poles, make thirty *Climates* on each Side; and becauſe the Obliquity of the Sphere makes a little Difference in the Length of the longeſt Day, ſome of them make the Difference of the *Climates* but a Quarter of an Hour inſtead of Half an Hour.

The Term *Climate* is vulgarly beſtow'd on any Country or Region differing from another, either in reſpect of the Seaſons, the Quality of the Soil, or even the Manners of the Inhabitants, without any Regard to the Length of the longeſt Day.

CLINOPODIUM; [Κλινοπόδιον, of Κλίνη a *Bed*, and ποῦς, Gr. a *Foot*, as tho' the Feet of a Bed, becauſe (according to *Dioſcorides*) the Stalks of this Plant reſemble the Feet of a Bed.] Field-Baſil.

The *Characters* are;

It is a Plant with a labiated Flower, conſiſting of one Leaf, whoſe upper Lip is upright, roundiſh, and generally ſplit in two; but the Beard, or under Lip, is divided into three Segments; theſe Flowers are diſpos'd in Whorles round the Stalks, and are ſucceeded by oblong Seeds.

The *Species* are;

1. Clinopodium *origano ſimile, elatius, majore flore. C. B.* The taller Field-Baſil, with a large Flower reſembling Baſtard-Marjoram.

2. Clinopodium *origano ſimile, flore albo. C. B.* Field-Baſil, with a white Flower, reſembling Baſtard-Marjoram.

3. Clinopodium *arvenſe, ocymi facie. C. B.* Wild Field-Baſil, reſembling Baſil.

4. Clinopodium *Alpinum, roſeum, ſatureiæ foliis. Boc. Muſſ. Alpine* Field-Baſil, with Leaves like Savory.

5. Clinopodium *Virginianum, anguſtifolium, floribus amplis luteis purpureo-maculatis, cujus caulis, ſub quovis verticillo, decem vel duodecim foliolis rubentibus eſt circumcinctus. Baniſter. Pluk. Phyt. Tab.* 24. Narrow-leav'd *Virginian* Field-Baſil, with large yellow Flowers ſpotted with Purple.

The firſt Sort grows wild upon dry chalky Hills in divers Parts of *England*. The ſecond is a Variety of the firſt, from which it only differs in the Colour of the Flower. Theſe Sorts do abide many Years, and may be propagated in a Garden, by either ſowing their Seeds, or parting of their Roots; the latter of which is the moſt expeditious Method, as alſo the ſureſt Way to preſerve the white-flowering Kind in its Colour, becauſe it may return back to the purple Kind from which it at firſt degenerated. Theſe Plants ſhould have a light Soil, and an open Situation, in which they will thrive exceedingly.

The third Sort is alſo found upon very ſtony or gravelly Hills in ſeveral Parts of *England*; but this being an annual Plant, is only propagated by Seeds, which ſhould be ſown ſoon after they are ripe, otherwiſe they will hardly grow: This muſt have a very poor ſtony Soil, in which it chiefly delights.

The fourth Sort is alſo an annual Plant, which was brought from the *Alps*: This ſhould be ſown in the Spring of the Year, in almoſt any Soil, it being a very good-natur'd Plant, and will thrive in any Part of the Garden.

The fifth Sort grows wild in *Virginia* and *Carolina*, from whence the Seeds have been ſent over, which grow very well with us, and are hardy enough to reſiſt our Cold in the open Air, if planted in a dry Soil.

CLUTIA.

This Plant was named by the learned Dr. *Boerhaave* of *Leyden*, in Memory of *Augerius Clute*, who was a curious Botaniſt.

The *Characters* are;

It hath a roſe-ſhaped Flower, conſiſting of five Leaves; in the Center ariſes the Pointal, ſurrounded by five Stamina: this Pointal afterward becomes the Fruit, which is divided into three Parts, and hath three Cells, in which are contained Seeds.

We have but one *Species* of this Plant, which is,

Clutia *Æthiopica fruteſcens, portulacæ folio, flore ex albido vireſcente. Boerh.* Shrubby *Æthiopian* Clutia, with a Purſlane Leaf, and a greeniſh white Flower.

This Plant is propagated by Seeds, which ſhould be ſown early in the Spring, on a moderate Hot-bed, obſerving to water the Bed gently from time to time, as the Surface becomes dry; and in the Heat of the Day the Glaſſes ſhould be raiſed to admit freſh Air, and let the Steam ariſing from the Bed to paſs off. If the Bed be of a proper Temper for Heat, the Plants will appear in about a Month after ſowing; and when they are about two Inches high, they ſhould be carefully taken up, and tranſplanted each into a ſeparate ſmall Pot filled with light freſh Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to ſhade them until they have taken new Root; after which time they ſhould be frequently refreſhed with Water, and the Glaſſes ſhould be raiſed every Day, when the Weather is warm, to admit freſh Air; otherwiſe the Plants will draw up very tall, and become very weak. Toward the latter End of *June*, if the Plants have made a good Progreſs, they will be near a Foot in Height: therefore you ſhould then begin to inure them to bear the open Air; and the middle of *July*, they may be removed out of the Hot-bed, and placed in the open Air, in a warm Situation, where they may be defended from ſtrong Winds. During the Summer Seaſon, theſe Plants muſt be frequently watered; but it ſhould not be given in too large Quantities, eſpecially while the Plants are young. Toward the latter End of *September*, the Plants muſt be removed into Shelter; for if they are expoſed too late in Autumn, they will be in Danger of ſuffering by Morning Froſts. In Winter theſe Plants ſhould be placed in a moderate Stove for the firſt Seaſon, while they are young; but after they have obtained Strength, they will live in a good Green-houſe; but then they ſhould not have too much Water in cold Weather. This Plant will riſe to the Height of three or four Feet, and become ſhrubby; and being an Ever-green, will add to the Variety in the Green-houſe.

CLYMENUM; [*κλύμενον*, of *κυλίνδω*, Gr. *to roll*, becauſe the Branches of this Plant embrace whatever Plants do grow near them with their Tendrils.] Chickling-Vetch.

The *Characters* are;

The Stalks, Flowers, and Fruits of this Plant are like thoſe of Lathyrus; *but the Leaves conſiſt of many Conjugations plac'd on a Mid-rib, which ends in a Tendril.*

The *Species* are;

1. Clymenum *Hiſpanicum, flore vario, ſiliqua plana. Tourn.* *Spaniſh* Chickling-Vetch, with a variable Flower, and a plain Pod.
2. Clymenum *Hiſpanicum, flore vario, ſiliqua articulata. Tourn.* *Spaniſh* Chickling-Vetch, with a variable Flower, and a jointed Pod.
3. Clymenum *Bithynicum, ſiliqua ſingulari, flore minore. Jeſſieu.* *Bithynian* Chickling-Vetch, with a ſingle Pod, and ſmaller Flower.
4. Clymenum *Pariſienſe, flore cæruleo. Tourn.* Common Chickling-Vetch, with a blue Flower.
5. Clymenum *Græcum, flore maximo ſingulari. T. Cor.* *Greek* Chickling-Vetch, with a large ſingle Flower.

The firſt, ſecond, third, and fifth Sorts are Annuals, and muſt be ſown every Year, (as is practis'd for the *Sweet-Pea*): If they are ſown in *Auguſt*, in a warm Border, they will ſtand through the Winter, and flower early in the ſucceeding Spring, by which Method you may be ſure to obtain good Seeds; whereas thoſe which are ſown in the Spring, are many times deſtroy'd by the Rains in Autumn before their Seeds are perfected. Theſe Plants delight in a dry Soil, and an open Situation; for if they are over-hung by Trees, *&c.* they ſeldom come to any Perfection.

Thoſe of theſe Plants which are ſown in Autumn, will begin to flower in *May*, and continue to produce new Flowers till *July*; about which Time the Seeds of their early Flowers will be perfected. Their Flowers are in Shape like thoſe of the *Pea*: but being of variable Colours do make a pretty Variety in a Garden; and if the Plants are ſupported with Sticks, they may be kept in a ſmall Compaſs. The fourth Sort hath a perennial Root, which multiplies very faſt, ſoon over-running a Spot of Ground, and ſhould therefore be kept in a Pot, where the Roots will be confin'd, and thereby the Plant caus'd to produce a greater Quantity of Flowers than it would naturally do if its Roots had full Liberty.

CNICUS.

The *Characters* are;

It hath floſculous Flowers, conſiſting of many Florets, which are multifid, and ſtand upon the Embryo; the Florets are inclos'd in a ſcaly Cup ſurrounded with Leaves.

The *Species* are;

1. Cnicus *ſylveſtris hirſutior, ſive Carduus Benedictus. C. B.* The Bleſſed Thiſtle, *vulgo.*
2. Cnicus *atractylis lutea dictus. H. L.* The yellow Diſtaff-Thiſtle, *vulgo.*
3. Cnicus *perennis cæruleus Tingitanus. H. L.* *Tangier* perennial blue Diſtaff-Thiſtle.
4. Cnicus *Creticus, atractylidis folio & facie, flore leucophæo. T. Cor.* *Candia* Diſtaff-Thiſtle, with whitiſh Flowers.
5. Cnicus *Hiſpanicus arboreſcens fœtidiſſimus. Tourn.* Stinking *Spaniſh* Tree Diſtaff-Thiſtle.

The *Bleſſed Thiſtle* is cultivated in Gardens for the Herb, which is dry'd and preſerv'd for medicinal Uſes; but of late Years it hath been in leſs Uſe than formerly, for which Reaſon there is but little of it now propagated.

This being an annual Plant, is only rais'd by Seeds, which ſhould be ſown in Autumn, or very early in the Spring: When the Plants are come up, they ſhould be either tranſplanted, or hough'd out to about nine or ten Inches Diſtance from each other, that the Plants may have Room to ſpread, obſerving alſo to keep them clear from Weeds; and when the Plants are in full Flower, they ſhould be cut off and laid to dry in a ſhady Place; and after they are thoroughly dry, they may be tied up into Bundles, and hung up in a dry Room upon Strings in Rows, ſo that the Air may paſs freely between them, which will prevent their growing mouldy or rotting, which they are very ſubject to, if laid too cloſe, or kept in a moiſt Place.

The other Varieties are only preſerv'd in curious Botanick Gardens; they may be propagated by ſowing their Seeds in the Spring, in a warm dry Soil, and the Plants reduc'd to about two Feet Diſtance: They will flower in *July*; and if the Autumn is favourable, their Seeds will be perfected in *September*.

COA. This Plant was ſo named by Father *Plumier* from the Iſland of *Cous*, which gave Birth to the Prince of Phyſicians *Hippocrates*. We have no *Engliſh* Name for this Plant.

The *Characters* are;

It hath a globular bell-ſhaped Flower, conſiſting of one Leaf; from whoſe Cup ariſes a multifid Pointal, fixed like a Nail in the hinder Part of the Flower; which afterward becomes a Fruit, compoſed of three membranaceous Seed-veſſels, which are compreſſed, bivalve, and divided into two Cells, in which are contained oblong winged Seeds.

We have but one *Species* of this Plant, which is;

Coa *ſcandens, fructu trigemino ſubrotundo. Plum.* Climbing Coa, with a roundiſh Fruit, which opens into three Parts.

This Plant was obſerved by Father *Plumier* (in the *French* Iſlands in *America*) and hath been ſince found in great Plenty in the *Spaniſh* Settlements in *America*, particularly about *Campechy*, from whence the Seeds have been ſet by Mr. *Robert Millar*, Surgeon, to ſome curious Perſons in this Country, who have raiſed ſeveral of the Plants; but as they are very young, ſo it can't be expected that any of them will produce Flowers until they are three or four Years old, becauſe they ſeem to be of ſlow Growth.

This Plant is propagated by Seeds, which muſt be obtained from the Places where it naturally grows, which ſhould be ſown early in the Spring, in ſmall Pots filled with light freſh Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to water the Earth as often as it becomes dry; and in the Heat of the Day, the Glaſſes of the Hot-bed ſhould be raiſed to admit freſh Air, and let the Steam, which may ariſe from the Bed, paſs off; and if the Nights ſhould prove cold, the Glaſſes ſhould be covered with Mats. If this be duly obſerved, the Plants will begin to appear in three Weeks or a Month after ſowing; when you ſhould be careful to ſprinkle them frequently with Water, but do not let them have too much at each Time; for while they are very young, they will be in danger of rotting, if they are kept too moiſt. You muſt alſo obſerve to admit freſh Air to them, in proportion to the Warmth of the Seaſon, otherwiſe they will draw up very weak; which ſhould always be carefully prevented, becauſe few Plants which are drawn up tender at firſt, will ever after become ſo ſtrong and beautiful as thoſe which are brought up hardily from the Beginning.

When the Plants are about two Inches high, they ſhould be carefully tranſplanted each into a ſeparate Pot, filled with light freſh Earth, and plunged into the Hot-bed again, obſerving to ſhade the Glaſſes every Day when the Sun is warm, until the Plants have taken new Root; after which Time they ſhould be raiſed every Day to admit freſh Air to the Plants, in proportion to the Warmth of the Seaſon. During the Summer Seaſon, theſe Plants muſt be frequently refreſhed with Water; and when their Roots have filled the Pots in which they were firſt planted, they ſhould be ſhaken out of them, and their Roots pared round, and then put into Pots a little larger than the former, which muſt be filled with light freſh rich Earth, and then plunged again into the Hot-bed; for theſe Plants will not live in the open Air in this Country : ſo that when they are grown too large to remain under the Glaſſes of the Hot-bed, they ſhould be removed into the Bark Stove, where they ſhould be placed with the tendereſt Exoticks, and heated with great Care. This Plant commonly riſes to the Height of five or ſix Feet, but being a trailing Plant muſt be ſupported by a Stake ; otherwiſe it will trail on the neighbouring Plants in the Stove, and injure them. It is ever-green, and the Leaves being of a ſhining green Colour, it makes a pretty Variety amongſt other tender exotick Plants.

COAST-MARY. *Vide* Balſamita.

COCCIGRIA. *Vide* Cotinus Coriaria.

COCHLEARIA ; [is ſo call'd of *Cochleare*, Lat. a *Spoon* ; becauſe the Leaves of this Plant are hollow'd like a Spoon.] Spoon-wort, or Scurvy-graſs.

The *Characters* are ;

The Flower conſiſts of four Leaves, which are diſpos'd in Form of a Croſs ; from the Flower-cup ariſes the Pointal, which becomes an almoſt globular Fruit, divided into two Cells by an intermediate Partition, to which the Valves adhere on both Sides, and are furniſh'd with many round Seeds.

The *Species* are ;

1. Cochlearia *folio ſubrotundo. C. B.* Scurvy-graſs with a roundiſh Leaf, or Common Scurvy-graſs.
2. Cochlearia *folio ſinuato. C. B.* Scurvy-graſs with a ſinuated Leaf, or Sea Scurvy-graſs, *vulgo.*
3. Cochlearia *minima, ex montibus Walliæ. Sher. Boerh. Ind.* The leaſt Scurvy-graſs, from the *Welſh* Mountains.
4. Cochlearia *folio cubitali. Tourn.* Horſe-radiſh, *vulgo.*

The firſt of theſe *Species* is propagated in Gardens for medicinal Uſes : This is done by ſowing the Seeds in *July*, ſoon after they are ripe, in a moiſt ſhady Spot of Ground ; and when the Plants are come up, they ſhould be thinn'd ſo as to be left at about four Inches Diſtance each way. The Plants that are taken out may be tranſplanted into other ſhady Borders, if you have Occaſion for them ; otherwiſe they may be hough'd out, (as is practis'd for *Onions*, *Carrots*, &c.) and at the ſame time all the Weeds may be hough'd down, ſo as to clear the Plants intirely from Weeds, that they may have Room to grow ſtrong. In the Spring theſe Plants will be fit for Uſe ; and thoſe that are ſuffer'd to remain will run up to Seed in *May*, and perfect their Seeds in *July*. If this Plant is ſown in the Spring, the Seeds ſeldom grow well ; therefore the beſt Time is ſoon after they are ripe : The Plants rarely live after producing Seeds ; ſo that it ſhould be ſown every Year, to have it for Uſe.

The *Sea Scurvy-graſs* is alſo us'd in Medicine ; but this grows in the Salt Marſhes in *Kent* and *Eſſex*, where the Salt Water overflows it almoſt every Tide ; and can rarely be made to grow in a Garden, or at leaſt to laſt longer there than one Year : But it being ſo eaſily gather'd in the Places before-mention'd, the Markets are ſupply'd from thence by the Herb-women, who make it their Buſineſs to gather this Herb.

The little *Welſh Scurvy-graſs* is an abiding Plant, and may be preſerv'd in a Garden, if planted in a ſtrong Soil, and a ſhady Situation. This is preſerv'd in curious Gardens of Plants, but is not of any Uſe.

The *Horſe-Radiſh* is propagated from Cuttings or Buds from the Sides of the old Roots. The beſt Seaſon for this Work is in *October* or *February* ; the former for dry Lands, and the latter for moiſt. The Manner of doing it is as follows : Provide yourſelf with a good Quantity of Off-ſets, which ſhould have a Bud upon their Crowns : but it matters not how ſhort they are ; therefore the Upper-part of the Roots which are taken up for Uſe, ſhould be cut off about two Inches long with the Bud to it, which is eſteem'd the beſt for planting. Then make a Trench ten Inches deep, in which you ſhould place the Off-ſets at about four or five Inches Diſtance each Way with the Bud upwards, covering them up with the Mould that was taken out of the Trench : Then proceed to a ſecond Trench in like manner, and continue the ſame until the whole Spot of Ground is planted. After this, level the Surface of the Ground even, obſerving to keep it clear from Weeds, until the Plants are ſo far advanced as to be ſtrong enough to over-bear and keep down the Weeds. With this Management, the Roots of the *Horſe-Radiſh* will be long and ſtrait, and free from ſmall lateral Roots ; and the ſecond Year after planting will be fit for Uſe. 'Tis true, they may be taken up the firſt Year ; but then the Roots will be but ſlender ; therefore it is the better way to let them remain until the ſecond Year. The Ground in which this is planted ought to be very rich, otherwiſe the Roots will make but a ſmall Progreſs.

COCOS. *Vide* Palma Nucifera.

CODLIN-TREE. *Vide* Malus or Apple-tree.

COFFEE-TREE. *Vide* Jaſminum.

COLCHICUM, is ſo call'd, from *Colchis* a Province of the *Levant*, (now call'd *Mingrelia*) becauſe this Plant was formerly very common in that Place.

The *Characters* are ;

It hath a Flower conſiſting of one Leaf, which is ſhap'd like a Lily, riſing from the Root in Form of a ſmall Tube, and is widened gradually into ſix Segments ; the Pointal riſes from the Bottom of the Flower, ending in ſmall Threads, and turns to an oblong triangular Fruit, divided into three Cells, which are full of roundiſh Seeds : It hath alſo a ſolid bulbous Root, which is cover'd with a membranous Skin.

The *Species* are ;

1. Colchicum *commune. C. B.* Common Meadow-Saffron.
2. Colchicum *Anglicum album. Park. Engliſh* white Meadow-Saffron.
3. Colchicum *pleno flore. C. B.* The double-flower'd Meadow-Saffron.
4. Colchicum *floribus Fritillariæ inſtar teſſelatis, foliis planis. M. H.* Meadow-Saffron with Flowers chequer'd like thoſe of the *Fritillaria*, and ſmooth Leaves.
5. Colchicum *Chionenſe, floribus Fritillariæ inſtar teſſelatis, foliis undulatis. M. H.* Meadow-Saffron with chequer'd Flowers, and wav'd Leaves, *commonly call'd* Colchicum *Chio.*
6. Colchicum *latifolium variegatum. C. B.* Broad-leav'd ſtrip'd Meadow-Saffron.
7. Colchicum *vernum Hiſpanicum. C. B.* Spring-flowering Meadow-Suffron.
8. Colchicum *candidum multiflorum. C. B.* Many-flower'd white Meadow-Saffron.

The firſt of theſe Species is found in moiſt Meadows in ſeveral Parts of *England*. The ſecond is a Variety of the firſt, from which it only differs in the Colour of the Flower. The third Sort alſo originally came from the firſt ; but is preſerv'd in Gardens, for the Doubleneſs of its Flowers. The fourth Sort is a Stranger to our Iſland, and is ſuppos'd to have been brought from the *Levant*, with the fifth Sort, which differs from the fourth in having the green Leaves very much waved on the Edges. The Root of one of theſe two Species is thought to be the *Hermodactyl* of the Shops. The ſixth Sort hath fine, broad, variegated, green Leaves, for which it is greatly eſteem'd. The ſeventh Sort is valuable for producing its Flowers early in the Spring ; as is the eighth for producing a great Number of Flowers.

Theſe are all very pretty Varieties for a Flower-Garden, moſt of them producing their Flowers in Autumn, when few other Plants are in Beauty. The Flowers come up and are blown ſome time before the green Leaves appear, and are therefore by ſome call'd *Naked Ladies*. The green Leaves come up in Winter, and in Spring are extended to a great Length : In *May* the green Leaves begin to decay ; ſoon after which Time, is the proper Seaſon to tranſplant their Roots ; for if they are ſuffer'd to remain in the Ground till *Auguſt*, they will ſend forth freſh Fibres ; after which Time it will be too late to remove them. The Roots may be kept above Ground until the Middle of *Auguſt* ; at which Time if they are not planted, they will produce their Flowers as they lie out of the Ground : but this will greatly weaken their Roots. The Manner of planting their Roots being the ſame as *Tulips*, &c. I ſhall forbear mentioning it here, referring the Reader to that Article : And alſo for ſowing the Seeds, by which Means new Varieties may be obtain'd, I ſhall refer to the Article of *Xyphion*, where there will be proper Directions for this Work.

COLD, ſignifies ſomething devoid of *Heat*, or which does not contain in it any Particles of Fire ; according to which Definition, Cold is a mere Negative Term. And this is agreeable to the Sentiments of moſt of our Modern Philoſophers, who ſuppoſe *Cold* to conſiſt in a mere Privation or Diminution of *Heat*.

Others, much on the ſame Principle, define *Cold* to be that State of the minute Parts of a Body, wherein they are agitated more ſlowly and faintly than thoſe of the Organs of *Feeling*. And in this Senſe *Cold* is a mere Term of Relation: And hence the ſame Body becomes liable to be perceiv'd *Hot* or *Cold*, as the Particles of it are in greater or leſſer Degree of Motion than thoſe of the ſenſible Organ.

Heat is ſuppos'd to conſiſt in a particular Motion of the Parts of the *Hot* Body: And hence the Nature of *Cold*, which is its Oppoſite, is eaſily deducible; for we find that *Cold* extinguiſhes, or rather abates *Heat*. Whence it ſeems to follow, that thoſe Bodies are *Cold* which check and reſtrain the Motion of the Particles wherein *Heat* conſiſts.

There are three Kinds of Bodies that can do this, *viz.* either thoſe whoſe Particles are perfectly at Reſt; or thoſe whoſe Particles are indeed agitated, but with leſs Violence than thoſe of the Hot Body to which they are apply'd; or, laſtly, ſuch whoſe Particles have a Motion proper for exciting the Senſation of *Heat*, but move with a different Determination, ſo as to retard and change the Motion of the Particles of the Organ.

Hence three different Kinds of *Cold*, or *cold Bodies* do proceed.

The 1ſt, That *Cold* is common to all hard Bodies which conſiſts in the Reſt of their Parts.

The 2d, Is that which riſes from plunging any Part of the Body in Water; which conſiſts in this, that the Parts of our *Præcordia* being more briſkly agitated than thoſe of the *Fluid*, do communicate part of their Motion to it.

The 3d, The *Cold* felt on the Collection of warm Air with a Pan, or in blowing hot Breath out of our Mouth with the Lips cloſe ſhut; which conſiſts in this, that the direct Motion of the Particles of *Air* do in ſome Meaſure change and rebate the Motion and Determination of the Parts of the Body: And hence it is that a *cold* Body cannot cool another without heating itſelf.

Hence alſo it proceeds, that the more the Parts of a *frigid* Body are at Reſt, the more the Particles of a warm Body that is apply'd to heat them, muſt loſe of their Motion, and conſequently of their Heat.

Thus there being more quieſcent Parts in a Marble than in Wood, which is full of Pores and Interſtices, the Marble is felt colder than the Wood. And hence alſo we may underſtand why *Air* near Marble and other denſe Bodies feels ſomewhat colder than in other Places.

On this Principle the two latter Kinds of *Cold* appear ſomewhat more than Privations: The Particles inducing the *Cold* may be eſteem'd real frigorick Corpuſcles; and *Coldneſs* may be deem'd a real Quality, as well as *Hotneſs*. Theſe Particles do not only check the Agitation of thoſe continually diffus'd from the Inner Parts of an Animal to the Outer; but having an elaſtick Power, they bend and hang about the Filaments of the Body, pinch and ſqueeze them; and hence is that acute pungent Senſation call'd *Cold*.

That *Cold* is more than a mere Relation or Compariſon, is evident from its having real and poſitive Effects; ſuch as *Freezing*, *Congelation*, *Condenſation*, *Rarefaction*, *Burſting*, &c.

Dr. *Clark* takes *Cold* to be owing to certain Nitrous and other Saline Particles, endued with particular Figures proper to produce ſuch Effects. Hence *Sal-Armoniack*, *Salt-Petre*, *Salt of Urine*, and many other *Volatile* and *Alkalizate Salts*, mix'd with *Water*, increaſe its Degree of *Cold* very ſenſibly.

Hence alſo comes that popular Obſervation, That *Cold* prevents Corruption. Which, however, muſt not be admitted without an Exception: Since if a hard porous Body have its Interſtices fill'd with Water, and this be too much dilated by freezing, the including Body will be burſt. And thus it is that *Cold* proves deſtructive to the Parts of ſome *Plants*: As it happen'd in the Winter *Anno* 1728, when in ſeveral Trees, whoſe Trunks were much expos'd to the South-Weſt, the Sap being thereby rarefy'd by the Warmth of the Sun, which for ſeveral Days at the Beginning of the ſevere Froſt, ſhone with an uncommon Heat, and the Nights coming on to extreme Cold, whereby the rarefy'd Sap was ſo ſuddenly condens'd, that the Sap-Veſſels could not contain it, and thereby burſt off the Bark of many Trees almoſt from Top to Bottom, and this chiefly on the South-Weſt Side of the Trees, as it did of two large Occidental *Plane-Trees* in the Phyſick-Garden at *Chelſea*, and ſeveral *Pear* and other *Fruit-Trees* in the Nurſeries of Mr. *Francis Hunt* at *Putney*.

Dr. *Boerhaave* ſays, That there is no ſuch Thing in all Nature as abſolute *Cold*; that the moſt ſevere he had ever known, was in the Year 1728, that then the Water would freeze while it ran down his Hand; and yet even then the *Cold* was not ſo complete, but that he could make an artificial *Cold* greater by twelve Degrees.

Tho' much might be ſaid as to the Effects of *Cold* on Plants, I ſhall only conclude with the Obſervation of the Reverend Dr. *Hales*, who in the Concluſion of his excellent Treatiſe of *Vegetable Staticks*, ſays;

The conſiderable Quantity of Moiſture, which is perſpir'd from the Branches of Trees during the cold Winter-ſeaſon, plainly ſhews the Reaſon, why in a long Seaſon of cold North-Eaſterly Winds, the Bloſſoms and tender young-ſet Fruit and Leaves are, in the early Spring, ſo frequently blaſted, *viz.* by having the Moiſture exhaled faſter than can be ſupply'd from the Trees; for doubtleſs Moiſture riſes ſlower from the Root, the colder the Seaſon is, tho' it riſes, in ſome Degree all the Winter; as is evident, as he ſays, from his ſixteenth Experiment in the ſaid Book.

And from the ſame Cauſe it is, that the leafy Spires of Corn are by theſe cold drying Winds often faded and turn'd yellow, which makes the Huſbandman, on theſe Occaſions, wiſh for Snow; which, though it be very cold, yet it not only defends the Root from being frozen, but alſo ſcreens the Corn from theſe drying Winds, and keeps it in a moiſt, florid, ſupple State.

It ſeems therefore to be a reaſonable Direction, which ſome Authors who write on Agriculture and Gardening, give, *viz.* during theſe cold drying Winds, when little Dew falls, to water the Trees in dry Soils, in the bloſſoming Seaſon, and while the young-ſet Fruit is tender; and provided there is no immediate Danger of a Froſt, or in Caſe of continu'd Froſt, to take care to cover the Trees well, and at the ſame Time to ſprinkle them with Water, which is imitating Nature's Method of watering every Part.

As to ſloping Shelters over Wall-trees, he ſays: I have often found, that when they are ſo broad as to prevent any Rain or Dew coming at the Trees, they do more Harm than Good in theſe long Eaſterly drying Winds, becauſe they prevent the Rain and Dews falling on them, which would not only refreſh and ſupple them, but alſo convey Nouriſhment to them: But in caſe of ſharp Froſt after a Shower of Rain, theſe Shelters and other Fences muſt needs be of excellent Uſe to prevent the almoſt total Deſtruction occaſion'd by the Freezing of the tender Parts of Vegetables, when they are full ſaturate with Moiſture.

COLEWORTS. *Vide* Braſſica.

COLOCYNTHIS; [Κολοκύνθη, of κοιλίαν κινεῖ *it moves the Belly*; or of κόλου κυῶν, *Dog's-meat*, by Way of Irony, becauſe of the great Bitterneſs.] Coloquintida or Bitter Gourd.

The *Characters* are;

It is in all reſpects like the Gourd, *excepting the Leaves of this Plant being deeply jagged, and the Fruit being exceſſively bitter, and not eatable.*

The *Species* are;

1. Colocynthis *fructu rotundo major. C. B.* The greater Coloquintida, with a round Fruit.
2. Colocynthis *fructu Aurantio ſimili. Tourn.* Coloquintida, with a Fruit reſembling an *Orange*.

There are ſeveral other Varieties of this Plant, which are very common in divers Parts of the *Eaſt* and *Weſt-Indies*; but as few of them come to any Maturity with us, ſo I ſhall paſs them over, with only obſerving, that whoever hath a mind to cultivate any of theſe Plants, muſt ſow them upon a Hot-bed, and manage them as is directed for raiſing Early *Cucumbers*; to which I ſhall refer the Reader.

COLUMBINE. *Vide* Aquilegia.

COLUTEA, Bladder-Sena.

The *Characters* are;

It hath a papilionaceous (or Butterfly) Flower, which is ſucceeded by Pods, ſomewhat reſembling the inflated Bladders of Fiſhes, in which are contain'd ſeveral Kidney-ſhap'd Seeds.

The *Species* are;

1. Colutea *veſicaria. C. B.* Bladder Sena.
2. Colutea *veſicaria, veſiculis rubentibus. J. B.* Bladder-Sena, with reddiſh-colour'd Pods.
3. Colutea *Orientalis, flore ſanguinei coloris, luteo maculâ notato. T. Cor.* Eaſtern Bladder Sena, with Blood-colour'd Flowers ſpotted with Yellow.
4. Colutea *Æthiopica, flore Phœnicio, foliis barbæ Jovis. Breyn. Cent.* *Ethiopian* Bladder-Sena, with Scarlet Flowers, and Leaves like the *Silver Buſh*.

5. Colutea *Africana annua, foliis parvis mucronatis, veſiculis compreſſis. Hort. Amſt. African* annual Bladder-Sena, with ſmall pointed Leaves and compreſs'd Pods.

The two firſt Sorts are promiſcuouſly ſold by the Gardeners near *London*, amongſt other flowering Shrubs, and are ſeldom diſtinguiſh'd but by *Botaniſts*.

Theſe are propagated by ſowing their Seeds any Time in the Spring, in a Bed of common Earth; and when the Plants are come up, they muſt be kept clear from Weeds; and the *Michaelmas* following, they ſhould be tranſplanted either into Nurſery Rows, or in the Places where they are deſign'd to remain; for if they are let grow in the Seed-bed too long, they are very ſubject to have downright Tap-roots, which renders them unfit for Tranſplantation: Nor ſhould theſe Trees be ſuffer'd to remain too long in the Nurſery before they are tranſplanted, for the ſame Reaſon.

Theſe Shrubs grow to the Height of eight or ten Feet, and are very proper to intermix with Trees of a middling Growth in Wilderneſs-quarters, or in Clumps of Flowering-trees, where the Oddneſs of their Flowers and Pods will make a pretty Variety.

The third Sort was brought from the *Levant* by Monſieur *Tournefort* to the King's *Garden* at *Paris*; from whence ſeveral curious Gardens have been ſupply'd with this beautiful Plant: This is alſo rais'd by ſowing the Seeds in the Spring, either in a moderate Hot-bed, or in a warm Border; and when the Plants are come up about four Inches high, they ſhould be tranſplanted into Pots fill'd with light freſh Earth, and during the firſt Winter ſhould be ſhelter'd under a common Hot-bed Frame; and the Spring following, they may be taken out of the Pots, and planted into a warm Border, where they will thrive and flower the third Year from Seed.

The fourth Sort is tenderer than any of the former, and ſhould be ſown on a Hot-bed, and afterwards tranſplanted into Pots, and manag'd as was directed for the third Sort, and in the Spring put into warm Borders under a good Wall, where it will flower and ſeed the ſecond Year; and if the Winters prove mild, will remain for two or three Years, producing great Quantities of beautiful Scarlet Flowers; but if the Winter proves hard, or the Soil is moiſt wherein it is planted, it ſeldom ſtands through a Winter abroad. This Plant is by moſt People preſerv'd in Green-houſes with *Oranges*, *Myrtle*, &c. But in this Management they are ſubject to grow very weak, for want of more free open Air than can be given with Safety to the other Trees; therefore the beſt Method is, to preſerve them, during the Winter, in an open Frame, where the Glaſſes may be kept off in mild Weather, and put on in froſty cold Nights, by which hardy Management the Plants will produce a greater Quantity of Flowers than when they are drawn in a Houſe.

The fifth Sort is an annual Plant, ſeldom riſing above three Feet high with us, and is but of very little Beauty: This is preſerv'd in curious Gardens of Plants. The Management of it being much the ſame as the *Balſamina*, I ſhall refer the Reader thereto for Inſtructions.

COLUTEA SCORPIOIDES. *Vide* Emerus.

COLLIFLOWER. *Vide* Braſſica.

COMA AUREA; [ſo call'd from the Golden Colour of its Flowers] Goldylocks.

The *Characters* are;

It hath a fibroſe perennial Root; the Leaves, which are in great Numbers, are produc'd alternately on every Side the Branches; the Cup of the Flower is not ſpecious; the Flowers are yellow, and produc'd either ſingly, or in an Umbel upon the Tops of the Branches, to which may be added, it hath the Appearance of a Shrub.

The *Species* are;

1. Coma Aurea *Germanica. Park. Theat. German* Goldylocks.

2. Coma Aurea *Africana, fruticans, foliis linariæ anguſtis major. Hort. Amſt. African* ſhrubby Goldylocks, with narrow Toad-Flax Leaves.

3. Coma Aurea *Africana, fruticans, foliis crithmi marini. Hort. Amſt. African* ſhrubby Goldylocks, with Samphire Leaves.

4. Coma Aurea *Africana, fruticans, foliis glaucis, & in extremitate trifidis. Hort. Amſt. African* ſhrubby Goldylocks, with Sea-green Leaves, which are divided into three Parts at their Extremities.

5. Coma Aurea *Africana, fruticans, foliis glaucis longis tenuibus multifidis, apice pinnularum trifido. Boerh. Ind. alt.* Shrubby *African* Goldylocks, with long narrow Sea-green Leaves, which are divided into many Parts, each of which are trifid at their Points.

The firſt of theſe Plants is very hardy, and will endure to be planted in the open Ground: This is propagated by parting the Roots in the Spring, or by planting Cuttings in any of the Summer Months, which if water'd and ſhaded will take Root in ſix Weeks Time, when they may be tranſplanted into the Borders where they are to remain for good: This Plant produces very pretty Umbels of Gold-colour'd Flowers upon the Tops of the Branches, which continue in Beauty for a long Time, which renders it worthy of a Place in every good Garden. The other four Sorts are tenderer, and muſt be preſerv'd either in a Green-houſe or under a Hot-bed Frame in Winter.

Theſe are propagated by planting their Cuttings in any of the Summer Months in a Bed of light Earth; which if kept ſhaded and watered, will take Root in two Months Time; when they muſt be planted into Pots fill'd with freſh light Earth, and may be expos'd to the open Air until *October*; at which Time they ſhould be remov'd to Shelter, leſt the Morning Froſts ſhould injure them: But they require to have a great Share of free open Air in mild Weather; for if they are ſhut up too cloſe they are very ſubject to Mouldineſs, and their younger Branches are very apt to decay: They muſt alſo have frequent, but moderate Waterings in Winter; and in the Spring, ſhould be remov'd into the open Air as ſoon as poſſible, obſerving to do it by degrees, that they may not receive a great Check thereby. With this Management theſe Plants will ſome of them grow to be eight or nine Feet high, and become very woody, and will produce great Quantities of Flowers thro' moſt Part of the Year, which renders them worthy of a Place in a good Green-houſe.

COMMELINA: This Plant was ſo call'd by Father *Plumier*, from Doctor *Commeline*, a famous Profeſſor of Botany at *Amſterdam*.

The *Characters* are;

The Leaves are produc'd alternately, and ſurround the Stalks at their Baſe, being in Shape ſomewhat like the Ephemeron; *the Stalks trail upon the Ground, and grow very branchy; at the ſetting on of the Branches, between the Wing of the Leaf and the Stalk, is produc'd a Flower which conſiſts of two Leaves, which are plac'd in the Form of two Wings, much after the manner of the* Butterfly Flowers; *From the upper Part of the Flower are produc'd three ſhort* Stamina *(or Threads); upon which are faſten'd yellow* Apices, *which reſemble the Head of a* Muſhroom: *In the under Part of the Flower are produc'd three other Male* Stamina, *which are thicker and longer than the other; the Ovary is produc'd in the Center of the Flower, which is extended into a long intorted Tube, and becomes an oblong Fruit, divided into two Cells, in each of which is contain'd one oblong Seed.*

There is but one *Species* of this Plant at preſent known, which is,

Commelina *graminea latifolia, flore cœruleo. Plum. Nov. Gen.* Broad Graſs-leav'd Herb Commeline, with blue Flowers.

This Plant ſeldom continues with us longer than one Year; but the Seeds, which are annually ripen'd, falling to the Ground, will grow again, ſo that we need be at no farther Trouble than to allot this Plant a Place in a warm Border, and not ſuffering it to be deſtroy'd, where it will maintain itſelf without any Culture. The Stalks of this Plant ſtriking Roots at the Joints as it lies upon the Ground, this Plant may be increas'd faſt enough in Summer by cutting theſe off, and tranſplanting them out into a freſh Spot of Ground, where they will greatly increaſe. The Seeds of this Plant ſhould be ſown as ſoon as it is ripe; for if it be kept till Spring, it ſeldom comes up well, nor will the Plants rais'd in the Spring be forward enough to produce ripe Seeds.

COMPARTIMENTS, are Beds, Plats, Borders, and Walks, laid out according to the Form of the Ground, and Ingenuity of the Artiſt, and depend more on a good Fancy than any Rules: Or, are Diverſities, or Knots of Flower-Gardens, or Parterres, of which there are great Variety, and may be diverſify'd infinitely, according to the Fancy of the Deſigner.

Plain Compartiments, are Pieces of Ground divided into equal Squares and Flower-Beds, mark'd out by the Line, of equal Length and Breadth.

Some Perſons allow to theſe Squares, Borders of two Feet in Breadth, and not more, if the Plat of Ground be ſmall; but if they be reaſonably large, three Feet; and they edge the Borders with *Box*, or upright hardy *Thyme*, or ſome other Aromatick *Herbs* or *Flowers*, for the Sake of the greater Neatneſs.

And in order to preſerve the Paths and Allies of *Compartiments* firm, even, and durable, they lay them with a Coat of Sand or Gravel two or three Inches thick, keeping them houghed and weeded as often as there ſhall be Occaſion.

COMPOSTS, [are ſo call'd, of *Compoſta*, or *Compoſita*, Lat. Compounds, of *componere*, Lat. to *compound* or *mix*: And in Huſbandry and Gardening, they ſignify ſeveral Sorts of Soils or Earthy Matter mix'd together, in order to make a Manure for aſſiſting the natural Earth in the Work of Vegetation, by Way of Amendment or Improvement.]

Compoſts are various, and ought to be different according to the different Nature or Quality of the Soils which they are deſign'd to meliorate, and according as the Land is either *light*, *ſandy*, or *looſe* or *heavy*, *clayey* and *cloddy*. A light, looſe Land requires a *Compoſt* of a heavy Nature, as the Scouring of deep Ditches, Ponds, *&c*.

So, on the other hand, a Land that is *heavy*, *clayey* or *cloddy*, requires a *Compoſt* of a more ſprightly and fiery Nature, that will inſinuate itſelf into the lumpiſh Clods; which, if they were not thus manag'd, would very much obſtruct the Work of Vegetation.

As a good *Compoſt* for *cold clayey* Land, ſome adviſe to take one Load of Sea-ſand, (if it can be conveniently had), or if not, other Sand, or ſandy Ground, or ſharp Sand, and two Loads of good rotten Dung, and three Loads of natural Mould, two Loads of the top Spit Turf from off the Meadows, or any other Kind of rich Turf Land, and half a Load of Coal-Aſhes, or the Sweepings of Streets, a ſmall Sprinkling of Pigeons, Sheep, or other hot Dungs. Theſe are to be laid down in different Heaps in a Circle, having a large Space in the Center, ſo that they may all be thrown up together in one Heap, which is to be done by as many Perſons at each Heap, as there are different Loads in each, *viz.* one to that of one Load, two to that of two Loads, and three to that of three Loads, and ſo on; theſe muſt caſt and ſpread at the ſame Time every Parcel with Care, and not all together in Lumps.

The fitteſt Time for the doing of this, is when the Weather is dry, and alſo in the Month of *May*. This Mixture ſhould be turn'd once a Month till *Michaelmas*, and then it may be ſcreen'd and ſeparated into ſeveral Sorts, to be ready, as occaſion ſhall require, in the Nurſery.

For the firſt Sort, it will be beſt to ſet the Skreen more upright; and what comes thro' may be mix'd with one fourth part of Melon Earth very fine.

The ſecond Sort may be ſcreen'd with the Skreen ſtanding more ſloping; by which means, what comes thro' will be coarſer than the firſt.

The Remainder, which will be the rougheſt and moſt cloddy Earth, is recommended as an extraordinary Manure to be dug in order to improve any barren or poor Land; and if it be kept in a Heap for one Year, and ſkreen'd the next Year, 'twill then be as good as either of the former. The fineſt of theſe ſhould be beſt kept in a Houſe, or under ſome Covering, that it may be dry; tho' it would be better to be turn'd out ſometimes to get Rain.

A *Compoſt* for a *looſe ſandy* Ground may be made by taking two Loads of Dung, three Loads of natural Soil, three Loads of ſtrong loamy Earth, three Loads of Pond Earth, or of the Scouring of Ditches, which are to be order'd, mix'd, and ſkreen'd as before; and ſo to make three different Sorts of Skreenings.

Others recommend other *Compoſts* differing according to the different Soils.

For a *ſtiff Soil* inclining to *Clay*, To make five Loads of the ſame Soil well broken and open'd, and to add to that five Loads more of Heath Turfs burnt; that theſe having been well mix'd and laid together during the Winter in a Heap or Ridge, and being well ſifted or ſkreen'd, are recommended as a good *Compoſt* that will extremely forward Trees.

2. To mix four Loads of ſharp Sand, and two Loads of Aſhes of burnt Furzes, Gorz, Fern, Weeds, or Wood, with four Loads of *ſtiff Soil* well broken and open'd: That theſe having been well mix'd together and laid up in a Ridge in *September*, ſhould lie till the *February* following, and then may be ſkreen'd and ſifted for Uſe. Sir *William Bruce* is ſaid to have uſ'd this *Compoſt* in his Garden with good Succeſs.

3. For a *ſtiff Soil*, Take four Loads of the ſtiff Soil, two Loads of rotten Wood, ſuch as may be found under a Wood Pile, or the ſame Quantity of rotted Leaves, if the former can't be had, two Loads of burnt Graſs-Turf, and four Loads of Sand: This is recommended to be done in *October* likewiſe; becauſe being then made, and ſifted in the following Spring, 'twill be better than if they were made in the Spring; for that the Heat of the Summer would exhale the volatile Spirits, and if they were not laid in ſome ſhady Place under Trees, the Weeds would exhauſt good Part of the Nouriſhment that is in them. Theſe being mix'd well, and laid in a Ridge till *February*, and then ſifted, is recommended as a good *Compoſt*.

4. Take two Loads of ſtiff Soil, two Loads of Rape-ſeed after the Oil has been preſs'd out, four Loads of Sand, and two Loads of burnt Heath or Graſs-Turf, and prepare them as the others, and ſift them: And this *Compoſt* is recommended as one that will forward any Plant.

5. Take four Loads of ſtiff Soil, two Loads of Malt Grains after Brewing, and four Loads of Sand; theſe being prepar'd as before, are recommended as a *Compoſt* that will haſten the Growth of Plants.

6. Take of Sheeps-dung and Wood-Aſhes equal Quantities; of Loam or Mother-Earth double the Quantity: Prepare them as before directed, and they will prove a good *Compoſt*.

7. Take four Loads of ſtiff Earth, four Loads of Sand, four Loads of Horſe-Dung well conſum'd, and two Loads of Turf-Aſhes: Prepare this Mixture as before directed.

The other *Compoſitions* which are proper for particular Plants, or choice Flowers, being exhibited in the ſeveral Articles where thoſe Plants are treated of, I ſhall not repeat them in this Place, but refer the Reader thereto.

COMPOUND FLOWERS, are ſuch as conſiſt of many Florets or Semi-florets, or both together, which make up what is commonly call'd one whole Flower.

CONE: A *Cone* is a hard dry Seed-Veſſel of a conical Figure, conſiſting of ſeveral Woody Parts (and is for the moſt part ſcaly) adhering cloſely together, and ſeparating when ripe.

CONIFEROUS TREES, are ſuch as bear *Cones*; as, the *Cedar of Libanon*, *Fir*, *Pine*, &c.

CONOCARPODENDRON, Silver Tree, *vulgo*.

The *Characters* are;

It hath an apetalous ſtamineous Flower, which is ſurrounded by a Number of long Leaves, immediately under the Flower-cup, which conſiſts of five narrow Leaves; theſe are ſucceeded by Cones, in Shape like thoſe of the Larch Tree; the Seeds are each of them included in a ſeparate Cell.

The *Species* are;

1. CONOCARPODENDRON *foliis argenteis ſericeis latiſſimis. Boerh. Ind. alt.* Silver Tree with broad ſoft white Leaves.

2. CONOCARPODENDRON *folio rigido craſſo anguſto, cono laricis parvo. Boerh. Ind. alt.* Silver Tree with a narrow thick ſtiff Leaf, and a ſmall Cone.

3. CONOCARPODENDRON *folio ſubrotundo craſſo rigido valde nervoſo, cono longo variegato, ex rubro & flavo, flore aureo. Boerh. Ind. alt.* Silver Tree with a roundiſh thick ſtiff Leaf full of Nerves, long Cones variegated with Red and Yellow, and a gold-coloured Flower.

4. CONOCARPODENDRON *folio tenui anguſto ſaligno, cono caliculato, corona foliacea ſuccincto. Boerh. Ind. alt.* Silver Tree with a narrow Willow Leaf, and the Cones growing in ſmall Cups, which are ſurrounded with a Crown of Leaves.

Theſe Plants are at preſent very rare in the *European* Gardens; the natural Place of their Growth is in the Country of the *Hottentots*, near the Cape of *Good Hope*, from whence ſeveral of theſe Kinds have been brought to the Gardens in *Holland*; but I have not obſerved more than two Sorts in the *Engliſh* Gardens: for they are with Difficulty propagated, the Cuttings ſeldom taking Root, tho' managed with the greateſt Care, and the Layers are two or three Years before they are rooted enough to take off; ſo that the ſureſt Method to propagate theſe Plants is by Seeds, which are ſeldom brought from the Country of their Growth; and as they do not yet produce Seeds in *Europe*, ſo they will be ſcarce, unleſs a Quantity of their Seeds could be procured from abroad.

The Seeds ſhould be brought over in their Cones; for if they are taken out, they will loſe their growing Quality, before they arrive in *Europe*. When the Seeds are obtained, they ſhould be ſown early in the Spring of the Year, in Pots filled with light freſh Earth, and plunged into a Hot-bed of Tanners-bark, obſerving frequently to water the Earth, otherwiſe the Seeds will dry, and their Covering become ſo hard, as to prevent their Growing. When the Plants are come up about two Inches high, which may be expected in Six Weeks after ſowing, if the Seed be freſh, they ſhould be carefully ſhaken out of the Pots, and ſeparated, putting each into a ſmall halfpenny Pot, filled with light freſh Earth, and then plunged into a moderate Hot-bed of Tanners-bark; then water them pretty well, to ſettle the Earth to their Roots, and in the Heat of the Day cover the Glaſſes of the Hot-bed, to ſcreen the Plants from the Sun, until they have taken new Root, which will not be longer than a Fortnight; after which time they muſt have a large Share of freſh Air admitted to them, by raiſing the Glaſſes with Bricks every Day, when the Weather is warm: you muſt alſo frequently refreſh them with Water in hot Weather, which if duly obſerved, the Plants will have obtained Strength enough by the Beginning of *July* to bear the open Air, to which they muſt then be inured by Degrees; and the Middle of *July* they ſhould be taken out of the Hot-bed, and placed in a warm Situation, where they may be ſcreened from ſtrong Winds; in which Situation they may remain until the End of *September*, when they ſhould be removed into the Green-houſe. For the firſt Year they are ſomewhat tenderer, than they will be when they are grown large; ſo that the firſt Winter they ſhould be placed in the warmeſt Part of the Green-houſe, where they may enjoy the Heat of the Sun, and be ſecured from Cold.

After the firſt Year theſe Plants may be treated as many other exotic Plants which come from the ſame Country, and only require to be protected from great Cold; ſo may be placed in the open Air during the ſummer Months, and in Winter removed into the Green-houſe, and placed where they may enjoy as much free Air as poſſible in mild Weather; for if theſe Plants are kept too warm, or too cloſely confined from the Air, they will make long weak Shoots, and become ſickly. Theſe Plants muſt be new-potted every Spring, when the Earth ſhould be carefully pared off from their Roots, and freſh Earth added to fill the Pots; and as the Plants advance in Size, ſo they ſhould have larger Pots; but they muſt not be put into Pots too large, for nothing is more injurious to moſt Plants than over-potting of them.

Theſe Plants, in the natural Country of their Growth, become large Trees; but in *Europe*, where they are confined in Pots or Tubs, it cannot be expected they ſhould grow ſo large. The largeſt Plant of theſe Kinds I have yet ſeen, was not more than eight Feet high; but as they retain their Leaves throughout the Year, which are of a fine ſilver Colour, ſo they merit a Place in the Green-houſe, for the beautiful Variety they add among other exotic Plants.

CONSOLIDA Major, *vide* Symphytum.

CONSOLIDA Media, *vide* Bugula.

CONSOLIDA MINIMA, *vide* Bellis.

CONSOLIDA Regalis, *vide* Delphinium.

CONVOLVULUS, [of *Convolvendo*, Lat. *rolling round*, or *wrapping* or *winding about*. Bindweed.

The *Characters* are;

It hath, for the moſt part, trailing Stalks; the Leaves grow alternately upon the Branches; And the whole Plant, for the moſt part, abounds with Milky Juice; the Flower conſiſts of one entire Leaf, ſhaped like a Bell, whoſe Mouth or Brim is, for the moſt part, widely ſpread and expanded; the Ovary becomes a roundiſh membraneous Fruit, which is, for the moſt part, wrapp'd up within the Flower cup; and is generally divided into three Cells, each containing one angular Seed.

The *Species* are;

1. CONVOLVULUS *vulgaris major albus. Mor. Hiſt.* The common great white Bind-weed, *vulgarly call'd* Bearbind.

2. CONVOLVULUS *minor arvenſis, flore roſeo. C. B.* Leſſer Field Bindweed, with a Roſe-colour'd Flower, *vulgarly call'd* Gravel-bind.

3. CONVOLVULUS *maritimus noſtras rotundifolius. Mor. Hiſt.* Common Sea Bindweed with round Leaves, or Soldanella Officin.

4. CONVOLVULUS *marinus catharticus, folio rotundo, flore purpureo. Plum. American* purging Sea Bindweed, with a round Leaf, and a purple Flower.

5. CONVOLVULUS *purpureus, folio ſubrotundo. C. B.* Indian *Convolvulus*, with roundiſh Leaves, and purple Flowers.

6. CONVOLVULUS *Indicus, flore albo. H. R. Par. Indian* Bindweed with white Flowers.

7. CONVOLVULUS *Indicus, flore albo-purpuraſcente, ſemine albo. H. R. Monſp. Indian* Bindweed, with whitiſh-purple Flowers, and white Seeds.

8. CONVOLVULUS *Indicus, flore amplo roſeo. Indian* Bindweed, with large Roſe-colour'd Flowers.

9. CONVOLVULUS *cæruleus hederaceus, ſeu trifolius. Park.* Ivy-leav'd *Indian* Bindweed, with fair blue Flowers.

10. CONVOLVULUS *Canarienſis ſempervirens, folio molli incano, flore ex albo purpuraſcente. H. A.* Perennial *Canary* Bindweed, with ſoft hoary Leaves, and whitiſh purple Flowers.

11. CONVOLVULUS *major heptaphyllos, flore ſulphureo odorato ſpecioſiſſimo. Sloan. Cat. Jam.* Great *American* Bindweed, with ſpecious yellow ſweet-ſcented Flowers, *commonly call'd Spaniſh* Arbor-Vine, or *Spaniſh* Woodbind.

12. CONVOLVULUS *Americanus, folio hederæ, flore coccineo minore. American* Bindweed, with Ivy Leaves, and ſmall ſcarlet Flowers. This is the *Quamoclit Americana, folio hederæ, flore coccineo*, of *Commeline*'s rare Plants.

13. CONVOLVULUS *Luſitanicus, flore cyaneo. Broſſ. Portugal* Bindweed, with fine blue Flowers, *vulgarly call'd* Convolvulus Minor.

14. CONVOLVULUS *Luſitanicus, flore & ſemine albo. Boerh. Ind. alt. Portugal* Bindweed, with white Flowers and Seeds, *vugarly call'd* Colvolvulus minor flore albo.

15. CONVOLVULUS *major rectus Creticus argenteus. Mor. Hiſt.* Great upright Bindweed from *Crete*, with Silver-colour'd Leaves.

16. CONVOLVULUS *linariæ folio, aſſurgens. Tourn.* Upright Bindweed, with Toad-flax Leaves.

17. CONVOLVULUS *radice tuberoſa eſculenta, ſpinachiæ folio, flore albo, fundo purpureo, ſemine poſt ſingulos flores ſingulo. Sloan. Cat.* White and yellow *Spaniſh* Potatoes.

18. CONVOLVULUS *radice tuberoſa eſculenta minore purpurea. Sloan. Cat.* Red *Spaniſh* Potatoes.

19. CONVOLVULUS *radice tuberoſa cathartica. Houſt.* The Jalap.

20. CONVOLVULUS *radice tuberoſa maxima, foliis hederaceis incanis, floribus maximis purpureis, ſemine villoſo. Houſt.* Large tuberous rooted Bindweed, with hoary Ivy Leaves, large purple Flowers, and hairy Seeds.

21. CONVOLVULUS *pentaphyllos, folio glabro dentato, viticulis hirſutis. Plum. Cat.* Five-leav'd Bindweed, with ſmooth indented Leaves, and hairy Stalks.

22. CONVOLVULUS *polyanthos niveus, folio ſubrotundo majori. Plum. Cat. American* Bindweed, with many white Flowers, and a larger roundiſh Leaf.

23. CONVOLVULUS *luteus polyanthos. Plum. Cat.* Yellow many-flowered Bindweed.

24. CONVOLVULUS *ampliſſimo folio cordiformi, flore maxim purpuraſcente. Plum. Cat.* Bindweed with a large heart-ſhaped Leaf, and a large purpliſh Flower.

25. CONVOLVULUS *ampliſſimo folio cordiformi, flore alb maximo. Plum. Cat.* Bindweed with a large heart-ſhaped Leaf, and a large white Flower.

26. CONVOLVULUS *coccineus heptaphyllos, radice craſſiſſima. Plum. Cat.* Scarlet Bindweed, with ſeven Leaves, and a thick Root.

27. CONVOLVULUS *pentaphyllos, hirſutus. Plum. Cat.* Hairy five-leaved Bindweed.

28. CONVOLVULUS *polyphyllos, flore & fructu purpureis maximis. Plum. Cat.* Many-leaved Bindweed, with the largeſt purple Flower and Fruit.

29. CONVOLVULUS *minimus villoſus, helianthemi folio. Plum. Cat.* The leaſt hairy Bindwind, with a dwarf Ciſtus Leaf.

30. CONVOLVULUS *pentaphyllos minor, flore purpureo. Sloan. Cat.* Leſſer five-leaved Bindweed, with a purple Flower.

31. CONVOLVULUS *polyanthos, foliis & viticulis purpureis.* Many-flowered Bindweed, with purple Stalks and Leaves.

32. CONVOLVULUS *Americanus, ariſtolochiæ folio glabro, viticulis hirſutis, flore majore purpureo, ſemine lanuginoſo. American* Bindweed, with a ſmooth Birthwort Leaf, hairy Stalks, a large purple Flower, and hairy Seeds.

33. CONVOLVULUS *Americanus, foliis oblongis hirſutis, flore minore purpuraſcente, ſemine minimo. American* Bindweed, with hairy oblong Leaves, a ſmall purpliſh Flower, and the leaſt Seed.

34. CONVOLVULUS *folio hederæ, flore dilute aurantio. Breyn.* Bindweed with an Ivy Leaf, and a pale Orange-coloured Flower.

35. CONVOLVULUS *Syriacus, & Scammonea Syriaca. Mor. Hiſt.* The Scammony.

36. Convolvulus *Indicus alatus maximus, foliis ibiſco nonnihil ſimilibus, anguloſis. Hort. Lugd. Bat.* The Turbith of the Shops.

The firſt of theſe *Species* is a very troubleſome Weed in Gardens, eſpecially under Hedges, or amongſt the Roots of Trees, where, by its creeping Roots, it increaſes very faſt; and the Plant twiſting itſelf about whatever Plants, *&c.* are near it, will ſpread as far above-ground, overbearing whatever Plant it comes near. The only Remedy that I know of to deſtroy this Plant, is by often houghing of it down; which in one Year's Time (if carefully perform'd, and often repeated) will intirely deſtroy it: For the whole Plant abounds with a milky Juice; and whenever the Top is cut off, it is very ſubject to emit ſo great a Quantity of its Juice, as to deſtroy the whole Branch to the Top; which (as the Gardeners expreſs it) is *bleeding to Death.*

The ſecond ſort, of which there are great Varieties of different-colour'd Flowers, is ſtill a worſe Weed than the former; for the Roots of this Kind do inſinuate themſelves into the Gravel many Feet deep, and greatly increaſe under-ground, riſing and ſpreading its Branches over every thing near it. This I know no other Method to deſtroy, than houghing often, or pulling it up by Hand; which will, in Time, weaken and ſubdue it: But this can't be done under three or four Years, if attended with all poſſible Care, (eſpecially in a dry, ſandy, or gravelly Soil:) But in a wet Soil it is ſoon deſtroy'd; for the Roots are very ſubject to rot with too much Moiſture in Winter.

The third Sort is found in Plenty upon the gravelly or ſandy Shores where the ſalt Water overflows in many Parts of *England.* This is a ſtrong Purger, and as ſuch is often us'd in Medicine. This Plant, if ſown in a Garden, will ſeldom laſt above a Year or two.

The fourth Sort is found in great Plenty upon the Sea-ſhores of *America*, and is by the Inhabitants us'd as a Purge. The Seeds of this Plant were brought from the *Bahama Iſlands* by Mr. *Cateſby*, and have been rais'd in ſeveral Gardens in *England*; but it is very tender, and not to be kept through a Winter without a Stove.

The fifth, ſixth, ſeventh, eighth and ninth Sorts are annual, and are propagated in Gardens for the Beauty of their Flowers: Theſe are commonly ſown on a Hot-bed in *March*, and afterwards tranſplanted into Borders in the open Air, where being ſupported by tall Stakes, they will twiſt round them, and ariſe to a great Height, producing great Quantities of fine large Bell-ſhap'd Flowers, and will continue flowering until the Froſt prevent them.

Theſe may all be rais'd in the open Ground, except the ninth, which, if it is not brought forward in the Spring by a Hot-bed, ſeldom produces ripe Seeds; the reſt are very hardy, and may be ſown to cover Seats, Arbours, Paliſado's, *&c.* which they will do in a ſhort Time, and continue very handſome until the Froſt deſtroys them: The ſeveral Varieties, when intermix'd, make a beautiful Appearance, but the ninth Sort is by far the moſt beautiful of them all.

The tenth Sort is an abiding Plant, and requires a Greenhouſe in Winter: This will grow to a conſiderable Height, and muſt be ſupported by ſtrong Stakes: It flowers almoſt every Year with us, but ſeldom produces good Seeds in *England.* This may be propagated by laying down the tender Branches in the Spring, which by Autumn will have ſufficient Roots to be taken off. Theſe muſt be planted in Pots fill'd with freſh light Earth, and ſhelter'd from Froſts in Winter; but muſt have as much free Air as poſſible in mild Weather, and require frequent Waterings.

The eleventh Sort is very common in the hotter Parts of *America*, where it is known by the Name of *Spaniſh Arbor Vine*: It is by the Inhabitants planted to cover Arbours and Seats, for which Purpoſe it is very proper; for in thoſe Countries one of theſe Plants will grow to the Length of ſixty or a hundred Feet, and produce great Quantities of Side-Branches, by which Means, in a very ſhort Time, it will cover a large Seat: This Plant produces in *America* great Quantities of large fragrant yellow Flowers, which are each of them ſucceeded by three large angular Seeds. It is a very tender Plant with us, and can't be preſerv'd but in warm Stoves through the Winter, nor hath it as yet produc'd any Flowers in *England* that I know of: It riſes eaſily from the Seeds, if they are ſown in a Hot-bed, and will grow to a great Length in one Summer; and altho' I have ſometimes preſerv'd it for two Years, and the Plant has ſpread to a great Length, yet I could never perceive any Attempt to flower.

The twelfth Sort is an annual Plant, and muſt be rais'd and manag'd, as was directed for the fifth, ſixth, *&c.* This produces ſmall Scarlet Flowers with a long Tube; which occaſion'd Monſ. *Tournefort* to range it amongſt the *Quamoclits.* This Plant is in great Plenty in *Carolina.*

The thirteenth and fourteenth Sorts are Annual; but theſe do not climb as the others: The Seeds of theſe Plants may be ſown in open Borders in *March*, where they will come up very wild, and may be afterwards tranſplanted to a greater Diſtance, to adorn the Borders of a Pleaſure-Garden. Theſe Plants trail upon the Ground, if they are not ſupported, and do produce their beautiful Flowers thro' moſt of the Summer Months.

The fifteenth Sort is an abiding Plant, which with us doth grow upright to be three or four Feet high; the Branches are ſet very thick, with long narrow Silver-colour'd Leaves, and the Flowers grow upon the Tops of the Branches in an Umbel. Theſe Flowers are ſometimes ſucceeded by angular Seeds like the other Kinds: It may be propagated by planting Cuttings in any of the Summer Months, obſerving to water and ſhade them until they have taken Root; at which Time they muſt be planted in Pots fill'd with freſh ſandy Soil, and muſt be ſhelter'd in Winter from the Froſts, but require open free Air at all Times when the Weather is mild.

The ſixteenth Sort is a perennial Plant, which increaſes greatly by its creeping Roots: This grows erect about eight or ten Inches high, and produces Flowers ſomewhat like thoſe of our leſſer wild Kind, but ſeldom produces good Seeds with us; but the Plant may be abundantly multiplied by parting the Roots: It is very hardy, and loves a light Soil.

The ſeventeenth and eighteenth Sorts are much cultivated in the *Weſt-Indies*, where they are a great Part of the Food of the Inhabitants; and from theſe Roots they make a Drink which they call *Mobby*; which is done by ſtewing the Roots over a gentle Fire till they are ſoft; then they break the Roots, and put them into fair Water, letting them remain therein two or three Hours, in which Time the Water will have drawn out the Spirit of the Root; then they put the Liquor and Roots into a woollen Bag, and ſtrain the Liquor through into a Jar, when in two Hours after it will begin to work; then they cover the Jar, and let it remain until the next Day, when it will be fit to drink. This Liquor they make ſtronger or weaker, by putting a greater or leſs Quantity of Roots into the Water. It is a very ſprightly Drink, but not ſubject to fly into the Head, nor will it keep good longer than four or five Days.

Theſe Plants are propagated with great Eaſe; for every Piece of the Root, which has an Eye or Bud, will grow, and ſend out Branches trailing on the Ground, which emit Roots at every Joint, and form a large Tuber or Potatoe at each, which in thoſe warm Countries will be full grown, and fit for Uſe in three or four Months time; ſo that from one Root planted there will be twenty or thirty fair Roots produced. Some of theſe Roots have been brought from *America* into *Europe*, and are now frequently cultivated in *Spain* and *Portugal*, from both which Places the Roots are annually brought into *England*, and are by ſome Perſons greatly eſteemed; tho' in general they are not ſo well liked as the common Potatoe, being too ſweet and luſcious for moſt Palates.

In *England* theſe Plants are ſometimes cultivated by curious Perſons, after the following Manner: the latter End of *March*, or the Beginning of *April*, they prepare a Heap of hot Dung; then having choſe a warm Spot of light Ground, they dig Holes about eight Feet aſunder, into each of which they put two or three Barrows of the hot Dung, which muſt be laid ſmooth, raiſing it high in the middle; then they cover the Dung with light rich Earth, and upon the Top of each Hill they plant two or three Pieces of ſound Roots, each having an Eye or Bud; then they cover the Hills with Bell or Hand Glaſſes, to preſerve a Heat in that Part of the Hill where the Roots are planted, as alſo to prevent the Rain from rotting the Roots. In about a Fortnight or three Weeks after planting they will begin to ſhoot, when the Glaſſes muſt be raiſed on one Side every Day, to admit freſh Air to the Plants; and they muſt be frequently refreſhed with Water, but it ſhould not be given them in large Quantities, until the Plants are grown pretty ſtrong, leſt thereby you rot the Roots. When the Vines have ſpread ſo far as to reach the Sides of the Glaſſes, the Glaſſes muſt be raiſed with three Bricks, to allow Room for the Vines to ſpread; but the Glaſſes ſhould not be taken quite away from the Plants until *June*, when the Plants will be paſt Danger of Injury from the Cold. As theſe Vines ſpread, ſo the Ground about them ſhould be looſened, that they may more eaſily ſtrike their Roots into it; and in dry Weather the Vines ſhould be watered all over, three or four times a Week; which greatly ſtrengthen the Plants, and cauſe the Roots which are formed at each Joint of the Vines, to grow large and fair, they muſt alſo be conſtantly kept clear from Weeds, which, if ſuffered to grow amongſt the Plants, will over-bear and greatly weaken or deſtroy them. Theſe Roots muſt remain undiſturbed till Autumn, when the firſt Approach of Froſt will pinch the tender Leaves of the Vines, at which Time you muſt immediately take up the Roots; for if the Froſt ſhould reach them, it will intirely deſtroy them. Theſe Roots may be kept in dry Sand in a warm Place for Uſe in the Winter, and a few of the ſoundeſt muſt be preſerved to make a freſh Plantation in the Spring.

The *Jalap*, whoſe Root has been long uſed in Medicine in *Europe*, is a Native of the Province of *Halapa*, about two Days Journey from *La Vera Cruz* in the *Spaniſh Weſt Indies*, from whence the Root is ſent in great Quantities every Year to *Europe*; but it is of late that the Plant has been known to the *Europeans*; for Dr. *Tournefort*, upon the Information of Father *Plumier*, has delivered it as one Species of the *Marvel of Peru*, and conſtituted the Genus under the Title of *Jalapa:* But my late learned Friend Dr. *William Houſtoun*, who was at *La Vera Cruz* two or three times, procured ſome Plants from *Halapa*, by his Intereſt with an ingenious *Spaniard*; which he carried to *Jamaica*, and planted there; by which he was informed truly, that it was one Species of *Convolvulus*, and accordingly gave it the Name I have here mentioned it under.

This and moſt of the other Sorts of *Convolvulus* here mentioned, were found in ſeveral Parts of *America*, by the forementioned Dr. *Houſtoun*, who ſent the Seeds of them into *England*, where they have been cultivated; but as moſt of them are abiding Plants, and require a warm Stove to preſerve them in Winter, ſo few of them have been maintained here: for they ſpread and ramble ſo far, that few Stoves now built are tall enough to contain them, and if they are intermixed with other Plants, they will twiſt themſelves round whatever Plants grow near them, and will ſoon over-bear and deſtroy them, if not timely prevented. The only Stoves yet built, within my Knowledge, proper for theſe Plants, are at the Right Hon. the Lord PETRE's at *Thorndon-Hall* in *Eſſex*; where there are Borders of Earth in the Back-part of the Stoves, and Trellaſſes thirty Feet high, to ſupport theſe and other climbing Plants; at which Place we may hope to ſee theſe and moſt other exotic Plants of large Growth, in greater Perfection than in any other Part of *Europe*; for this noble Patron of Gardening has erected the moſt judicious and magnificent Stoves that were ever contrived; and theſe are ſo curiouſly ſtocked with Plants from the ſeveral Parts of the World, that it is already (tho' but lately executed) one of the moſt curious and magnificent Sights perhaps in the whole World.

All theſe Sorts of *Convolvulus* are propagated by Seeds, which ſhould be ſown in a moderate Hot-bed early in the Spring: thoſe Sorts which have large Seeds, ſhould be ſown very thin, and buried deeper in the Earth, than thoſe which have ſmall Seeds; in about a Fortnight after they are ſown, the Plants will begin to appear above Ground, when the Glaſſes of the Hot-bed ſhould be raiſed every Day, to admit freſh Air to the Plants; otherwiſe they will draw up weak, and twiſt themſelves together, ſo as to render it difficult to ſeparate them. When the Plants are about three Inches high, they ſhould be carefully taken up, and each planted in a ſmall Pot filled with light freſh Earth, and then plunged into a moderate Hot-bed of Tanners-bark, obſerving to ſhade the Glaſſes every Day with Mats, until the Plants have taken new Root: after which Time they ſhould have a large Share of freſh Air, and in warm Weather they muſt be frequently watered. When the Plants have filled the Pots with their Roots, they ſhould be ſhaken out, and planted into larger Pots, filled with freſh Earth, and then placed in the Stove, where they may have room to climb, and their Shoots either twiſted on an Eſpalier made in the Back-part of the Stove for theſe and other rambling Plants, or elſe ſupported with long Stakes; otherwiſe they will ramble over whatever Plants ſtand near them. Some of theſe Sorts will produce Flowers the firſt Seaſon, but others will not flower until the ſecond or third Year, nor will they flower kindly, unleſs they have a large Share of freſh Air, eſpecially in warm Weather. Theſe Plants will continue ſeveral Years, provided they are managed rightly; and will produce Flowers and Seeds every Year, and make a fine Appearance in the Stove, when they are in Flower.

CONYZA; [of Κωνώψ, *Gr.* becauſe the Leaves being hung up, drive away Gnats and Fleas, as *Dioſcorides* ſays: It is alſo call'd *Baccharis*, of *Bacchus*; becauſe it breathes out a vinous Scent.] Flea-bane.

The *Characters* are;

It hath undivided Leaves, which, for the moſt part, are glutinous, and have a ſtrong Scent; the Cup of the Flower is, for the moſt part, ſcaly, and of a cylindrical Form; the Flower is compos'd of many Florets, which are ſucceeded by Seeds which have a downy Subſtance adhering to them.

The *Species* are;

1. CONYZA *major, vulgaris. C. B.* Common Great Flea-bane.

2. CONYZA *minor, flore globoſo. C. B.* Leſſer Flea-bane, with globular Flowers.

3. CONYZA *Americana, lamii folio. Tourn. American* Flea-bane, with Leaves of the Dead Nettle.

4. CONYZA *mas, Theophraſti, major Dioſcoridis. C. B.* The Greater Flea-bane of *Dioſcorides*.

5. CONYZA *Cretica, fruticoſa, folio molli, candidiſſimo & tomentoſo. Flor.* Shrubby Flea-bane from *Crete*, with ſoft downy white Leaves.

6. CONYZA *fruticoſa, ciſti odore, floribus pallide purpureis, ſummitatibus ramulorum inſidentibus, capitulis & ſemine minoribus. Sloan. Cat. Jam.* Shrubby *American* Fleabane, ſmelling like the Rock-roſe, with pale purple Flowers growing on the Top of the Branches, and ſmaller Heads and Seeds.

7. CONYZA *fruticoſa, ciſti odore, floribus pallide purpureis, ſummitatibus ramulorum inſidentibus, capitulis & ſemine majoribus. Sloan. Cat. Jam.* Shrubby *American* Fleabane, ſmelling like the Rock-roſe, with pale purple Flowers growing on the Top of the Branches, and larger Heads and Seeds.

8. CONYZA *arboreſcens tomentoſa, foliis oblongis, floribus in ſummitatibus ramulorum racemoſis ſparſis albicantibus. Houſt.* Woolly Tree-like Flea-bane, with longiſh Leaves, and white Flowers, growing in thin Bunches on the Top of the Branches.

9. CONYZA *fruteſcens, flore luteo umbellato. Houſt.* Shrubby *American* Flea-bane, with yellow Flowers, growing in an Umbel.

10. CONYZA *arboreſcens, foliis oblongis, floribus ſingulis, tribus floſculis conſtantibus. Houſt.* Tree-like *American* Flea-bane, with longiſh Leaves, and each Flower has conſtantly three Florets.

11. CONYZA *ſcandens, lauri foliis aſperis, capitulis ſpicatis rotundis, floribus albis. Houſt.* Climbing *American* Flea-bane, with rough Bay-leaves, and white Flowers growing on round Spikes.

12. CONYZA *fruticoſa, flore pallide purpureo, capitulis e lateribus ramulorum ſpicatim exeuntibus. Sloan. Cat. Jam.* Shrubby *American* Flea-bane, with pale purple Flowers growing in Spikes from the Side and at the Top of the Branches.

13. CONYZA *major odorata, ſive Baccharis, floribus purpureis nudis. Sloan. Cat. Jam.* Greater ſweet-ſmelling Flea-bane, with naked purple Flowers.

14. CONYZA *major inodorata, helenii folio integro, ſicco & duro, cichorii flore albo, e ramorum lateribus exeunte. Sloan. Cat.* Greater unſavory Flea-bane, with hard dry Elecampane Leaves, and white Flowers growing from the Side of the Branches.

15. CONYZA *fruticoſa, folio haſtato, flore pallide purpureo. Sloan. Cat. Jam.* Shrubby *American* Flea-bane, with a ſpear-ſhaped Leaf, and a pale purple Flower.

16. CONYZA *urticæ folio. Sloan. Cat. Jam. American* Flea-bane with a Nettle Leaf.

17. CONYZA *herbacea, caule alato, ſalicis folio, floribus umbellatis purpureis minoribus. Houſt.* Herbaceous *American* Flea-bane, with a Willow Leaf, and ſmaller purple Flowers growing in an Umbel.

18. CONYZA *odorata, bellidis folio villoſo & viſcoſo. Houſt.* Sweet-ſmelling Flea-bane, with a viſcous hairy Daizy Leaf.

19. CONYZA *ſymphyti facie, flore luteo. Houſt. American* Flea-bane, with the Face of Comfery, and a yellow Flower.

20. CONYZA *linariæ folio, floribus parvis ſpicatis albis. Houſt. American* Flea-bane, with a Toad-flax Leaf, and ſmall white Flowers growing in Spikes.

The firſt of theſe Species is found wild upon dry chalky Hills in divers Parts of *England*, and is ſeldom cultivated in Gardens: It is a biennial Plant, being ſown in the Spring: It flowers the ſecond Year, and after producing Seeds it decays.

The ſecond Sort grows on boggy Places, or where the Water has ſtood all the Winter, in many Parts of *England*: It may be propagated in a Garden by ſowing the Seeds ſoon after they are ripe. This Plant is an Annual, and never continues above one Year. This is the Species which is ſometimes uſed in Medicine.

The third Sort is very common in *Barbadoes*, and many other Parts of *America*; it very often comes up in great Plenty in the Earth that is brought from thence. This is an annual Plant, and muſt be ſown in a Hot-bed, and managed as hath been directed for the *Balſamina*, to which I refer the Reader.

The fourth Sort is ſaid to grow in great Plenty about *Montpelier*: This is ſomewhat like the firſt Sort, and may be propagated by ſowing the Seeds ſoon after they are ripe, which will flower the ſucceeding Summer, and after perfecting its Seeds decays.

The fifth Sort is an abiding Plant, which with us ſeldom riſes above eighteen Inches high, but hath woody Branches; the Leaves are very white and ſoft, which renders them very agreeable when intermix'd with different colour'd Plants in large Borders; but the Flowers have no great Beauty in them. This Plant is very hardy, and will endure our ſevereſt Cold in the open Borders, and may be propagated by planting Cuttings in any of the Summer Months.

The ſhrubby Flea-banes are Natives of the *Weſt-Indies*, where they uſually grow about ſix or ſeven Feet high, and ſome of the Tree-kinds ten or twelve Feet high, and divide into many Branches. They are all propagated by Seeds, which ſhould be ſown ſoon after they are ripe; for as they have light downy Seeds, ſo they will nor retain their growing Quality very long. If the Seeds are ſown in Autumn, they will remain in the Ground all the Winter, and the Plants will appear the following Spring; but then the Pots in which the Seeds are ſown, ſhould be plunged into a Hot-bed of Tanners-bark, and ſecured from Cold, otherwiſe the Seeds will periſh in Winter. And when the Seeds are kept out of the Ground till Spring, they ſeldom grow: but as theſe Plants ſeldom produce Seeds in this Country, ſo the ſureſt Method to obtain theſe Plants, is to have their Seeds ſown in a Box of Earth ſoon after they are ripe, in the natural Countries of their Growth, and ſent over to *England*. When theſe Tubs of Earth arrive, they ſhould be plunged into a moderate Hot-bed of Tanners-bark, and frequently refreſhed with Water, which will ſoon bring up the Plants, if their Seeds were not deſtroyed in their Paſſage.

When the Plants begin to appear above Ground, the Glaſſes of the Hot-bed ſhould be raiſed every Day in warm Weather, to admit freſh Air to the Plants; otherwiſe they will draw up weak, and be ſoon ſpoiled: they muſt alſo be frequently refreſhed with Water in warm Weather; for they are all very thirſty Plants, moſt of them naturally growing in low ſwampy Grounds. When the Plants are grown about two Inches high, they ſhould be carefully taken up, and each planted in a ſeparate Pot filled with light freſh Earth, and plunged into a moderate Hot-bed of Tanners-bark, obſerving to ſhade the Glaſſes of the Hot-bed every Day with Mats, to ſcreen the Plants from the Heat of the Sun, until they have taken new Root; after which Time they muſt have a large Share of freſh Air, as alſo a great Quantity of Moiſture in warm Weather. In Winter, theſe Plants muſt be placed in the Stove, where they may enjoy a moderate Warmth; for if they are kept too hot, they will make weak Shoots in Winter, which will render them very unſightly. In Summer theſe Plants muſt have a large Share of freſh Air, but they muſt not be placed in the open Air, for they are too tender to thrive abroad in this Climate.

Theſe Plants will produce their Flowers in two or three Years after they are raiſed, and will continue many Years, provided they are carefully managed, and will flower annually toward the latter Part of the Summer.

The herbaceous Kinds muſt be propagated in the ſame manner as hath been directed for the woody Kinds; but theſe will decay annually to the Surface, and riſe again every Spring from the Root. When the green Shoots begin to decay, the Plants ſhould not be over watered, leſt thereby the Roots ſhould be rotted; but during the Time of their Growth, they muſt be plentifully watered. The ſureſt Method to have theſe Plants produce their Flowers, is, to plunge the Pots into a moderate Hot-bed of Tanners-bark, in the Spring, always obſerving to let them have a large Share of Air in warm Weather, to prevent their ſhooting too weak, and water them frequently; with this Management they will produce their Flowers every Year: but as they rarely produce ripe Seeds in *England*, ſo the Pots muſt be removed into the Stove in Winter to preſerve their Roots, which may be parted in the Spring, at the Time when they are plunged into the Hot-bed, by which Method they may be increaſed.

CONSERVATORY. *Vide* Green-houſe.

CONVAL-LILY. *Vide* Lilium Convallium.

COPAIBA, The Balſam of Capevi Tree.

The *Characters* are;

It hath a Flower conſiſting of five Leaves, which expands in Form of a Roſe; the Pointal is fixed in the Center of the Flower, which afterward becomes a Pod; in which are contained one or two Seeds, which are ſurrounded with a Pulp of a yellow Colour.

We know but one Sort of this Tree, which is;

Copaiba *folio ſubrotundo, flore rubro.* The Balſam of Capevi, with a roundiſh Leaf, and a red Flower.

This Tree grows near a Village called *Ayapel*, in the Province of *Antiochi*, in the *Spaniſh Weſt-Indies*, this is about ten Days Journey from *Carthagena*. There are great Numbers of theſe Trees in the Woods about this Village, which grow to the Height of fifty or ſixty Feet; ſome of theſe Trees do not yield any of the Balſam; thoſe which do, are diſtinguiſhed by a Ridge which runs along their Trunks; theſe Trees are wounded in their Center, and they place Calabaſh Shells, or ſome other Veſſels to the wounded Part, to receive the Balſam, which will all flow out in a ſhort Time. One of theſe Trees will yield five or ſix Gallons of the Balſam; but tho' theſe Trees will thrive well after being tapp'd, yet they never afford any more Balſam.

As this Balſam is uſed in Medicine, ſo it deſerves our Application to procure the Trees, and cultivate them in ſome of the *Engliſh* Colonies of *America*; for as the *Engliſh* are poſſeſſed of Lands, in ſo many different Latitudes, they might cultivate moſt Kinds of Trees and Plants, from the different Parts of the World, which are uſeful in Medicine, Dying, or for any other Purpoſe of Life.

The Seeds of this Tree were brought from the Country of their Growth, by Mr. *Robert Millar*, Surgeon, who ſowed a Part of them in *Jamaica*, which he informed me, had ſucceeded very well; ſo that we may hope to have theſe Trees propagated in great Plenty in a few Years, in ſome of the *Engliſh* Colonies, if the Slothfulneſs of the Inhabitants doth not ſuffer them to periſh, as they have the *Cinnamon-tree*, and ſome other uſeful Plants, which have been carried thither by curious Perſons.

There are not at preſent any of theſe Trees in *Europe*, that I can learn; for thoſe Seeds which Mr. *Millar* ſent over to *England*, were all deſtroyed by Inſects in their Paſſage, ſo that not one of them ſucceeded in the ſeveral Places where they were ſown: But could freſh Seeds be procured, the Plants might be raiſed in *England*, and preſerved in the Bark-Stoves very well; for the Country of their Growth is much more temperate than many others, from whence we have been furniſhed with a great Variety of Plants, which ſucceed very well in the Stoves, and ſome of them arrive to a great Degree of Perfection.

CORALLODENDRON; [of Κοράλιον, *Coral*; and δένδρον, *Gr.* a *Tree.*] The Coral-Tree.

The *Characters* are;

It hath the Appearance of a Tree; the Leaves, for the moſt part, conſiſt of three Lobes; the Flowers are papilionaceous; the Standard (or Vexillium) is long, and ſhaped like a Sword; The Wings on each Side, and the Keel (or Carina) are very ſhort; the Flowers are ſucceeded by knobbed bivalve Pods, which contain ſeveral Kidney-ſhap'd Seeds.

The *Species* are;

1. Corallodendron *triphyllon, Americanum, ſpinoſum, flore ruberrimo. Tourn.* The three-leav'd *American* Coral-tree, with deep red Flowers, *commonly called* in *America* the Bean-tree.

2. Corallodendron *Americanum, non ſpinoſum, foliis magis acuminatis flore longiore:* An, *Coral arbor non ſpinoſa, flore longiore & magis clauſo. Sloan. Cat. Jam. American* Coral-tree without Spines, having ſharp-pointed Leaves and long Flowers.

3. Corallodendron *Carolinianum, floribus ſpicatis coccineis radice craſſiſſima.* Thick-rooted *Carolina* Coral-tree, with Scarlet Flowers growing in Spikes.

4. Corallodendron *triphyllum Americanum minus, ſpinis & ſeminibus nigricantibus. Tourn.* Leſſer three-leav'd *American* Coral-tree, with blacker Seeds and Spines.

5. Corallodendron *triphyllum Americanum non ſpinoſum, foliis acutioribus, flore pallido rubente.* Three-leav'd *American* Coral-tree without Spines, having pointed Leaves, and pale red Flowers.

6. Corallodendron *triphyllum Americanum, caudice & nervis foliorum ſpinoſis armatibus.* Three-leav'd *American* Coral-

tree, whoſe Stalk and the Nerves of the Leaves are armed with Spines.

The firſt and ſecond Species do grow with us to be eight or ten Feet high, with ſtrong woody Stems, and produce very beautiful ſcarlet Flowers, but never produce any Seeds in the *European* Gardens, as I can hear of. They may be rais'd by ſowing their Seeds, which are brought from *America*, in a Hot-bed in the Spring of the Year, which will very eaſily come up: The young Plants ſhould, when they are five or ſix Inches high, be carefully tranſplanted into Pots of light freſh Earth, and plung'd into a Hot-bed, obſerving to ſhade them from the Heat of the Sun, until they have taken freſh Root; after which they ſhould have Air given them, by raiſing up the Glaſſes in the Day-time when the Weather is warm; and in *July* and *Auguſt*, they ſhould have a greater Share of Air, in order to harden them before Winter; and in *September*, they ſhould be remov'd into the Stove, and during the Winter-ſeaſon ſhould have but little Water given them, for they commonly caſt their Leaves in Winter, and puſh them out freſh the ſucceeding Spring.

Theſe Plants may alſo be propagated by planting Cuttings in any of the Summer Months, which ſhould be put into Pots filled with freſh light Earth, and plung'd into a moderate Hot-bed of Tanner's Bark, obſerving to ſhade the Glaſſes in the Heat of the Day, and to give them gentle Refreſhings with Water, as the Earth in the Pots is found to dry. In two Months Time theſe Cuttings will have ſufficient Roots to tranſplant; at which Time they muſt be put each into a ſingle Pot, and plung'd again into the Hot-bed, and manag'd as was directed for the Seedling Plants.

In four or five Years Time theſe Plants will produce Flowers, if they are preſerv'd in a moderate Warmth all the Winter; for if they are kept too warm, they are ſubject to grow all the Winter, and the Shoots will be thereby drawn too weak to produce Flowers; and if they are kept too cold, they are liable to loſe their tender Buds which ſhould produce the Flowers: Therefore if they are kept up to the temperate Point mark'd on Mr. *Fowler*'s Thermometer during the Winter Seaſon, they will ſucceed very well.

The third Sort was rais'd from Seeds which were ſent from *Carolina* by Mr. *Cateſby*, *Anno* 1724. This Plant ſeldom riſes above three Feet high with us, and hath large knobbed Roots; the Flowers are produc'd in Spikes upon the Branches, in the Summer Seaſon, when the Plant is almoſt deſtitute of Leaves, but never produces ripe Seeds with us.

This Plant is ſomewhat hardier than the other two Species, and may be kept in a leſſer Degree of Heat in Winter, and be expos'd to the open Air during the Months of *June*, *July*, and *Auguſt*. I have not been able yet to propagate this Plant by Cuttings, but there is no Doubt of its ſucceeding as well as the other two Sorts.

The Seeds of the laſt three Sorts were ſent from *Carthagena* in *New Spain*, by Mr. *Robert Millar*, who collected them in the Neighbourhood of that Place. Theſe are propagated in the ſame Manner as the firſt three Sorts.

CORCHORUS, Jews Mallow.

The *Characters* are;

The Leaves are produced alternately at the Joints of the Stalks; the Cup of the Flower conſiſts of five Leaves; the Flower hath five Leaves, which expand in Form of a Roſe; *the Pointal of the Flower becomes a cylindrical Fruit, which is divided into five Cells which are fill'd with angular Seeds.*

The *Species* are;

1. CORCHORUS *ſive Melochia. J. B.* Common Jews Mallow.
2. CORCHORUS *Americana, Carpini foliis, ſextuplici capſula prælonga. Pluk. American* Jews Mallow, with Leaves like the *Hornbeam*, with long Pods.
3. CORCHORUS *Americana, prælongis foliis, capſula ſtriata ſubrotunda brevi. Pluk. American* Jews Mallow, with long Leaves and ſhort roundiſh furrow'd Pods.
4. CORCHORUS *Orientalis, brevioribus foliis, flore flavo, fructu caryophilloide longiori. Pluk.* Eaſtern Jews Mallow, with ſhort Leaves and long Pods ſhap'd like a Clove.

The firſt Species, *Rauwolf* ſays,* is ſown in great Plenty about *Aleppo* as a Pot-herb; the *Jews* boiling the Leaves of this Plant to eat with their Meat: This he ſuppoſes to be the *Olus Judaicum* of *Avicenna*, and the *Corchorum* of *Pliny*.

The Varieties of this Plant are preſerv'd in curious Botanick Gardens to add to their Number of Plants, but it being of no great Beauty or Uſe with us, is ſeldom propagated in other Gardens.

They are all of them Annual, and muſt be ſown on a Hot-bed early in the Spring, and afterward treated as the Female *Balſamine*; to which I ſhall refer the Reader for their Culture. They delight in a rich Soil, and muſt have frequent Waterings in dry Weather.

Their Flowers are produced in *June* and *July*, and their Seeds ripen in *September*.

CORIANDRUM; [Κοριάννον, of Κόρις, *Gr.* a *Tick*; ſo called, either becauſe it has the Scent of this Inſect, or, as others ſay, becauſe it drives away or kills them; and Ἀνδρὸς, Gr. the *Iſle* where it grew plentifully.] Coriander.

The *Characters* are;

It hath a fibroſe annual Root; the lower Leaves are broad, but the upper Leaves are deeply cut into fine Segments; the Petals of the Flower are unequal, and ſhap'd like a Heart; the Fruit is compos'd of two hemiſpherical (and ſometimes ſpherical) Seeds.

The *Species* are;

1. CORIANDRUM *majus. C. B.* Greater Coriander.
2. CORIANDRUM *minus, teſticulatum. C. B.* Smaller teſticulated Coriander.
3. CORIANDRUM *ſylveſtre, fœtidiſſimum. C. B.*

The firſt of theſe Species is the moſt common Kind, which is cultivated in the *European* Gardens and Fields for the Seeds, which are us'd in Medicine. The ſecond Sort is leſs common than the firſt, and is ſeldom found but in Botanick Gardens in theſe Parts of *Europe*. The third Sort, as mention'd in *Caſpar Bauhin*'s *Pinax*, and cited by the learned *Boerhaave*, in his Catalogue of the *Leyden* Garden, is ſo like the firſt, that I could find no Difference between them when compar'd together, tho' I receiv'd the Seeds of this Kind from the *Leyden* Garden.

Theſe Plants are propagated by ſowing their Seeds early in the Spring, in an open Situation in a Bed of good freſh Earth; and when the Plants are come up, they ſhould be houghed out to about four Inches Diſtance every Way clearing them from Weeds; by which Management theſe Plants will grow ſtrong, and produce a greater Quantity of good Seeds.

CORIARIA, Myrtle-leav'd Sumack, *vulgo*.

The *Characters* are;

It hath a Flower compoſed of ten Stamina (or Threads) each having two Apices, and ariſe from the Bottom of the Calyx, which is divided into five Parts to the Baſe. When the Flower is paſſed, the Pointal (which is contained in another Cup, divided alſo into five Parts to the Baſe) becomes (jointly with the Cup) a Fruit containing five Kidney-ſhap'd Seeds.

We have but one *Species* of this Plant, which is;

CORIARIA *vulgaris. Mem. Acad. Scien. Ann.* 1711. Myrtle-leav'd Sumack, *vulgo*.

This is a low Shrub, ſeldom riſing above three or four Feet high; the Flowers appear in *April*, which are produced from the Joints all the whole Length of the Shoots. Theſe conſiſt of ſeveral Stamina, or Threads, which are of a red Colour; but there is no great Beauty in the Plant.

I have obſerved, that the ſeveral Plants we have in the *Engliſh* Gardens, have no Embryo or Rudiment of the Fruit; which makes me ſuſpect, that they are Male and Female in different Plants; but as Monſieur *Niſſol*, a curious Botaniſt of *Montpelier*, who has given a particular Account of this Plant to the Academy of Sciences at *Paris*, has taken no Notice of this Difference; I muſt leave it to be decided by thoſe who may have an Opportunity of examining the Plants in the Country of their Growth.

It may be propagated plentifully from the Suckers, which are produced from the creeping Roots in great Abundance: Theſe ſhould be taken off in *March*, and planted into a Nurſery, to form good Roots; where they may continue one or two Years, and then muſt be removed to the Places where they are to remain.

This Plant delights in loamy Soil, which is not too ſtiff; and ſhould be placed where it may have Shelter from the North and Eaſt Winds, where it will endure the Cold of our ordinary Winters very well, and will flower better than if it is preſerved in Pots, and ſheltered in the Winter, as is by ſome practiſed.

This Plant is uſed by the Tanners for dreſſing their Leather in the South Parts of *France*, where it grows wild in great Plenty.

CORINDUM; [of *Cor* the Heart, becauſe this Seed has a bright Spot reſembling a Heart; and *Indum*, becauſe it is brought from *India*. This Plant is ſaid to be a very high *Cardiac*. It is alſo call'd *Halicacabus*, of κάκαβος, a *Veſſel*, becauſe the Fruit of this Plant reſembles a Kettle.] Heart-Peas.

The *Characters* are;

It hath a trailing Stalk, emitting Claſpers whereby it faſtens itſelf to whatever Plant it ſtands near: The Calyx (or Flower-cup) conſiſts of three Leaves; the Flowers conſiſt of eight Leaves, and are of an anomalous Figure; the Ovary becomes a Fruit which is like a Bladder, and divided into three Cells, in which are contain'd round Seeds in Form of Peas, of a black Colour, having the Figure of a Heart of a white Colour upon each.

The *Species* are;

1. Corindum *folio ampliori, fructu majore. Tourn.* Heart-Pea, with large Leaves and Fruit.
2. Corindum *folio & fructu minore. Tourn.* Heart-pea, with ſmall Leaves and Fruit, *called by the Inhabitants of the* Weſt Indies, Wild Parſley.
3. Corindum *folio ampliſſimo, fructu minore.* Heart-pea, with very large Leaves, and ſmall Fruit.

Theſe Plants are very common in *Jamaica*, *Barbadoes*, and moſt of the other warm Iſlands in the *Weſt Indies*, where their Seeds are ſcatter'd and become Weeds all over the Country.

They may be cultivated in *England*, by ſowing their Seeds on a Hot-bed in *March*; and when the Plants come up, they muſt be tranſplanted into a freſh Hot-bed, where they may remain until the Middle of *May*; at which Time they may be tranſplanted into Pots or Borders, and expos'd to the open Air. Theſe Plants will require Sticks to ſupport them; otherwiſe their Branches will trail upon the Ground, and be apt to rot, (eſpecially in a wet Seaſon). There is no great Beauty in this Plant; it is chiefly preſerved as a Rarity in the Gardens of the Curious. It produces its Flowers in *June*, and the Seed are perfected in *Auguſt*.

CORIS. We have no *Engliſh* Name for this Plant.

The *Characters* are;

It hath a monopetalous perſonated Flower, whoſe hinder Part is tubulous, but the fore Part is ſhaped like a Fan; from the Flower-cup riſes the Pointal, fixed like a Nail in the hinder Part of the Flower, which afterward becomes a globular Fruit, divided into ſeveral Parts, containing roundiſh Seeds, which are incloſed by the Calyx.

The *Species* are;

1. Coris *cœrulea maritima. C. B. P.* Maritime blue Coris.
2. Coris *maritima, flore rubro. C. B. P.* Maritime Coris with a red Flower.
3. Coris *maritima, flore albo. H. R. Monſp.* Maritime Coris with a white Flower.

Theſe Plants grow wild about *Montpelier*, and in moſt Places in the South of *France*; they ſeldom grow above a Foot high, and ſpread near the Surface of the Ground like Heath; and in *June*, when they are full of Flowers, they make a very pretty Appearance.

They may be propagated by ſowing of their Seeds in the Spring, on a Bed of freſh Earth; and when the Plants are about three Inches high, they ſhould be tranſplanted, ſome of them into Pots filled with freſh light Earth, that they may be ſheltered in Winter, and the others into a warm Border, where they will endure the Cold of our ordinary Winters very well, but in ſevere Froſt they are generally deſtroyed; for which Reaſon, it will be proper to have ſome Plants of each Sort in Pots, which may be put under a common Hot-bed Frame in Winter, where they may be covered in froſty Weather; but when it is mild, they ſhould have a great Share of free Air. Theſe Plants ſometimes produce ripe Seeds in *England*; but as they do not conſtantly perfect their Seeds, ſo it will be proper to increaſe them from Slips and Cuttings, which will take Root if planted in *April*, on a very gentle Hot-bed, and ſhaded from the Sun, and duly watered.

CORK-TREE. *Vide* Suber.

CORN-FLAG. *Vide* Gladiolus.

CORNICULATE PLANTS, [*Plantæ Corniculatæ*, or ſuch as after each Flower produce many diſtant horned Seed-pods, call'd *Siliquæ*.

CORN-MARYGOLD. *Vide* Chryſanthemum.

CORN-SALAD. *Vide* Valerianella.

CORNUS, [is ſo call'd, of *Cornu*, Lat. a *Horn*; becauſe its Wood, or the Office of its Fruit, is hard as a Horn.] The Cornelian Cherry.

The *Characters* are;

The Calyx (or Flower-cup) conſiſts of four ſmall rigid Leaves, which are expanded in Form of a Croſs; from the Center of which are produced many ſmall yellowiſh Flowers, each conſiſting of four Leaves, which are diſpoſed almoſt in Form of an Umbrella. Theſe Flowers are ſucceeded by Fruit, which are oblong, or of a cylindrical Form, ſomewhat like an Olive, containing a hard Stone, which is divided into two Cells, each containing a ſingle Seed.

The *Species* are;

1. Cornus *hortenſis, mas. C. B.* The Cornelian-Cherry, or Male Cornel-tree.
2. Cornus *fœmina. C. B.* The Dog-berry, or Gatten-tree.
3. Cornus *fœmina, foliis variegatis. H. L.* The ſtrip'd Dog-berry-tree.
4. Cornus *fœmina, Laurifolia, fructu nigro cœruleo, oſſiculo compreſſo, Virginiana. Pluk. Alm.* The *Virginian* Dog-berry-tree.
5. Cornus *mas, odorata, folio trifido, margine plano, Saſſafras dicta. Pluk. Alm.* The Saſſafras-tree.
6. Cornus *fœmina Virginiana, anguſtiore folio.* The *Virginian* Dog-berry-tree, with a narrower Leaf.
7. Cornus *mas Virginiana, foliis oblongis, fructu rubro majore.* The Male *Virginian* Dog-berry, with oblong Leaves, and a larger red Fruit.
8. Cornus *mas Virginiana, floſculis plurimis albidis, ex involucro tetrapetalo rubro irrumpentibus. D. Baniſter. Pluk. Phyl. Tab. 26. F. 3. Virginia* Dog-berry, with many ſmall white Flowers, coming out of a four-leav'd red Involucrum.
9. Cornus *racemoſa, trifolia & quinquefolia, foliis foraminulatis. Plum. Cat.* Branching *American* Dog-berry, with three or five Leaves.
10. Cornus *pumila, herbacea, Chamœpericlymenum dicta. Hort. Elth.* Dwarf Honeyſuckle, *vulgo*.

The firſt of theſe Trees is very common in the *Engliſh* Gardens, being propagated for its Fruit; which is by many People preſerv'd, to make Tarts: It is alſo uſed in Medicine as an Aſtringent and Cooler. There is alſo an Officinal Preparation of this Fruit, call'd *Rob de Cornis*.

The ſecond Sort is very common in the Hedges in divers Parts of *England*, and is ſeldom preſerv'd in Gardens. The Fruit of this Plant is often brought into the Markets, and ſold for *Buckthorn Berries*; from which it may be eaſily diſtinguiſhed, if the Berries are opened to obſerve how many Stones there are in each, which in this Fruit is but one, but in the *Buckthorn* four.

The third is alſo a Variety of the ſecond, and is preſerv'd for its variegated Leaves, in ſeveral curious Gardens.

The fourth Sort is at preſent pretty rare in *England*: It is brought from *Virginia* and *Carolina*, where it grows in great Plenty.

The fifth Sort is alſo a Native of *America*, and is rarely found in the *European* Gardens. The Root of this Tree is much uſed in *England*, to make a Tea which is greatly commended by ſome againſt violent Defluxions.

The firſt, ſecond, and third Species are propagated by laying down their tender Branches, which in one Year's Time will take ſufficient Root to be tranſplanted; at which Time they may be either planted in a Nurſery, or in the Places where they are to remain. During the two firſt Years, Care ſhould be taken to train their Stems upright; otherwiſe they are very ſubject to ſhoot crooked, and appear unſightly: But when they are grown up to a regular Size, they ſhould not be pruned, eſpecially if you would have Plenty of Fruit.

Theſe Trees commonly riſe with us to be eight or ten Feet high, or more, and are proper to intermix with Trees of the ſame Growth in ſmaller Quarters of Trees and Shrubs, where they will add to the Variety; and if they are not too much crowded with other Trees, will produce large Quantities of Fruit.

The fourth Sort may be alſo propagated by *Layers*; but muſt have a good Soil, and a Situation which is well defended from the North and Eaſt Winds, and loves to grow in the Shelter of other Trees. This may be alſo rais'd from Seeds, which ſhould be ſown ſoon after they are ripe, and ſhelter'd from ſevere Froſts under a Frame: The ſecond Spring after ſowing, the Plants will come up, which muſt alſo be ſcreen'd from ſevere Froſts while young, but afterwards they will endure our hardeſt Winters abroad.

The beſt Seaſon for tranſplanting theſe Trees, is toward the latter End of *March*, or the Beginning of *April*, juſt before they begin to ſhoot; obſerving to ſhade and water them (if the Weather ſhould prove hot and dry) for about a Fortnight after removing; as alſo to cover the Surface of the Ground with a little Mulch, to preſerve the Earth from drying too faſt: And if the Summer ſhould prove very dry, it would be convenient to give them a little Water once a Week; and after they are well rooted in the Ground, they will want little farther Care.

The *Saſſafras* is one of the moſt difficult Trees to grow with us, that I know; it will rarely live, if kept in Pots and preſerv'd in a Green-houſe; nor will it endure our open Air abroad; The beſt Culture that I can preſcribe, is to remove it carefully in *April* into a good ſtrong Soil, and in a Situation that is well defended by other Trees, both from the cold Winds and open Sun: but they muſt not ſtand under the Dropping of other Trees. In the Winter it will be proper to lay a little Mulch upon the Surface of the Ground round their Stems, to prevent the Froſt from penetrating too deep into the Ground: but their Heads ſhould by no means be cover'd; which, tho' practiſ'd by ſome, yet I am ſure doth more harm than good: In the Summer Seaſon they muſt be kept clear from Weeds, &c. In this Management, I have ſeen the moſt promiſing Trees of this Kind.

Theſe Trees are generally brought over from *Virginia* or *Carolina* to curious Perſons, in both which Places they abound very much, and do propagate themſelves by their creeping Roots; as alſo their Berries, which fall to the Ground, and come up in great Plenty: But with us they are not ſo eaſily increas'd; it being with great Difficulty procur'd by *Layers*, which are commonly two Years before they are furniſh'd with Roots enough to tranſplant, and is alſo with as much Difficulty remov'd. And the Berries which are brought from *America* ſeldom ſucceed with us: They are always two Years before they come up, and then make but a very ſmall Advance for two or three Years after, and it is very rare that many of them are preſerv'd ſo as to ſucceed.

The beſt Method of ſowing the Seeds, is to put them into a Bed of freſh good Earth ſoon after the Seeds are ripe, in a Situation where they may have the Morning Sun until Eleven o' Clock; and in hard froſty Weather cover the Surface of the Ground with Litter: in ſuch a Bed you may expect (if the Seeds were freſh) the Plants to come up the ſecond Spring, which ſhould alſo be cover'd with light Litter or Peas-haulm the firſt Winter, until they have Strength to reſiſt the ſevere Cold of our Climate; after which Time, they muſt be treated as was before directed; theſe Plants delight in a moiſt Soil.

The ſixth, ſeventh, and eighth Sorts are very hardy Plants, ſo will thrive very well in the open Air in this Climate; they may be propagated either by Seeds or Layers; but as their Seeds are ſeldom perfected in this Country, ſo the laying down of their tender Branches in the Spring, is the moſt expeditious Method of propagating them; for when the Seeds are procured from abroad, they remain a whole Year in the Ground, before the Plants appear; whereas the Layers will be ſufficiently rooted in one Year for tranſplanting, ſo that they will have two Years Growth Advance of thoſe raiſed from Seeds.

Theſe Plants thrive beſt on a moiſt light Ground; for in the Country of their natural Growth, they are commonly found in ſwampy Places. They uſually grow about ten or twelve Feet high, and ſpread pretty much on every Side into Branches; ſo ſhould be intermixed with Shrubs of the ſame Growth, in Wilderneſs Quarters, where they will make an agreeable Variety.

The ninth Sort is much more tender than either of the former; theſe may be propagated by Seeds, which muſt be ſown in Pots filled with light freſh Earth, and plunged into a moderate Hot-bed of Tanners-bark, obſerving to water the Pots frequently in warm Weather, as alſo to raiſe the Glaſſes of the Hot-bed to admit freſh Air. Theſe Seeds many Times remain in the Ground a whole Year before the Plants will appear; in which Caſe you muſt let the Pots remain in the Hot-bed, being careful to weed them; and in Winter the Glaſſes muſt be covered with Mats to prevent the Froſt from getting to the Seeds, which will deſtroy them. When the Plants come up, they muſt be frequently watered; and when they are about three Inches high, they ſhould be taken carefully out of the Pots, and each planted in a ſeparate Pot filled with light freſh Earth, and plunged into a moderate Hot-bed, obſerving to ſcreen them from the Sun until they have taken new Root; after which Time they muſt be frequently watered, and in warm Weather ſhould have a large Share of freſh Air. In Winter they muſt be placed in the Stove; for while theſe Plants are young, they are tender; but when they have acquir'd Strength, they may be placed in the Green-houſe in Winter, and in Summer they may be expoſed in the open Air in a warm Situation. Theſe Plants will produce their Flowers in *England*, but they never perfect their Seeds in this Country.

The Dwarf Honey-ſuckle grows on *Cheviot Hills* in *Northumberland*, and on many high Mountains in *Northern* Countries, but are with Difficulty preſerved in Gardens. They muſt be planted in a ſtrong moiſt Soil, and a ſhady Situation; where they will ſometimes produce Flowers, but ſeldom abide many Years in Gardens.

CORNUTIA. (We have no *Engliſh* Name for this Plant. *It is ſo called from* CORNUTUS, *a Phyſician of* Paris, *who publiſhed a Hiſtory of* Canada *Plants.*)

The *Characters* are;

It hath a monopetalous, perſonated Flower, whoſe upper Lip ſtands erect, but the under Lip is divided into three Parts; from the Flower-cup ariſes the Pointal, which is fixed like a Nail in the hinder Part of the Flower, which afterward becomes a ſpherical ſucculent Berry, including Seeds which are for the moſt part Kidney-ſhaped.

There is but one *Species* of this Plant yet known, which is;

CORNUTIA *flore pyramidato cæruleo, foliis incanis. Plum.* Cornutia with a pyramidal Flower, and hoary Leaves.

This Plant was firſt diſcovered by Father *Plumier* in *America*, who gave it the Name. It is found in plenty in ſeveral of the Iſlands in the *Weſt Indies*, and at *Campechy* and *La Vera Cruz*, from both which Places I received the Seeds, which were collected by my late ingenious Friend Doctor *William Houſtoun*.

It is propagated by Seeds, which ſhould be ſown early in the Spring on a Hot-bed; and when the Plants are come up, they ſhould be tranſplanted each into a ſeparate Half-penny Pot, filled with light freſh Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to ſhade them until they have taken Root; after which time they ſhould have freſh Air let into the Bed, in Proportion to the Warmth of the Seaſon, and they muſt be frequently watered (for it naturally grows on ſwampy Soils). When the Plants have filled theſe Pots with their Roots, they ſhould be ſhifted into others of a larger Size, and plunged into the Hot-bed again, where they ſhould be continued till *October*, when they muſt be removed into the Bark-ſtove, and plunged into the Tan; for otherwiſe it will be very difficult to preſerve it thro' the Winter. The Stove in which theſe Plants are placed, ſhould be kept to the temperate Heat marked on Mr. *Fowler's Thermometers*, which will agree better with them than a hotter Stove. The third Year from Seed theſe Plants will flower, when they make a fine Appearance in the Stove, but they never perfect their Seeds in *England*.

They may be alſo propagated by Cuttings, which if planted into Pots filled with freſh Earth, and plunged into a Bark-bed, obſerving to ſhade and water them, will take Root, and muſt be afterwards treated as the Seedling Plants.

CORONA IMPERIALIS; [ſo call'd, becauſe it bears Flowers crown'd with Leaves.] Crown Imperial.

The *Characters* are;

The Flowers conſiſt of ſix Leaves, are Bell-ſhap'd, and hang downwards; theſe are rang'd, as it were, into a Crown; above which appears a great Buſh of Leaves; the Pointal of the Flower becomes an oblong Fruit, which is wing'd, and divided into three Cells, which are fill'd with flat Seeds; to which may be added, it hath a coated Root, which is furniſh'd with Fibres at the Bottom.

The *Species* are;

1. CORONA IMPERIALIS. *Dod.* The common Crown Imperial.
2. CORONA IMPERIALIS *major. Tourn.* The greater Crown Imperial.
3. CORONA IMPERIALIS *flore pleno. Tourn.* Crown Imperial, with a double Flower.
4. CORONA IMPERIALIS *duplici corona. Tourn.* Crown Imperial with a double Crown.
5. CORONA IMPERIALIS *triplici corona. H. L.* Crown Imperial, with a triple Crown.
6. CORONA IMPERIALIS *multiflora latoque caule. Tourn.* Crown Imperial, with many Flowers, and flat Stalks.

7. CORONA IMPERIALIS *folio vario. Tourn.* Strip'd-leav'd Crown Imperial.

8. CORONA IMPERIALIS *folio vario ex viridi & argenteo. Boerh. Ind.* Silver ſtrip'd-leav'd Crown Imperial.

9. CORONA IMPERIALIS *flore pulchre luteo. Tourn.* Crown Imperial, with a beautiful yellow Flower.

10. CORONA IMPERIALIS *flore luteo pleno. Boerh. Ind.* Crown Imperial with a double yellow Flower.

11. CORONA IMPERIALIS *flore luteo ſtriato. Tourn.* Crown Imperial, with a yellow-ſtrip'd Flower.

12. CORONA IMPERIALIS *ramoſa. Tourn.* Branch'd Crown Imperial.

There are ſome other Varieties of this Flower, which are preſerv'd in the Gardens of curious Floriſts: but as they are only Variations which are accidental, from Seeds of the ſame Plant, ſo their Numbers may be increas'd, like many other bulbous Plants, by ſuch who are curious in ſaving and ſowing Seeds of the different Varieties.

The Manner of propagating this Plant from Seeds, being the ſame with the *Tulip*, I ſhall refer the Reader to that Article for the particular Directions, and ſhall proceed to the Method of cultivating their Roots already obtain'd, ſo as to have fair large Flowers.

The beſt Seaſon for tranſplanting their Roots is in *July* or *Auguſt*, before they puſh forth freſh Fibres; after which Time, it is not ſo ſafe to remove them: or they may be taken up in *June*, when their green Leaves are quite decay'd; and may be kept out of the Ground until *Auguſt*, at which Time they ſhould be planted in Beds or Borders of good freſh Earth, burying a little rotten Dung in the Bottom, ſo that the Fibres may ſtrike into it: But be ſure not to let it be near the Bulb, for it is apt to rot whenever this happens.

If they are planted in open Beds or Borders of a Pleaſure-Garden, they ſhould be plac'd exactly in the Middle, for they will riſe to be three Feet high or more in a good Soil, and ſo would be improper to ſtand on the Side of a Border where ſhould be planted Flowers of lower Growth.

In planting of theſe Roots, after the Border is mark'd out, and the Diſtances fix'd between each Root, (which ſhould be eight or ten Feet or more, according to the Size of the Garden, and the Number of Roots to be planted) you ſhould open a Hole with a ſmall Spade about ſix Inches deep, into which you ſhould place your Root, obſerving to ſet the Crown uppermoſt; and then with your Hand fill in the Earth round the Root, breaking the Clods, and removing all large Stones from about it, and afterwards level the Ground with your Spade, and rake the Border over, after all the Roots are planted. Your Roots being thus planted will require no farther Care, as being very hardy; the Froſt never injures them, but if the Ground is too wet in Winter, they will be apt to rot; therefore in ſuch Caſes, the Borders ſhould be rais'd a Foot or more above the Level of the Ground. In *February* their Buds will appear above-ground, and if the Weather be mild, they will advance in Height very faſt, and in *March* they will produce their Flowers; but as their Stems grow tall, and the Spring-ſeaſon being commonly windy, it will be very proper to ſupport them with Sticks, to prevent their being broke down: Nor ſhould the Flowers of this Plant be gather'd when blown, for it greatly weakens their Roots; ſo that they do not afford an Increaſe of Bulbs, and many Times are two or three Years before they flower again.

Theſe Roots ſhould be tranſplanted every third Year, by which Time they will have furniſh'd ſome Off-ſets of conſiderable Strength, which muſt be taken from the old Roots; and ſuch of them as are large enough to produce Flowers, may be planted in Borders with the old Roots, but the ſmall ones ſhould be planted in a Nurſery-bed, where they may remain till they have Strength enough to flower; but if you remove the Blowing Roots oftener, they will not flower ſo ſtrong, nor will their Increaſe be near ſo great.

This Plant deſerves a Place in the moſt curious Flower Gardens, for the Earlineſs of its Flowering; it being the firſt Plant of large Growth that we have flowers, and ſo conſequently garniſhes the Crowns of Borders, at a Seaſon when there are no other Flowers in the ſame Line appearing, and ſo begins that Order of Flowering, which ſhould be ſucceeded by other Flowers of the like Growth, through the greateſt part of the Seaſon. Their Seeds are ripe about the Beginning of *June*, and ſhould be ſown in *July*. For the Manner of performing it, ſee *Tulipa*.

CORONA SOLIS; The Sun-Flower.

The *Characters* are;

It hath a ſquamous Cup; the Flowers are radiated like the great Starwort; *the Embryo's of the Seeds are diſtinguiſh'd by little imbricated Leaves in the Diſk; the Top of the Ovary is crown'd with two ſmall Leaves; the Seeds are puſh'd out from the Bottom of the Flower, leaving a Vacuity which appears very like a Honey-comb.*

The *Species* are;

1. CORONA SOLIS. *Tab.* The Common great annual Sun-Flower.

2. CORONA SOLIS *maxima, ſemine albo, cinereo & ſtriato. Tourn.* Great annual Sun-Flower, with Aſh-colour'd ſtrip'd Seeds.

3. CORONA SOLIS *maxima, flore pallide ſulphureo, fere albo, ſemine nigro. Boerh. Ind.* Great annual Sun-Flower, with pale Brimſtone-colour'd Flowers, and black Seeds.

4. CORONA SOLIS *maxima, flore pleno aureo, ſemine nigro. Boerh. Ind.* Great annual Sun-Flower with double yellow Flowers, and black Seeds.

5. CORONA SOLIS *maxima, flore pleno aureo, ſemine albo. Boerh. Ind.* Great annual Sun-Flower with double yellow Flowers, and white Seeds.

6. CORONA SOLIS *maxima, flore pleno ſulphureo, ſemine nigro. Boerh. Ind.* Great annual Sun-Flower, with double Brimſtone-colour'd Flowers, and black Seeds.

7. CORONA SOLIS *maxima, flore pleno ſulphureo, ſemine albo. Boerh. Ind.* Great annual Sun-Flower, with double Brimſtone-colour'd Flowers, and white Seeds.

8. CORONA SOLIS *perennis & vulgaris. Vaill.* Common Perennial or Everlaſting Sun-Flower, *vulgo*.

9. CORONA SOLIS *foliis amplioribus laciniatis. Tourn.* Perennial Sun-Flower, with large divided Leaves.

10. CORONA SOLIS *foliis anguſtioribus laciniatis. Tourn.* Perennial Sun-Flower, with narrow divided Leaves.

11. CORONA SOLIS *foliis aſperis, tribus vel quaternis ad genicula ſitis. Mor. Hiſt.* Rough-leav'd Perennial Sun-Flower, having three or four Leaves plac'd at each Joint of the Stalk.

12. CORONA SOLIS *trachelii folio, radice repente. Tourn.* Creeping-rooted Perennial Sun-Flower, with a Throat-wort Leaf.

13. CORONA SOLIS *altiſſima, Voſacan dicta. Vail.* The talleſt Perennial Sun-Flower, *call'd* Voſacan.

14. CORONA SOLIS *altiſſima, virgæ aureæ foliis. Tourn.* Talleſt Perennial Sun-Flower, with Golden-Rod Leaves.

15. CORONA SOLIS *ſalicis folio, alato caule. Tourn.* Willow-leav'd Perennial Sun-Flower with winged Stalks.

16. CORONA SOLIS *ſalicis folio latiore, caule alato ſerotino.* Broader Willow-leav'd Perennial late flowering Sun-flower, with winged Stalks.

17. CORONA SOLIS *arborea, folio latiſſimo platani. Boerh. Ind.* Tree-like Perennial Sun-Flowers, with a broad Plane-tree Leaf.

18. CORONA SOLIS *parvo flore, tuberoſa radice. Tourn.* Tuberoſe-rooted Perennial Sun-Flower, with a ſmall Flower, *commonly call'd* Jeruſalem Artichoke.

All theſe *Species* of *Sun-Flowers* are Natives of *America*, from whence we are often ſupply'd with new Kinds, it being a large *Genus* of Plants: And it is very remarkable, that there is not a ſingle *Species* of this *Genus* that is *European*; ſo that before *America* was diſcover'd, we were wholly unacquainted with theſe Plants. But altho' they are not originally of our own Growth; yet are they become ſo familiar with our Climate, as to thrive and increaſe full as well as if they were at Home (ſome of the very late Flowering Kinds excepted, which require a longer Summer than we generally enjoy, to bring them to Perfection): and many of them are now ſo plentiful in *England*, that Perſons unacquainted with the Hiſtory of theſe Plants, would imagine them at leaſt to have been Inhabitants of this Iſland many hundred Years; particularly the *Jeruſalem Artichoke*, which tho' it doth not produce Seeds in our Climate, yet doth ſo multiply by its knobbed Roots, as when once well fix'd in a Garden, is not eaſily to be rooted out.

The firſt ſeven Sorts being Annual, muſt be ſown every Spring in a Bed of good light Earth; and when the Plants are come up about three Inches high, muſt be tranſplanted into Nurſery-beds, at about eight or ten Inches Diſtance every way, where they may continue until they are a Foot high, when they muſt be carefully taken up with a Ball of Earth, and tranſplanted into the Middle of large Borders, or intermix'd in Boſquets of large growing Plants, obſerving to water them until they are well rooted; after which Time they will require no farther Care but to clear them from Weeds.

In *July* the great Flowers upon the Tops of the Stems will appear; amongſt which, the beſt and moſt double Flowers of each kind ſhould be preſerv'd for Seeds; for thoſe which flower

later

later upon the Side-branches are neither ſo fair, nor do they perfect their Seeds ſo well as thoſe which are firſt in Flower: When the Flowers are quite faded, and the Seeds are form'd, you ſhould carefully guard the Heads from the Sparrows, which will otherwiſe devour moſt of the good Seeds; and about the Beginning of *October*, when the Seeds are ripe, you ſhould cut off the Heads with a ſmall Part of the Stems, and hang them up in a dry airy Place for about a Month; by which Time the Seeds will be perfectly dry and hard, when you may eaſily rub them out, and put them up in Bags, or Papers, preſerving them from Vermin until the Seaſon for ſowing them.

The other perennial Sorts rarely produce Seeds in *England*, but moſt of them do increaſe very faſt at their Roots, eſpecially the common and creeping-rooted Kinds. The eighth Sort, which is the moſt common in the *Engliſh* Gardens, is the largeſt and moſt valuable Flower, and is a very proper Furniture for large Borders in great Gardens, as alſo for Boſquets of large growing Plants, or to intermix in ſmall Quarters with Shrubs, or in Walks under Trees where few other Plants will thrive: It is alſo a great Ornament to Gardens within the City; where it doth grow in Defiance of the Smoak better than moſt other Plants; and for its long Continuance in Flower, deſerves a Place in moſt Gardens, for the Sake of its Flowers for Baſons, *&c.* to adorn Halls and Chimnies in a Seaſon when we are at a Loſs for other Flowers. It begins flowering in *June*, and continues until *October*.

The 9th, 10th, 11th, 12th, 13th, 14th, 15th and 16th Sorts, may alſo have a Place in ſome abject Part of the Garden, for the Variety of their Flowers; which though not ſo fair as thoſe of the common Sort, yet will add to the Diverſity; and as many of them are late Flowerers, ſo we may continue the Succeſſion of Flowers longer in the Seaſon.

Theſe Sorts are all of them very hardy, and will grow in almoſt any Soil or Situation: They are propagated by parting their Roots into ſmall Heads, which in one Year's Time will ſpread and increaſe greatly. The beſt Seaſon for this Work is in the Middle of *October*, ſoon after their Flowers are paſt, or very early in the Spring, that they may be well rooted before the Droughts come on; otherwiſe their Flowers will be few in Number, and not near ſo fair, and by this means their Roots will be weak; but if they are planted in *October*, you will ſave the Trouble of watering them; their Roots being ſurely fix'd before the dry Weather, they will need no other Trouble than to clear them from Weeds.

The *Jeruſalem Artichoke* is propagated in many Gardens for the Roots, which are by ſome People as much eſteem'd as *Potatoes*, but they are more watery and flaſhy, and are very ſubject to trouble the Belly by their windy Quality, which hath brought them almoſt into Diſuſe.

Theſe are propagated by planting the ſmaller Roots, or the larger ones cut into Pieces, (obſerving to preſerve a Bud to each ſeparate Piece) either in the Spring or Autumn, allowing them a good Diſtance, for their Roots will greatly multiply; the Autumn following, when their Stems decay, the Roots may be taken up for Uſe. Theſe ſhould be planted in ſome remote Corner of the Garden, for they are very unſightly while growing, and their Roots are apt to over-run whatever grows near them, nor can they be eaſily deſtroy'd when they are once well fix'd in a Garden.

The ſeventeenth Sort, is ſomewhat tenderer than any of the former, and doth therefore require a better Situation, and a dry Soil. This Sort ſeldom produces its Flowers fair with us, it being a very late Flowerer; and if the Autumn proves bad, doth not produce any Flowers: This will grow to be ſix, ſeven, or eight Feet high, and very ſtrong, but there is no great Beauty in its Flowers, and is rarely preſerv'd except in *Botanick* Gardens.

[**CORONILLA**; [This Plant is ſo call'd of *Corona*, a *Crown* or *Garland*, q. d. a *little Crown*, &c. becauſe it bears Huſks at the End like a little Crown, or becauſe it reſembles the Garlands that Shepherds adorn'd their Sweet-hearts with: It is by ſome call'd *Colutea*] Jointed-podded Colutea.

The *Characters* are;

It hath Leaves like thoſe of the Scorpion-Sena; *the Flowers are papilionaceous, the Pods are full of Joints, having one oblong ſwelling Seed in each Diviſion.*

The *Species* are;

1. CORONILLA *argentea Cretica.* *Tourn.* Silver-leav'd jointed-podded Colutea of Candia.
2. CORONILLA *maritima, glauco folio.* *Tourn.* Maritime jointed-podded Colutea, with a Sea-green-Leaf.
3. CORONILLA *herbacea, flore vario.* *Tourn.* Herbaceous jointed-podded Colutea, with a variable Flower.
4. CORONILLA *Cretica herbacea, flore parvo purpuraſcente.* *Tourn.* *Candia* herbaceous, jointed-podded Colutea, with a ſmall purpliſh Flower.
5. CORONILLA *Zeylanica argentea tota.* *Boerh. Ind.* Silver jointed-podded Colutea of *Ceylon*.
6. CORONILLA *minima.* *Tourn.* The leaſt jointed-podded Colutea.
7. CORONILLA *ſiliquis & ſeminibus craſſibus.* *Tourn.* Jointed-podded Colutea, with thick Pods and Seeds.
8. CORONILLA *Americana ſcandens pentaphylla.* *Plum.* Five-leav'd *American* jointed-podded Colutea, with climbing Stalks.

The firſt and ſecond *Species* grow with us to be ſmall Shrubs about three or four Feet high, and are ſo nearly alike in all reſpects, ſo far as I have been able to examine them, that I could readily pronounce them the ſame, were it not that they have been by ſo many eminent *Botaniſts* diſtinguiſh'd for two abſolutely different Plants, which if there are two ſuch, I have as yet ſeen but one of them: I have indeed receiv'd Seeds of the two Sorts from different Perſons Abroad; but when they came up, they prov'd the ſame, and this more than once; which cauſes me to ſuſpect they are not different; for at different Seaſons of the Year the ſame Plant appears different as to the Colour of their Leaves; which might at firſt lead a Perſon into the Miſtake: and this has been follow'd by all that have ſince wrote thereof.

This Plant is propagated by ſowing the Seeds in the *Spring*, either upon a gentle Hot-bed or on a warm Border of light freſh Earth; and when the Plants are come up about two Inches high, they ſhould be tranſplanted either into Pots, or in a Bed of good rich Earth, at about four or five Inches Diſtance every way, where they may remain until they have obtain'd Strength enough to plant out for good, which ſhould be either into Pots fill'd with good freſh Earth, or in a warm ſituated Border; in which, if the Winter is not too ſevere, they will abide very well, and in the *Spring* following will produce large Quantities of yellow Flowers of a ſtrong ſweet Smell; which will be ſucceeded by long ſlender-jointed Pods in great Plenty, in which are contain'd the Seeds.

The third Sort dies down every *Winter*, but riſes again the ſucceeding *Spring*, and produces large trailing Branches, which are furniſh'd with great Numbers of variable-colour'd Flowers, which grow in Bunches; theſe are ſometimes ſucceeded by ſmall-jointed Pods, containing many oblong Seeds: but the Root creeps very far under-ground, by which the Plant increaſes greatly; which when permitted to remain unremov'd for two or three Years, will ſpread and over-bear whatever Plants grow near it; for which Reaſon the Roots ſhould be confin'd; and it ſhould be planted at a Diſtance from any other Plants: It will grow in almoſt any Soil and Situation, but thrives beſt in a warm Sunny Expoſure, in which the Flowers will alſo be much fairer, and in greater Quantities.

The fourth Sort is Annual, and muſt be ſown every *Spring* in an open Bed or Border of good light Earth, in the Place where it is to remain; for it doth not very well bear removing. This is a Plant of little Beauty, and is only preſerv'd in curious Gardens of Plants.

The fifth Sort is very tender, being a Native of *Ceylon*: This muſt be ſown on a Hot-bed early in the *Spring*; and when the Plants are come up, they muſt be tranſplanted into ſmall Pots fill'd with light ſandy Earth, and plung'd into a freſh Hot-bed of Tanners Bark; obſerving to give them frequent gentle Waterings: and as the Weather is hot or cold, ſo they muſt have more or leſs Air in Proportion thereto, by raiſing up the Glaſſes in the Middle of the Day, but in the Nights the Glaſſes ſhould be cover'd with Mats.

And when the Plants have grown ſo as to fill the Pots with their Roots, they muſt be carefully ſhaken out of them, preſerving the Earth to their Roots; and after their having pared off the Outſide of the Ball of Earth, put them into Pots a Size bigger than thoſe were which they came out of, filling up the Pot with the ſame light freſh ſandy Earth as before; then plunge the Pots again into the Hot-bed, and manage them as before. In the *Winter* they muſt be plac'd in a warm Bark-Stove amongſt Plants of the tendereſt Claſs, obſerving to refreſh them frequently with Water which has ſtood in the ſame Stove at leaſt eight or ten Hours before, that the Cold may be taken off: but never give them too much at a time: In this Management I have had this Plant ſucceed very well for two or three Years; but I have not as yet ſeen it flower in *England*, tho' there are Plants of this Kind in three or four Gardens, which are two or three Years old.

The ſixth Sort is a very ſmall Plant, and hath very little Beauty in it; this is preſerv'd by the Curious in Botany, but is ſeldom found in Gardens of Pleaſure, where few Plants are admitted that are not either beautiful or rare; and it is propagated by ſowing of the Seeds in the *Spring*, on a Bed of freſh ligh light Earth in a warm Poſition: And when the Plants are come up, they muſt be either tranſplanted into Pots fill'd with the ſame freſh Earth, or into warm Borders under a South or Weſt Wall; for they are ſubject to be deſtroy'd by ſevere Froſts: and therefore thoſe which are planted in Pots ſhould be ſhelter'd during the Winter-ſeaſon under a common Hot-bed Frame, taking off the Glaſſes in mild Weather, that they may enjoy as much of the free open Air as poſſible; and in the *Spring*, after the Cold is paſt, they may be ſhaken out of the Pots, and planted in a warm Border, where they will flower and produce ripe Seeds the ſucceeding *Summer*.

The ſeventh Sort grows to the Height of two or three Feet, and branches out on every Side, ſo as to form a regular Shrub. This may be propagated by Seeds, which ſhould be ſown on a moderate Hot-bed in the Spring; and when the Plants are about two Inches high, they ſhould be carefully tranſplanted into ſmall Pots, filled with light freſh Earth, and plunged into a very moderate Hot-bed, being careful to ſcreen them from the Sun until they have taken new Root; after which Time they muſt have a large Share of freſh Air, otherwiſe they will draw up very weak; they muſt alſo be frequently watered in warm Weather. When theſe Plants have acquired Strength, they ſhould be inured to bear the open Air by degrees; for in Summer they ſhould be taken out of the Hot-bed, and ſome of them may be planted in warm Borders; but it will be proper to keep ſome in Pots, that they may be ſheltered in Winter; for in ſevere Froſt, thoſe in the Borders will be in danger of ſuffering thereby. Theſe Plants produce their Flowers in the Spring, when they make an agreeable Appearance, and in *Auguſt* they perfect their Seeds.

The eighth Sort was diſcovered by Father *Plumier* in *America*. I received the Seeds of this Plant from *Carthagena*, which was ſent me by my late ingenious Friend Doctor *William Houſtoun*. This Plant is propagated by Seeds, which ſhould be ſown early in the Spring on a moderate Hot-bed; and when the Plants are come up, they ſhould be each tranſplanted into a Halfpenny Pot, filled with freſh rich Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to ſhade them until they have taken Root; after which time they ſhould have Air and Water in Proportion to the Warmth of the Seaſon; and when they have filled theſe Pots with their Roots, they ſhould be ſhifted into Pots of a larger Size, and plunged into the Hot-bed again, where they muſt remain until Autumn, when they ſhould be removed into the Stove, and plunged into the Tan. Theſe Plants muſt be conſtantly kept in the Bark-ſtove, and placed among Plants which require a moderate Heat; where they will thrive and flower, and ſhould be ſupported by tall Sticks, round which they will twine, as Hops do; ſo that they muſt not be ſuffered to twiſt round other Plants, leſt they over-bear and ſpoil them. Theſe are very proper Plants to place againſt an Eſpalier on the Back-part of the Stove, amongſt other climbing Plants, where they will make an agreeable Variety.

This Sort will continue two or three Years, provided it be carefully managed, and will ſometimes produce ripe Seeds in this Country; but it will be proper to lay down ſome of the Shoots, either into the Tan, or Pots of freſh Earth plunged into the Tan, becauſe theſe will often take Root, whereby a Supply of young Plants may be obtained; which is a ſure Method to preſerve the Kind in this Country, where they do not commonly perfect their Seeds.

CORONOPUS; [Κορωνόπȣς, of Κορώνη a *Crow*, and Πȣ͂ς a *Foot*; becauſe the Leaves are ſaid to reſemble the Foot of a Crow.] Buck's-horn Plantain.

The *Characters* are;

It agrees in Flower and Fruit with the Plantain, *from which it differs in its Leaves, which are deeply cut in on the Edges; whereas the Leaves of* Plantain *are either intire, or but ſlightly indented.*

The *Species* are;

1. Coronopus *hortenſis. C. B.* Garden Buck's-horn Plantain or Hart's-horn, *vulgo*.
2. Coronopus *Maſſilienſis hirſutior latifolius. Tourn.* Broad-leav'd hairy Buck's-horn Plantain of *Marſeilles*.
3. Coronopus *Neapolitanus tenuifolius. Col.* Narrow-leav'd Buck's-horn Plantain of *Naples*.
4. Coronopus *maritimus roſeus. Bocc. Rar. Pl.* Roſe-like Sea Buck's-horn Plantain.

The firſt of theſe *Species*, tho' intitled a Garden Plant, yet is found wild in moſt Parts of *England*, and is the very ſame Plant which grows upon moſt Commons and barren Heaths, where, from the Poorneſs of the Soil, it appears to be very different from the Garden Kind, as being little more than a fourth Part ſo large. But this Plant, when tranſplanted or ſown in a Garden by the other, grows to be full as large. Nor can I ſee any Difference between theſe, and that which grows upon the Sea-Coaſts; tho' *Caſpar Bauhin*, and many Botaniſts after him, make them diſtinct Species: But when they are all cultivated together in the ſame Soil, I am ſatisfy'd that no one Perſon can diſtinguiſh them, therefore I make no doubt of calling them all the ſame Plant.

This *Species* was formerly cultivated in Gardens as a Sallad-Herb; but at preſent is little regarded, and almoſt wholly diſuſed: It may be eaſily cultivated by ſowing the Seeds in the Spring upon any Soil, or in any Situation, it being extremely hardy; and when it comes up, it may be thinned out and ſuffered to remain for Uſe at about three or four Inches Diſtance, where the Leaves may be often cut for the Purpoſes above-mentioned, the Roots ſtill putting forth freſh Leaves; and if it is not ſuffered to ſeed, the Roots will remain two or three Years: But it ſeldom continues long after perfecting its Seeds. If the Seeds are ſuffered to fall upon the Ground, there will be a conſtant Supply of Plants, without any farther Care than clearing them from Weeds as they grow. The other Varieties are maintained in Botanick Gardens, but are ſeldom cultivated for Pleaſure or Profit.

CORTUSA: [This Plant is ſo called, from *Cortuſus*, a famous Botaniſt, who firſt brought it into Uſe.] Bear's-Ear Sanicle.

The *Characters* are;

It hath a perennial Root; the Leaves are roundiſh, rough, and crenated on the Edges, like thoſe of Ground-Ivy; *the Cup of the Flower is ſmall, and divided into five Parts; the Flowers are ſhaped like a Funnel, are cut at the Top into many Segments, and are diſpoſed in an Umbel; the Fruit is roundiſh, terminating into a Point, and is cloſely fixed in the Cup, in which are contained many ſmall angular Seeds.*

There is but one *Species* of this Plant at preſent in *England*, which is;

Cortusa *Matthioli. Cluſ.* The Bear's-Ear Sanicle, or *Cortuſa* of *Matthiolus*.

This Plant is nearly ally'd to the *Auricula Urſi*; but the Flowers are not quite ſo large and fair: yet, for its Curioſity, may deſerve a Place in every good Garden, eſpecially as it requires no great Management to preſerve it: for it being a Native of the *Alps*, will grow in the coldeſt Part of the Garden, under North-Walls, *&c.* but muſt not be planted under the dropping of Trees, nor in two wet or ſtiff Soil. It is propagated by parting the Roots, in the manner of *Auricula's*; the beſt Seaſon for which is about *Auguſt* or *September*. Theſe Plants loſe their Leaves in Winter, but put out new ones early in the Spring; and in *April* they produce their Flowers, which are ſometimes ſucceeded by Seed-Pods; but it is very rare that they perfect their Seeds with us.

CORYLUS, [is ſo call'd, of Καρύα a *Nut*, q. d. a *little Nut*. It is alſo call'd *Avellana*, as tho' *Abellina*, of *Abella* a Town in *Campania*, where it grew in great Plenty.] The Hazel or Nut-tree.

The *Characters* are;

It hath Male Flowers (or Katkins) growing at remote Diſtances from the Fruit on the ſame Tree; the Nuts grow (for the moſt part) in Cluſters, and are cloſely joined together at the Bottom, each being covered with an outward Huſk or Cup, which opens at the Top; and when the Fruit is ripe, it falls out; the Leaves are roundiſh and intire.

The *Species* are;

1. Corylus *ſylveſtris. C. B.* The wild Hazel-Nut.
2. Corylus *ſativa, fructu albo minore, ſive vulgaris. C. B.* The ſmall manured Hazel-Nut.
3. Corylus *ſativa, fructu rotundo maximo. C. B.* The large Cob-Nut.
4. Corylus *ſativa, fructu oblongo rubente. C. B.* The Red Filbert.
5. Corylus *ſativa, fructu oblongo rubente, pellicula alba tecto. C. B.* The white Filbert.
6. Corylus *Hiſpanica, fructu majore anguloſo. Pluk. Alm.*

The firſt of theſe Trees is common in many Woods in *England*, from whence the Fruit is gather'd in Plenty, and brought to the *London* Markets by the Country People. This Tree is ſeldom planted in Gardens, (except by Perſons curious in Collections of Trees and Shrubs): It delights to grow on a moiſt ſtrong Soil, and may be plentifully increaſ'd by Suckers from the old Plants, or by laying down their Branches, which in one Year's Time will take ſufficient Root for tranſplanting; and theſe will be much handſomer, and better rooted Plants than Suckers, and will greatly out-grow them, eſpecially while young.

The ſecond and third Sorts are planted in Hedge-rows, in moiſt ſhady Places in Gardens: but the Fruit is much better, and in greater Quantities, when they have an open, free Air, and are not ſuffer'd either to grow too thick, or be over-hung or crowded with other Trees.

The fourth and fifth Sorts, *viz.* the *Red* and *White Filberts*, are moſtly eſteem'd for their Fruit, being much ſweeter, and their Shells much tenderer.

The ſixth Sort is annually brought from *Spain* in great Plenty, and ſold in *London* all the Winter-ſeaſon; from which Nuts there have been many Trees raiſ'd in the *Engliſh* Gardens; but they ſeldom prove the ſame with the Nuts ſown.

All theſe Sorts may be propagated by ſowing their Nuts in *February*; which, in order to preſerve them good, ſhould be kept in Sand in a moiſt Cellar, where the Virgin can't come at them to deſtroy them: Nor ſhould the external Air be excluded from 'em, which would occaſion their growing mouldy.

The Manner of ſowing the Seeds being well known to every one, I need not here mention it, eſpecially ſince it is not the ſureſt Way to obtain the Sorts deſired; for they ſeldom prove ſo good as the Nuts which were ſown, or at leaſt not one in four of them will: And the Method of propagating them by *Layers* being not only the ſureſt, but almoſt expeditious, is what I would recommend to every one, who would cultivate theſe Trees for the ſake of their Fruits.

CORYMBIFEROUS PLANTS, are ſuch as have a compound diſcous Flower; but their Seeds have no Down adhering to them. The Name is taken from the manner of bearing its Flowers in Cluſters, and ſpreading round in the Form of an Umbrella, as *Onions*, &c. Of this Kind is the *Corn Marygold*, *common Ox-Eye*, the *Daiſy*, *Camomile*, *Mugwort*, *Feverfew*, &c.

Mr. *Ray* diſtinguiſhes them in ſuch as have a radiate Flower, as the *Sun-Flower*, the *Marygold*, &c. and ſuch as have a naked Flower, as the *Lavender Cotton* and *Tanſey*; and alſo thoſe that are akin to them, as *Scabious*, the *Teaſel*, *Carduus*, &c.

CORYMBUS, [Κόρυμβος, Gr.] ſignifies among *Botaniſts* Cluſters of Berries, as thoſe of *Ivy*.

Jungius uſes it, to ſignify the Extremity of a Stalk, ſo ſubdivided and laden with Flowers or Fruits, as to compoſe a ſpherical Figure.

It is alſo by modern *Botaniſts* us'd to ſignify a compound diſcous Flower, which does not fly away in Down, as the *Chryſanthemum*. *Daiſy*, *Chryſocome*, &c. for theſe kind of Flowers being ſpread into Breadth, do, after a ſort, reſemble an Umbrella, or Bunch of Ivy-Berries.

COTINUS CORIARIA, Venice Sumach.

The *Characters* are;

It hath round Leaves, with long Foot-ſtalks; the Flowers are ſmall, conſiſting of five Leaves, which expand in Form of a Roſe; *are diſpos'd in capillary Branches of very ſlender and ſtiff Filaments or Hairs, which are widely diffus'd after the manner of Plumes, and ſpring out of the top Branches.*

There is but one *Species* of this Plant at preſent known, and that is,

Cotinus *Coriaria. Dod.* Venice Sumach, *commonly call'd* Coccygria.

This Shrub grows with us about ſeven or eight Feet high: The Branches grow very irregular and diffus'd; but when it flowers, (which it ſeldom doth until it is pretty ſtrong) it maketh a beautiful Figure, the Flowers growing, as it were, on large Plumes of Hair, which almoſt cover the whole Shrub: It is very proper to plant amongſt other Shrubs of the ſame Growth, where it will make an agreeable Variety.

This Plant is propagated by laying down the tender Branches, which ſhould have a little Slit made at one of the Joints that are laid in the Earth, (as is practiſ'd in laying *Carnations*) which will greatly facilitate their Rooting. When they are ſufficiently rooted, (which is commonly in one Year's Time) they may be tranſplanted, where they are to remain; for it ſeems not to bear removing well, eſpecially when grown old; the Roots trailing far under-ground, which, when cut or broken, do not ſoon recover it; and it ſeldom produces many Fibres near the Stem.

The Wood of this Shrub is greatly us'd in the Southern Parts of *France*, where it grows in great Plenty, to dye their Woollen Cloths of a yellow Colour, or *Feuille Morte*; and the Tanners uſe the Leaves to prepare their Skins.

COTONEA MALUS. *Vide* Cydonia.

COTONEASTER. *Vide* Meſpilus.

COTULA FOETIDA. *Vide* Chamæmelum Fœtidum.

COTYLEDON [Κοτυληδὼν, Gr. of Κοτυλὴ, Gr. a *Cavity*; becauſe the Leaves of this are cavated, or becauſe it reſembles a Veſſel wherewith the Ancients us'd to draw Water, or the Hollow of the Thigh.] Navel-wort.

The *Characters* are;

It hath a Leaf, Stalk, and the whole Appearance of Houſeleek; from which it differs in having an oblong tubulous Flower conſiſting of one Leaf, which is divided at the Top into five Parts; the Fruit is like that of the Houſeleek.

The *Species* are;

1. Cotyledon *major. C. B.* The greater Navel-wort.

2. Cotyledon *Africana fruteſcens, foliis orbiculatis, limbo purpureo cinctis. Tourn.* Shrubby *African* Navel-wort, with round Leaves edg'd with a purple Rim.

3. Cotyledon *Africana fruteſcens, folio longo & anguſto, flore flaveſcente. Com. Rar.* Shrubby *African* Navel-wort, with a long narrow Leaf, and a yellowiſh Fower.

4. Cotyledon *Africana fruteſcens, flore umbellato, coccineo. Com. Rar.* Shrubby *African* Navel-wort, with ſcarlet Flowers growing in an Umbel.

5. Cotyledon *Afra, folio craſſo lato laciniato, floſculo aureo. Boerh. Ind.* *African* Navel-wort, with a broad thick divided Leaf, and ſmall yellow Flowers.

6. Cotyledon *Afra arboreſcens major, foliis glaucis oblongioribus, flore luteo. Boerh. Ind.* Greater Tree-like *African* Navel-wort, with oblong Sea-green Leaves, and a yellow Flower.

7. Cotyledon *major arboreſcens Afra, foliis minoribus, craſſiſſimis, viridioribus, minutiſſime punctatis. Boerh. Ind.* Greater *African* Tree-like Navel-wort, with ſmall thick Leaves.

8. Cotyledon *major arboreſcens Afra, foliis minoribus oblongis, atro-viridibus. Boerh. Ind.* Greater *African* Tree-like Navel-wort, with ſmall oblong dark green Leaves.

9. Cotyledon *major arboreſcens Afra, foliis orbiculatis glaucis, limbo purpureo & maculis viridibus ornatis. Boerh. Ind. alt.* Greater Tree-like *African* Navel-wort, with rounder Sea-green Leaves, having purple Edges, and ſpotted with Green.

10. Cotyledon *Capenſis, folio ſemiglobato. Hort. Elth.* Navel-wort of the *Cape of Good Hope*, with thick half-globular Leaves.

The firſt Sort (which is that us'd in Medicine) grows upon old Walls and Buildings in divers Parts of *England*, but is not readily to be cultivated in a Garden; it requires a dry rubbiſhy Soil, and to have a ſhady Poſition.

The *African* Kinds are all of them propagated by planting Cuttings in any of the Summer Months, which ſhould be laid in a dry Place for a Week or more after they are taken from the Plant, before they are planted; for theſe abound with Juice through every Part of the Plant, which will certainly rot the Cuttings, if they are not ſuffer'd to lie out of the Ground, that the wounded Part may heal over, and the great Redundancy of Sap evaporate. The Soil in which theſe Plants thrive beſt, is one third freſh light Earth from a Paſture, one third Sand, and the other third Part Lime Rubbiſh, and rotten Tan, in equal Quantities: Theſe ſhould be well mix'd, and laid in a Heap ſix or eight Months before it is us'd, turning it over five or ſix times, that the Parts may the better incorporate; and before it is us'd, it will be proper to paſs it through a Screen, to ſeparate the large Stones and Clods, *&c.* therefrom.

Having prepar'd the Earth, and your Cuttings being in a fit Order for Planting, you muſt fill as many half-penny Pots with Earth as you have Cuttings to plant; then put one Cutting in the middle of each Pot about two Inches deep or more, according to their Strength; then give them a little Water to ſettle the Earth cloſe about them, and ſet the Pots in a warm ſhady Place for about a Week, to prepare the Cuttings for putting forth Roots; after which they ſhould be plung'd into a moderate Hot-bed of Tanners Bark, which will greatly facilitate their rooting; but obſerve to give them Air, by raiſing the Glaſſes at all times when the Weather will permit, as alſo to ſhade the Glaſſes in the Heat of the Day.

In about a Month's Time after planting, theſe Cuttings will be rooted, when you muſt begin to expoſe them to the open Air by degrees, firſt drawing the Pots out of the Tan, and ſetting them on the Top; then raiſe the Glaſſes very high in the Day-time; and in about a Week after remove the Pots into a Green-houſe, and there harden them for another Week; after which they may be expos'd to the open Air in a well defended Place, obſerving not to ſet them into a Place too much expos'd to the Sun, until they have been enur'd to the open Air for ſome Time.

In this Place the Plants may remain until the beginning of *October*; at which Time you ſhould remove them into the Conſervatory, placing them as near the Windows as poſſible at firſt, letting them have as much free open Air as the Seaſon will permit, by keeping the Windows open whenever the Weather is good: And now you muſt begin to abate your Waterings, giving it to them ſparingly, eſpecially the fifth Sort, which is ſo very ſucculent, that upon its having a little too much Water in Winter, it will certainly rot; but you ſhould not ſuffer its Leaves to ſhrink for want of Moiſture, which is another Extreme ſome People run into for want of a little Obſervation; and when they are ſuffer'd to ſhrink for want of Water, they ſeldom fail to rot when they have Water given them, for their Parts being conſtricted for want of ſufficient Moiſture to keep their Veſſels diſtended, they are render'd incapable of diſcharging this Moiſture whenever they receive it again. This Sort ſhould be placed in a warm Stove in Winter, nor muſt it be ſet abroad in Summer, for it is much tenderer than any of the other Sorts.

The other Plants are all of them pretty hardy, except the ſixth Sort, (which muſt have a moderate Stove in Winter) and may be preſerv'd without any artificial Heat in the Winter. The beſt Method to treat theſe Plants is, to place them in an open airy dry Glaſs-Frame among *Ficoides's* and *African Houſeleeks*, where they may enjoy as much of the Sun-ſhine as poſſible, and have a free dry open Air; for if theſe are plac'd in a common Green-houſe amongſt ſhrubby Plants, which perſpire freely, it will fill the Houſe with a damp Air, which theſe ſucculent Plants are apt to imbibe; and thereby becoming too replete with Moiſture, do often caſt their Leaves, and many times their Branches alſo decay, and the whole Plant periſhes.

The fifth Sort, as was before mention'd, muſt be preſerv'd in a moderate Stove, with *Aloes*, *Cereus's*, &c. which may be kept up to the temperate Heat as mark'd on Mr. *Fowler's Thermometers*: This muſt have very little Water in Winter, and be planted in a very dry ſandy Soil.

The fourth Sort produces the moſt beautiful Flowers of any of them, and deſerves a Place in every good Collection of Plants; as doth the ſecond, third, fifth and ſixth, for the regular Beauty of their Stems, and large, fair, thick ſucculent Leaves; and the ſecond, third, and ſixth Sorts produce very fair, handſome Bunches of Flowers, but they ſeldom produce Seeds in *England*.

The ninth Sort uſually grows to the Height of two or three Feet in this Country, and divides into many Branches: It is eaſily propagated by Cuttings in any of the Summer Months, if, after they are taken from the Plants, they are laid in a dry Place for a Week or ten Days, that the wounded Parts may heal before they are planted; otherwiſe they are ſubject to rot. When the Cuttings are fit to plant, they ſhould be each put into a Half-penny Pot, filled with a Mixture of freſh Earth, Lime-rubbiſh, and Sea-ſand, in equal Proportion; then plunge the Pots into a very moderate Hot-bed, which will greatly promote their Rooting: In about ſix Weeks after Planting, the Cuttings will be well rooted, when they may be taken out of the Hot-bed, and placed in the open Air, in a Situation where they may be defended from ſtrong Winds; where they may remain till the middle of *October*, provided there happens no froſty Weather before; then they muſt be removed into an airy Glaſs-caſe, where they may be defended from the Froſt and Wet, and enjoy a large Share of freſh Air; in which Place they will thrive better than in a Green-houſe, where they cannot have ſo much free Air.

The tenth Sort is of humbler Growth, ſeldom riſing above a Foot high; this produces many ſhort Branches near the Ground, but never ſpreads very far, ſo may be confined in ſmall Pots. This is propagated in the ſame Manner as the former Sort, and ſhould be treated in the ſame Method.

COURBARIL, [*This is the* American *Name by which the* Indians *call this Tree.*] The Locuſt-tree, *vulgo*.

The *Characters* are;

It hath a papilionaceous Flower, from whoſe Calyx ariſes the Pointal; which afterward becomes a unicapſular hard Pod, including roundiſh hard Seeds, which are ſurrounded with a fungous ſtringy Subſtance.

We know but one *Specie* of this Plant, *viz.*

COURBARIL *bifolia, flore pyramidato. Plum. Nov. Gen.* Courbaril with two Leaves ſet together, and a pyramidal Flower, commonly called *Locuſt-tree*, by the *Engliſh* Inhabitants of *America*.

The Pods of this Tree are frequently brought from *America*, by the Title of *Locuſt*, from the Seeds of which theſe Plants may be raiſed. Theſe Seeds ſhould be ſown on a Hot-bed early in the Spring, and when the Plants are come up, they ſhould be very carefully taken up, and each planted into a ſmall Pot, filled with light freſh Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to ſhade them until they have taken Root; after which Time they ſhould have Air and Water in proportion to the Warmth of the Seaſon; but they will not bear to be quite expoſed to the open Air in *England*, even in the hotteſt Part of Summer. In Winter theſe Plants muſt be removed into the Bark-ſtove, and plunged into the Tan, amongſt the tenderer Sorts of exotic Plants; and during that Seaſon they ſhould be frequently refreſhed with Water, but it muſt not be given to them in large Quantities, for they are impatient of much Wet. If theſe Plants are continued in the Bark-ſtove, and ſhifted into larger Pots as they increaſe in Size, they may be preſerved; but I believe it will be many Years before they will produce Flowers in *Europe*, for they are of very ſlow Growth, after the firſt ſix Months, being in this reſpect like the *Acajou*.

COWSLIP. *Vide* Primula Veris.

CRAB-TREE. *Vide* Malus.

CRAMBE; [κραμβὴ, Gr.] Sea-Cabbage.

The *Characters* are;

It hath fleſhy Leaves like thoſe of the Cabbage; the Flowers are white, conſiſting of four Leaves; the Pointal afterwards turns to a roundiſh Fruit, which terminates in a Point, having but one Cell, in which is contain'd one oblong Seed.

The *Species* are;

1. CRAMBE *maritima, braſſicæ folio. Tourn.* Sea-Cole-wort or Cabbage.
2. CRAMBE *Orientalis, dentis leonis folio, erucaginis facie. T. Cor.* Eaſtern Sea-Cole-wort, with a Dandelion Leaf, and the Face of Wild Rocket.

The firſt of theſe *Species* is found wild upon the Sea-ſhores in divers Parts of *England*, but particularly in *Suſſex* in great Plenty, where the Inhabitants gather it in the Spring to eat, preferring it to any of the *Cabbage* kind: But this muſt be gather'd young, ſoon after the Heads are thruſt out of the Ground, otherwiſe it will be very tough and rank.

This Plant may be propagated in a Garden, by ſowing the Seeds, ſoon after it is ripe, in a ſandy or gravelly Soil, where it will thrive exceedingly, and increaſe greatly by its creeping Roots, which will ſoon overſpread a large Spot of Ground, if encourag'd: This may be cut for Uſe in *April* and *May*, while it is young; but if the Heads are ſuffer'd to remain, they will produce fine regular Heads of white Flowers, which appear very handſome, and will perfect its Seeds, by which it may be propagated.

The ſecond Sort is only preſerv'd in curious Gardens of Plants for Variety, but is not of any Uſe or Beauty.

CRANE's-BILL. *Vide* Geranium.

CRASSULA, Leſſer Orpine or Houſeleek.

The *Characters* are;

It hath the Appearance of Houſeleek or Navelwort, from the latter of which it only differs in having a ſhort tubulous Flower, conſiſting of one Leaf.

The *Species* are;

1. CRASSULA *altiſſima perforata. Hort. Elth.* Talleſt Craſſula, with Leaves ſurrounding the Stalks, commonly call'd *Aloe perfoliata.*
2. CRASSULA *anacampſerotis folio. Hort. Elth.* Craſſula with an Orpine Leaf.
3. CRASSULA *portulacæ facie, arboreſcens. Hort. Elth.* Tree-like Craſſula, with the Face of Purſlain, commonly call'd the *Purſlain-Tree.*
4. CRASSULA *cæpoſa longifolia. Hort. Elth.* Onion-like Craſſula, with a long Leaf.
5. CRASSULA *cauleſcens, foliis ſempervivi cruciatis. Hort. Elth.* Stalky Craſſula, with Houſeleek-leaves.
6. CRASSULA *meſembrianthemi facie, foliis longioribus aſperis. Hort. Elth.* Craſſula with the Face of Ficoides, and long rough Leaves.
7. CRASSULA *orbicularis repens, foliis ſempervivi. Hort. Elth.* Creeping orbicular Craſſula, with Houſeleek Leaves.
8. CRASSULA *portulacæ facie, repens. Hort. Elth.* Creeping Craſſula, with the Appearance of Purſlain.

Theſe Plants are Natives of the *Cape of Good Hope*, from whence they were brought into the *European* Gardens. The firſt, third, and fifth Sorts, will grow to be ſhrubby: The firſt doth not ſend forth any Side-branches, unleſs the Top be cut off, or ſome Way injured; but it may be trained up ſix or eight Feet high, if it is ſupported with a Stake. The third Sort grows almoſt in a pyramidal Form, and the Stalks and Leaves have the Appearance of Purſlain. The fifth Sort grows very buſhy, and the Stalks are very full of Joints, and ſo brittle, that on the Touch they break, and the Pieces which fall on the Ground will take Root, ſo that it is eaſily propagated. The other Sorts are of lower Growth, moſt of them trailing on the Ground. The eighth Sort doth not continue above two Years, but it frequently ripens Seed, which if permitted to ſcatter upon the Earth in the Pots, and they are ſheltered in Winter, will produce young Plants, whereby the Kind may be eaſily preſerved.

The third Sort has not produced any Flowers in this Country, that I could ever hear; but from the Appearance of the Plant, it is ranged with theſe Plants.

All theſe Sorts may be eaſily propagated, by planting their Cuttings in any of the Summer Months, on a ſhady Border, where they will ſoon take Root, and may be then potted in a ſandy-rubbiſhing Earth; and muſt be treated in the ſame Manner as the Ficoides's, to which I ſhall refer the Reader to avoid Repetition.

CRATÆGUS; [κράταιγος, or κραταίγονον, Gr.] The Wild Service.

The *Characters* are;

The Leaves are ſingle; the Flower conſiſts of five Leaves, which expand in Form of a Roſe; the Fruit is ſmall, and ſhap'd like a Pear, in which are contain'd many hard Seeds.

The *Species* are;

1. CRATÆGUS *folio laciniato. Tourn.* The Common or Wild Service.
2. CRATÆGUS *folio ſubrotundo ſerrato, ſubtus incano. Tourn.* The white Beam-Tree, or Aria Theophraſti.
3. CRATÆGUS *ſylveſtris Anglica, foliis viburni.* The Red Cheſs Apple, or *Engliſh* Wild Service.
4. CRATÆGUS *Virginiana, foliis arbuti. Tourn.* The *Virginian* Wild Service, with Leaves like the Strawberry-Tree.

The firſt of theſe Trees is very common in divers Parts of *England*, growing in Woods, *&c.* The Leaves of this Tree are very like thoſe of the *Hawthorn*, but are larger, and have fewer Segments; the Fruit grows in Bunches, and are about the Bigneſs of *Black Cherries*, which are ſometimes ſold in the Markets in Autumn, and are by ſome People eaten as *Medlars*, &c. but have ſomewhat of an auſtere Taſte.

This Tree, where it grows wild, will ariſe to a great Height and Magnitude, but is with Difficulty tranſplanted into a Garden. The ſureſt Way to procure kindly Trees is, to ſow their Fruits ſoon after they are ripe, which muſt be manag'd in the Manner directed for the *Hawthorn*: The ſecond Spring after ſowing, the Seeds will come up, when you muſt carefully keep them clear from Weeds, and in dry Weather gently water them. In this Place the Plants may remain until the ſecond Autumn after they come up; when you muſt prepare a Spot of freſh Ground, and tranſplant them out in Rows, at about two Feet Diſtance Row from Row, and ſix Inches aſunder in the Rows, obſerving in tranſplanting them, to cut off the down-right Tap-Root, which theſe Trees are ſubject to have; and when you have planted them, cloſe the Earth about their Roots, to prevent the Froſt from turning them out of the Ground. In this Nurſery they may remain three or four Years, obſerving to keep them clear from Weeds, as alſo to dig the Ground between the Rows at leaſt once a Year, being careful not to cut or diſturb their Roots; this will greatly promote their Growth: Then you may tranſplant them where they are deſign'd to remain, which may be to form Clumps or Wilderneſſes of Trees, where, by their Variety, it will add a Pleaſure to the Proſpect: Theſe will grow to a conſiderable Bulk, if they delight in the Soil, as may be ſeen by ſeveral very large Trees now growing on *Hampſtead* Heath, therefore they ſhould be intermix'd amongſt ſuch as are of a large Growth.

The ſecond Sort is alſo very common in *England*, and will grow very regular to a conſiderable Bulk. This is eaſily propagated in a Garden, either from Layers, Suckers, or by ſowing the Seeds, as directed for the firſt Sort. This Tree deſerves a Place in large Wilderneſs Quarters, or in regular Clumps of Trees, where, by the Diverſity of its white hoary Leaves, it affords an agreeable Variety. This alſo bears its Fruit in Bunches in the Manner of the former, but is not quite ſo large, or well-taſted.

The third Sort grows wild in ſome of the Northern Counties of *England*, but is at preſent very rare near *London*. This may be propagated in the ſame Manner as was directed for the two former, and may have a Place, for Variety-ſake, in Plantations of Trees.

The *Virginian* Wild Service is ſomewhat tender while young, during which Time it will require a little Shelter, but may afterwards be tranſplanted into the full Ground, where, if it is not too much expos'd, it will thrive very well, and endure our ſevereſt Colds. This may be propagated by Seeds as the former, or from Layers and Suckers, and may alſo be budded or inarch'd into any of the former Sorts.

CRESSES, GARDEN. *Vide* Naſturtium.

CRESSES, WATER. *Vide* Siſybrium.

CRESSES, INDIAN. *Vide* Acriviola.

CRITHMUM, Samphire.

The *Characters* are;

The Leaves are thick, ſucculent, narrow, branchy, and trifid; the Flowers grow in an Umbel, each conſiſting of five Leaves, which expand in Form of a Roſe; the Empalement of the Flower becomes a Fruit conſiſting of two plain and gently ſtreak'd Seeds.

We have but one *Species* of this Plant common in *England*, which is,

CRITHMUM, *ſive fœniculum maritimum minus.* Smaller Samphire or Sea-Fennel.

This Plant grows in great Plenty upon the Rocks near the Sea-ſhore, where it is waſh'd by the Salt-water, but will not grow to any Strength in a Garden, tho' it may be preſerv'd ſeveral Years, and propagated by parting its creeping Roots in the Spring. This ſhould be planted in Pots fill'd with gravelly coarſe Soil, and in Summer plentifully water'd: In this Management it will grow tolerably well, and produce Flowers, but rarely perfects its Seeds in a Garden, nor is the Herb near ſo good for Uſe as that gathered from the Rocks. This Plant is greatly eſteem'd for pickling, and is ſometimes us'd in Medicine.

CRISTA GALLI. *Vide* Pedicularis.

CRISTA PAVONIS. *Vide* Poinciana.

CROCUS, [is ſo call'd of the Youth *Crocus*, who (as the Poets feign) loved *Smilax* with ſo violent a Paſſion, that, by reaſon of Impatience, he was turn'd into a Flower of his Name] Saffron.

The *Characters* are;

It hath a Flower conſiſting of one Leaf, which is ſhaped like a Lily, fiſtulous underneath, the Tube widening into ſix Segments, and reſting on the Footſtalk; the Pointal riſes out of the Bottom of the Flower, and is divided into three headed and creſted Capillaments; but the Empalement afterwards turns to an oblong triangular Fruit, divided into three Cells, and is full of roundiſh Seeds: To theſe Marks muſt be added, it hath a tuberoſe Root, and long, narrow, graſſy Leaves, with a longitudinal white Furrow thro' the Middle of each.

In giving a Liſt of their ſeveral Names, I ſhall divide them into two Claſſes; in the firſt of which I ſhall place all the Spring-flowering *Crocus's* nearly in the Order of their Flowering; and in the ſecond, ſhall inſert thoſe which flower in Autumn, amongſt which will come the true *Saffron.*

1. Crocus *vernus ſtriatus vulgaris. Park. Par.* The ordinary ſtriped Crocus, commonly call'd, the *Scots* Crocus.
2. Crocus *vernus luteus verſicolor primus. Park. Par.* The beſt Cloth of Gold Crocus.
3. Crocus *vernus latifolius flavus. C. B.* The *Dutch* yellow Crocus.
4. Crocus *vernus minor albicans. C. B.* Small whitiſh Spring Crocus.
5. Crocus *vernus, flore albo, purpuro-violaceo baſi. C. B.* Spring Crocus, with a white Flower, and a purple-violet Bottom.
6. Crocus *vernus latifolius, flavo-vario flore duplici. Cluſ. Hiſt.* The double Cloth of Gold Crocus.
7. Crocus *vernus latifolius flavus, flore minore & pallidiore. C. B.* Spring Crocus, with ſmaller pale yellow Flowers.
8. Crocus *vernus latifolius flavo-varius. C. B.* Spring Crocus, with yellow variable Flowers.
9. Crocus *vernus anguſtifolius, magno flore candido. C. B.* Narrow-leav'd Spring Crocus, with large white Flowers.
10. Crocus *vernus albus ſtriatus. Park. Par.* The white ſtriped Crocus.
11. Crocus *vernus albus polyanthos verſicolor. Park. Par.* The Party-colour'd Crocus, with many Flowers.
12. Crocus *vernus latifolius, flore penitus albo, ad infima tubuli parum cæruleſcente. Boerh. Ind.* White feather'd Crocus, *vulgo.*
13. Crocus *vernus latifolius, flore purpureo magno. C. B.* Broad-leav'd Spring Crocus, with a large purple Flower.
14. Crocus *vernus latifolius purpureus variegatus. C. B.* Broad-leav'd Spring Crocus, with a purple ſtriped Flower.
15. Crocus *vernus latifolius, flore cæruleo, lineis violaceis variegato. C. B.* Broad-leav'd Spring Crocus, with a blue Flower ſtriped with Violet.
16. Crocus *vernus, latifolius, albus, vel cinericeus. C. B.* Broad-leav'd Spring Crocus, with a white or aſh-colour'd Flower.
17. Crocus *vernus, latifolius, purpureo-violaceus. C. B.* The leſſer purple violet-colour'd Crocus, with broad Leaves.
18. Crocus *vernus latifolius parvus, flore extus pallido, cum lituris purpureis, intus cæruleſcente pallido. Boerh. Ind.* Broad-leav'd Spring Crocus, with a ſmall Flower of a pale Colour on the Outſide, with purple Stripes, and the Inſide of a pale blue Colour.
19. Crocus *vernus anguſtifolius, parvo flore. C.B.* Narrow-leav'd Spring Crocus, with a ſmall purple Flower.
20. Crocus *vernus, capillari folio. Cluſ. App.* Spring Crocus, with a capillaceous Leaf.

There are ſeveral other Varieties of the Spring *Crocus* to be found in the curious Gardens of Floriſts, which are ſeminal Productions; for there may be as great Variety of theſe Flowers raiſed from Seeds, as there is of *Hyacinths*, *Iris's*, &c. were we curious in ſaving and ſowing the Seeds of all the different Kinds. The Manner of ſowing theſe Seeds being exactly the ſame with the *Xiphium*, I ſhall refer the Reader to that Article for farther Inſtructions; but ſhall obſerve here, that the Seeds ſhould be ſown ſoon after they are ripe.

All theſe ſeveral Varieties of *Crocus's* are very hardy, and do increaſe exceedingly by their Roots, eſpecially if they are ſuffer'd to remain two or three Years unremoved; they will grow in almoſt any Soil or Situation, and are very great Ornaments to a Garden early in the Spring of the Year, before many other Flowers appear. They are commonly planted near the Edges of Borders on the Sides of Walks: In doing of which, you ſhould be careful to plant ſuch Sorts in the ſame Line as do flower at the ſame Time, and are of an equal Growth, otherwiſe the Lines will ſeem imperfect. Theſe Roots loſing their Fibres with their Leaves, may then be taken up and kept dry until the Beginning of *September*, obſerving to keep them from Vermin; for the Mice are very fond of them. When you plant theſe Roots, (after having drawn a Line upon the Border) make Holes with a Dibble about two Inches deep or more, according to the Lightneſs of the Soil, and two Inches Diſtance from each other, in which you muſt place the Roots with the Bud uppermoſt; then with a Rake fill up the Holes in ſuch a Manner as that the upper Part of the Root may be cover'd an Inch or more, being careful not to leave any of the Holes open; for this will intice the Mice to them, which, when once they have found them out, will deſtroy all your Roots, if they are not prevented.

In *January*, if the Weather is mild, the *Crocus* will appear above Ground; and in *February* their Flowers will appear, before the green Leaves are grown to any Length, ſo that the Flower ſeems at firſt to be naked; but ſoon after the Flowers decay, the green Leaves grow to be ſix or eight Inches long, which ſhould not be cut off until they decay, notwithſtanding they appear a little unſightly; for by cutting off the Leaves, the Roots will be ſo weaken'd as not to arrive at half their uſual Bigneſs, nor will their Flowers the ſucceeding Year be half ſo big: Their Seeds are commonly ripe about the latter End of *April*, or the Beginning of *May*, when the green Leaves begin to decay.

The ſecond Claſs, *or* Autumnal *Crocus's.*

1. Crocus *ſativus. C. B.* The true Saffron.
2. Crocus *Alpinus Autumnalis. C. B.* Autumnal *Crocus* of the *Alps.*
3. Crocus *juncifolius Autumnalis, flore magno purpuraſcente. Boerh. Ind.*

The Autumnal *Crocus's* are not ſo great Increaſers as are thoſe of the Spring, nor do they produce Seeds in our Climate, ſo that they are leſs common in the Gardens, except the true *Saffron*, which is propagated for Uſe in great Plenty in many Parts of *England*: theſe may be taken up every third Year, as was directed for the Spring *Crocus's*, but ſhould not be kept out of the Ground longer than the Beginning of *Auguſt*; for they commonly produce their Flowers in *September*, or the Beginning of *October*; ſo that if they remain too long out of the Ground, they will not produce their Flowers ſo ſtrong, nor in ſuch Plenty, as when they are planted early.

The Method of cultivating *Saffron* being ſomewhat curious, I thought it not improper to inſert in this Place an Abſtract of it, as it was preſented to the *Royal Society* by Dr. *James Douglas.*

As *Saffron* grows at preſent moſt plentifully in *Cambridgeſhire*, and has grown formerly in ſeveral other Counties of *England*, the Method of Culture does not, I believe, vary much in any of them, and therefore I judge it ſufficient to ſet down here the Obſervations which I employ'd proper Perſons, in different Seaſons, to make, in the Years 1723, 1724, 1725, and 1728, up and down all that large Tract of Ground that lies between *Saffron-Walden* and *Cambridge*, in a Circle about ten Miles diameter.

In that Country *Saffron* has been cultivated; and therefore it may reaſonably be expected, that the Inhabitants thereof are more thoroughly acquainted with it than they are any where elſe.

I ſhall begin with the Choice and Preparation of the Ground: The greateſt Part of the Tract already mention'd, is an open, level Country, with few Incloſures; and the Cuſtom there is, as in moſt other Places, to crop two Years, and let the Land be fallow the third. *Saffron* is always planted upon fallow Ground, and all other Things being alike, they prefer that which has borne Barley the Year before.

The *Saffron* Grounds are ſeldom above three Acres, or leſs than one; and in chuſing, the principal Thing they have Regard to, is, that they be well expoſed, the Soil not poor, nor a very ſtiff Clay, but a temperate dry Mould, ſuch as commonly lies upon Chalk, and is of a Hazel Colour; tho', if every thing elſe anſwers, the Colour of the Mould is pretty much neglected.

The Ground being made choice of, about *Lady-day* or the Beginning of *April*, it muſt be carefully plough'd, the Furrows being drawn much cloſer together, and deeper, if the Soil will allow it, than is done for any kind of Corn; and accordingly, the Charge is greater.

About five Weeks after, during any Time in the Month of *May*, they lay between twenty and thirty Loads of Dung upon each Acre, and having ſpread it with great Care, they plough it in as before: The ſhorteſt rotten Dung is the beſt; and the Farmers, who have the Conveniency of making it, ſpare no Pains to make it good, being ſure of a proportionable Price for it. About *Midſummer* they plough a third Time, and between every ſixteen Feet and a half, or Pole in Breadth, they leave a broad Furrow or Trench, which ſerves both as a Boundary to the ſeveral Parcels, when there are ſeveral Proprietors to one Incloſure, and to throw the Weeds in at the proper Seaſon.

To this Head likewiſe belongs the Fencing of the Grounds, becauſe moſt commonly, tho' not always, that is done before they plant. The Fences conſiſt of what they call dead Hedges, or Hurdles, to keep out not only Cattle of all Sorts, but eſpecially Hares, which would otherwiſe feed on the *Saffron* Leaves during the Winter.

About the Weather we need only obſerve, that the hotteſt Summers are certainly the beſt; and therewith, if there be gentle Showers from time to time, they can hardly miſs of a plentiful rich Crop, if the extreme Cold, Snow, or Rain of the foregoing Winter have not prejudiced the Heads.

The next general Part of the Culture of *Saffron* is, planting or ſetting the Roots: the only Inſtrument uſed for which, is a narrow Spade, commonly term'd a *Spit-ſhovel.*

The Time of planting is commonly in the Month of *July*, a little ſooner or later, according as the Weather anſwers. The Method is this: One Man with his Spit-ſhovel raiſes between three and four Inches of Earth, and throws it before him about ſix or more Inches; two Perſons, generally Women, following with Heads, place them in the fartheſt Edge of the Trench he makes, at three Inches Diſtance from each other, or thereabouts: As ſoon as the Digger or Spitter has gone once the Breadth of the Ridge, he begins again at the other Side, and digging, as before, covers the Roots laſt ſet, and makes the ſame Room for the Setters to place a new Row, at the ſame Diſtance from the firſt that they are from one another: thus they go on, till a whole Ridge, containing commonly one Rod, is planted; and the only Nicety in digging is, to leave ſome Part of the firſt *Stratum* of Earth untouch'd, to lie under the Roots; and, in ſetting, to place the Roots directly upon their Bottom.

What ſort of Roots are to be preferr'd, ſhall be ſhewn under the fourth Head: but it muſt be obſerv'd in this Place, that formerly, when Roots were very dear, they did not plant them ſo thick as they do now; and that they have always ſome Regard to the Size of the Roots, placing the largeſt at a greater Diſtance than the ſmall ones.

The Quantity of Roots planted in an Acre is generally about 16 Quarters, or 128 Buſhels, which, according to the Diſtances left between them, as before aſſign'd, and ſuppoſing all to be an Inch in Diameter one with another, ought to amount to 392,040 in Number.

From the Time that the Roots are planted, till about the Beginning of *September*, or ſometimes later, there is no more Labour about them; but as they then begin to ſpire, and are ready to ſhew themſelves above Ground, which is known by digging a few out of the Earth, the Ground muſt be carefully par'd with a ſharp Hough, and the Weeds, *&c.* rak'd into the Furrows, otherwiſe they would hinder the Growth of the Plants.

In ſome Time after appear the *Saffron-Flowers*; and this leads us to the third Branch of our preſent Method. The Flowers are gather'd as well before as after they are full blown; and the moſt proper Time for this is early in the Morning. The Owners of the *Saffron* get together a ſufficient Number of Hands, who place themſelves in different Parts of the Field, pull off the whole Flowers, and throw them Handful by Handful into a Baſket, and ſo continue till all the Flowers are gather'd, which happens commonly about Ten or Eleven o' Clock.

Having then carry'd home all they have got, they immediately ſpread them upon a large Table, and fall to picking out the *Filamenta Styli*, or Chives, and together with them a pretty long Portion of the *Stylus* itſelf, or String to which they are join'd; the reſt of the Flower they throw away as uſeleſs: the next Morning they return into the Field again, whether it be wet or dry Weather, and ſo on daily, even on *Sundays*, till the whole Crop be gathered.

The Chives being all pick'd out of the Flowers, the next Labour about them is to dry them on the Kiln. The Kiln is built upon a thick Plank (that it may be moved from Place to Place) ſupported by four ſhort Legs: The Outſide conſiſts of eight Pieces of Wood about three Inches thick, in Form of a quadrangular Frame, about 12 Inches ſquare at the Bottom on the Inſide, and 22 Inches at Top; which is likewiſe equal to the perpendicular Height of it. On the Foreſide is left a Hole about eight Inches ſquare, and four Inches above the Plank, thro' which the Fire is put in. Over all the reſt Laths are laid pretty thick, cloſe to one another, and nail'd to the Frame already mention'd, and then are plaiſter'd over on both Sides, as are alſo the Planks at Bottom very thick, to ſerve for a Hearth. Over the Mouth or wideſt Part goes a Hair-cloth, fix'd to the Sides of the Kiln, and likewiſe to two Rollers or moveable Pieces of Wood, which are turn'd by Wedges or Screws, in order to ſtretch the Cloth. Inſtead of the Hair-cloth, many People now uſe a Net-work, or Iron-wire, with which it is obſerv'd that the *Saffron* dries ſooner, and with a leſs Quantity of Fuel: but the Difficulty of preſerving the *Saffron* from burning, makes the Hair-cloth be preferr'd by the niceſt Judges in drying.

The Kiln is placed in a light Part of the Houſe; and they begin by laying five or ſix Sheets of white Paper on the Hair-cloth, upon which they ſpread the wet *Saffron* between two and three Inches thick; this they cover with other Sheets of Paper, and over theſe lay a coarſe Blanket five or ſix times doubled, or, inſtead thereof, a Canvas Pillow fill'd with Straw; and after the Fire has been lighted for ſome time, the whole is cover'd with a Board, having a large Weight upon it.

At firſt they give it a pretty ſtrong Heat, to make the Chives *ſweat*, (as their Expreſſion is) and in this, if they do not uſe a great deal of Care, they are in danger of ſcorching, and ſo of ſpoiling all that is on the Kiln.

When it has been thus dried about an Hour, they take off the Board, Blanket, and upper Papers, and take the *Saffron* off from that which lies next it, raiſing at the ſame time the Edges of the Cake, with a Knife: then laying on the Paper again, they ſlide in another Board between the Hair-cloth and under Papers, and turn both Papers and Saffron upſide-down; afterwards covering them (as above.)

This ſame Heat is continued for an Hour longer; then they look on the Cake again, free it from the Papers, and turn it: then they cover it, and lay on the Weight, as before. If nothing happens amiſs during theſe firſt two Hours, they reckon the Danger to be over; for they have nothing more to do, but to keep a gentle Fire, and to turn their Cakes every half Hour, till thoroughly dry: for the doing of which, as it ought, there are requir'd full 24 Hours.

In drying the larger plump Chives they uſe nothing more, but toward the latter End of the Crop, when theſe come to be ſmaller, they ſprinkle the Cake with a little Small-beer, to make it ſweat as it ought; and they begin now to think, that uſing two Linnen-cloths next the Cake, inſtead of the two innermoſt Papers, may be of ſome Advantage in drying: but this Practice is follow'd as yet but by few.

Their Fire may be made of any kind of Fuel; but that which ſmoaks the leaſt it beſt; and Charcoal, for that Reaſon, is preferr'd to any other.

What Quantity of *Saffron* a firſt Crop will produce, is very uncertain: ſometimes five or ſix Pounds of wet Chives are got from one Rood; ſometimes not above one or two; and ſometimes not enough to make it worth while to gather and dry it. But this is always to be obſerv'd, that about five Pounds of wet *Saffron* go to make one Pound of dry, for the firſt three Weeks of the Crop, and ſix Pound during the laſt Week: And now the Heads are planted very thick, two Pounds of dried *Saffron* may, at a Medium, be allow'd to an Acre for a firſt Crop, and 24 Pounds for the two remaining; the third being conſiderably larger than the ſecond.

In order to obtain theſe, there is only a Repetition to be made every Year of the Labour of Houghing, Gathering, Picking, and Drying, in the ſame Manner as before ſet down, without the Addition of any thing new; except that they let Cattle into the Fields, after the Leaves are decay'd, to feed upon the Weeds; or, perhaps, mow them for the ſame Uſe.

About the *Midſummer* after the third Crop is gather'd, the Roots muſt be all taken up and tranſplanted: the Management requiſite for which, is the fourth Thing to be treated of. To take up the *Saffron* Heads, or *break up the Ground*, (as the Term is) they ſometimes plow it, ſometimes uſe a forked kind of Hough, call'd a Pattock, and then the Ground is harrow'd once or twice over; during all which Time of Ploughing or Digging, and Harrowing, fifteen or more People will find Work enough to follow and gather the Heads as they are turn'd up.

They are next to be carried to the Houſe in Sacks, and there to be clean'd and raſed: this Labour conſiſts in cleaning the Roots thoroughly from Earth, and from the Remains of old Roots, old *Involucra*, and Excreſcencies; and thus they become fit to be planted in new Ground immediately, or to be kept for ſome Time without Danger of ſpoiling.

The Quantity of Roots taken up, in proportion to thoſe which were planted, is uncertain; but at a Medium, it may be ſaid, that allowing for all the Accidents which happen'd to them in the Ground, and in breaking up, from each Acre may be had 24 Quarters of clean Roots, all fit to be planted.

The Owners are ſure to chuſe for their own Uſe the largeſt, plumpeſt, and fatteſt Roots; but leaſt of all do they approve the longeſt pointed ones, which they call *Spicketi*, or *Spickards*; for very ſmall round or flat Roots are ſometimes obſerv'd to flower.

This is the whole Culture of *Saffron* in the Country abovementioned; and we have only now to conſider the Charges and Profits which may be ſuppoſed, one Year with another, to attend that Branch of Agriculture: and of theſe I have drawn up the following Computation for one Acre of Ground, according to the Price of Labour in this Country.

	l.	*s.*	*d.*
Rent for three Years	3	00	00
Ploughing for three Years	0	18	00
Dunging	3	12	00
Hedging	1	16	00
Spitting and ſetting the Heads	1	12	00
Weeding or paring the Ground	1	04	00
Gathering and picking the Flowers	6	10	00
Drying the Flowers	1	06	00
Inſtruments of Labour for three Years with the Kiln, about	0	10	00
Ploughing the Ground once, and Harrowing twice	0	12	00
Gathering the *Saffron* Heads	1	00	00
Raiſing the Heads	1	12	00
Total Charge	23	12	00

This Calculation is made upon Suppoſition, that an Acre of Ground yields 26 Pounds of neat *Saffron* in three Years, which I ſtated only as a mean Quantity between the greateſt and the leaſt, and therefore the Price of *Saffron* muſt be judg'd accordingly; which I think cannot be done better than by fixing it at 30 Shillings *per* Pound, ſince in very plentiful Years it is ſold at 20, and is ſometimes worth between three and four Pounds: at this Rate 26 Pounds of *Saffron* are worth 39 Pounds; and the neat Profits of an Acre of Ground producing *Saffron*, will in three Years amount to 15 Pounds 13 Shillings, or to about 5 Pounds 4 Shillings yearly.

This, I ſay, may be reckon'd the neat Profit of an Acre of *Saffron*, ſuppoſing that all the Labour were to be hir'd for ready Money: but as the Planter and Family do a conſiderable Part of the Work themſelves, ſome of this Expence is ſaved; that is, by planting *Saffron*, he may not only reaſonably expect clear about five Pounds yearly *per* Acre, but alſo to maintain himſelf and Family for ſome Part of each Year: and it is upon this Suppoſition only, that the Reſult of other Computations can be ſaid to have any tolerable Degree of Exactneſs; but the Calculations themſelves are undoubtedly very unaccurate.

I have ſaid nothing here concerning the Charge in Buying, or Profits in Selling the *Saffron-heads*, becauſe in many large Tracts of Ground theſe muſt at length balance one another, while the Quantity of Ground planted yearly continues the ſame, which has been pretty much the Caſe for ſeveral Years paſt.

Dr. *Patrick Blair*, deſigning to treat concerning the *Crocus*, in his VIth Decade of his *Pharmaco-Botanologia*, did, in the Year 1725. ſend to me the following Queries:

1. After what Manner the Species are propagated?
2. Whether the Tap-Root ſprings firſt, or the Bulb?
3. At what Seaſon the Leaves do ſpring forth?

To theſe Queries I ſent him the following Anſwer:

1. As to the Propagation of the Species.

This is only by the Roots or Off-ſets, which the old Roots produce in great Plenty; for I never ſaw any thing like a *Seed* or a *Seed-veſſel* produced, altho' I have let ſtand great Quantities of Flowers, purpoſely to try.

2. As to the Query, Whether the Tap-Root ſpring firſt, and the Bulb be afterwards form'd?

As ſoon as the Roots begin to ſhoot upwards, there are commonly two or three large *Tap-Roots* ſent forth from the Side of the old *Root*, which will run downright two Inches and a half, or more, into the Ground: at the Place where theſe *Bulbs* firſt come out from the *old one*, will be form'd a *Bulb*, ſometimes (tho' not always, as you will hear preſently); and this *Tap-Root* decays. The *Bulb* will increaſe in its Bigneſs, till at laſt it quite falls off, and is then left intire; which commonly happens in *April*, when the Green begins to decay: but many times theſe *tap* or *carroty Roots* never produce any *Bulbs*, but always retain the ſame Figure, and for ever after, I believe, are barren; for I planted a Parcel of theſe *carroty Roots* four Years ago in a little Bed, where they have ever ſince remain'd, but have not produced me one ſingle Flower, notwithſtanding they have produced a numerous Offſpring of the ſame *carroty Roots*.

And the People about *Saffron-Walden* are well appriz'd of this Barrenneſs, and therefore throw away all ſuch Roots when they make a new Plantation: but as this Change of the Root is not peculiar to the *Saffron* only, permit me to digreſs a little, to give you ſome Account of this Matter.

In the Pariſh of *Fulham* near *London*, the Gardeners uſed to drive a great Trade in the *Junquil*, or *Narciſſus juncifoliui, flore multiplici*, at which Place the greateſt Quantity of thoſe Roots was raiſed for Sale, as perhaps was in any Part of *England*, and turn'd to as great Account for the Maſter as any Crop they could employ their Ground in, till within theſe ſeven or eight Years; ſince which Time moſt of their Roots have turn'd *carroty*, and ſo proved barren, or have produced only ſingle Flowers; ſo that the Gardeners being hereby diſhearten'd, have thrown them out intirely, neglecting to cultivate them, ſatisfying themſelves with this Reaſon, that their Ground was tired with them.

But to return to the *Crocus*: Beſides thoſe *Roots* already mention'd, there will be three or four ſmall *Bulbs* form'd upon the upper Part of the *Root*, and ſome underneath, which from the firſt Appearance aſſume the round Shape of its Parent *Root*, and have no Tap-Root belonging to them; thoſe on the upper Part of the Root rarely emit ſo much as a Fibre, but receive their Nouriſhment immediately from the *old Root*; but thoſe on the under Side ſend forth many Fibres all around, by which they draw their Nouriſhment from the Ground; theſe being parted from the old Root much ſooner than the other, ſtand in need of fit Organs for receiving their Nouriſhment.

I have ſometimes taken up ſome, thro' the Middle of which hath been a Root of the *Gramen Caninum* or *Couch Graſs*, which ſome People have imagin'd had Strength enough to force its Way thro' the *Crocus Root*; but the Truth is, the *Root* of the *Graſs* cloſely adhering to the old *Root* of the *Crocus*, juſt at the Place where the young *Roots* were emitted, theſe young *Roots* being quick of Growth, incloſed the *Root* of the *Graſs*: and thus I have ſeen ſeveral *Roots* run thro' each other in the ſame Manner.

But beſides theſe Off-ſets mention'd, directly upon the upper Part of the *Root* is one large Root form'd, of equal Bigneſs with the old one; and this is the Time that the Root is *Radix Gemina*, as *Tournefort* calls it; for they are not ſo at any other Seaſon, and therefore I think it a very improper Appellation: for when the new *Roots* are perfectly form'd, the old ones with their *Coats* fall off and die, and leave the new *Roots* all ſingle: this has occaſion'd ſeveral People to doubt of what *Tournefort* has ſaid of the *Roots*, till I took up ſome Plants at that Seaſon, and with them the two *Roots* of equal Bigneſs, *i. e.* the *old one* at the Bottom, and the *new one* at the Top.

Dr. *Blair* alſo happening, in viewing a Root, to be ſurpriz'd with a different Appearance from what he had ſeen before, or heard of, ſent me another Letter.

The Manner of the Root was thus: From the upper Part of the *Bulb*, where it ſends forth all the Leaves within a common Tunicle, at the Exit there was an Appendix about an Inch and an half long, about the Groſneſs of a large Turkey or Gooſe Quill, cylindrical and blunt, without the leaſt *radical Fibre* by which it might receive the Nouriſhment; ſmooth or poliſh'd, and bluiſh in the Surface, conſiſting of ſeveral circular Lines, when cut tranſverſly; white, with an hard greeniſh Center like a *Carrot*, when it hath puſh'd forth the flowering Stem; not unlike the *Stolones* of ſome running *Root*, ſuch as the *Mints* below Ground, only the Extremity deſcended obliquely, inſtead of aſcending, to ſend forth *Leaves* to produce a new *Plant*: and, what is moſt remarkable, this did not happen to one or two Plants, but to the whole Bundle, which were above twenty diſtinct Sets, differing in nothing but *majus* and *minus*; the *Bulb* ſeem'd at the ſame time to be pined and emaciated, tho' it emitted large radical Fibres like thoſe of a *Leek*.

I having receiv'd this Account from him by Letter, ſent him the following Anſwer.

I receiv'd yours in Anſwer to my laſt, with the Figure of the Roots of ſome Sets of *Crocus Autumnalis* you have taken out of the Ground: I have found a Figure in *Dodonæus* which correſponds with it; and thoſe Roots are no new Thing with the *Saffron* Gardeners, who always throw them away when they make freſh Plantations.

Your Figure does not agree with my Tap-Roots, as you will ſee by the Figure taken as juſt from the Life as I could: In mine, you'll find the *Bulb* turn'd Side-ways, which I ſtill find to be conſtant in all the Roots I have examin'd, which have been a great many, and makes me ſuſpect theſe Tap-Roots are occaſion'd by the accidental Poſition of the *Roots* in planting, which may retard the aſcending Sap, the *flowering Stem* being thereby turn'd into a crooked Figure, and the Tap-Roots are full of longitudinal Veſſels of a conſiderable Dimenſion; ſo that the greater attracting Power of the Sap, being hereby diverted downwards, the *Flower-ſtem* may be quite deſtitute of proper Nouriſhment.

The Method you propoſe to remedy this Inconveniency will not do: for I have remov'd ſome of theſe Roots at the Seaſon when the Tap-Roots were forming, and this alone deſtroy'd them all; ſo that I am perſuaded, the cutting them off entirely will kill them.

The Method I uſed with the *Jonquils* was, to lay ſome Tiles juſt under the *Roots*, to prevent their running downwards: But this has not anſwer'd, nor do I think it poſſible wholly to recover them; for the Alteration is not only in the Root and Flower, but alſo in the Leaf and Blade, which before was fiſtulous: But after this Alteration in the Root, becomes a plain ſulcated Leaf, and if it ever bloſſoms after, the Flowers are large and ſingle, which before were ſmall and double: But the *Saffron*, after the Change of its Roots, produces a ſmall narrow Blade, ſeldom half the Length of thoſe in a natural State.

Upon this Dr. *Blair* form'd this Concluſion:

Theſe additional Obſervations plainly ſhew, that neither the *carroty Root*, nor the Baſtard Tap-Root, as I may call it, are merely accidental, or what may be call'd *Luſus Naturæ*, but certain Diſeaſes incident to ſuch Roots; for were they accidental, they would not have the ſame Appearances to different Perſons in different Soils and Climates, nor would ſo many taken up together have ſuch a Reſemblance to each other, as I have twice obſerv'd.

CROTOLARIA, [of Κρόταλον, *Gr.* a *Rattle*, becauſe it diſcharges its Seeds with a rattling; or becauſe the Infants of *Indians* make uſe of the Branches of this Plant furniſh'd with Pods inſtead of Rattles.]

The *Characters* are;

It hath ſingle Leaves, in which it differs from Reſt-harrow, *and the Pods are turgid, in which it differs from* Spaniſh Broom.

The *Species* are;

1. Crotolaria *Aſiatica, folio ſingulari verrucoſo, floribus cœruleis. H. L. Aſiatick* Crotolaria, with a ſingle warted Leaf, and blue Flowers.
2. Crotolaria *Aſiatica, folio ſingulari cordiformi, floribus luteis. H. L. Aſiatick* Crotolaria, with a Heart-ſhap'd Leaf, and yellow Flower.
3. Crotolaria *Africana, ſtyracis folio, flore cœruleo. Tourn. African* Crotolaria, with a Leaf of the Storax-tree, and a blue Flower.
4. Crotolaria *ſagittalis glabra, longioribus foliis, Americana. Pluk. Phyt. American* Crotolaria, with long, ſmooth, Spear-wort Leaves.
5. Crotolaria *Americana, caule alato, foliis piloſis, floribus in thyrſo luteis. Martyn. Decad.* 5. *American* Crotolaria, with a winged Stalk, hairy Leaves, and yellow Flowers growing in a Spike.
6. Crotolaria *ari folio ſagittato, flore luteo. Plum. Cat.* Crotolaria with a ſpear-ſhaped Arum Leaf, and a yellow Flower.
7. Crotolaria *ari folio ſagittato, flore purpuraſcente. Plum. Cat.* Crotolaria with a ſpear-ſhaped Arum Leaf, and a purpliſh Flower.
8. Crotalaria *fruteſcens hirſuta, flore luteo, ramulis alatis, foliis mucronatis. Houſt.* Shrubby hairy Crotolaria, with a yellow Flower, winged Branches, and pointed Leaves.

The firſt, ſecond, and fourth Roots are annual: The Seeds of theſe muſt be ſown on a Hot-bed early in the Spring; and when the Plants are come up, they muſt be tranſplanted into a freſh Hot-bed, and treated in the ſame Manner as is directed for *Amaranths*; (to which Article I refer the Reader, to avoid Repetition:) If theſe are brought forward early in the Year, they will produce their Flowers in *July*, and perfect their Seeds in *September*; but if they are late, and the Autumn ſhould prove bad, they will not live to ripen Seeds; therefore it is the better Way to place the Pots in a Bark-ſtove, which will bring them forward, and perfect their Seeds.

The third Sort will abide three or four Years, if preſerv'd in a warm Stove, and will produce Flowers and Seeds annually, by which it may be propagated. All theſe Varieties are very ornamental to curious Gardens of Plants.

The fifth, ſixth, and ſeventh Sorts are annual Plants, which ſhould be raiſed on a Hot-bed early in the Spring; for if they are not brought forward at that Seaſon, they ſeldom perfect their Seeds in this Country. Theſe Sorts are to be managed in the ſame Manner as thoſe above-mention'd.

The eighth Sort will grow to the Height of ſix or ſeven Feet, provided they are preſerved in a warm Stove, otherwiſe they will not live thro' the Winter. Theſe are propagated by Seeds which ſhould be ſown on a Hot-bed early in the Spring; and when the Plants are come up an Inch high, they ſhould be carefully tranſplanted into ſmall Pots filled with freſh Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to ſhade them until they have taken Root; after which Time, they ſhould have Air and Water in proportion to the Warmth of the Seaſon. In this Bed they may remain until the Plants reach the Glaſſes, when they muſt be removed into the Bark-ſtove, obſerving to ſhift the Plants into larger Pots, as they ſhall require it.

CROWN IMPERIAL. *Vide* Corona Imperialis.

CRUCIATA, [is ſo call'd of *Crux*, *Lat.* a *Croſs*; becauſe the Leaves are diſpoſed in the Form of a Croſs; *i. e.* having four Leaves oppoſite each to the other] Croſs-wort.

The *Characters* are;

It hath ſoft Leaves like the Ladies Bed-ſtraw, *from which it differs in the Number of Leaves which are produced at every Joint, which in this are only four, diſpoſed in Form of a Croſs.*

The *Species* are;

1. Cruciata *hirſuta. C. B.* Rough or hairy Croſs-wort.
2. Cruciata *glabra. C. B.* Smooth Croſs-wort.
3. Cruciata *Alpina latifolia lævis. Tourn.* Broad ſmooth-leav'd Croſs-wort of the *Alps*.
4. Cruciata *Orientalis latifolia erecta glabra. T. Cor.* Upright and Oriental Croſs-wort, with broad ſmooth Leaves.

The firſt of theſe Plants is ſometimes uſed in Medicine: This is found wild in divers Parts of *England*, growing on dry ſandy Banks.

The other Sorts are preſerv'd in Botanic Gardens for the ſake of Variety, but there is no great Beauty in them. They may all of them be propagated eaſily by Perſons curious that Way; for they ſpread and increaſe by their creeping Roots, or their trailing Branches ſtriking Root as they lie upon the Ground. They love a light ſandy Soil.

CRUPINA BELGARUM. *Vide* Serratula.

CUCUBALUS, Berry-bearing Chickweed.

The *Characters* are;

The Flower conſiſts of five Leaves, which are bifid, and diſpoſed in a circular Order: The Pointal becomes a ſoft oval-ſhaped Berry, which is included in the Flower-cup, as in a Bladder, and containing many Kidney-ſhaped Seeds.

There is but one *Species* of this Plant, which is;

Cucubalus *Plinii. Lugd.* Berry-bearing Chickweed.

This Plant is of no great Uſe or Beauty, and is ſeldom preſerv'd in Gardens, except for Variety-ſake: It grows wild in many Parts of *Germany*, and hath alſo been found in the North Part of *England*. It is eaſily propagated by ſowing the Seeds, or planting the Roots, which will in a ſhort Time overſpread a large Spot of Ground, if ſuffer'd to remain; and it delights in a moiſt ſhady Place.

CUCULLATE PLANTS, [are ſo call'd, of *Cuculla*, Lat. a *Hood* or *Cowl*, ſuch as Monks wear, becauſe their Flowers reſemble it.]

CUCUMIS, [takes its Name of *Curvatura*, Lat. a *Bending*; becauſe the Stalks of this Plant are very crooked] The Cucumber.

The *Characters* are;

It hath a Flower conſiſting of one ſingle Leaf, which is Bell-ſhaped, and expanded towards the Top, and cut into many Segments, of which ſome are Male or Barren, having no Embryo, but only a large Style in the Middle, which is charg'd with the Farina; others are Female or Fruitful, being faſten'd to an Embryo, which is afterwards changed into a fleſhy Fruit, for the moſt part oblong, and turbinated, which is divided into three or four Cells incloſing many oblong Seeds.

The *Species* are;

1. Cucumis *ſativus vulgaris, maturo fructu ſubluteo. C. B.* The common Cucumber.
2. Cucumis *ſativus vulgaris, fructu albo. C. B.* The white Cucumber.

3. Cucumis *oblongus*. *Dod.* The long Turkey Cucumber.

The firſt of theſe Kinds is the moſt common in the *Engliſh* Gardens, of which there are two or three Varieties, differing in the Length or Roughneſs of the outer Skin of the Fruit: But theſe being only accidental Sportings of Nature, I ſhall paſs them over without making any Diſtinction of them.

The ſecond Sort, which is by far the better Fruit, (as being leſs Watery, and containing fewer Seeds) is the moſt common Kind cultivated in *Holland*; for I do not remember to have ſeen one of our green Sort in any of the Markets in *Holland*.

The third Sort is propagated in ſome curious Gardens, for the uncommon Length of its Fruit, and alſo its having leſs Water, and fewer Seeds: But it is not ſo fruitful as the common Kind, nor will it come up ſo eaſily.

The common Sort is cultivated in three different Seaſons: The firſt of which is on Hot-beds under Garden-Frames, for early Fruit: The ſecond is under Bell or Hand-Glaſſes, for the middle Crop: And the third is in the common Ground, for a late Crop, or to pickle.

I ſhall begin with giving Directions for raiſing *Cucumbers* early, which is what moſt Gentlemens Gardeners have an Emulation to exceed each other in; and ſome have been at the Pains and Expence to have ripe Fruit in every Month of the Year: Which is rather a Curioſity, than any real Advantage; for *Cucumbers* that are produced before *April* cannot be ſo wholſome as thoſe that are later: For before the Sun has Strength enough to warm the Beds thro' the Glaſſes in the Day-time, all the Force muſt proceed from the Fermentation of the Dung, which muſt conſequently occaſion a very conſiderable Steam, as alſo a great Quantity of Air will be thereby generated, which being pent up in the Hot-bed, ſoon becomes rancid, and the Steam of the Bed being by the Cold of the Night condenſed into large Drops of Water, which being abſorb'd or inſpir'd by the Plants, muſt certainly make the Fruit crude and unhealthy, eſpecially when the Nights are very long. This, together with the great Expence and Trouble of procuring them earlier, having almoſt got the better of People's Ambition, hath render'd it leſs practiſed than it hath been ſome Years ſince. I ſhall begin with giving plain Directions how to procure Plenty of good handſome Fruit in *April*.

Towards the latter End of *January* you muſt provide a Quantity of new Horſe-dung, with the Litter mix'd together, (in Proportion to the Number of Plants you intend to raiſe, which if for a private Family, two Loads will be full enough) this ſhould be thrown into a Heap, mixing a few Sea-coal Aſhes therewith; in about four or five Days after, the Dung will begin to heat, at which Time you may draw a little Part of the Heap on the Outſide flat, laying thereon a little good Earth, about two Inches thick; this you ſhould cover with a Bell-glaſs, laying a little dry Litter thereon; and in a Day or two after, when you perceive the Earth to be warm, you muſt put your Seeds therein, covering them about a quarter of an Inch, with the ſame Earth, then put the Glaſs on again: And alſo at Night, or in bad Weather, obſerve to cover the Glaſs with dry Litter or Mats, *&c.* and in three or four Days Time (if the Dung be in a good Temper of Heat) the Plants will appear above Ground; which when you firſt obſerve, you muſt immediately with the adjoining Heap of Dung make a Bed for one ſingle Light, being careful not to take the Dung away too cloſe to the Bell-glaſs, but obſerving to lay a little Dung round about it, as alſo to keep it cover'd, that the young Plants may not receive a Check thereby. This Hot-bed will require to be three Feet thick in Dung at leaſt, which, in the making, ſhould be carefully mix'd, and beat pretty cloſe with the Fork, to prevent the Heat from being too ſudden and violent: Then lay ſome fine freſh Earth upon the Dung about three Inches thick, levelling it very even, and put on the Frame, covering it over in the Night, or in bad Weather with a Mat, *&c.* as before, in order to excite a Heat in the Bed; and as ſoon as you perceive the Bed to be in a good kindly Temper of Heat, you ſhould prick your young Plants thereon, at about two Inches diſtance each Way, obſerving to put them into the Earth almoſt up to their Seed-leaves.

If the Bed is of a good Temper for Heat, your Plants will take Root in leſs than twenty-four Hours; after which Time you muſt be careful to let in a little Air, at ſuch Times when the Weather will permit, as alſo to turn the Glaſſes upſide downwards every Day to dry; for the Steam of the Bed condenſing on the Glaſſes, will fall down upon the Plants, and be very injurious to them; and therefore whenever the Weather is ſo bad as not to permit the Glaſſes to lie turn'd long, you ſhould at leaſt turn them once or twice a Day, and wipe off the Moiſture with a Woollen Cloth; but you muſt alſo be very careful how you let in too much cold Air, which is equally deſtructive to the tender Plants; therefore, to avoid this, it is a very good Method to faſten before the upper Side of the Frame, where the Air is ſuffer'd to enter the Bed, a Piece of coarſe Cloth, or a Mat, ſo that the Air which enters may paſs thro' that, which will render it leſs injurious to your Plants.

You muſt alſo be very cautious in giving Water to the Plants while young; and whenever this is done, it ſhould be ſparingly, and the Water ſhould be placed either into a Heap of Dung, or in ſome other Place, for ſome Time before it is uſed, ſo as to be nearly of a Temperature for Warmth with the incloſed Air of the Hot-bed; and as the Plants advance in Height, you ſhould have a little dry ſifted Earth always ready, to Earth up their Shanks, which will greatly ſtrengthen them: You muſt alſo be very careful ſo to keep up the Heat of the Bed; which if you ſhould find decline, you muſt lay a little freſh Litter round about the Sides of the Bed, and alſo keep the Glaſſes well cover'd in the Nights, or in bad Weather; but if, on the other Hand, your Bed ſhould prove too hot, you ſhould thruſt a large Stake into the Side of the Dung in two or three Places almoſt to the Middle of the Bed, which will make large Holes, thro' which the greateſt Part of the Steam will paſs off without aſcending to the Top of the Bed; and when you find it has anſwer'd your Purpoſe by ſlacking the Heat of your Bed, you muſt ſtop them up again with Dung.

Theſe Directions, if carefully attended to, will be ſufficient for raiſing the Plants in the firſt Bed: You muſt therefore, when you perceive the third or rough Leaf begin to appear, prepare another Heap of freſh Dung, which ſhould be mix'd with Aſhes, as was before directed: This ſhould be in Quantity according to the Number of Holes you intend to make: The common Allowance for ridging out the earlieſt Plants is, one Load to each Light or Hole, ſo that the Bed will be near three Feet thick in Dung; but for ſuch as are not ridg'd out till *March*, two Loads of Dung will be ſufficient for three Holes; for I could never obſerve any Advantage in making theſe Beds ſo thick with Dung as ſome People do: Their Crops are ſeldom better, if ſo good, as thoſe which are of a moderate Subſtance, nor are they forwarder, and the Fruit is rarely ſo fair, nor do the Vines continue ſo long in Health.

In making theſe Beds you muſt carefully mix the Dung, ſhaking it well with the Fork, ſo as not to leave any Clods of Dung unſeparated, as alſo to beat it down pretty cloſe, to prevent the Steam from riſing too haſtily; you muſt alſo be careful to lay it very even, and to beat or preſs down the Dung equally in every Part of the Bed, otherwiſe it will ſettle in Holes, which will be very hurtful: When you finiſh laying the Dung, you muſt make a Hole exactly in the Middle of each Light, about a Foot deep, and eight or nine Inches over; theſe Holes muſt be fill'd with light freſh Earth, which ſhould be ſcreen'd to take out all large Stones, Clods, *&c.* laying it up in a Hill, and in the Middle of each thruſt in a Stick about 18 Inches long, which ſhould ſtand as a Mark to find the exact Place where the Hole is; then Earth the Bed all over about three Inches thick, levelling it ſmooth, and afterwards ſet the Frame upon it, covering it with the Glaſſes.

In two or three Days Time your Bed will be in fit Order to receive your Plants; of which you may eaſily judge by pulling out one of the Sticks which was put in the Middle of the Holes, and feeling the lower Part of it, which will ſatiſfy you what Condition your Bed is in: Then you muſt ſtir up the Earth in the Middle of the Hole with your Hand, breaking all Clods, and removing all large Stones, making the Earth hollow in Form of a Baſon: Into each of theſe Holes you muſt plant four Plants; in doing of which, obſerve to make the Holes for the Plants a little ſlanting towards the Middle of the Baſon, eſpecially if your Plants are long-ſhank'd: This is intended to place the Roots of the Plants as far as poſſible from the Dung, to which if they approach too near, the lower Part of their Roots are ſubject to be burn'd off: Then ſettle the Earth gently to each Plant, and if the Earth is dry, it will be proper to give them a little Water, (which ſhould be warm'd to the Temper of the Bed, as was before directed); and if the Sun ſhould appear in the Middle of the Day, they ſhould be ſhaded therefrom with Mats until the Plants have taken Root, which will be in two or three Days; after which, you muſt let them enjoy as much of the Sun as poſſible, obſerving to turn the Lights in the Day-time to dry, as alſo to give a little Air whenever the Weather will permit.

You muſt alſo obſerve to keep the Glaſſes cover'd every Night, and in bad Weather; but be very careful not to keep them cover'd too cloſe, eſpecially while the Bed has a great Steam in it, which will cauſe a Damp to ſettle upon the Plants, which, for want of Air to keep the Fluid in Motion, will ſtagnate and rot them.

When your Plants are grown to be four or five Inches high, you muſt, with ſome ſlender forked Sticks, incline them toward the Earth, each one a ſeparate Way ; but this muſt be done gently at firſt, leſt by forcing them too much, you ſhould ſtrain or break the tender Veſſels of the Plants, which would be very hurtful to them : In this Manner you ſhould from Time to Time obſerve to peg down the Runners as they are produced, laying each in exact Order, ſo as not to interfere or croſs each other, nor ſhould you ever after remove them from their Places, or handle them too roughly, whereby the Leaves them ; be broken or diſplaced, which is alſo equally injurious to many but whenever you have Occaſion to weed the Bed between the Plants, do it with great Care, holding the Leaves aſide with one Hand, while with the other you pull out the Weeds.

In about a Month after they are ridg'd out, you may expect to ſee the Beginnings of Fruit, which very often are preceded by Male Flowers, which many People are ſo ignorant as to pull off, calling them falſe Bloſſoms ; but this I am fully convinced, by many Experiments, is wrong ; for theſe Flowers are of abſolute Service to promote the Welfare of the Fruit ; which, when theſe Male Flowers are intirely taken off, does very often fall away, and come to nothing : Nor ſhould the Vines be pruned, as is too often the Practice of unſkilful People, eſpecially when they are too luxuriant, which often happens when the Seeds were freſh, or of the laſt Year's ſaving, and the Plants in good Heart : If this ſhould happen to be the Caſe, it would be very proper to pull up one of the Plants before it hath run ſo far as to intangle with the others ; for it often happens, that two or three Plants are better than four or five, when they are vigorous ; for when the Frame is too much crowded with Vine, the Fruit is ſeldom good, nor in ſuch Plenty, as when there is a more moderate Quantity of Shoots ; for the Air being hereby excluded from the Fruit, they often ſpot and decay, or fall off very young.

You muſt alſo be very careful to cover the Glaſſes every Night when your Fruit begins to appear, as alſo to lay a little freſh Litter or Mowings of Graſs round the Sides of the Bed to add a freſh Heat thereto ; for if the Heat of the Bed be ſpent, and the Nights prove cold, the Fruit will fall away and come to nothing ; and when the Sun is extreme hot, in the middle of the Day, you muſt cover the Glaſſes with Mats to ſhade the Vines ; for altho' they delight in Heat, yet the direct Rays of the Sun, when it has great Force, are very injurious, by either ſcorching thoſe Leaves which are near the Glaſſes, or by cauſing too great a Perſpiration, whereby the extreme Part of the Shoots and the large Leaves are left deſtitute of Nouriſhment, and the Fruit will be at a Stand, and often turn yellow before it arrives at half its Growth.

At this Time, when your Vines are ſpread, ſo as to cover the Hot-bed, it will be of great Service, when you water them, to ſprinkle them all over gently ſo as not to hurt the Leaves ; but obſerve to do this not at a Time when the Sun is very hot, for hereby I have known a whole Bed of *Cucumbers* ſpoil'd, for the Water remaining upon the Surface of the Leaves in Drops, doth collect the Rays of the Sun as it were to a Focus, and ſo ſcorches the Leaves, that in one Day's-time they have, from a bright Green, become of the Colour of brown Paper.

Theſe Directions, with diligent Obſervation, will be ſufficient for the Management of this Crop of *Cucumbers* ; and Vines thus treated will continue to ſupply you with Fruit till *Midſummer*, by which Time the ſecond Crop will come to bear : The Sowing and Managing of which is what I ſhall next proceed to.

About the beginning of *March*, or a little later, according to the Earlineſs of the Seaſon, you muſt put in your Seeds, either under a Bell-glaſs, or in the Upper-ſide of your early Hot-bed ; and when the Plants are come up, they ſhould be prick'd upon another moderate Hot-bed, which ſhould be cover'd with Bell or Hand-glaſſes plac'd as cloſe as poſſible to each other ; the Plants ſhould alſo be prick'd at about two Inches Diſtance from each other, obſerving to water and ſhade them until they have taken Root, which will be in a very ſhort Time : You muſt alſo cover the Glaſſes with Mats every Night, or in very bad Weather ; but in the Day-time, when the Weather is hot, you muſt raiſe the Glaſſes with a Stone on the oppoſite Side from the Wind, to give Air to the Plants, which will greatly ſtrengthen them : You muſt alſo water them as you ſhall find they require it ; but this muſt be done ſparingly while the Plants are young.

The beginning of *April* the Plants will be ſtrong enough to ridge out ; you muſt therefore be provided with a Heap of new Dung, in Proportion to the Quantity of Holes you intend to plant, allowing one Load to ſix Holes : When your Dung is fit for Uſe, you muſt dig a Trench about two Feet four Inches wide (and in Length juſt as you pleaſe, or the Place will allow) ; and if the Soil be dry, it ſhould be ten Inches deep, but if wet, very little in the Ground, levelling the Earth in the Bottom ; then put in your Dung, obſerving to ſtir and mix every Part of it, as was directed for the firſt Hot-beds, laying it cloſe and even.

When this is done, you muſt make Holes about eight Inches over, and ſix Inches deep, juſt in the Middle of the Ridge, and three Feet and an half Diſtance from each other ; and if there be more than one Ridge, the Diſtance of thoſe ought to be eight Feet and an half from each other ; then fill the Holes with good light Earth, putting a Stick into the Middle of each for a Mark, and afterwards cover the Ridge over with Earth about four Inches thick, laying the Earth the ſame thickneſs round the Sides : When the Earth is levell'd ſmooth, you muſt ſet the Glaſſes on upon the Holes, leaving them cloſe down about twenty-four Hours, in which Time the Earth in the Holes will be warm'd ſufficiently to receive the Plants ; then with your Hand ſtir up the Earth in the Holes, making it hollow in Form of a Baſon ; into each of which you ſhould plant four Plants, obſerving to water and ſhade them until they have taken Root : After which Time you muſt be careful to give them a little Air by raiſing the Glaſſes on the oppoſite Side to the Wind in proportion to the Heat of the Weather, as alſo to water them as you ſhall ſee they require it ; but you muſt only raiſe the Glaſſes in the middle of the Day until the Plants do fill the Glaſſes ; at which Time you ſhould raiſe the Glaſſes with a forked Stick on the South-ſide in Height proportionable to the Growth of the Plants, that they may not be ſcorch'd by the Sun : This alſo will harden and prepare the Plants to endure the open Air ; but you ſhould not expoſe them too ſoon thereto, for it often happens that there are Morning Froſts in *May*, which are many Times deſtructive to theſe Plants when expos'd thereto ; it is therefore the ſureſt Method to preſerve them under the Glaſſes as long as they can be kept in without Prejudice to the Plants : And if the Glaſſes are rais'd with two Bricks on the Backſide, and the forked Stick on the other Side, they may be kept in a great while without Danger.

Towards the latter end of *May*, when the Weather appears ſettled and warm, you ſhould turn your Plants down gently out of the Glaſs ; but do not perform this in a very dry hot ſunny Day, but rather when there is a cloudy Sky, and an Appearance of Rain : You muſt in doing of this raiſe the Glaſſes either upon Bricks or forked Sticks, whereby they may ſtand ſecure at about four or five Inches high from the Ground, that the Plants may lie under them without bruiſing ; nor ſhould you take the Glaſſes quite away until the latter end of *June*, or the beginning of *July* ; for theſe will preſerve the Moiſture much longer to their Roots than if they were quite expos'd to the open Air : about three Weeks after you have turn'd the Plants out of the Glaſſes, they will have made a conſiderable Progreſs, eſpecially if the Weather has been favourable ; at which time you ſhould dig up the Spaces of Ground between the Ridges, laying it very even ; then lay out the Runners of the Vines in exact Order, and be careful in this Work not to diſturb the Vines too much, not to bruiſe or break the Leaves : this digging of the Ground will looſen it, and thereby render it eaſy for the Roots of the Plants to ſtrike into it, as alſo render the Surface of the Earth more agreeable to the Vines that run upon it : After this there will be no farther Care needful, but only to keep them clear from Weeds, and to water them as often as they ſhall require, which they will ſoon ſhew, by the hanging of their greater Leaves. The Ridges thus manag'd will continue to produce large Quantities of Fruit from *June* until the latter end of *Auguſt*, after which time the Coldneſs of the Seaſon renders them unwholſome, eſpecially if the *Autumn* proves wet.

From theſe Ridges People commonly preſerve their *Cucumbers* for Seed, by making Choice of two or three of the faireſt Fruit upon each Hole, never leaving above one upon a Plant, and that ſituated near the Root of it ; for if you leave more, they will weaken the Plants ſo much, that your other Fruit will be ſmall, and fewer in Number. Theſe ſhould remain upon the Vines until the end of *Auguſt*, that the Seeds may be perfectly ripe ; and when you gather them from the Vines, it will be proper to ſet the Fruit in a Row upright againſt an Hedge or Wall, where they may remain until the outer Cover begins to decay ; at which time you ſhould cut them open and ſcrape out the Seeds, together with the Pulp, into a Tub, which ſhould be afterwards cover'd with a Board, to prevent Filth from getting amongſt the Pulp. In this Tub it ſhould be ſuffer'd to remain eight or ten Days, obſerving to ſtir it well with a long Stick to the Bottom every Day, in order to rot the Pulp, that it may be eaſily ſeparated from the Seeds ; then pour ſome Water into the Tub, ſtirring it well about, which will raiſe the Scum to the Top, but the Seeds will ſettle to the Bottom, ſo that by two or three times pouring in Water, and afterwards ſtraining it off from the Seeds, they will be perfectly clear'd from the Pulp; then you ſhould ſpread the Seeds upon a Mat, which ſhould be expos'd to the open Air three or four Days until they are perfectly dry, when they may be put up in Bags, and hung up in a dry Place where Vermin cannot come to them, where they will keep good for ſeveral Years, but are generally preferr'd when three or four Years old, as being apt to produce leſs vigorous, but more fruitful Plants.

I ſhall in the next place proceed to give Directions for managing *Cucumbers* for the laſt Crop, or what are generally call'd *Picklers*.

The Seaſon for ſowing theſe is towards the latter end of *May*, when the Weather is ſettled: The Ground where theſe are commonly ſown, is between *Colliflowers*, in wide Rows, between which are allow'd four Feet and an half Space when the *Colliflowers* were planted. In theſe Rows you ſhould dig up ſquare Holes at about three Feet and an half Diſtance from each, breaking the Earth well with a Spade, and afterwards ſmoothing and hollowing it in the Form of a Baſon with your Hand; then put eight or nine Seeds into the middle of each Hole, covering them over with Earth about half an Inch thick; and if it ſhould be very dry Weather, it will be proper to water the Holes gently in a Day or two after the Seeds are ſown, in order to facilitate their Germination.

In five or ſix Days, if the Weather be good, your Plants will begin to thruſt their Heads above Ground; at which time you ſhould be very careful to keep off the Sparrows, who are very fond of the young tender Heads of theſe Plants, and if they are not prevented, will deſtroy your whole Crop: But as it is not above a Week that the Plants are in this Danger, ſo it will be no great Trouble to look after them during that Time; for when the Plants are come up, and have expanded their Seed-leaves, the Sparrows will not meddle with them.

You muſt alſo be careful to water them gently, as you ſhall find the Drought of the Seaſon doth require; and when you perceive the third or rough Leaf of the Plants begin to appear, you muſt pull out all the weakeſt Plants, leaving only five of the moſt promiſing and beſt ſituated in each Hole, ſtirring the Earth round about them with a ſmall Hough to deſtroy the Weeds, and raiſe the Earth about the Shanks of the Plants, putting a little Earth between them, preſſing it gently down with your Hand, that the Plants may be thereby ſeparated from each other to a greater Diſtance; then give them a little Water (if the Weather be dry) to ſettle the Earth about them, which you muſt afterwards repeat as often as you ſhall find it neceſſary, ſtill being careful to keep the Ground clear from Weeds.

When your *Colliflowers* are quite drawn off the Ground from between the *Cucumbers*, you muſt hough and clean the Ground, drawing the Earth up round each Hole in Form of a Baſon, the better to contain the Water when it is given them; and alſo lay out the Plants in exact Order as they are to run and extend, ſo that they may not interfere with each other: And if all the five Plants before left are in good Condition, you ſhould pull out one of the worſt of them, and throw it away; for four good Plants will be full enough to remain for good; then lay a little Earth between the Plants left, preſſing it down gently with your Hand, the better to ſpread them each way, giving them a little Water to ſettle the Earth about them, repeating it as often as the Seaſon ſhall require, and obſerving to keep the Ground clean from Weeds: The Plants thus manag'd, will begin to produce Fruit toward the latter end of *July*, when you may either gather them young for pickling, or ſuffer them to grow for large Fruit.

The Quantity of Holes neceſſary for a Family is about fifty or ſixty; for if you have fewer, they will not produce enough to pay for pickling, without keeping them too long in the Houſe, for you can't expect to gather more than two hundred at each Time from fifty Holes; but this may be done twice a Week during the whole Seaſon, which commonly laſts five Weeks; ſo that from fifty Holes you may reaſonably expect to gather about two thouſand in the Seaſon, which, if they are taken ſmall, will not be too many for a private Family, eſpecially conſidering, that if you have fewer Holes, the Quantity each Week produc'd will ſcarcely be worth the Trouble of pickling.

But leſt I ſhould be cenſur'd by thoſe who delight in having very early *Cucumbers*, for omitting what they call an eſſential Part of Gardening, I ſhall beg Leave here to ſubjoin a ſhort Account of a Method which I have us'd with very good Succeſs, to obtain *Cucumbers* very early; which is, After having rais'd my Plants in the Manner before directed, for early *Cucumbers*, until they have put forth their rough Leaves, I prepar'd ſome looſe wrought Baskets, about eight Inches Diameter, and five Inches deep, with two ſmall Handles to each; then I made a freſh Hot-bed of good Strength, which would hold a Frame of two Lights; on this I plac'd the Baſkets, which were almoſt full of good light Earth, as near to each other as poſſible, by which means this ſmall Bed would contain eighteen or twenty Baſkets; then I fill'd up the Spaces between the Baſkets with the ſame light Earth as was put into the Baſkets, putting the Frame and Glaſſes over the Bed, which in two Days was in a proper Temperature of Heat to receive the Plants; then I put five into each Baſket, obſerving to water and ſhade them until they had taken Root; afterwards managing them as was before directed for the firſt Crop of *Cucumbers*, obſerving when the Bed began to loſe its Heat, to lay a little freſh Dung round the Sides, which added a new Heat to the Bed. In this Frame I ſuffer'd them to remain until the Plants were laid down, and had run to the Sides of the Baſkets; then I prepar'd the Ridge, which I made of a good Subſtance in Dung, and after it had lain two or three Days to heat, I remov'd the Plants in the Baſkets, placing one into the Hole in the middle of each Light: Theſe Plants in a ſhort time after produc'd Fruit, which, by the good Temper of Heat in the Bed, grew ſo faſt, that in three Weeks after removing the Baſkets, I cut *Cucumbers*. There are ſeveral Advantages in this Management; firſt, you can keep the Baſkets in a ſmall Room for a conſiderable Time, whereby your Frames may be employ'd in other Uſes: And ſecondly, a leſs Quantity of Dung is requir'd in this Way: Thirdly, when the Plants are in Baſkets, if you find your Bed too hot, it is but raiſing up the Baſkets, and they are ſecure from any Danger; and when the violent Heat is over, they may be ſettled down again: And laſtly, by having your Plants ſo forward for Fruit when they are put into the Ridges, the Heat of the Bed continues to ſet and bring off the firſt Crop of Fruit; for want of which kindly Heat, the firſt Setting or Crop of Fruit which appears upon the Vines, either drops off, or is a long time growing to Maturity; therefore from theſe and many other Advantages attending this Method, I may with Safety pronounce it, the beſt yet known to procure *Cucumbers* in any of the Winter or Spring Months.

CUCUMIS AGRESTIS. *Vide* Elaterium.

CUCURBITA, [is ſo call'd, as tho' *Curvata*, Lat. *Bended*; becauſe this Plant always bends, unleſs it be ſupported] The Gourd.

The *Characters* are;

It hath a Flower conſiſting of one Leaf, which is of the expanded Bell-ſhape; for the moſt part ſo deeply cut, that it ſeems to conſiſt of five diſtinct Leaves: This, like the Cucumber, has Male and Female Flowers on the ſame Plant; the Fruit of ſome Species is long, of others round or Bottle-ſhap'd, and is commonly divided into ſix Cells, in which are contain'd many flat oblong Seeds, which have ſometimes a Border round them.

The *Species* are;

1. Cucurbita *longa, folio molli, flore albo. J. B.* The long Gourd, with a ſoft Leaf, and a white Flower.
2. Cucurbita *falcata figura, folio molli, flore albo. C. B.* The Sickle-ſhap'd Gourd, with a ſoft Leaf, and a white Flower.
3. Cucurbita *latior, folio molli, flore albo. J. B.* Flat Gourd, with a ſoft Leaf, and a white Flower, *commonly call'd* Squaſhes.
4. Cucurbita *lagenaria, flore albo, folio molli. C. B.* Bottle-ſhap'd Gourd, with a ſoft Leaf, and a white Flower.

There are ſeveral other Varieties of this Plant, which are annually brought from *America*, where are numberleſs Varieties of theſe, and of *Pumkins* and *Calabaſhes*.

They may be all propagated by ſowing their Seeds in *March* on a Hot-bed; and when the Plants come up, they ſhould be tranſplanted on another moderate Bed, where they ſhould have a great deal of Air to ſtrengthen them; and when they have got four or five Leaves, they ſhould be tranſplanted into Holes made upon an old Dunghil, or ſome ſuch Place, allowing them a great deal of Room to run; for ſome of the Sorts will ſpread to a great Diſtance: I have meaſur'd a ſingle Plant, which had run upwards of forty Feet from the Hole, and had produc'd a great Number of Side-Branches; ſo that if the Plant had been encourag'd, and all the Side-Branches permitted to remain, I dare ſay it would have fairly over-ſpread twenty Rods of Ground. Which, to ſome People, may ſeem like a Romance: yet I can affirm it to be Fact, But what is this to the Account printed in the *Tranſactions of the Royal Society*, which was communicated to them by *Paul Dudley*, Eſq; from *New-England*, wherein Mention is made of a ſingle Plant of this Kind, which, without any Culture, ſpread over a large Spot of Ground, and from which Plant were gather'd Two Hundred and Sixty Fruits, each, one with another, as big as an Half-Peck!

Theſe Fruits are by ſome People gather'd while young, and boil'd; afterwards ſtripping off the outer Cover, and buttering them, they eat them with Meat, and are by ſome People mightily eſteem'd; eſpecially the firſt Sort, which is counted by far the ſweeteſt: Of this Kind I have ſeen a ſingle Fruit upwards of ſix Feet long, which has ripen'd perfectly well. But this is not common with us; tho' I have heard of their being longer in other Countries: This Sort requires to be ſown early in the Spring, and brought forward under Bell or Hand-Glaſſes, otherwiſe they ſeldom arrive to half their Maturity.

Theſe Plants requiring ſo much Room to ſpread, and their Fruit being very little valu'd in *England*, hath occaſion'd their not being cultivated amongſt us; we have ſo many Plants, Roots, or Fruits, which are greatly preferable to thoſe for Kitchen Uſes: but in ſome Parts of *America*, where Proviſions are not in ſo great Plenty, or ſo great Variety, theſe Fruits may be very acceptable.

CUCURBITIFERA ARBOR; [ſo call'd, becauſe it bears a Fruit reſembling a *Gourd*, having a hard Rind when ripe, containing a ſoft moiſt Pulp incompaſſing the Seed.] The Calabaſh-Tree.

The *Characters* are;

It hath an anomalous Flower, conſiſting of one Leaf, which is ſhap'd like a Bottle, and cut into ſeveral Segments; from the Cup of the Flower ariſes the Piſtillum, *which becomes a large fleſhy Fruit, with a hard Shell, in which are contain'd many Heart-ſhap'd Seeds.*

There is but one *Species* of this Tree at preſent in *England*, which is,

Cucurbitifera Arbor *Americana. H. L.* The Calabaſh-Tree.

This Tree grows to a conſiderable Height in the warmer Parts of *America*, where it produces a very large Fruit; the outer Coat of which becomes very hard, and, as it were, of a woody Subſtance, and is of great Uſe to the Inhabitants for Bowls, Cups, and many other Purpoſes in Life: but whether the Inſide or Pulp of the Fruit is of any Uſe to them, I can't ſay.

This Tree being a Native of the warmer Countries, muſt, with us, be kept in a Stove, with *Guava's*, &c. which Stove ſhould be kept to the temperate Heat, as mark'd on Mr. *Fowler*'s *Thermometers*, with which Heat I find they ſucceed better than in a greater. This Tree requires frequent Waterings, and a light ſandy Soil, and in Summer muſt have a great Quantity of free Air; for if it be kept too cloſe in that Seaſon, the Leaves are apt to be infeſted by a great Number of Inſects; which greatly deface the Tree and retard its Growth. To remedy this, whenever you ſee them firſt begin to attack the Leaves, you muſt carefully waſh them off with a woollen Rag; and then expoſe the Plant (if in Summer-time) to the open Air, or ſet it in ſome cooler Place in Winter. This Plant may be propagated by planting Cuttings in any of the Summer Months, which ſhould be put into Pots fill'd with good freſh Earth, and plung'd into a moderate Bed of Tanners-bark, obſerving to water and ſhade them in the Heat of the Day until they have taken Root. The Seeds of this Tree, if brought over freſh in the Fruit, will grow, if ſown on a Hot-bed, and manag'd as was directed for the *Anana's*; to which I ſhall refer the Reader, to avoid Repetition.

CUIETE, The Calabaſh-tree.

The *Characters* are;

It hath a Flower conſiſting of one Leaf of an anomalous Figure, and divided at the Brim into ſeveral Parts; from whoſe Cup riſes the Pointal, fixed like a Nail in the hinder Part of the Flower; which afterward becomes a fleſhy Fruit, having a hard Shell, incloſing many heart-ſhaped Seeds.

The *Species* are;

1. **Cuiete** *foliis oblongis anguſtis, magno fructu ovato. Plum. Nov. Gen.* The Calabaſh-tree with narrow oblong Leaves, and a large oval Fruit.
2. **Cuiete** *latifolia, fructu putamine fragili. Plum. Nov. Gen.* The broad-leav'd Calabaſh-tree, with tender-ſhelled Fruit.
3. **Cuiete** *minima, fructu duro. Plum. Nov. Gen.* The leaſt Calabaſh-tree, with a hard Fruit.
4. **Cuiete** *anguſtifolia, fructu minori globoſo. Plum. Nov. Gen.* Narrow-leav'd Calabaſh-tree, with a leſſer globular Fruit.
5. **Cuiete** *anguſtifolia, fructu minori ovato. Plum. Nov. Gen.* Narrow-leav'd Calabaſh-tree, with a leſſer oval Fruit.

The firſt and ſecond Sorts riſe to the Height of twenty-five or thirty Feet in the *Weſt Indies*, where they grow naturally in Woods and the Savanna's. The Shells of this Fruit are uſed by Negroes for Cups to drink out of; as alſo for Inſtruments of Muſick, by making a Hole in the Shell, and clearing it of the Pulp and Seeds; then they put in ſmall Stones, or the hard Seeds of Trees, with which they make a Sort of Rattle.

Theſe Plants are all of them tender, ſo cannot be maintained in this Country, unleſs they are preſerved in warm Stoves. They are propagated by Seeds, which ſhould be obtained from the Countries where they naturally grow: for they never produce any Fruit in this Country. Theſe Seeds ſhould be ſown early in the Spring, in Pots filled with light freſh Earth, and plunged into a Hot-bed of Tanners-bark; the Earth in theſe Pots muſt be frequently refreſhed with Water; for if it be kept dry, the Seeds will not vegetate: in about five Weeks after the Seeds are ſown, the Plants will begin to appear; when they muſt be duly watered, and the Glaſſes of the Hot-bed ſhould be raiſed every Day, to admit freſh Air to the Plants, and let the Steam, which will ariſe from the Bed, paſs off: which is very injurious to young Plants, when it is pent amongſt them. When the Plants are about two Inches high, they ſhould be carefully tranſplanted, each into a ſeparate ſmall Pot, filled with rich light Earth, and plunged into the Hot-bed again, being careful to ſcreen them from the Sun until they have taken new Root, after which Time they muſt have freſh Air admitted to them in proportion to the Warmth of the Seaſon, and muſt be duly watered; for as they naturally grow on ſwampy Grounds, ſo they require a pretty large Share of Moiſture in warm Weather.

In Winter theſe Plants muſt be removed into the Stove, and plunged into the Bark-bed; for they do not thrive well, if they are placed on Boards in a dry Stove; becauſe the Fibres of their Roots, which are toward the Side and Bottom of the Pots, will dry, and retard the Growth of the Plants, if the Pots are not ſurrounded with Tan, which always retains ſome Moiſture, which keeps the Fibres of the Plants ductile, and thereby is greatly beneficial to them.

In Summer, theſe Plants may have a large Share of Air, by opening of the Glaſſes of the Stove; but they will not thrive, if they are taken out of the Stove, and placed in the open Air; ſo that they ſhould always be kept in the Bark-ſtove, obſerving to ſhift them into larger Pots, as the Plants advance in their Growth. With this Management, theſe Plants may be preſerved many Years, and brought to a large Size; when they will make a fine Appearance amongſt tender exotick Plants in the Stove, for they retain their Leaves throughout the Year.

CULMIFEROUS PLANTS [are ſo call'd of *Culmus*, Lat. *Straw* or *Haulm*] are ſuch as have a ſmooth, jointed Stalk, and uſually hollow, and at each Joint wrapp'd about with ſingle, narrow, ſharp-pointed Leaves; and their Seeds are contain'd in chaffy Huſks, as Wheat, Barley, *&c.*

CUMINOIDES; [of Κύμινον and εἶδος, Gr. *Form*; becauſe (by reaſon of its Likeneſs to it) many Authors have confounded it with *Cummin.*] Wild Cummin.

The *Characters* are;

It hath Leaves conſiſting of many Lobes like thoſe of Burnet; *the ſmall Flowers, which conſiſt of many Petals, are collected into a round Head; the Petals (or Flower-Leaves) are fringed; each of theſe Flowers are ſucceeded by a ſingle Seed.*

There is but one *Species* of this Plant, which is,

Cuminoides *vulgare. Tourn.* Common Wild Cummin.

This Plant is preſerved in curious Botanick Gardens, for the ſake of Variety: But it being of no great Beauty or Uſe, is very ſeldom cultivated in other Gardens. The Seeds of this Plant ſhould be ſown ſoon after ripe; for if kept until Spring, they ſeldom ſucceed ſo well. It loves a light dry Soil: and if the Seeds are permitted to ſcatter upon the Ground, they will come up again, and require no farther Culture.

CUMINUM, [Κύμινον, of κυεῖν, Gr. to *bring forth*; becauſe it is ſaid to be very efficacious againſt Barrenneſs.] Cummin.

The *Characters* are;

The Root is annual; the Leaves are like thoſe of Fennel; *the Seeds are ſmall, long, narrow, and crooked; two of which ſucceed each Flower, as in the other umbelliferous Plants.*

There is but one *Species* of this Plant at preſent known in *England*, which is,

CUMINUM. *Mor. Umb.* Cummin.

This Plant is propagated for Sale in the Iſland of *Malta*, where it is call'd *Cumino aigro*, i. e. *hot Cummin.* But *Aniſe*, which they alſo propagate in no leſs Quantity, they call *Cumino dolce*, i. e. *ſweet Cummin.* So that many of the old Botaniſts were miſtaken, when they made two Species of *Cummin*, viz. *acre* and *dulce*.

The Seeds of this Plant are us'd in Medicine, which are brought from the above-mention'd Place; for the Plant is too tender to be cultivated to any Advantage in *England*: I have ſown the Seeds ſeveral times in the *Phyſick-Garden*, which have come up very well, and grown to be four or five Inches high; but have conſtantly decay'd, without producing any good Seeds. If any Perſon is inclin'd to cultivate a little of this Plant for Curioſity, the beſt Method is, to ſow the Seeds early upon a very moderate Hot-bed; and when the Plants are come up pretty ſtrong, they may be tranſplanted into a light Soil, at about four or five Inches Diſtance, where they may probably produce good Seeds.

CURRANT-TREE. *Vide* Ribes.

CURURU. This is the *Indian* Name for this Plant, and we know of no *Engliſh* Name to it at preſent.

The *Characters* are;

It hath a roſe-ſhaped Flower, conſiſting of four or more Petals, which are placed in a circular Order, from whoſe many-leav'd Flower-cup ariſes the Pointal; which afterward becomes a pear-ſhaped triangular Fruit, divided into three Parts from the Top to the Bottom, containing three fleſhy Seeds, which are faſtened to the Seed-veſſel by a ſlender red Filament.

The *Species* are;

1. CURURU *ſcandens enneaphylla, fructu racemoſo rubro. Plum. Nov. Gen.* Climbing nine-leav'd Cururu, with red Fruit growing in a Bunch.
2. CURURU *ſcandens pentaphylla. Plum. Nov. Gen.* Climbing five-leav'd Cururu.
3. CURURU *ſcandens triphylla. Plum. Nov. Gen.* Climbing three-leav'd Cururu.

Theſe Plants grow plentifully in the Iſland of *Jamaica*, at *La Vera Cruz*, and ſeveral other Parts of *America*; where they climb up Trees, and ramble over Hedges, Buſhes, or whatever grows near them. The firſt, which is the largeſt Plant of Growth, will many times climb up five and twenty, or thirty Feet high; the other two ſeldom grow above ſixteen or eighteen Feet high.

Theſe Plants are preſerved in curious Botanick Gardens for the ſake of Variety, but there is no great Beauty in them. They may be propagated by ſowing of their Seeds on a Hot-bed early in the Spring, and when the Plants are come up, they ſhould be each tranſplanted into a ſmall Half-penny Pot, filled with light freſh Earth, and then plunged into a moderate Hot-bed of Tanners-bark, obſerving to ſhade them until they have taken Root; after which Time they ſhould have a large Share of freſh Air admitted to them in warm Weather, and muſt be frequently refreſhed with Water. When the Plants have filled theſe Pots with their Roots, they ſhould be ſhifted into others of a larger Size, and plunged into the Hot-bed again, treating them as before; in this Bed they may remain till Autumn (provided there is Room for them under the Glaſs without being preſſed); then they muſt be removed into the Bark-ſtove, and placed toward the Backſide of the Bed; where if they are ſupported by a Trellaſs, they will climb up to a great Height, and produce Flowers. In Winter theſe Plants ſhould have a temperate Heat, and muſt be often refreſhed with Water.

CUSPIDATED PLANTS [are ſo call'd, of *Cuſpis*, Lat. the *Point of a Spear*] are ſuch *Plants*, the Leaves of which are pointed like a Spear.

CUSTARD-APPLE. *Vide* Anona.

CYANUS, [Κύανος, Gr. ſo call'd on Account of its Blue or Azure Colour.] Bottle-Flower.

The *Characters* are;

It hath a ſquamoſe hairy Calyx; the Diſk of the Flower is almoſt plain; but the Outer Florets round the Border are large, tubulous, and deeply cut in; theſe Outer Florets are always barren; but the Inner Florets have a ſingle naked Seed ſucceeding each.

The *Species* are;

1. CYANUS *montanus latifolius, vel verbaſculum cyanoides. C. B.* The Greater broad-leav'd Blue-bottle, *commonly call'd* Globe-Flower.
2. CYANUS *anguſtiore folio & longiore, Belgicus. H. R. Par.* The Greater narrow-leav'd Blue-bottle, or Globe-Flower.
3. CYANUS *floridus odoratus Turcicus, ſive Orientalis major, flore purpureo. Park.* The purple ſweet Sultan, *vulgo.*
4. CYANUS *floridus odoratus Turcicus, ſive Orientalis major, flore albo. H. R. Par.* The white ſweet Sultan, *vulgo.*
5. CYANUS *floridus odoratus Turcicus, ſive Orientalis major, flore incarnato. H. L.* Sweet Sultan, with a pale Flower.
6. CYANUS *floridus odoratus Turcicus, ſive Orientalis major, flore luteo. H. L.* The yellow ſweet Sultan.
7. CYANUS *ſegetum, flore cœruleo. C. B.* Corn Blue-bottle.
8. CYANUS *ſegetum, flore albo. C. B.* Corn-bottle, with a white Flower.
9. CYANUS *ſegetum, flore variegato.* Corn-bottle, with a variable Flower.

The firſt and ſecond Species are abiding Plants, which increaſe greatly by their creeping Roots. The firſt is very common in moſt of the old Country Gardens, but is ſeldom preſerved in curious Flower-Gardens, becauſe it is ſo apt to overſpread whatever Plants grow near it: however, it may have a Place in large Borders under Trees, or in Wilderneſſes, where it will thrive very well: And altho' it is a Flower of little Beauty; yet, for its Variety, and long Continuance to flower, it deſerves to be propagated in very large Gardens. The ſecond is at preſent leſs common in *England*, being rarely to be found but in Botanick Gardens: Theſe are multiply'd by taking Off-ſets from the old Roots (which they furniſh in great Plenty) either in Spring or Autumn, and will grow in any Soil or Situation.

The third, fourth, fifth and ſixth Sorts are commonly ſown on a Hot-bed, and treated as the *Balſamine*, or *Marvel of Peru*: but theſe will flower full as well if they are ſown on a Border of good light Earth, in a warm Poſition, (except the ſixth Sort, which ſhould have a Hot-bed); and when the Plants come up, they may be prick'd out upon another Bed of good Earth ſix Inches apart each Way, where they may remain until they are ſtrong enough to be tranſplanted where they are to flower; which may be either in Pots or in Borders amongſt other Annuals: in doing of which, you muſt be careful not to ſhake the Earth from their Roots; and when they are planted, they ſhould be water'd and ſhaded until they have taken new Root. In *July* theſe Plants will begin to flower, and continue until the Froſt prevents them. But you ſhould obſerve to let the earlieſt Flowers remain for Seeds; for if the Autumn ſhould prove cold and wet, the late Flowers will not produce good Seeds, eſpecially the yellow Sort, which ſeldom perfects Seeds unleſs they are brought to flower very early.

Theſe Plants are annual, and rarely continue after perfecting their Seeds; yet in order to have them flower early in the Seaſon, you may ſow their Seeds the latter End of *July*, or the Beginning of *Auguſt*, that the Plants may have Strength before the cold Weather comes on, which being planted into warm Borders will endure the Cold very well, (provided they are not ſo forward as to run up to flower) and will flower early the next Summer; by which Method you may always be ſure to obtain good Seeds.

The Corn Bottles are alſo Annuals, which for the Diverſity of their Flowers were propagated in Gardens, but of late Years they are almoſt excluded; however, the variable Flowers are worthy of a Place in every good Garden. Theſe ſhould be ſown in Autumn, and may be tranſplanted into large Borders, where they will endure the Cold, and flower early the ſucceeding Summer, and will grow in almoſt any Soil or Situation.

CYCLAMEN; [Κυκλάμενος, of Κύκλος, Gr. a *Circle*, becauſe the Root of this Plant is orbicular: It is call'd *Sowbread*, becauſe the Root is round like a Loaf, and the Sows eat it.] Sowbread.

The *Characters* are;

It hath a thick, round, fleſhy Root; the Flowers ariſe ſingly upon Pedicles from the Root, which conſiſt of one Leaf, divided into five or ſix Segments, which are reflex'd almoſt to the Bottom, where they are divided; the Pointal of the Flower becomes a round membranaceous Fruit, which contains many roundiſh Seeds, which being committed to the Earth, become a Root.

The *Species* are;

1. Cyclamen *hederæ folio. C. B. flore purpureo.* Common autumnal Sowbread, with purple Flowers.
2. Cyclamen *hederæ folio, flore albo.* Autumnal Sowbread, with a white Flower.
3. Cyclamen *orbiculato folio, inferne purpuraſcente. C. B.* Round-leav'd Sowbread, with Leaves of a purpliſh Colour underneath.
4. Cyclamen *vernum, minus orbiculato folio inferne rubente, flore minore ruberrimo. Mor. Hiſt.* Leſſer Spring Sowbread, with roundiſh Leaves of a reddiſh Colour underneath, with ſmall deep red Flowers.
5. Cyclamen *hyeme & vere florens, folio anguloſo amplo, flore albo, baſi purpurea, Percum dictum. H. R. Par.* The *Perſian* Winter and Spring-flowering Sowbread, with large white Flowers, and a purple Bottom.
6. Cyclamen *hyeme & vere florens, folio anguloſo amplo, flore carneo, baſi purpurea. H. R. Par.* The *Perſian* Winter and Spring-flowering Sowbread, with a large fleſh-coloured Flower, and a purple Bottom.
7. Cyclamen *vernum album. C. B.* White Spring-flowering Sowbread.

There are ſeveral other Varieties in the curious Gardens abroad, but theſe here mentioned are what we have at preſent in *England*.

The firſt and ſecond Sorts are very common in the *Engliſh* Gardens, and are very hardy. Theſe are propagated by ſowing their Seeds ſoon after they are ripe, in Tubs of freſh ſandy Earth, in the Manner directed for *Xiphium*, to which I ſhall refer to avoid Repetition. In four or five Years Time they will begin to flower, but their Roots being then ſmall, will produce very few Flowers; and as their Roots yearly increaſe in Bulk, ſo will the Number of Flowers increaſe in proportion. I have ſeen a ſingle Root of this Plant above fourteen Inches Diameter, which hath produc'd upwards of an hundred Flowers in one Seaſon.

The beſt Seaſon for tranſplanting theſe Roots is in *June* or *July*, ſoon after the Seeds are perfected; but they ſhould not be kept long out of the Ground, for the Roots are diſpos'd to ſhoot out freſh Fibres with the firſt moiſt Weather after the Seeds are fall'n, and in about ſix Weeks do produce their Flowers, which appear upon ſingle Footſtalks before the Leaves are produc'd: After the Flowers are blown, the green Leaves appear, which continue all the Winter; and being of a ſtrong Green, varied with White, it makes an handſome Appearance during that Seaſon: The Pedicle of the Flower afterwards twiſts like a Screw, incloſing the Embryo of the Fruit, by which means it is cover'd by the green Leaves, whereby it is protected from the Froſt, &c. and about the Beginning of *June* the Seeds will be perfected.

The third Sort was formerly more common in *England* than at preſent. This muſt be treated in the ſame manner with the two former, and flowers in the ſame Seaſon.

The fourth and ſeventh Sorts are tenderer than the former, and muſt either be planted in Pots, and ſhelter'd under a Frame in Winter, or be plac'd in a warm dry Border. Theſe produce their Flowers very early in the Spring, if the Froſt doth not prevent them. The Seeds of theſe are ripe about the ſame Time with the former, and muſt be ſown and manag'd in the ſame manner; but the Boxes of Seeds or young Plants of theſe Kinds ſhould be ſhelter'd in Winter.

The fifth and ſixth Sorts are ſtill more impatient of Cold and Wet than any of the former. Theſe muſt conſtantly be preſerv'd in Pots fill'd with ſandy light Earth, and hous'd in Winter, but ſhould be plac'd near the Glaſſes, where they may enjoy as much free open Air as poſſible, when the Weather will permit; for if they are crowded under other Plants, and are kept too cloſe, they are very ſubject to mould and rot; nor ſhould they have much Water in Winter, which is alſo very injurious to them: But whenever they want Water, it ſhould be given them ſparingly. In Summer theſe Plants may be expos'd to the open Air, when their green Leaves will decay; at which Time you ſhould remove them to a Place where they may have the Morning Sun until eleven o' Clock; but during the Time that the Roots are deſtitute of Leaves they ſhould have very little Water given them, becauſe at that Seaſon they are not capable of diſcharging the Moiſture. This is alſo the proper Seaſon to tranſplant the Roots, or to freſh earth them; and as the Autumn comes on, that the Heat decreaſes, they may be remov'd into Places more expos'd to the Sun, where they may remain until *October* before they need be hous'd.

Toward *Chriſtmas*, if the Roots are in good Health, they will begin to flower, and continue producing freſh Flowers until *April*; from which if you intend to have any Seeds, you muſt let the Pots be plac'd ſo as to receive a great Share of freſh Air; for if their Flowers are drawn up in the Houſe, they ſeldom produce any Seeds. Theſe Seeds are ripe about *July*, when they ſhould be immediately ſown in Pots or Caſes of good light undung'd Earth, which ſhould be ſhelter'd in Winter under a Frame, and expos'd in Summer in the ſame Manner as is directed for the older Roots, obſerving to remove them into Pots at a wider Diſtance when they are two Years old, and ſo from Time to Time, as their Roots increaſe in Bulk, you muſt give them more Room; and in about four or five Years Time they will begin to flower, when you ſhould let each Root have a ſeparate Pot, which at firſt may be ſmall; but when the Roots are grown large, they muſt be put into bigger Pots.

CYDONIA; takes its Name of *Cydon*, an Iſland near *Leſbos*, or the famous Town of *Crete* of that Name.] The Quince-Tree.

The *Characters* are;

The Tree is of low Stature; the Branches are diffus'd and crooked; the Flower and Fruit is like that of the Pear-Tree; *but however cultivated, the Fruit is ſour and aſtringent, and is cover'd with a Kind of Down.*

The *Species* are;

1. Cydonia *fructu oblongo læviori. Tourn.* The Pear Quince, *vulgo.*
2. Cydonia *fructu breviore & rotundiore. Tourn.* The Apple Quince, *vulgo.*
3. Cydonia *latifolia Luſitanica. Tourn.* The broad-leav'd *Portugal* Quince.
4. Cydonia *fructu oblongo lævi dulci edulique. Tourn.* The Quince-Tree, with oblong ſmooth ſweet Fruit, which are eatable.
5. Cydonia *fructu oblongo minori lanuginoſo non eduli. Tourn.* Quince-Tree with leſſer oblong downy Fruit, which are not eatable.
6. Cydonia *anguſtifolia vulgaris. Tourn.* The common Quince-Tree, with narrow Leaves.

The firſt three Sorts are cultivated in moſt Nurſeries near *London*, but the *Portugal* Kind is moſt valu'd for the Goodneſs of its Fruit.

They are all eaſily propagated, either by Layers, Suckers or Cuttings, which muſt be planted in a moiſt Soil. Thoſe rais'd from Suckers are ſeldom ſo well rooted as thoſe which are obtain'd from Cuttings or Layers, and are ſubject to produce Suckers again in greater Plenty, which is not ſo proper for Fruit-bearing Trees. The Cuttings ſhould be planted early in the Spring, and in dry Weather muſt be often water'd to encourage their Rooting: The ſecond Year after they ſhould be remov'd into a Nurſery at three Feet Diſtance Row from Row, and one Foot aſunder in the Rows, where they muſt be manag'd as was directed for *Apples*: In two or three Years Time theſe Trees will be fit to tranſplant, where they are to remain for good; which ſhould be either by the Side of a Ditch, River, or in ſome other moiſt Place, where they will produce a greater Plenty, and much larger Fruit than in a dry Soil; tho' thoſe in the dry Soil will be better taſted, and earlier ripe. Theſe Trees require very little pruning; the chief Thing to be obſerv'd, is, to keep their Stems clear from Suckers, and cut off ſuch Branches as croſs each other; ſo likewiſe all upright luxuriant Shoots from the Middle of the Tree ſhould be taken intirely out, that the Head may not be too much crowded with Wood, which is of ill Conſequence to all Sorts of Fruit Trees.

Theſe are alſo in great Eſteem for Stocks to graft and bud *Pears* on, which for Summer and Autumn Fruits are a great Improvement to them, eſpecially thoſe deſign'd for Walls and Eſpaliers: For the Trees upon theſe Stocks do not ſhoot ſo vigorouſly as thoſe upon free Stocks, and ſo may be kept in leſs Compaſs, and are ſooner diſpoſed to bear Fruits: But Winter Fruits do not ſucceed ſo well upon theſe Stocks, their Fruit being very ſubject to crack, and are commonly ſtony. The beſt Stocks are thoſe which are raiſed from Cuttings.

The three laſt Sorts may be cultivated in the ſame Manner as the common Sorts, and are equally hardy; ſo that I ſhall not repeat it in this Place, but ſhall only obſerve, that it is the beſt Way to propagate them, either by Cuttings or Layers; for thoſe which are propagated from Suckers, will always continue to ſend out a great Number of Suckers from their Roots, which renders them very unſightly.

CYNOGLOSSUM; [κυνόγλωσσον, of κυνὸς, a *Dog*; and γλῶσσα, Gr. the *Tongue*, ſo call'd, becauſe the Leaves of this Plant reſemble a Dog's Tongue] Hounds-Tongue.

The *Characters* are;

The Cup of the Flower conſiſts of one Leaf, which is deeply cut into five Parts; the Flower conſiſts of one Leaf, is Funnel-ſhap'd, and cut into five Segments; the Pointal, which ariſes from the Bottom of the Flower, changes into a Fruit compos'd of four rough, and for the moſt part burry Cells, each containing a flat Seed affix'd to a pyramidal and quadrilateral Placenta.

The *Species* are;

1. CYNOGLOSSUM *majus vulgare. C. B.* Common great Hounds-Tongue.
2. CYNOGLOSSUM *majus vulgare, flore albo. C. B.* Common Hounds-Tongue, with a white Flower.
3. CYNOGLOSSUM *montanum maximum. Tourn.* The largeſt Mountain Hounds-Tongue.
4. CYNOGLOSSUM *ſemper-virens. C. B.* Ever-green Hounds-Tongue.
5. CYNOGLOSSUM *Creticum, argenteo anguſto folio. C. B.* Candia Hounds-Tongue, with narrow Silver-colour'd Leaves.
6. CYNOGLOSSUM *folio molli incano, flore cæruleo, ſtriis rubris variegato. Mor. Hiſt.* Soft-leav'd hoary Hounds-Tongue, with blue Flowers ſtrip'd with Red.
7. CYNOGLOSSUM *hirſutum vineale minus, floſculis minimis cæruleis. Mor. Hiſt.* The leſſer hairy Hounds-Tongue, with ſmall blue Flowers.

There are ſeveral other Varieties of this Plant which are cultivated in curious Botanick Gardens; but as they are Plants of little Beauty, and the firſt Sort only is that which is commonly us'd in Medicine, and this growing in great Plenty wild upon Dunghils, and in ſhady Lanes in divers Parts of *England*, they are therefore ſeldom preſerved in Gardens. They may be eaſily cultivated by any Perſon that is curious that Way, by ſowing the Seeds early in the Spring, or in Autumn ſoon after they are ripe, in almoſt any Soil or Situation, (except the *Candia* Sort, which muſt have a warm Poſition, and a dry Soil) where they will flower and ſeed in Plenty; and if the Seeds are permitted to ſcatter, will abundantly ſupply the Place with young Plants. As the Roots are often uſed, ſo the proper Seaſon to take them up is ſoon after the Leaves decay, before they ſhoot again; which is what ſhould be obſerv'd of all Roots either for Meat or Medicine, for then it is that they have the moſt Virtue.

CYPRESSUS; takes its Name either of κύω, to *bring forth*, as tho' opening its Branches on both Sides; or of *Cypariſſus*, a certain Infant whom the Poets feign to have been transform'd into a *Cypreſs-Tree*] The Cypreſs-Tree.

The *Characters* are;

The Leaves are ſquamoſe and flat; the Male Flowers, which are ſquamoſe, grow at remote Diſtances from the Fruit on the ſame Tree; the Fruit is of a ſpherical Form, and is compos'd of many Woody Tubercles, in which are contain'd hard angular Seeds.

The *Species* are;

1. CYPRESSUS *meta in faſtigium convoluta, quæ Fæmina Plinii. Tourn.* The common Cypreſs-Tree.
2. CYPRESSUS *ramas extra ſe ſpargens, quæ Mas Plinii. Tourn.* The Male ſpreading Cypreſs, *vulgo*.
3. CYPRESSUS *Virginiana, foliis Acaciæ deciduis. H. L.* The *Virginian* Cypreſs-Tree, with Leaves like the *Acacia*, which fall off in Winter.
4. CYPRESSUS *Luſitanica patula, fructu minori. Tourn.* Spreading *Portugal* Cypreſs, with a ſmaller Fruit.
5. CYPRESSUS *Americana, fructu minimo. American* Cypreſs, with the leaſt Fruit, commonly called *White Cedar* in *America*.

The firſt of theſe Trees is very common in moſt of the old Gardens in *England*, but at preſent is not ſo much in Requeſt as formerly; tho' it is not without its Advantages: nor ſhould it be intirely rejected, as many Perſons are of Opinion; for it ſerves to add to the Beauty of Wilderneſſes, or Clumps of Ever-greens. It was formerly planted in Borders of Pleaſure-Gardens, and kept ſhorn into a pyramidal or conick Form; and ſome People, believing them ſubject to be kill'd if they cut them, ty'd them up with Cords into a pyramidal Figure; which Form they are naturally diſpos'd to grow in: But this winding them about, prevented the Air from entering the inward Parts of the Branches; ſo that the Leaves decay'd and became unſightly, and greatly retarded their Growth. And ſo thoſe which are ſheer'd, if the Operation is not perform'd in the Spring, or early in the Summer, are very ſubject to be injured by ſharp Winds and cutting Froſts in Winter. Wherefore, upon the Whole, I think it much better to ſuffer them to grow wild as they are naturally diſpos'd, planting them only amongſt other Ever-green Trees, where, by the Darkneſs of their green Leaves, together with their waving Heads, they will greatly add to the Variety.

The ſecond Sort is by far the largeſt-growing Tree, and is the moſt common Timber in the *Levant*; this, if planted upon a warm ſandy or gravelly Soil, will proſper wonderfully; and tho' it is not quite ſo tonſile a Plant as the firſt Sort, yet greatly recompenſes for that Defect, by its vigorous Growth, and Strength in reſiſting all Weathers. This Tree is very proper to intermix with Ever-greens of a ſecond Size next to Pines and Firs, to form Clumps, in which Caſe it will keep pace with the Trees of the ſame Line, and be very handſome. Beſides, the Wood of this Tree is very valuable, when grown to a Size fit for Planks; which I am convinc'd it will do, in as ſhort a Space as Oaks; therefore, why ſhould not this be cultivated for that Purpoſe, ſince there are many Places in *England* where the Soil is of a ſandy or gravelly Nature, and ſeldom produces any Thing worth the Manuring? Now, in ſuch Places theſe Trees would thrive wonderfully, and greatly add to the Pleaſure of the Owner, while growing, and afterwards render as much Profit to his Succeſſors, as perhaps the beſt Plantation of Oaks; eſpecially ſhould the Timber prove as good here, as in the Iſlands of the *Archipelago*, which I ſee no Reaſon to doubt of: For we find it was ſo gainful a Commodity to the Iſland of *Candia*, that the Plantations were called *Dos Filiæ*; the Felling of one of them, being reckon'd a Daughter's Portion.

The Timber of this Tree is ſaid to reſiſt the Worm, Moth, and all Putrefaction, and is ſaid to laſt many hundred Years. The Doors of St. *Peter*'s Church at *Rome* were framed of this Material, which laſted from the Great *Conſtantine* to Pope *Eugenius* IVth's Time, which was Eleven Hundred Years, and were then ſound and intire, when the Pope would needs change them for Gates of Braſs. The Coffins were made of this Material, in which *Thucydides* tells us the *Athenians* us'd to bury their *Heroes*; and the *Mummy*-Cheſts brought with thoſe condited Bodies out of *Egypt*, are many of them of this Material.

This Tree is by many learned Authors recommended for the Improvement of the Air, and a Specifick for the Lungs, as ſending forth great Quantities of Aromatick and Balſamick Emiſſions; wherefore many of the ancient Phyſicians of the Eaſtern Countries us'd to ſend their Patients, who were troubled with weak Lungs, to the Iſland of *Candia*, which at that Time abounded with theſe Trees, where, from the Effects of the Air alone, very few fail'd of a perfect Cure.

The third Sort is a Native of *America*, where it grows in watery Places, and ariſes to a prodigious Height, and is of a wonderful Bulk: I have been inform'd, that there are Trees of this Kind in *America* which are upwards of Seventy Feet High, and ſeveral Fathoms in Circumference; which Trees grow conſtantly in the Water: Therefore they may probably be of ſingular Advantage to plant in ſuch ſwampy or wet Soils where few other Trees will grow, eſpecially of the reſinous Kind. That they are very hardy, in reſpect to Cold, is evident, from ſome few Trees of this Kind which were formerly planted in *England*, particularly one in the Gardens of *John Tradeſcant* at *South-Lambeth* near *Vaux-hall*, which is upwards of Thirty Feet high, and of a conſiderable Bulk; which, tho' in a common Yard at preſent, where no Care is taken of it, but, on the contrary, many Hooks are drove into the Trunk, to faſten Cords thereto for Drying of Cloaths, yet the Tree is in great Health and Vigour; but hath not produced any Fruit as yet; which may be occaſion'd for want of Moiſture: for we often ſee many Aquatick Plants will grow upon a drier Soil; but yet are ſeldom ſo productive of either Flowers or Fruits, as thoſe which remain growing in the Water.

Theſe Trees are all propagated from Seeds, which ſhould be ſown early in the Spring on a Bed of warm, dry, ſandy Earth, which muſt be levell'd very ſmooth; then ſow the Seeds thereon pretty thick, ſifting the ſame light Earth over them half an Inch thick. If the Weather ſhould prove very warm and dry, it will be proper to water the Bed, which muſt be done very carefully, obſerving not to waſh the Seeds out of the Ground. In about a Month's Time (if your Seeds are good) the young Plants will appear above-ground, which muſt be conſtantly kept clean from Weeds, and in very dry Weather ſhould be often refreſh'd with Water; but this ſhould be done with great Caution, leſt you beat theſe tender-rooted Plants out of the Ground.

In this Bed the young Plants may remain two Years, by which Time they will have Strength enough to be tranſplanted into a Nurſery: The beſt Seaſon for removing them is in the Beginning of *April*, when the drying Eaſterly Winds of *March* are over; and, if poſſible, chuſe a cloudy Day, when it is inclinable to Rain: And in taking them out of the Seed-bed, preſerve the Roots as intire as poſſible, and, if you can, a Ball of Earth to each Plant. The Soil in which theſe Trees ſhould be planted, (as I before ſaid) ſhould be, for the two firſt Sorts, a warm Sand or Gravel; which when you have prepar'd, by careful digging and cleanſing from all noxious Weeds, you muſt lay it level: Then draw the Lines where the Trees are to be planted at three Feet aſunder, and plant the Trees at eighteen Inches Diſtance in the Rows, obſerving to cloſe the Earth well to their Roots, as alſo to lay a little Mulch upon the Surface of the Ground about their Stems; and water them well, to ſettle the Earth to their Roots; which ſhould be repeated twice a Week, until the Plants have taken freſh Root.

Theſe Plants may remain in the Nurſery three or four Years, according to the Progreſs they make, or your Ground is ready where they are to be planted: But if you intend to let them remain longer, you ſhould take up every other Tree in the Rows, and tranſplant out; for otherwiſe their Roots will be matted together, ſo that it will render it difficult to tranſplant them, as alſo endanger the future Growth of the Trees. When they are planted out for good, (if they are deſign'd for Timber) they ſhould be planted about eighteen or twenty Feet Diſtance every Way, and be very careful in removing them, not to ſhake the Earth from their Roots; to prevent which, you ſhould open the Ground about each Tree, cutting off all long Roots: Then working under the Ball of Earth, cut the downright Roots off; and after having pared off all the Earth from the upper Part of the Ball, as alſo reduc'd the Bulk of it, ſo that its Weight may not be too great for the Fibres to ſupport, they may be carried upon a Hand-Barrow by two Perſons to the Place where they are to be planted: but if they are to be carry'd to a very diſtant Place, they ſhould either be put into Baſkets, or their Roots cloſely matted up. When they are planted, you muſt ſettle the Earth cloſe to their Roots, (as before) laying a little Mulch upon the Surface of the Ground about their Stems, to prevent the Sun and Wind from entering the Earth to dry their Fibres; and water them well, to ſettle the Ground to their Roots; which muſt alſo be repeated (if the Weather be dry) until they have taken Root: after which Time they will require little more Care than to keep them clear from Weeds.

The firſt, which is the moſt common Sort in *England*, ſeldom produces good Seeds in this Country; it is therefore the beſt Way to have the Cones brought over intire from the South Parts of *France* or *Italy*, where they ripen perfectly well, and take the Seeds out juſt before you ſow them; for they will keep much better in the Cones, than if they are taken out: The Method to get the Seeds out, is to expoſe the Cones to a gentle Heat, which will cauſe them to open, and eaſily emit their Seeds.

The ſecond Sort produces very good Seeds in *England*; ſo that we may hope to be ſupply'd with Seeds in Plenty, in a few Years, from Trees of our own Growth: And as this is the more valuable Tree, ſo it will be no ſmall Advantage to our Plantations of Timber to introduce it amongſt them, eſpecially thoſe of Ever-green Trees.

The *Virginian* Kind may alſo be propagated in as great Plenty; for the Cones of this may be eaſily procur'd from *Carolina* or *Virginia*, in both which Places they grow in great Abundance; and the Seeds will riſe as eaſily as any of the other Sorts, and are equally as hardy; Theſe have been formerly kept in Pots and hous'd in Winter; with which Management they have not ſucceeded ſo well, as they have done in *England*, ſince People have planted them into the full Ground; and where they have had a moiſt Soil, I have obſerv'd them to thrive beſt: Which is ſince confirm'd by Mr. *Cateſby*, in his *Natural Hiſtory of* Carolina, where he ſays, that this Tree grows in Places where the Water commonly covers the Surface of the Ground three or four Feet; ſo that it may be a very great Improvement to our boggy Soils. This Tree caſting its Leaves in Winter, does not ſo well ſuit with Plantations of Ever-greens at that Seaſon; tho' in Summer, when there is the greateſt Pleaſure in walking among Plantations of Trees, it hath ſo much the Appearance of an Ever-green, as to paſs for ſuch, and therefore may be of Service to compleat Plantations, or Viſta's of *Cypreſs-Trees*, where it may ſo happen, that a low marſhy Spot of Ground may intervene.

The fourth Sort of theſe Trees is rarely to be ſeen in the *Engliſh* Gardens at preſent, nor is it ſo well worth Cultivating as any of the other Kinds, it being of humbler Growth, and of a leſs regular Figure. This may be propagated by Seeds in the ſame Manner as the common Sort, and is equally hardy; ſo that whoever hath an Inclination to cultivate this Tree, ſhould procure the Cones from *Liſbon*, near which Place it grows very common.

The fifth Sort is a Native of *North America*, where it grows to a conſiderable Height, and affords a uſeful Timber to the Inhabitants for many Purpoſes. This Sort is extremely worth cultivating in *England*; for as it grows in a much colder Country, ſo there is no Danger of its thriving well in the open Air in *England*; and being an Ever-green of regular Growth, ſo will add to the Variety in Wilderneſs Quarters, or other Plantations of Ever-green Trees.

This Sort is propagated by Seeds, which ſhould be ſown in the Spring, in Boxes or Tubs filled with light freſh Earth, and placed where they may enjoy the Morning Sun till eleven or twelve o' Clock; in dry Weather they ſhould be duly watered, and conſtantly kept clear from Weeds: In this Situation they may remain till *Michaelmas*, when they ſhould be removed to a warmer Place; for the Plants will not appear till the following Spring, ſo that it will be proper to place the Boxes or Tubs near a South Wall, Pale, or Hedge, during the Winter Seaſon, leſt by being too much ſhaded, the Wet of the Winter Seaſon ſhould rot the Seeds. In the Spring following, if theſe Tubs or Boxes are placed on a moderate Hot-bed, it will bring up the Plants very ſoon, and greatly forward their Growth; but as the Spring advances, ſo they ſhould be inured to bear the open Air by degrees; and in *May* they muſt be taken out of the Hot-bed, and placed in a ſheltered Situation, where they may enjoy the Morning Sun, being careful to keep them clear from Weeds, as alſo to water them duly in dry Weather. The following Winter it will be proper to remove the Tubs near a South Wall or Pale; for the Plants being very young, are ſomewhat tenderer than they will be afterward. Toward the latter End of *March*, or the Beginning of *April*, juſt before the Plants begin to ſhoot, they ſhould be carefully taken up out of the Boxes; and having prepared a Bed or two (according to the Quantity of Plants raiſed) of freſh Earth in a warm Situation, the Plants ſhould be planted therein in Rows about eighteen Inches aſunder, and about a Foot Diſtance Plant from Plant in the Rows: This Work ſhould be done in cloudy Weather, or when there is Rain; for in dry Weather, when Eaſterly Winds commonly blow at this Seaſon, it will be very dangerous to tranſplant theſe Plants; ſo that it had better be deferr'd a Fortnight longer, till there is an Alteration of Weather, than hazard the Plants. When the Plants are planted, they ſhould be watered to ſettle the Earth to their Roots; and then the Surface of the Ground ſhould be covered with Mulch, to prevent the Sun and Wind from penetrating to the Roots of the Plants; for nothing is more injurious to theſe Plants, than to have their Fibres dried when they are tranſplanted; therefore the Plants ſhould not be taken out of the Tubs, till you are ready to place them in the Ground; for they will not bear to lie out of the Ground any Time without great Danger.

Theſe Plants may remain in the Beds, where they are firſt tranſplanted, three or four Years; during which Time the Ground muſt be conſtantly kept clear from Weeds; and every Spring the Ground muſt be carefully dug between the Plants, in doing of which great Care ſhould be had, not to diſturb their Roots, nor to lay them bare, leſt the Wind and Sun ſhould injure them. When the Plants are about two Feet and a half, or three Feet high, they ſhould be tranſplanted where they are to remain: The Time for this Work is in *April*, in moiſt cloudy Weather. In taking of the Plants up, there ſhould be as much Earth preſerved to their Roots as poſſible; and if they are to be carried to any Diſtance, it will be proper to put them in Baſkets, to prevent the Earth from falling from them; for if it ſhould, there will be great Hazard of their growing: When they are planted, they muſt be well watered to ſettle the Earth to their Roots; and ſome Mulch ſhould be laid upon the Ground about their Roots, to prevent the Wind and Sun from drying of them; and if the Seaſon ſhould prove dry, it will be proper to water them once or twice a Week until they are thoroughly rooted; after which Time they will require no other Culture, but to keep them clear from Weeds, and dig the Ground about them every Spring; with this Management the Plants will make great Progreſs, and in a few Years will be out of any Danger.

This Sort of *Cypreſs* will grow as large in this Country, as the common Kind; ſo will be very proper to intermix with them, either in Wilderneſſes, or in any other Plantations of theſe Trees, which will make an agreeable Diverſity; and the Wood of theſe Trees may in Time become uſeful for many Purpoſes.

But ſuppoſing the Timber of theſe Trees were of no Uſe, yet are they ſo very ornamental to Gardens, that no large Garden can be complete without many of theſe Trees; and it is to theſe Trees that the *Italian* Villa's owe a great Share of their Beauty: for there is no Tree ſo proper to place near Buildings: the pyramidal upright Growth of their Branches afford a pictureſque Appearance, and do not obſtruct the View of the Building; and the Dark-green of their Leaves make a fine Contraſt with the White of their Building. So that, where-ever there are Temples or other Buildings erected in Gardens, there is no Sort of Tree ſo proper to place near them as theſe. In all the Landſkips of *Italian* Villa's, we ſee many Cypreſs Trees repreſented, which have a very agreeable Effect in the Picture; and the Trees, when rightly diſpoſed in a Garden, afford a no leſs agreeable Proſpect.

CYSTICAPNOS: [of κύςις, a *Bladder*, and καπνὸς, *i. e.* Fumitory, q. d. the Bladder Fumitory] *African* Bladder Fumitory.

The *Characters* are;

It hath an annual fibroſe Root; the Leaves, Branches, and Flowers, have the Appearance of Climbing Fumitory; the Fruit is an oval Bladder pierc'd thro' by an Axis, to which are faſten'd round Seeds on every Side, incloſ'd again with one common Veſicle, which is expanded about the Axis.

There is but one *Species* of this Plant at preſent known, which is;

Cysticapnos *Africana ſcandens. Boerh. Ind. African* Climbing Bladder Fumitory.

This Plant is annual; the Seeds of which may be ſown on a warm Border, where it is to remain, for it doth not care to be remov'd: It flowers in *July*, and the Seeds are perfected in *Auguſt* or *September*. It is a Plant of no great Beauty, but is preſerv'd in curious Botanick Gardens for the Sake of Variety.

CYTISO-GENISTA; [It is ſo call'd, becauſe it reſembles both the Plants *Cytiſus* and *Geniſta*] Common (or Green) Broom.

The *Characters* are;

It hath Papilionaceous (or Butterfly) Flowers; which are ſucceeded by compreſs'd Pods, in which are contain'd many Kidney-ſhap'd Seeds; the Branches of the Tree are flexible, and have ſometimes ſingle, and other times three Leaves join'd together.

There is but one *Species* of this Plant, which is,

Cytiso-genista *ſcoparia vulgaris, flore luteo. Tourn.* Common Broom.

This Shrub is rarely preſerv'd in Gardens, but grows wild upon barren dry Heaths in divers Parts of *England*, though, for Variety ſake, it may have a Place amongſt flowering Shrubs of a middle Growth in ſmaller Wilderneſs Quarters, where it will appear very well. This may be propagated by ſowing the Seeds in the Spring, or in Autumn ſoon after ripe; and when the Plants are one Year old, they ſhould be tranſplanted into a Nurſery, in order to prevent their making downright Roots, which this Plant is very ſubject to; and when they have remain'd two Years in the Nurſery, they will be fit to tranſplant into the Places where they are deſign'd to ſtand for good. The beſt Seaſon for tranſplanting theſe Shrubs is in the Beginning of *April*, when the drying Winds are over, and, if poſſible, chuſe a moiſt cloudy Day for this Work: After they are planted, the Earth ſhould be cloſ'd to their Roots, and a little Mulch laid thereon; then give them a good Watering, to ſettle the Earth to their Roots, and if the Seaſon ſhould prove dry, it ſhould be repeated twice a Week until they have taken freſh Roots, after which they will require very little Care.

This Plant is ſometimes us'd in Medicine.

CYTISUS; [This Plant takes its Name from *Cytiſus*, an Iſland where it grew in great Plenty] Baſe Tree Trefoil.

The *Characters* are;

It hath Papilionaceous (or Pea-bloom) Flowers, which are ſucceeded by compreſs'd Pods, in which are contain'd ſeveral Kidney-ſhap'd Seeds; to which may be added, the Leaves are for the moſt part roundiſh, and ſomewhat like thoſe of the Nettle-Tree.

The *Species* are;

1. Cytisus *Alpinus latifolius, flore racemoſo pendulo. Tourn.* The broad-leav'd Laburnum or Bean-Trefoil.

2. Cytisus *Alpinus anguſtifolius, flore racemoſo pendulo longiori. Tourn.* The narrow-leav'd Laburnum or Bean-Trefoil, with long pendulous Flowers.

3. Cytisus *Alpinus, flore racemoſo pendulo breviori. Tourn.* Broad-leav'd Laburnum or Bean-Trefoil, with very ſhort pendulous Flowers.

4. Cytisus *glaber nigricans. C. B.* The Black Baſe-tree Trefoil.

5. Cytisus *Canarienſis ſempervirens & incanus. Hort. Amſt.* Hoary Ever-green Canary Tree Trefoil.

6. Cytisus *glabris foliis ſubrotundis, pediculis breviſſimis. C. B. P.* Round-leav'd ſmooth Baſe-tree Trefoil, with ſhort Footſtalks. This is commonly ſold by the Nurſery Gardeners, under the Title of *Cytiſus ſecundus Cluſii.*

7. Cytisus *hirſutus. J. B.* Hairy Baſe-tree Ttrefoil.

8. Cytisus *ſpinoſus. H. L.* Prickly Baſe-tree Trefoil.

9. Cytisus *Monſpeluſanus, medicæ folio, ſiliquis denſe congeſtis & villoſis. Tourn.* Baſe-tree Trefoil of *Montpelier*, with medic Leaves, and hairy Pods, growing in Bunches.

10. Cytisus *incanus, ſiliquâ longiore. C. B. P.* Hoary Baſe-tree Trefoil, with a longer Pod.

11. Cytisus *hirſutus, flore luteo purpuraſcente. C. B. P.* Hairy Baſe-tree Trefoil, with a purpliſh yellow Flower.

12. Cytisus *glaber viridis. C. B. P.* Smooth green Baſe-tree Trefoil.

13. Cytisus *foliis incanis anguſtis, quaſi complicatis. C. B. P.* Baſe-tree Trefoil, with narrow hoary Leaves.

14. Cytisus *humilis argenteus anguſtifolius. Tourn.* Silvery-dwarf Baſe-tree Trefoil, with narrow Leaves.

15. Cytisus *glutinoſus, omnium minimus. Tourn.* The leaſt clammy Baſe-tree Trefoil.

16. Cytisus *argenteus linifolius, inſularum Stæchadum. Tourn.* Silvery Flax-leav'd Baſe-tree Trefoil, of the *Stechades Iſlands.*

17. Cytisus *Hiſpanicus procerior, anagyridis folio, floribus glomeratis. Tourn.* Taller *Spaniſh* Baſe-tree Trefoil, with an anagyris Leaf, and glomerated Flowers.

18. Cytisus *Hiſpanicus humilior, floribus glomeratis. Tourn.* Lower *Spaniſh* Baſe-tree Trefoil, with glomerated Flowers.

19. Cytisus *Luſitanicus, medicæ foliis, floribus in foliorum alis. Tourn. Portugal* Baſe-tree Trefoil, with a medic Leaf, and the Flowers growing at the Wings of the Leaves.

20. Cytisus *Luſitanicus, foliis minimis argenteis, parvo flore albo. Tourn. Portugal* Baſe-tree Trefoil, with the leaſt Silvery-leaves, and a ſmall white Flower.

21. Cytisus *Luſitanicus, foliis exiguis, magno flore, ſiliquis latis & tomentoſis. Tourn. Portugal* Baſe-tree Trefoil, with ſmall Leaves, a large Flower, and broad woolly Pods.

22. Cytisus *ſpinoſus, ſiliquâ villoſa incanâ. Tourn. Cor.* Prickly Baſe-tree Trefoil, with white hairy Pods.

23. Cytisus *ſpinoſus Creticus, ſiliquâ villis denſiſſimis longiſſimis & incanis obductâ. Tourn. Cor.* Prickly Baſe-tree Trefoil of *Crete*, with Pods covered with a thick long hoary Down.

24. Cytisus *orientalis minimus humifuſus. Tourn. Cor.* The leaſt low *Eaſtern* Baſe-tree Trefoil.

25. Cytisus *orientalis humifuſus, flore magno ex luteo purpuraſcente. Tourn. Cor.* Low *Eaſtern* Baſe-tree Trefoil, with a large purpliſh yellow Flower.

26. Cytisus *orientalis humifuſus, facie trifolii pratenſis. Tourn. Cor.* Low *Eaſtern* Baſe-tree Trefoil, with the Appearance of Meadow Trefoil.

27. Cytisus *foliis argenteis. Wheel. Itin.* Silvery Baſe-tree Trefoil of Sir *George Wheeler.*

28. Cytisus *orientalis, medicæ foliis incanis & villoſis, flore flaveſcente. Tourn. Cor. Eaſtern* Baſe-tree Trefoil, with hoary and hairy Leaves, and a yellowiſh Flower.

29. Cytisus *orientalis latifolius ſubtus incanus. Tourn. Cor. Eaſtern* Baſe-tree Trefoil, with broad Leaves, which are hoary underneath.

30. Cytisus *Africanus argenteus, flore atropurpureo. Oldenl.* Silvery *African* Baſe-tree Trefoil, with a dark purple Flower.

31. Cytisus *Africanus hirſutus anguſtifolius. Oldenl.* Hairy *African* Baſe-tree Trefoil, with narrow Leaves.

32. Cytisus *Americanus ſpinoſus, floribus luteis ad alas naſcentibus. Plum. Cat.* Prickly *American* Baſe-tree Trefoil, with yellow Flowers growing at the Wings of the Leaves.

33. Cytisus *Americanus fruteſcens ſericeus. Plum. Cat.* Shrubby-ſilky *American* Baſe-tree Trefoil.

34. Cytisus *Americanus arboreſcens, fructu eduli albo. Plum. Cat. American* Tree-like Baſe-tree Trefoil, with a white eatable Fruit, commonly called the *Pigeon Pea* in *America*.

The firſt, ſecond, and third Sorts grow to be large Trees, and are therefore proper for large Quarters of Flowering-trees, eſpecially the firſt, which will grow to be eighteen or twenty Feet high: Their Seaſon of Flowering is in *May*, at which Time they afford a very agreeable Proſpect, eſpecially that Sort with long pendulous Flowers, which is by far the moſt beautiful Kind.

Theſe are all propagated by ſowing their Seeds (which they afford in Plenty) in *March* on a Bed of good freſh light Earth, ſifting a little Mould over them about half an Inch thick, and in about a Month's Time the Plants will come up; you muſt therefore keep them clear from Weeds, and if the Seaſon ſhould prove dry, you muſt often refreſh them with Water, which will greatly promote their Growth: In this Bed they may remain until *March* following, when you may tranſplant them into a Nurſery, in Rows three Feet Diſtance, and one Foot aſunder in the Rows, being careful not to break the Roots, which are very tender, as alſo to water and mulch their Roots, to prevent the Sun and Wind from drying their Fibres: This Nurſery muſt alſo be kept very clear from Weeds, and every Spring the Ground between the Rows ſhould be dug, to looſen the Earth, and deſtroy the Weeds. In this Nurſery they may remain two or three Years, according to the Progreſs they make, or the Ground where they are to be planted is ready; but however if they ſtand longer than three Years, every other Tree ſhould be remov'd, or elſe they ſhould at firſt be planted at a much greater Diſtance; for otherwiſe their Roots will intermix, and render it difficult to remove them ſafely. The Seaſon for tranſplanting theſe Trees, is either in *October* or *February*, obſerving to mulch and water them as before.

The fourth ſeldom riſes with us to be above five or ſix Feet high, and may be kept to a regular Head: This ſhould therefore be planted in ſmaller Quarters, with Shrubs of the ſame Growth. It flowers in *June*, at which Time it makes an agreeable Figure, for the Flowers are produc'd in large Cluſters very cloſe together, ſo that the whole Shrub is cover'd with them. This may be propagated in the ſame Manner as the former.

The fifth Sort is tender, and requires a Green-houſe in Winter, where it ſhould be plac'd to have as much open free Air as poſſible when the Weather is good, but muſt be ſcreen'd from Froſt, and cold nipping Winds: In the Summer it may be expos'd abroad, with *Oranges*, *Myrtles*, &c. It ſhould have a freſh light Soil, and frequent Waterings in that Seaſon. This Plant may be either propagated by Seeds, (which ſhould be ſown on a Hot-bed in the Spring; and when the Plants come up, they may be planted into ſmall Pots, and manag'd as directed for the *African Tree-Milkwort*) or by Layers, which ſhould be laid down in the Spring; and if kept duly water'd, will take Root againſt the ſucceeding Spring, when they may be taken off and tranſplanted into Pots, which ſhould be fill'd with the ſame light Soil as was before directed, ſetting the Pots into a ſhady Place until the Plants have taken freſh Root; after which Time they may be expos'd with the old Plants, and manag'd as directed for them.

The ſixth Sort is very common in the Nurſeries about *London*; where it is ſold with other flowering Shrubs, to intermix in planting Wilderneſs Quarters. This may be eaſily propagated by the Seeds, which it produces every Year in great Plenty; which ſhould be ſown on a Bed of light Earth in *March*, and a little Earth ſifted over the Seeds, ſo as to cover them about half an Inch. In the Beginning of *May* the Plants will begin to appear, when they ſhould be carefully clear'd from Weeds, and in very dry Weather they muſt be refreſhed with Water. In this Bed the Plants may remain till the following Spring, always obſerving to keep them clear from Weeds; which, if ſuffer'd to overbear the Plants while young, will either totally deſtroy them, or very much retard their Growth. The Spring following they may be tranſplanted out into Beds of freſh Earth the Beginning of *March*, placing them about a Foot aſunder; being careful that the Plants are not kept above Ground, but planted as ſoon as they are taken up; otherwiſe the Fibres of the Roots will ſoon dry, which is very prejudicial to young Plants. In theſe Beds they may remain two Years; after which Time they ſhould either be planted out where they are to remain, or elſe tranſplanted into a Nurſery, placing them in Rows three Feet aſunder, and eighteen Inches Diſtance in the Rows; where they may continue until the Ground is ready where they are deſigned to remain. This Plant is very hardy, and will form a handſome Shrub about five or ſix Feet high, and is very proper to place amongſt flowering Shrubs of the ſame Growth. It flowers plentifully in *June*, and the Seeds are ripe in *Auguſt*.

The ſeventh, eighth, and ninth Sorts are ſomewhat tenderer than the former, and will not abide the open Air in *England* in ſevere Winters. Theſe may be all propagated by ſowing of their Seeds on a moderate Hot-bed in the Spring; and when the Plants are come up, they ſhould be tranſplanted each into a ſeparate Halfpenny Pot, filled with freſh Earth, and plunged in a moderate Hot-bed, obſerving to water and ſhade them until they take Root; after which they muſt be inured to the open Air by Degrees; and in *June*, the Pots ſhould be removed and placed abroad in a Situation where they may be defended from ſtrong Winds, where they may remain until the Middle of *October*; when they ſhould be removed either into an airy Green-houſe, or placed under a common Hot-bed Frame; where they ſhould have as much free Air as poſſible in Winter, for they only require to be defended from hard Froſts; and if they have not much Air, they will draw very weak, and become tender and unſightly. Theſe Plants ſhould be removed into larger Pots the Spring following; and ſo from Year to Year, as they increaſe in Size, they ſhould have larger Pots: in Summer they muſt be kept as long abroad as the Seaſon will permit, and in Winter ſhould have as much Air as poſſible in mild Weather; with which Management they will thrive, and produce great Plenty of Flowers. When theſe Plants are become woody, they may be ſhaken out of the Pots, and planted in the open Air in a warm Situation, where they will endure the Cold of our ordinary Winters very well, and flower and produce ripe Seeds every Year, much better than thoſe which are confined in Pots: but it will be proper to keep one Plant of each Kind in Pots, becauſe a very ſevere Winter may deſtroy thoſe which ſtand abroad; ſo their Kinds may be loſt, unleſs there is one of each Kind preſerved by ſheltering of them in Winter.

The thirteen Sorts next following of theſe, are ſome of them more tender than the four laſt mentioned; ſo that there will be a Neceſſity of preſerving ſome of them in Pots, that they may be ſheltered in Winter. All theſe Sorts may be propagated in the ſame Manner as the former.

The twenty-third, twenty-fourth, twenty-fifth, twenty-ſixth, twenty-ſeventh, twenty-eighth and twenty-ninth Sorts, are leſs common than the former; theſe grow in the Iſlands of the *Archipelago*, from whence their Seeds may be procured: theſe Seeds ſhould be ſown in the Spring, on a very moderate Hot-bed; and when the Plants are come up, they ſhould be carefully tranſplanted, each into a ſeparate ſmall Pot, filled with freſh light Earth; then place them where they may be ſheltered from the Sun until they have taken new Roots, after which Time they may be removed into a warm Situation, where they may be defended from ſtrong Winds, obſerving to water them conſtantly in dry Weather. In Winter theſe Plants ſhould be placed under a Hot-bed Frame, where they may be ſheltered from Froſt, but they ſhould be every Day expoſed to the open Air in mild Weather; for they are hardy enough to bear the open Air of this Country, except in very cold Weather; and if they are kept too tender, they will draw up very weak, ſo that they will not produce their Flowers.

The following Spring, ſome of theſe Plants ſhould be ſhaken out of the Pots, and planted in a warm Situation in the full Ground; where they will thrive very well, and produce their Flowers every Spring, and ſome of them will perfect their Seeds; but it will be proper to preſerve a Plant or two of each Kind in Pots, that may be ſheltered in Winter; becauſe thoſe abroad may be deſtroyed by ſevere Froſt. Theſe Plants make a fine Diverſity amongſt flowering Shrubs of a middling Growth; ſo that they deſerve a Place in every good Garden.

The two *African* Sorts are yet tenderer than either of the former; theſe will not bear the open Air of our Country in Winter, ſo muſt be conſtantly preſerved in Pots, and removed into the Green-houſe in Winter, where they ſhould be placed ſo as to enjoy as much free Air as poſſible in mild Weather; otherwiſe they will ſhoot very weak, and become unſightly: nor will they produce their Flowers in near ſo great Plenty, as when they are expoſed to Air as much as poſſible in mild Weather.

Theſe Sorts are propagated by Seeds, which ſhould be ſown early in the Spring, in Pots filled with light freſh Earth, which ſhould be plunged into a Hot-bed of Tanners-bark, obſerving to water them gently as the Earth may require. When the Plants are come up two Inches high, they ſhould be carefully tranſplanted, each into a ſeparate ſmall Pot, which ſhould be plunged into a moderate Hot-bed, obſerving to ſcreen them from the Sun until they have taken new Roots; after which Time the Glaſſes of the Hot-bed ſhould be raiſed every Day, to admit freſh Air to the Plants; and they muſt be duly watered three or four times a Week in warm Weather. By the Beginning of *June*, theſe Plants will have acquired ſome Strength; then they ſhould be inured to bear the open Air by Degrees; and toward the End of *June*, if the Seaſon proves warm, the Plants ſhould be removed out of the Hot-bed, and placed in a warm Situation, where they may remain until *October*; when they muſt be removed into Shelter, placing them near the Windows of the Green-houſe, that they may enjoy a large Share of Air. During the Winter Seaſon, theſe Plants muſt be frequently watered, but they muſt not have too much given them at a Time, leſt it rot the Fibres of their Roots. In Summer they muſt be expoſed again, with other exotic Plants, in a ſheltered Situation, where they may be defended from ſtrong Winds; and as the Plants increaſe in Size, ſo they muſt be put into larger Pots; but they muſt not be allowed Pots too large, for in theſe they will not thrive.

The thirty-ſecond and thirty-third Sorts are yet more tender than the laſt mentioned; theſe being Natives of the warm Parts of *America*, will not live in this Climate, unleſs they are preſerved in the warmeſt Stoves. They are propagated by Seeds, which ſhould be ſown early in the Spring, in Pots filled with rich light Earth, and plunged into a Hot-bed of Tanners-bark. When the Plants are come up about three Inches high, they ſhould be each tranſplanted into a ſmall Pot, filled with light freſh Earth, and plunged again into the Hot-bed, obſerving to ſhade them until they have taken Root again; then in warm Weather, the Glaſſes of the Hot-bed ſhould be raiſed every Day to admit freſh Air, in proportion to the Warmth of the Seaſon; and they muſt be frequently watered in hot Weather. Theſe Plants may remain in the Hot-bed during the Summer Seaſon, but in Autumn they muſt be removed into the Stove, and plunged into the Bark-bed; where if they are duly watered, and the Stove kept to a temperate Heat, they will thrive exceeding well. Theſe Plants will not live in the open Air in this Country at any Seaſon of the Year, ſo they ſhould always remain in the Stove, being careful to admit freſh Air to the Plants in warm Weather, by opening the Glaſſes of the Stove; and as the Plants advance, ſo they ſhould be removed into larger Pots: With this Management, the Plants will continue many Years, and produce their Flowers, which will afford an agreeable Variety amongſt other Plants of the ſame Country.

The thirty-fourth Sort is preſerved as a Curioſity in *Europe*, but in the *Weſt-Indies* it is frequently planted by the Sides of Allies in Gardens, to form a Hedge, where they will laſt many Years without decaying; and will thrive on barren Land, which has been worn out, where ſcarcely any other Plant will proſper. It produces great Quantities of Fruit, which are ſometimes eaten by the Inhabitants; but their chief Uſe is to feed Pigeons, from whence this Plant had its Name. The Branches, with the ripe Peaſe and Leaves, are given to Hogs, Horſes, and moſt other Cattle, which fattens them very much.

In *England*, it is preſerved by ſome curious Perſons in the Stove, being too tender to live thro' the Winter in this Climate without artificial Warmth. This Plant may be propagated by ſowing of the Seeds on a Hot-bed early in the Spring; and when the Plants are come up, they ſhould be each tranſplanted into a Half-penny Pot, filled with freſh light Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to ſhade them until they have taken Root; after which Time they ſhould have a large Share of freſh Air admitted to them in warm Weather, and muſt be frequently refreſhed with Water: When the Plants have filled theſe Pots with their Roots, they ſhould be ſhifted into larger, and plunged into the Hot-bed again, treating them as before: In this Bed they may remain till they are too tall to ſtand under the Glaſſes, when they ſhould be removed into the Stove, and plunged into the Bark-bed; where during the Winter Seaſon they ſhould have a moderate Heat, and be frequently watered. The Spring following they will produce Flowers, and if they are preſerved in the Stove, will perfect their Fruit in Summer.

DA

DAFFODIL. *Vide* Narciſſus.

DAISIES. *Vide* Bellis.

DALECHAMPIA.

This Plant was ſo named by Father PLUMIER, *in Honour to the Memory of* JACOBUS DALECHAMP, *who was a curious Botaniſt.*

The *Characters* are;

It hath Male and Female Flowers on the ſame Plant, which are contain'd in a many-leav'd prickly Cup; the Female Flowers, with the Embryo's, have two trifid Leaves; the Male Flowers conſiſt of a great Number of Stamina, which are loaded with Farina: the Embryo afterward becomes a Fruit, which is divided into three Parts, each containing one roundiſh Seed.

We have but one *Sort* of this Plant, which is;

DALECHAMPIA *ſcandens, lupuli foliis, fructu tricocco glabro, calyce hiſpido. Houſt.* Climbing Dalechampia, with Leaves like Hops, a ſmooth three-ſeeded Fruit, and a prickly Cup.

This Plant is a Native of the warm Parts of *America*; it was diſcovered by Father *Plumier* in *Martinico*; but either he has miſtaken in his Deſcription of the Fruit, or his Kind is different from that which the late Dr. *Houſtoun* obſerved in ſeveral Places in the *Spaniſh Weſt-Indies*; for Father *Plumier* deſcribes the Fruit to be prickly, in the Sort which he ſaw; whereas that of Dr. *Houſtoun* has ſmooth Fruit incloſed in a prickly Cup.

This Plant is propagated by Seeds, which muſt be ſown early in the Spring on a Hot-bed: and when the Plants are come up three Inches high, they ſhould be carefully tranſplanted, each into a ſeparate ſmall Pot, filled with light rich Earth, and then plunged into a Hot-bed of Tanners-bark; being careful to ſcreen them from the Sun, until they have taken new Root; after which Time, the Glaſſes of the Hot-bed ſhould be raiſed every Day, in proportion to the Heat of the Weather, to admit freſh Air to the Plants: They muſt alſo be frequently watered, for they naturally grow in moiſt Places. When the Plants have grown ſo large as to fill theſe Pots with their Roots, they ſhould be removed into larger Pots, and placed in the Bark-bed in the Stove; where they muſt be ſupported either with Stakes, or a Trellace, round which they will twine, and riſe to the Height of eight or ten Feet.

Theſe Plants muſt be kept conſtantly in the Stove, for they are too tender to bear the open Air in this Country, even in the Summer Seaſon. Therefore they ſhould be placed with *Convolvulus's*, and other twining Plants, near the Back of the Stove, where ſhould be made an Eſpalier to ſupport them; in which Situation they will thrive and produce their Flowers, and ſometimes will perfect their Seeds in this Country. But in order to this, they ſhould have a large Share of free Air in warm Weather, by drawing down the upper Glaſſes of the Stove; but in Winter the Stove ſhould be kept to a temperate Heat, or rather higher. In Summer they will require a large Share of Water, but in Winter it ſhould be given to them in leſs Quantities, but muſt be frequently repeated. Theſe Plants do not continue above two or three Years; ſo that young Plants ſhould be raiſed in order to preſerve the Kind.

DAMASONIUM, Star-headed Water-plantain.

The *Characters* are;

It hath a Flower compoſed of three Leaves, which are placed orbicularly, and expand in Form of a Roſe; out of the Flower-cup riſes the Pointal, which afterward becomes a ſtar-ſhaped Fruit, with many Cells, which are full of oblong Seeds.

The *Species* are;

1. DAMASONIUM *ſtellatum. Lugd.* Star-headed Water-plantain.

2. DAMASONIUM *Americanum maximum, plantaginis folio, flore flaveſcente, fructu globoſo. Plum.* Greateſt *American* Water-plantain, with a Plantain Leaf, a yellowiſh Flower, and a globular Fruit.

The firſt of theſe Plants is a Native of *England*, it grows commonly in ſtanding Waters, which are not very deep. It is ſometimes uſed in Medicine, but never cultivated in

Gardens, ſo muſt be gathered for Uſe in the Places of its Growth.

The ſecond Sort grows in *Jamaica*, *Barbados*, and ſeveral other Places in the warm Parts of *America*, where it is generally found in ſtagnating Waters, and other ſwampy Places: ſo that it would be difficult to preſerve this Plant in *England*; for it will not live in the open Air, and requires a Bog to make it thrive. But as it is a Plant of no great Beauty or Uſe, ſo it is not worth the Trouble of cultivating in this Country.

DANDELION. *Vide* Dens Leonis.

DATE-TREE. *Vide* Palma.

DAUCUS; [δαῦκος, which ſome derive of δαίω, Gr. *to burn*, of its ſharp and fiery Power, or fervent Taſte.] The Carrot.

The *Characters* are;

It hath for the moſt part a fleſhy Root; the Leaves are divided into narrow Segments; the Petals of the Flower are unequal, and ſhap'd like a Heart; the Umbel when ripe is hollow'd and contracted, appearing ſomewhat like a Bird's Neſt; the Seeds are hairy, and in Shape of Lice.

The *Species* are;

1. DAUCUS *vulgaris. Cluſ.* Common wild Carrot.
2. DAUCUS *ſylveſtris humilior, latiore folio.* Dwarf wild Carrot, with broader Leaves.
3. DAUCUS *ſativus, radice atro-rubente. Tourn.* Dark red-rooted Garden-Carrot.
4. DAUCUS *ſativus, radice aurantii coloris. Tourn.* The Orange-colour'd Carrot.
5. DAUCUS *ſativus, radice alba. Tourn.* The White Carrot.

The firſt of theſe Species grows wild upon arable Land in moſt Parts of *England*, and is ſeldom cultivated except in Botanick Gardens. This is the particular Sort which ſhould be us'd in Medicine, and for which the Druggiſts commonly ſell the Seeds of the Garden *Carrot*.

The ſecond Sort was found by Mr. *Rand*, near *Dover*, and is ſpecifically different from the common Sort, as hath been prov'd by ſowing them together in a Garden for ſeveral Years.

The fourth Sort is commonly cultivated in Gardens for the Kitchen; as is the fifth Sort, tho' not ſo common in *England* as the former: nor would they be worth the Gardeners while to propagate them; for their pale Colour would render them leſs acceptable in the Markets, where the deepeſt-colour'd *Carrots* are always moſt eſteem'd, tho' for the Table, the White is generally preferr'd as the ſweeteſt.

They are propagated at two or three different Seaſons, or ſometimes oftener, where People are fond of young *Carrots* through all the Summer Months. The firſt Seaſon for ſowing the Seeds, is ſoon after *Chriſtmas*, if the Weather is open, which ſhould be in warm Borders, under Walls, Pales, or Hedges, but they ſhould not be ſown immediately cloſe thereto; but a Border of *Lettuce*, or other young Sallad-herbs, of about ſix or eight Inches wide, ſhould be next the Wall, *&c.* for if the *Carrots* were ſown cloſe to the Wall, they would run up to Seed without making any tolerable Roots.

Theſe delight in a warm ſandy Soil which is light, and ſhould be dug pretty deep, that the Roots may the better run down; for if they meet with any Obſtruction, they are very apt to grow forked, and ſhoot out lateral Roots, eſpecially where the Ground is too much dung'd the ſame Year that the Seeds are ſown, which will alſo occaſion their being Worm-eaten; it is therefore the better Method to dung the Ground intended for *Carrots* the Year before they are ſown, that it may be conſum'd and mix'd with the Earth.

Theſe Seeds have a great Quantity of ſmall forked Hairs upon their Borders, by which they cloſely adhere, ſo that they are difficult to ſow even ſo as not to come up in Patches; you ſhould therefore rub it well through both Hands, whereby the Seed will be ſeparated before it is ſown: then you ſhould chuſe a calm Day to ſow it, for if the Wind blows, it will be impoſſible to ſow it equal; for the Seeds being very light, will be blown into Heaps: When the Seed is ſown, you ſhould tread the Ground pretty cloſe with your Feet, that it may be buried, and then rake the Ground level.

When the Plants are come up, you ſhould hough the Ground with a ſmall Hough about three Inches wide, cutting down all young Weeds, and ſeparating the Plants to four Inches Diſtance each way, that they may get Strength; and in about three Weeks after, when the Weeds begin to grow again, you ſhould hough the Ground over a ſecond time, in which you ſhould be careful not to leave two *Carrots* cloſe to each other, as alſo to ſeparate them to a greater Diſtance, cutting down all Weeds, and ſlightly ſtirring the Surface of the Ground in every Place, the better to prevent young Weeds from ſpringing, as alſo to facilitate the Growth of the young *Carrots*.

In about three Weeks or a Month after, you muſt hough them a third time, when you muſt clear the Weeds as before; and now you ſhould cut out the *Carrots* to the Diſtance they are to remain, which muſt be proportion'd to the Size you intend to have them grow: If they are to be drawn while young, five or ſix Inches aſunder will be ſufficient; but if they are to grow large before they are pull'd up, they ſhould be left eight or ten Inches diſtant every way: You muſt alſo keep them clear from Weeds, which if ſuffer'd to grow amongſt the *Carrots*, will greatly prejudice them.

The ſecond Seaſon for ſowing theſe Seeds is in *February*, on warm Banks ſituated near the Shelter of a Wall, Pale or Hedge; but thoſe which are intended for the open large Quarters, ſhould not be ſown before the Beginning of *March*, nor ſhould you ſow any later than the End of the ſame Month; for thoſe which are ſown in *April* or *May* will run up to Seed before their Roots have any Bulk, eſpecially if the Weather ſhould prove hot and dry.

In *July* you may ſow again for an autumnal Crop, and in the End of *Auguſt* you may ſow ſome to ſtand the Winter; by which Method you will have early *Carrots* in *March*, before the Spring-ſowing will be fit to draw; but theſe are ſeldom ſo well taſted, and are often very tough and ſticky. Many People mix ſeveral other Sorts of Seeds, as *Leek*, *Onion*, *Parſnip*, *Radiſh*, &c. amongſt their *Carrots*; and others plant *Beans*, &c. but, in my Opinion, neither of theſe Methods is good; for if there is a full Crop of any one of theſe Plants, there can be no Room for any thing elſe amongſt them, ſo that what is got by the one is loſt by another; and beſides, it is not only more ſightly, but better for the Plants of each Kind to be ſown ſeparate, and alſo by this Means your Ground will be clear when the Crop is gone, to ſow or plant any thing elſe; but when three or four Kinds are mix'd together, the Ground is ſeldom at Liberty before the ſucceeding Spring: Beſides, where Beans, or any other tall growing Plants are planted amongſt the *Carrots*, it is apt to make them grow more in Top than Root, ſo that they will not be half ſo large as if ſown ſingly without any other Plants amongſt them.

But in order to preſerve your *Carrots* for Uſe all the Winter and Spring, you ſhould, about the Beginning of *November*, when the green Leaves are decay'd, dig them up, and lay them in Sand in a dry Place, where the Froſt can't come to them, taking them out from time to time as you have occaſion for them, reſerving ſome of the longeſt and ſtraiteſt Roots for Seed, if you intend to ſave any; which Roots ſhould be planted in the Middle of *February*, in a light Soil, about a Foot aſunder each way, obſerving to keep the Ground clear from Weeds; and about the Middle of *Auguſt*, when you find the Seeds are ripe, you muſt cut it off, and carry it to a dry Place, where it ſhould be expos'd to the Sun and Air for ſeveral Days to dry; then you may beat out the Seeds, and put it up in Bags, keeping it in a dry Place until you uſe it. This Seed is ſeldom eſteem'd very good after the firſt or ſecond Year at moſt; but new Seed is always preferr'd, nor will it grow when it is more than two Years old.

DAUCUS CRETICUS. *Vide* Myrrhis.

DAY-LILY. *Vide* Liliaſtrum.

DECEMBER.

Work to be done in the KITCHEN GARDEN.

This Month (the Days being at the ſhorteſt) is the darkeſt of the whole Year, and is ſubject to different Sorts of Weather; ſometimes the Ground is frozen up, ſo that little can be done in the Garden; and at other times there are hard Rains, and thick ſtinking Fogs, which render it very uncomfortable ſtirring abroad, and are very injurious to tender Plants.

If the Seaſon be mild, you may earth up thoſe Artichokes which were neglected the former Months; in doing of which you ſhould bury a little rotten Dung in the Ground, which will greatly promote the Growth of your Artichokes the following Spring.

Carry Dung into the Quarters of your Kitchen-garden, and ſpread it on the Ground, and trench up the Quarters, laying the Earth in Ridges, that it may be mellow'd by Froſt, and be fit for Uſe when the Seaſon for cropping them comes on;

for if you do not get your Ground in Readineſs at this Seaſon, you will have too much Buſineſs hurrying upon you in the Spring.

Pick Snails out of the Holes of old Walls, or from under Pales, Hedges, broken Pots, or other Rubbiſh, in which Places they lay themſelves up during the Winter-ſeaſon, and may be then eaſily taken before they get abroad again.

Sow Creſſes, Muſtard, Rape, Radiſh, Turnep, and other Sallet-herbs, upon a moderate Hot-bed, which ſhould be either cover'd with Frames, or arch'd over with Hoops, and cover'd with Mats; for at this Seaſon theſe Seeds will not come up where they are expoſed to the open Air.

In mild Weather you ſhould obſerve to uncover your Cauliflower Plants every Day, that they may enjoy the free Air, otherwiſe they will draw up weak, and be good for little; you muſt alſo conſtantly pick off all decay'd Leaves, which if ſuffer'd to remain on, will be very injurious to the Plants, eſpecially if it ſhould happen that the Weather will not permit the Beds to be uncovered for two or three Days together, which is often the Caſe at this Seaſon, when theſe decay'd Leaves, rotting in the Beds, will emit a rancid Vapour, which mixing with the confin'd Air of the Beds, will render it unwholſome for the Plants.

You may now make Hot-beds for Aſparagus to ſupply the Table about the latter End of *January*; for at this Seaſon it will be near ſix Weeks from the Time of making the Beds, before the Aſparagus will be fit to cut.

About the Middle of this Month, if Weather is mild, you ſhould ſow ſome early Peaſe, on warm Borders, to ſucceed thoſe which were ſown the former Months, and obſerve to draw ſome Earth up about the Stems of thoſe Peaſe and Beans which are come up, to protect them from the Froſt.

You may alſo ſow ſome Radiſhes, Carrots, and Lettuce, on warm Borders, near Walls or Pales, for an early Crop, becauſe it may happen that thoſe which were ſown the former Months may be deſtroy'd, and theſe eſcape; for which Reaſon it is proper always to have two or three Crops, one under the other, which will allow you a better Chance than if you had but one.

Toward the latter End of this Month you ſhould plant ſome *Sandwich* Beans, which are hardier than the *Windſor* Kind, and will be very proper to ſucceed the *Spaniſh* or *Liſbon* Beans, which were planted the former Months, ſo that there may be a conſtant Supply for the Table.

When the Ground is frozen ſo hard that you cannot dig it, you ſhould repair your Fences, and carry Dung upon your Quarters, that it may be ready when the Froſt goes off; you ſhould alſo clean your Seeds ready for ſowing, and prepare all your Tools, that there may be no Delay when the Seaſon is favourable for cropping your Ground.

Products of the KITCHEN-GARDEN.

Cabbages, Savoys, Red Cabbages, Borecole, and ſome Broccoli, Carrots, Parſnips, Turneps, Potatoes, Skirrets, Scorzonera, Salſafy, Beets, and Horſe Radiſh.

Onions, Leeks, Garlick, Rocambole, Shallots, Thyme, Winter Savory, Hyſſop, Sage, Roſmary, Chard Beets, Chardoons, Celery, and ſome other Herbs for Soop.

Creſſes, Muſtard, Rape, Radiſh, Turnep, ſmall Lettuce, and other Sallet-herbs upon the Hot-bed; Celery, Endive, and ſome Brown Dutch Lettuce, from under Glaſſes in mild Weather, with Mint and Tarragon upon Hot-beds made the Beginning of laſt Month, and Aſparagus upon Hot-beds made in *October*.

Work to be done in the FRUIT GARDEN *and* ORCHARD.

If the Seaſon be mild, you may dig and prepare your Ground for planting Fruit-trees in *February*, and mend the Borders of your Fruit-garden with ſome freſh Earth and very rotten Dung well mixed together, which will greatly encourage your Trees.

It will not be proper to prune any of your Fruit-trees either againſt Walls or Eſpaliers at this Seaſon, leſt the Froſt ſhould follow ſoon after, which would injure the wounded Branches, eſpecially of Peaches, Apricocks, and other tender Fruit-trees.

Examine your Orchards, and cut all dead Branches out of the Trees, as alſo ſuch as croſs each other; in doing of which you ſhould obſerve to make the Wound ſloping, and as ſmooth as poſſible, that the Wet may the eaſier paſs off without entring the Tree.

You may alſo dung and plough the Ground of your Orchards between the Trees, which will be of great Service to them, and cauſe the Fruit to be much fairer, and better taſted; and when you intend to plant any young Orchards in the Spring, the Ground ſhould now be prepared for that Purpoſe.

In froſty Weather you ſhould be careful to cover the Ground about your new-planted Trees with Mulch, to prevent the Froſt from penetrating the Ground to their Roots, for that would greatly injure the young Fibres.

You muſt alſo be very careful to keep the Froſt out of the Room where you keep your choice Winter Fruit; for whenever any of the Fruit are frozen, they certainly decay ſoon after.

Fruits in prime, or yet laſting.

Pears; the Colmar, St. Germain, St. Andrew, Virgouleuſe, Ambrette, Leſchaſſerie, Epine d'Hyver, St. Auguſtine, Beurre d'Hyver, Louiſe-Bonne, l'Amodotte, Spaniſh Boncretien, Poire de livre, Ronville, Citron d'Hyver, Rouſelette d'Hyver, Martin Sec, with ſome others.

Apples; the Nonpareil, Golden Pippen, *French* Pippen, *Holland* Pippen, *Kentiſh* Pippen, Pile's Ruſſet, Winter Pearmain, Wheeler's Ruſſet, Haut-bonne, Rennet Griſe, Aromatick Ruſſet, Winter Gilliflower, Golden Ruſſet, Pear Ruſſet, Harvey Apple, Winter Queening, with ſome others of leſs Note.

As alſo Medlars, Services, Almonds, and Nuts.

Work to be done in the NURSERY.

In this Month and the next it is very unſafe to tranſplant Trees; therefore little can be done in the Nurſery, except carrying in Dung where it is wanted; and in mild Weather to prepare the Ground, where you intend to plant Trees in the Spring.

Obſerve now to lay Mulch about the Stems of your new-planted Trees, where it has been omitted in the former Months; otherwiſe the Froſt will enter the Ground, and pinch all the new Fibres, whereby the Trees will be greatly weaken'd.

In froſty Weather look well to ſuch Nurſeries as are expoſed to Hares, Rabbits, *&c.* for in ſuch Seaſons theſe Animals will be apt to bark your young Trees, and ſpoil them.

Obſerve alſo to ſecure ſuch young Exotick Trees as have not Strength to reſiſt the Cold of our Climate, by laying Mulch round their Stems, and in ſevere Froſt, cover their Tops with Peaſe-haulm; but this muſt not remain after the Froſt is over, leſt it cauſe a Mouldineſs upon the tender Parts of the Plants for want of the free Air.

Be careful to cover your Beds of Seeds and Acorns, which were ſown in *October*, to prevent the Vermin from getting at them, and to keep the Froſt out of the Ground, which might greatly injure ſuch of them as are ſprouting.

Work to be done in the PLEASURE GARDEN.

Your Beds of choice Ranunculus's, Anemonies, and Hyacinths ſhould be carefully covered in very wet or froſty Weather, both which are equally prejudicial to them.

The Pots or Boxes of ſeedling Flowers ſhould alſo be covered in very hard Rains, or ſevere Froſt, otherwiſe they will be in Danger of being deſtroyed thereby.

Cover your choice Carnations and Auricula's, to protect them from great Rains and Snow, which are very injurious to them; but in mild Weather they ſhould have as much free Air as poſſible, otherwiſe they will draw up weak, and become very tender.

You ſhould now lay ſome Mulch about the Roots of your new-planted Trees and Shrubs, as alſo about your exotick Trees which are planted in the open Air, to prevent the Froſt from penetrating the Ground to their Roots, which would greatly injure, if not deſtroy them.

Turn over your ſeveral Heaps of Earth which are prepared for the Flower-Garden, that the Froſt may mellow them; and mix up ſome new Heaps, that you may have a Quantity always prepared eight or ten Months at leaſt before you uſe them.

In mild Weather you ſhould dig and prepare your Beds and Borders ready for planting Flower-roots in the Spring, in doing of which it will be proper to lay the Earth up in a Ridge, that the heavy Rains may run off, which would render the Earth too wet for planting, if the Beds were laid flat to receive them.

Continue to dig up the Ground in your Wilderneſs Quarters, that the whole may be render'd neat againſt the next Spring, when the Trees begin to bud, and the Flowers blow, which will invite Perſons to walk out; but in doing of this, you muſt be careful not to injure any of the Plants which grow between the Trees.

Prepare ſuch Parts of your Garden where you intend to plant flowering Shrubs or tender Trees out in the Spring ; but this Ground ſhould be laid in Ridges till the Seaſon for planting is come.

In froſty Weather, when you can do little Work in the Garden, you muſt prepare your Tallies to number your Flowers and Seeds when they are ſown, and make all your Tools ready for Uſe againſt Spring, when you will have full Employment abroad.

Plants now in Flower in the open Air.

Some Single Anemonies, Polyanthus's, Primroſes, Stock-Gilliflowers, Polyanthus Narciſſus, Helleboraſter, or Bears-foot, Alyſſon Halimi folio, Red-flower'd Spring Cyclamen, Tangier Fumatory, Narrow-leav'd Golden Rod, and in mild Weather ſometimes the Winter Aconite, and Snow-drops.

Hardy Trees and Shrubs now in Flower.

Lauruſtinus, Arbutus or the Strawberry-tree, Spurge Laurel, Glaſtenbury Thorn, Virginian Groundſel-tree, Upright blue-berried Honeyſuckle, Geniſta Spinoſa, Clematitis Bœtica, Cytiſſus Maranthe, and in mild Weather the Mezereon.

Work to be done in the GREEN-HOUSE *and* STOVE.

If the Seaſon be very cold, you muſt keep the Windows and Doors of your Green-houſe cloſely ſhut ; but in mild Weather you ſhould open ſome of them, to let freſh Air into the Houſe, otherwiſe there will be a damp moiſt Air, which will cauſe the tender Shoots of the Plants to grow mouldy and decay ; therefore whenever you obſerve any Mouldineſs upon your Plants, you muſt immediately clean it off, otherwiſe it will ſpread, and infect the neighbouring Plants ; you muſt alſo diligently pick off all decay'd Leaves, and not permit them to fall off upon the Floor ; becauſe, if they remain in the Houſe, they will rot, and infect the Air, to the great Injury of your Plants.

You muſt now water your Plants very ſparingly, eſpecially ſuch of them as are of a ſucculent Nature, as Aloes, Cereus's, Ficoides's, Sedums, Cotyledons, *&c.* but your Myrtles, Amomum Plinii's, Leonurus's, Oleanders, Bays, Adhatoda, with other woody Plants, muſt be frequently water'd ; but in cold Weather they ſhould not have too much given them at a Time, but rather give it to them often and in leſs Quantities.

The Fires in the Stoves muſt now be carefully kept up, as well in dark foggy Weather, as in ſevere Froſt ; for if the Air is damp, it is equally injurious as a ſharp Air to the Plants, ſo that you muſt be directed by a well graduated Thermometer, as to the Degree of Heat which your Plants require.

Your Anana or Pine-Apples muſt have a good Share of Heat, otherwiſe they will not produce Fruit the following Summer : you muſt alſo obſerve to refreſh them often with Water, which ſhould be placed in the Stove to warm, at leaſt twelve or fourteen Hours before it is uſed : Where this is neglected, the Plants are often ſo check'd as not to be recover'd in ſome Months after.

Your tender Exotick Plants, which are plunged in the Bark-bed, muſt now be carefully tended, to water them as they ſhall require it, and to pick off all decay'd Leaves, and cleanſe their Stems and Leaves from Inſects and Filth, which they are very ſubject to contract, eſpecially the Coffee-trees, which muſt be often clean'd, otherwiſe their Leaves will decay.

You muſt now mix up your ſeveral Compoſts of Earth for your Exotick Plants, and turn over thoſe Heaps which have been already prepared, that their ſeveral Parts may be better united together.

Plants now in Flower in the GREEN-HOUSE *and* STOVE.

Leonurus's, Candy-tuft-tree, Yellow Indian Jaſmine, Aleppo Cyclamens, Aſcyron Balearicum, Geraniums, Spaniſh Jaſmine, Arabian Jaſmine, Ilex-leav'd Jaſmine, Polygala Arboreſcens, Double-flower'd Indian Naſturtium, Onion-leav'd Aſphodel, ſeveral Sorts of Aloes, Anemonoſpermos's, Leuchanthemum Pyrethi ſapore, Carolina Dwarf Sunflower, Canary Campanula, Althæa Arboreſcens, Virginian large blue Aſter, Golden Rod, Senecio folio Retuſo, Alaternoides Ericæ folio, ſome Sorts of Ficoides's, Senſitive Plants, with ſome others.

DECORTICATION, the pulling off the outward Bark of Trees ; alſo the peeling or unhuſking of Roots.

DELPHINUM, [Δελφὶν, Gr. a *Dolphin* ; ſo call'd becauſe the Flower, before it opens, reſembles a Dolphin. It is call'd *Conſolida Regalis*, from its Conſolidating Virtue. *Caſpar Bauhin* calls it the Royal Plant, becauſe it has its Cup turn'd backwards, like a Nobleman's Badge. *Cæſalpinus*, *Pliny*, and the Poets, ſay, this Plant is the true Hyacinth, becauſe it has its Flower, *i. e.* the *Alpha* A, with the *Iota* I, placed over it ; and that *Apollo* begat *Hyacinthus*, when he ſent forth his laſt Breath : which Point is a Particle of Bewailing. *Ovid* is ſaid to have inſcribed his *Lamentations* in its Leaves. It is obſerv'd in this Plant, that when the Leaf is folded in, it has Characters conceal'd in the White. The *Germans* call it *Lauſkraut*, i. e. *Louſe-wort* ; becauſe, being powder'd, and ſtrew'd on the Head, it kills Lice] Larkſpur.

The *Characters* are ;

It hath an anomalous Flower, conſiſting of many diſſimilar Petals (or Flower-leaves), the uppermoſt of which is contracted, and ends in a Tail or Spur, and receives another bifid Petal, which, in like manner, ends in a Tail: In the Middle ariſes the Pointal, which becomes a Fruit, conſiſting of many Pods or Sheaths collected into a Head, which open likewiſe, and are fill'd with Seeds, which are for the moſt part angular.

The *Characters* are ;

1. DELPHINIUM *perenne montanum villoſum, aconiti folio. Tourn.* Perennial Mountain hairy Larkſpur, with a Monks-hood Leaf.

2. DELPHINIUM *latifolium, parvo flore. Tourn.* Broad-leav'd Larkſpur, with a ſmall Flower.

3. DELPHINIUM *platani folio, Staphiſagria dictum. Tourn.* Lark-ſpur with a Plane-Tree Leaf, *commonly call'd* Staveſacre, or Louſewort.

4. DELPHINIUM *ſegetum, flore cæruleo. Tourn.* Corn Larkſpur, with a blue Flower.

5. DELPHINIUM *vulgare, flore multiplici. Tourn.* Common Larkſpur, with a double Flower.

6. DELPHINIUM *hortenſe, flore majore & multiplici, cæruleo. Tourn.* Garden Larkſpur, with a large double blue Flower.

7. DELPHINIUM *hortenſe, flore majore & multiplici, incarnato. Tourn.* Garden Larkſpur, with a large double Fleſh-colour'd Flower.

8. DELPHINIUM *hortenſe, flore majore & multiplici, violaceo. Tourn.* Garden Larkſpur, with a large double Violet-colour'd Flower.

9. DELPHINIUM *hortenſe, flore majore & multiplici, rubro. Tourn.* Garden Larkſpur, with a large double red Flower.

10. DELPHINIUM *hortenſe, flore majore & multiplici, purpureo ex albo variegato. Tourn.* Garden Larkſpur, with a large double Flower of a purple Colour, variegated with White.

11. DELPHINIUM *hortenſe, flore roſeo punctato. Tourn.* Garden Larkſpur, with a ſpotted Roſe-colour'd Flower.

There are ſeveral other Varieties of this Plant, which differ either in the Colour or Size of their Flowers: But as moſt of them are accidental, and ariſe from Seeds of the ſame Plant, ſo I ſhall paſs them over, without enumerating all their minute Differences.

The firſt *Species* here mention'd is a Native of the *Alps*, and is remarkably different from the other Kinds of *Larkſpur*, in being an abiding Plant: This is propagated by ſowing the Seeds in an open light Soil in *March* ; and when the Plants are come up, they may be tranſplanted into ſhady Borders at a Foot Diſtance from each other, where they may ſtand until the ſecond Year ; by which Time they will have Strength to produce Flowers, and may then be tranſplanted into Borders in the Pleaſure-Garden, amongſt other Flowering Plants, where they will make a handſome Appearance when in Flower.

The ſecond Sort is not near ſo beautiful as the firſt, but is preſerv'd in curious Gardens of Plants, for its Variety. The Flowers of this Kind are very ſmall ; and it is commonly ſo late in the Seaſon before they are produced, that they ſeldom perfect their Seeds with us, unleſs the Plants come up in Autumn, and abide the Winter. The Seeds of this Plant I received from my Honour'd Friend Mr. *Henry Hopkey*, who gather'd it on *Gibraltar Hills*, where it grows wild.

The third Sort is the *Staveſacre*, the Seeds of which are uſed in Medicine : This is a large handſome Plant, and produces fair large Flowers : The Seeds of this ſhould be ſown in a light ſandy Soil, and a warm Situation, ſoon after it is ripe ; for if it be kept until Spring, it very often miſcarries. The ſecond Year after ſowing, it flowers, and ſoon after perfects its Seed, and dies. This Plant is at preſent very uncommon in *England*, and only to be found in ſome curious Gardens of Plants.

The other Sorts are commonly cultivated in Gardens, for the Beauty of their Flowers ; where, when the ſeveral Varieties

ties are intermix'd in a Bed, they make a goodly Shew: The Seeds of theſe ſhould be ſown in Autumn, ſoon after they are ripe; for thoſe ſown in the Spring do not grow near ſo large, nor will their Flowers be ſo double. When the Plants come up, they ſhould be either tranſplanted out, or ſome of them pull'd up: So that the remaining Plants may be left eight or ten Inches Diſtance each Way; whereby they will have Room to grow, and ſpread their Branches, which they generally produce in great Plenty, and their Flowers will be produced in larger Bunches. They will require no farther Care, but to keep them clear from Weeds. In *June* theſe Plants will flower; and their Seeds will ripen about the Beginning of *Auguſt*. But in order to have your Flowers more beautiful, you ſhould mark ſuch only for Seeds as produced very double and finely-variegated Flowers, pulling up or cutting off all ſingle or plain-colour'd Flowers.

DENS CANIS, [this Plant is ſo call'd, becauſe the Root of it reſembles the Tooth of a Dog] Dog's-Tooth.

The *Characters* are;

It hath a fleſhy Root ſhaped like a Dog's Tooth; the Leaves are broad, and ſpread upon the Ground, and, in Appearance, like thoſe of the Round-leav'd Sowbread*: The Flower is naked, and produced ſingle upon each Stalk, each conſiſting of ſix Leaves, and ſhaped like a* Lily, *and hang downward: The Petals of this Flower are reflex'd: The Pointal of the Flower becomes a roundiſh Fruit, in which are contained many oblong Seeds.*

The *Species* are;

1. DENS CANIS *latiore rotundioreque folio, flore candido. C. B.* The broad round-leav'd Dog's-Tooth, with a white Flower.
2. DENS CANIS *latiore rotundioreque folio, flore ex purpura rubente, majore. C. B.* Broad round-leav'd Dog's-Tooth, with a large purpliſh red Flower.
3. DENS CANIS *anguſtiore longioreque folio, flore albo. C. B.* Long narrow-leav'd Dog's-Tooth, with a white Flower.
4. DENS CANIS *anguſtiore longioreque folio, flore ſuave-rubente. H. R. Par.* Long narrow-leav'd Dog's-Tooth, with a fine red Flower.

There are ſome other Varieties of this Plant in the curious Gardens abroad; but theſe here mention'd are all that I have yet ſeen in *England*: The two firſt mention'd are the moſt common with us; the other two being very rare at preſent, and only to be found in a few curious Gardens.

Theſe Plants are propagated by ſowing their Seeds, as alſo by Off-ſets from the old Roots: The Seaſon for ſowing theſe Seeds, and the Method of raiſing and managing the young Plants, being the ſame as directed for the *Narciſſus*, I ſhall refer the Reader thereto, to avoid Repetition.

The Off-ſets, which theſe Roots produce but ſparingly, ſhould be taken off at the Time when the old Roots are tranſplanted, which ſhould be when the green Leaves decay, which is commonly towards the latter End of *May*; but the Roots ſhould not be kept long above Ground, for then they are apt to ſhrivel and dry up, which, if this happens, they ſeldom recover again. Theſe Plants delight in a good freſh Soil, neither too light nor too heavy, but ſuch as is of a middling Nature, and not over-dung'd; and they ſhould have an Eaſt or Weſt Aſpect; for if they are planted in a very warm or an extreme cold Situation, they ſeldom thrive well. They produce their Flowers early in *March*, for which they are valued, as alſo for the Beauty of their green Leaves. If Seeds of the different Sorts are ſown, there may be ſome new Varieties obtain'd, which is well worth the Trial, where we have ſo few Species of an early beautiful Flower as of this.

DENS LEONIS, [i. e. *Lion's-Tooth*: This Plant is ſo call'd, becauſe it reſembles the Jaw-bone of a Lion ſet with Teeth: It is alſo call'd *Caput Monachi*, i. e. *Monk's-Head*; becauſe after the Flowers are fallen off, what remains reſembles a bald Head: It is the firſt Plant that by the Antients was deſcribed under the Title of *Taraxacon*: It is by the *French* call'd *Piſſentlits*, becauſe it provokes Urine] Dandelion.

The *Characters* are;

It agrees in all reſpects with the Hawk-weed, *but only in its having a ſingle naked Stalk with one Flower upon the Top, whereas the* Hawk-weeds *have branching Stalks: To which may be added, the Flowers are for the moſt part fiſtulous or pip'd.*

There are ſeveral Species of this Plant, which are preſerv'd in curious Botanick Gardens; but as they are Plants of no great Uſe, and withal are very troubleſome in a good Garden, if ſuffer'd to feed, ſo they are never propagated. We have three or four Varieties which grow wild in *England*; but the moſt common broad-leav'd Kind is what is uſed in Medicine. There are alſo ſome People very fond of it blanch'd in the Spring, like *Endive*: But whoever has a mind to have it for either Uſe, may be abundantly ſupplied in the Fields.

DENTARIA, Tooth-wort.

The *Characters* are;

It hath a Flower conſiſting of four Leaves, which expand in Form of a Croſs; out of whoſe Flower-Cup riſes the Pointal, which afterward becomes a Fruit or Pod, which is divided into two Cells, by an intermediate Partition, to which the Valves adhere on both Sides; and is furniſhed with roundiſh Seeds. To theſe Marks ſhould be added, the Valves, when ripe, twiſt up like a Screw, and diſcharge the Seeds with Violence; and the Roots are fleſhy, ſcaly, and cut in, as it were, with Teeth.

The *Species* are;

1. DENTARIA *heptaphyllos. C. B. P.* Seven-leav'd Tooth-wort.
2. DENTARIA *pentaphyllos, foliis mollioribus. C. B. P.* Five-leav'd Tooth-wort, with ſoft Leaves.
3. DENTARIA *pentaphyllos, foliis aſperis. C. B. P.* Five-leav'd Tooth-wort, with rough Leaves.
4. DENTARIA *heptaphyllos baccifera. C. B. P.* Seven-leav'd berry-bearing Tooth-wort.
5. DENTARIA *triphyllos. C. B. P.* Three-leav'd Tooth-wort.
6. DENTARIA *enneaphyllos, Montis Aurei. H. R. Par.* Nine-leav'd Tooth-wort of *Mount d'Or*.

Theſe Plants grow on the Mountains in *Italy*, and in the Woods of *Auſtria*: The firſt Sort is found wild in Woods in ſome Parts of *England*, but the other Sorts are very rare in the *Engliſh* Gardens. Theſe Plants are propagated by Seeds, or parting of their Roots; the Seeds ſhould be ſown in the Autumn, ſoon after they are ripe, in a light ſandy Soil, and a ſhady Situation; in the Spring the Plants may be taken up where they grow too cloſe, and tranſplanted out in the like Soil and Situation; where, after they have taken Root, they will require no farther Care, but to keep them clear from Weeds; the ſecond Year they will produce Flowers, and ſometimes will perfect their Seeds.

The beſt Seaſon for taking up the old Roots to tranſplant them, is at *Michaelmas*, when the Leaves are decayed; at which Time they may be parted to increaſe them. Theſe Plants are proper to plant in dry Wilderneſſes, under the Shade of Trees; for their natural Places of Growth are in Woods, and on the Sides of Banks, under cloſe Cover of Trees.

DENTILLARIA. *Vide* Fraxinella.

DEW, is by ſome defined to be a Meteor bred of a thin cold Vapour; or, compoſed of the Steams and Vapours of the Earth, which being exhaled by the Heat of the Sun, and kept ſuſpended during his Preſence, do, upon his Abſence, convene into Drops, and then fall down to the Earth again.

Others define it, a thin, light, inſenſible Miſt or Rain falling while the Sun is below the Horizon.

The Origin and Matter of *Dews*, is, without doubt, from Vapour and Exhalations of the Earth and Water raiſed by the Warmth of the Earth, *&c.*

There being many Vapours in the Air, tho' not always viſible, hence it comes to paſs, that even in clear Weather great *Dews* fall, eſpecially in Countries where it ſeldom rains: For when it happens that the ſcatter'd Vapours are collected and condenſed together, and forced downwards, they muſt needs fall and bedew the Plants and Graſs.

The thin Veſicles of which Vapours conſiſt, being once detach'd from their Bodies, keep riſing in the Air till they arrive at ſuch a Stage as is of the ſame ſpecifick Gravity with themſelves, when their Riſe is ſtopp'd: Now as it is the Warmth or Fire that dilates the Parts of Water, and forms thoſe Veſicles that are ſpecifically lighter than the Air, and are capable of aſcending therein; ſo when that Heat declines or is loſt, as by the Approach or Contiguity of any colder Body, the Veſicles condenſe and become heavier, and deſcend.

Therefore the Sun warming the Atmoſphere in the Daytime, by the continual Influx of his Rays, the Vapours being once raiſed, continue their Progreſs, not meeting with any Thing to increaſe their Gravity, till ſuch Time as they are got far beyond the Reach of the reflected Warmth of the Earth in the middle Region of the Atmoſphere, and there condenſe and form Clouds.

Tho' ſome ſay, it is diſputable whether *Dews* ever congregate ſo as to form Clouds, but only as they are elevated by the Sun; ſo that when that Power is gone, as it is after the Setting of the Sun, they immediately deſcend: and this is more obſervable in very warm Weather and very hot Climates.

The Time for the falling of the *Dew* is either before Sun-riſing, or after Sun-ſet: but that it may regularly fall at ſuch Times, it is neceſſary for the Air to be calm; for windy or ſtormy Weather hinders it; but when it is calm Weather, and gentle Breezes are felt from the Weſt about the Setting, and from the Eaſt about the Riſing of the Sun, it is probable, that by moderately cooling the Air, they collect the Vapours, and precipitate them; and becauſe the Morning Breezes are more general than the Evening ones, for this Reaſon the Evening *Dews* fall only here and there, but thoſe in the Morning ſeldom fail to be univerſal: Or, as it may be otherwiſe expreſs'd, when the Sun is got below the Horizon, the Atmoſphere cools the Vapours, which have in the preceding Day been raiſed by the Warmth of the Earth, and the Rays of the Sun being lodged there, as ſoon as they are got out of the Air, they begin to condenſe apace, and ſpend their Stock of Heat and Fire on the cold moiſt Air that they paſs through.

Hence it is, that *Dews* are more copious in the Spring than other Seaſons, there being a greater Stock of Vapour in Readineſs, by reaſon there has been but a ſmall Expence thereof during the Winter's Cold and Froſt than at other Times.

It is found by Experience, that the *Dews* are more copious in hotter Countries than in cold, as *Pliny* obſerves of the Summer Nights in *Africa*, which he calls *Roſcida Æſtate Noctes*; the Reaſon of which ſeems to be this, that in the Day-time the Heat of the Sun raiſes abundance of Vapours out of the Water; which Vapours are ſo extremely rarefied by the ſame Heat, that they are diſperſed far and wide; but the Cool of the Night brings them together, and condenſes them to that Degree, that they fall to the Ground, but not in ſuch large Drops as Rain does: but in colder Countries, where there are frequent Rains, and the Vapours are leſs rarefied, moſt of them come down in Rain, and but a ſmall Part turns to *Dew*. Beſides, in *Africa* there is a great Difference between the Heat of the Day and Night, particularly in Summer, for their Nights are long, and very cold; whereas in Northern Countries they are little colder than the Day, and much ſhorter than in Places nearer the Line.

Pliny likewiſe relates of *Egypt*, that it abounds in *Dews* throughout all the Heat of Summer; for the Air being there too hot to conſtipate the Vapours in the Day-time, they never gather into Clouds, and for that Reaſon they have no Rain. But it is known, in Climates where the Days are exceſſive hot, the Nights are remarkably cold, ſo that the Vapours that are raiſed after Sun-ſet are readily condenſed into *Dews*; or, perhaps, notable Coldneſs may be rather the Effect than the Cauſe of the Quantity of *Dews*; for much Vapour being raiſed by the great Heat of the Earth, and the Stock of Fire being ſpent on it in the Day-time, the Influx of ſuch a great Quantity of Moiſture muſt greatly chill the Air.

The Difference between *Dew* and *Rain* ſeems to be only this, that *Dew* falls at ſome particular Times, as aforeſaid, and in very ſmall Drops, ſo as to be ſeen when down, but ſcarce perceivable while it is falling; whereas *Rain* falls at any Time, and in groſſer Drops.

The Rev. Dr. *Hales*, in his Treatiſe of *Vegetable Staticks*, tells us, That in order to find out the Quantity of *Dew* that fell in the Night on the 15th of *Auguſt*, at 7. *p. M.* he took two glazed Earthen Pans, which were three Inches deep, and twelve Inches diameter in Surface; that he fill'd them with pretty moiſt Earth, taken from off the Surface of the Ground, and they increaſed in Weight by the Night's *Dew* 180 Grains; and decreaſed in Weight by the Evaporation of the Day 1 Ounce + 282 Grains.

He ſays likewiſe, he ſet theſe in other broader Pans, to prevent any Moiſture from the Earth from ſticking to the Bottom of them. He adds, that the moiſter the Earth is, the more *Dew* falls on it in a Night, and more than a double Quantity of *Dew* falls on a Surface of Water than there does on an equal Surface of moiſt Earth: The Evaporation of a Surface of Water in nine Hours Winter's dry Day, is $\frac{1}{21}$ of an Inch: the Evaporate of a Surface of Ice ſet in the Shade during a nine Hours Day, was $\frac{1}{31}$.

So here are 540 Grains more evaporated from the Earth every 24 Hours in Summer than fall in *Dew* in the Night; that is, in 21 Days near 26 Ounces from a circular Area of a Foot diameter; and Circles being as the Squares of their Diameters, 10 Pounds + 2 Ounces will in 21 Days be evaporated from the Hemiſphere of 30 Inches diameter, which the *Sun-flower*'s Root occupies; which, with the 29 Pounds drawn off by the Plant in the ſame Time, makes 39 Pounds, that is, 9 Pounds and $\frac{1}{4}$ out of every Cubick Foot of Earth, the Plants Roots occupying more than 4 Cubick Feet: but this is a much greater Degree of Dryneſs than the Surface of the Earth ever ſuffers for 15 Inches Depth, even in the drieſt Seaſons in this Country.

In a long dry Seaſon therefore, eſpecially within the *Tropicks*, we muſt have recourſe, for ſufficient Moiſture to keep Plants and Trees alive, to the moiſt *Strata* of Earth which lie next below that in which the Roots are.

Now moiſt Bodies always communicate of their Moiſture to more dry adjoining Bodies; but this ſlow Motion of the Aſcent of Moiſture is much accelerated by the Sun's Heat to conſiderable Depths in the Earth, as is probable, he ſays, from the twentieth Experiment in the ſaid Book.

Now 180 Grains of *Dew* falling in one Night on a Circle of a Foot Diameter = 113 ſquare Inches; theſe 180 Grains being equally ſpread on this Surface, its Depth will be $\frac{1}{159}$ Part of an Inch $= \frac{180}{113 \times 254}$. He adds, that he found the *Dew* in a Winter Night to be the $\frac{1}{90}$ Part of an Inch; ſo that if we allow 151 Nights for the Extent of the Summer *Dew*, it will in that Time ariſe to one Inch Depth: And reckoning the remaining 214 Nights for the Extent of the Winter's *Dew*, it will produce 2,39 Inches Depth; which makes the *Dew* of the whole Year amount to 3,39 Inches Depth.

And the Quantity which evaporated in a fair Summer's Day from the ſame Surface, being as 1 Ounce 282 Grains, gives $\frac{1}{40}$ Part of an Inch Depth for Evaporation, which is four times as much as fell at Night.

He ſays likewiſe, that he found by the ſame Means, the Evaporation of a Winter's Day to be nearly the ſame as in a Summer's Day; for the Earth being in Winter more ſaturate with Moiſture, that Exceſs of Moiſture anſwers to the exceſſive Heat in Summer.

Nic. Cruquius, N° 381, of the *Philoſophical Tranſactions*, found that 28 Inches Depth evaporated in a whole Year from Water, *i. e.* $\frac{1}{12}$ of an Inch each Day at a mean Rate: But the Earth in a Summer's Day evaporates $\frac{1}{40}$ of an Inch; ſo the Evaporation of a Surface of Water is to the Evaporation of a Surface of Earth in Summer as 10 : 3.

The Quantity of *Rain* and *Dew* that falls in a Year is at a Medium 22 Inches: The Quantity of the Earth's Evaporation in a Year is at leaſt $9 + \frac{1}{2}$ Inches; ſince that is the Rate at which it evaporates in a Summer's Day: From which $9 + \frac{1}{2}$ Inches is to be deducted 3,39 Inches for circulating daily *Dew*, there remains 6,2 Inches; which 6,2 Inches deducted from the Quantity of Rain that falls in a Year, there remains at leaſt 16 Inches Depth, to repleniſh the Earth with Moiſture for Vegetation, and to ſupply the Springs and Rivers.

Dr. *Hale* proceeds to inſtance, in the Caſe of a Hop-Ground which he gives in his ninth Experiment of his Book of *Vegetable Staticks*, that the Evaporation there found, from the Hops, conſider'd only for three Months, at $\frac{1}{101}$ Part of an Inch each Day, which will be $\frac{9}{10}$ of an Inch: But before it be allow'd 6,2 Inches to form the Surface of the Ground; which added to $\frac{9}{10}$, give 7,1 Inches; which is the utmoſt that can be evaporated from a Surface of Hop-Ground in a Year: So that of 22 Inches Depth of Rain, there remain 15 Inches to ſupply Springs, which are more or leſs exhauſted, according to the Dryneſs or Wetneſs of the Year.

Hence we find, that 22 Inches Depth of Rain in a Year, is ſufficient for all the Purpoſes of Nature in ſuch flat Countries as that about *Teddington* near *Hampton-Court*: But in the Hill Countries, as in *Lancaſhire*, there falls 42 Inches Depth of Rain-water: From which deducting 7 Inches for Evaporation, there remain 35 Inches Depth of Water for the Springs, beſides great Supplies from much more plentiful *Dews* than fall in plain Countries; which vaſt Stores ſeem ſo abundantly ſufficient to anſwer the great Quantity of Water, which is convey'd away by the Springs and Rivers from thoſe Hills, that we need not have Recourſe for Supplies to the great Abyſs, whoſe Surface at High Water is ſurmounted ſome Hundreds of Feet by thoſe vaſt Hills from whence the longeſt and greateſt Rivers take their Riſe.

DIAPENSIA. *Vide* Sanicula.

DICTAMNUS ALBUS. *Vide* Fraxinella.

DICTAMNUS, Dittany.

The *Characters* are;

The Flower-cup conſiſts of two Leaves; after that another athwart the former; and again, a third in like manner, until a ſcaly Head be thence form'd: Out of the Center of all theſe Scales grows a Flower, whoſe Creſt is erect, roundiſh, and bifid;

bifid; the Beard is divided into three Parts; theſe little Flowers come forth from leafy Scales after the manner of the Verticle Plants, in a long looſe Spike.

The *Species* are;

1. DICTAMNUS *Creticus. C. B.* Dittany of *Crete.*
2. DICTAMNUS *montis Sipyli, origani foliis. Flor. Bat.* Dittany from Mount *Sipylus*, with wild Marjoram Leaves.

The firſt of theſe Plants hath been renown'd for many Ages, upon the Account of its ſovereign Qualities in Medicine. This is generally brought over dry from the *Levant*, and is ſtill us'd in ſome of the grand Preparations.

This Plant, altho' a Native of a warmer Country than ours, yet is tolerably hardy, and will endure the Cold of our common Winters, if planted in the open Air, provided it is planted in a dry ſandy Soil: It may be propagated by planting Cuttings in any of the Summer Months; which muſt be ſhaded and water'd until they have taken Root: afterwards they may be either planted in Pots, or in a warm Border under a South Wall, where it will remain for ſeveral Years, unleſs deſtroy'd by violent hard Froſts; for which Reaſon 'tis adviſeable always to keep a Pot or two of this Plant under a Frame as a Reſerve, in caſe thoſe abroad ſhould be deſtroy'd. This Plant produces its Flowers in *June* and *July*, but the Seeds are ſeldom perfected in this Climate: And altho' there is no great Beauty in the Flowers of this Plant, yet for the Variety of its round hoary ſweet-ſmelling Leaves, it deſerves a Place in very good Gardens.

The ſecond Sort was found upon Mount *Sipylus*, by Sir *George Wheeler* in his Travels, and by him ſent to *Oxford*. This is a very neat Plant, affording long Spikes of Flowers which continue a long time in Beauty, and deſerves a Place with the former in every good Garden. This is propagated and manag'd as the other in every reſpect.

DIERVILLA. [*This Plant was ſo named by Dr.* Tournefort, *from Mr.* DIERVILLE *a Surgeon, who brought it from* ACADIA.] *We have no* Engliſh *Name for this Plant.*

The *Characters* are;

It hath a Flower conſiſting of one Leaf, which is tubulous, and divided into five Parts: The Ovary, which crowns the Pointal, is produced from the Centre of the Two-leav'd Calyx; and after the Flower is paſſed, it becomes a pyramidal Fruit divided into four Cells, which are filled with ſmall Seeds.

We have but one *Species* of this Plant at preſent in *Europe*, which is;

DIERVILLA *Acadienſis fruticoſa, flore luteo. Acad. Reg. Scien.* Shrubby Diervilla of *Acadia*, with a yellow Flower.

This is a very low Shrub, ſeldom riſing to the Height of three Feet in *England*; but is very ſubject to ſpread at the Root, and become buſhy. The Flowers are ſmall, and produced ſparſedly on the Branches, ſo that it doth not make any good Appearance in a Garden; but as it is pretty hardy, ſo it may be admitted as an Under-ſhrub, to fill up Vacancies in Wilderneſs Quarters, where it will add to the Variety. It is eaſily propagated from Suckers, which it generally produces in great Plenty from the Root, or by laying down the Branches. It requires a Soil not too hot and dry, nor over wet, but of a middling Nature.

DIGITALIS; [This Plant is ſo call'd, becauſe the Flower of it reſembles a Finger-ſtall.] Fox-Glove.

The *Characters* are;

The Leaves are produc'd alternately on the Branches; the Cup of the Flower conſiſts of one Leaf, which is divided into ſix ample long Segments; the Flower conſiſts of one Leaf, is tubuloſe and compreſs'd, and a little reflex'd at the Brim; theſe Flowers are diſpos'd in a long Spike, and always grow upon one Side of the Stalk; the Ovary of the Flower becomes a roundiſh Fruit, which ends in a Point, and opens in the Middle; has two Cells, in which are contain'd many ſmall Seeds.

The *Species* are;

1. DIGITALIS *purpurea. J. B.* The purple Fox-Glove.
2. DIGITALIS *vulgaris, flore carneo. Hort. Edinb.* Common Fleſh-colour'd Fox-Glove.
3. DIGITALIS, *flore magno candido. J. B.* Fox-Glove, with a large white Flower.
4. DIGITALIS *latifolia, flore ferrugineo. Mor. Hiſt.* Broad-leav'd Fox-Glove, with an Iron-colour'd Flower.
5. DIGITALIS *anguſtifolia, flore ferrugineo. C. B.* Narrow-leav'd Fox-Glove, with an Iron-colour'd Flower.
6. DIGITALIS *lutea, magno flore. C. B.* Fox-Glove, with a large yellow Flower.
7. DIGITALIS *major lutea vel pallida, parvo flore. C. B.* Greater Fox-Glove, with a ſmall pale-yellow Flower.
8. DIGITALIS *Orientalis, folio Tragopogi, flore albido. T. Cor.* Eaſtern Fox-Glove, with a Goat's-Beard Leaf, and a whitiſh Flower.
9. DIGITALIS *Canarienſis acanthoides fruteſcens, flore aureo. Hort. Amſt.* Shrubby *Canary* Fox-Glove, with a Gold-colour Flower.

The firſt of theſe Plants is very common in ſhady Woods, and upon uncultivated Heaths in divers Parts of *England*: The two next are alſo Varieties of the firſt, from which they only differ in the Colour of the Flowers.

The fourth, fifth, and ſixth Sorts, are preſerv'd in Gardens, for the Beauty of their Flowers; but the ſeventh and eighth Sorts are only cultivated in Botanick Gardens for the ſake of Variety, as being Plants of no great Beauty.

Theſe Plants may all be propagated by ſowing their Seeds in *March*, in a freſh Soil that is not too ſtiff; and when the Plants come up, they ſhould be tranſplanted into Beds ſix Inches aſunder, where they may remain until the *Michaelmas* following, obſerving to keep them clear from Weeds; then you may tranſplant them into the middle of large Borders, intermixing the Variety of Colours at regular Diſtances amongſt Flowers of the ſame Growth. In *May* following theſe will produce their Flowers, which will continue near a Month in Beauty, if the Seaſon is not too hot and dry, and in *Auguſt* the Seeds will ripen; which if permitted to fall to the Ground, will come up in great Plenty, and abundantly ſtock the Garden with Plants.

Some of theſe Sorts ſeldom remain above two Years, when after having perfected their Seeds, they die, unleſs Care be taken to cut off the Flowers when they are in Beauty, before they begin to decay, which often cauſes the Roots to break out again, whereby they may be kept for ſeveral Years, (eſpecially the Iron-colour'd Sorts) and may be increas'd by parting their Roots.

Theſe Plants thrive beſt in a poor undung'd freſh Soil, nor can they be maintain'd many Years in a rich Soil, and their Flowers will be, when planted therein, much ſmaller, and of ſhorter Duration; and altho' they are ſome of them common in *England*, yet they make a very good Appearance in large Gardens.

The ninth Sort is of a nicer Nature, and requires to be ſhelter'd in a Green-houſe in Winter; which indeed it is worthy of, for it is one of the handſomeſt Flowers, when in Beauty, of moſt of the Green-houſe Plants: This is multiply'd by ſowing the Seeds in the Spring upon a moderate Hot-bed, and when the Plants are ſtrong enough to be remov'd, they ſhould be planted in Pots fill'd with freſh light ſandy Earth, and the Pots plung'd into a very moderate Hot-bed, in order to facilitate the Rooting of the Plants, obſerving to water and ſhade them until they have taken freſh Root; after which they muſt be enur'd to the open Air by Degrees, and in Summer may be expos'd in a ſhelter'd Place amongſt other Exotick Plants: In Winter the Pots ſhould be plac'd in a Green-houſe, ſo that the Plants may enjoy as much free Air as poſſible, but muſt be preſerv'd from Froſt, and do require frequent Refreſhings with Water.

This Plant produces its Flowers in *June*, and the Seeds ripen in *Auguſt*.

DILL. *Vide* Anethum.

DIOSCOREA. [*This Plant was ſo named by Father* Plumier, *from* PEDACIUS DIOSCORIDIS, *a famous Phyſician.*] *We have no* Engliſh *Name for this Plant.*

The *Characters* are;

It hath a ſpreading bell-ſhap'd Flower, conſiſting of one Leaf, which is divided at the Extremity into ſeveral Parts; from whoſe Cup ariſes the Pointal, which afterwards becomes a triangular Fruit, divided into three Cells; in which are contained orbicular Seeds, which are bordered.

The *Species* are;

1. DIOSCOREA *ſcandens, foliis tamni, fructu racemoſo. Plum. Nov. Gen.* Climbing Dioſcorea, with Black-briony Leaves, and the Fruit growing in Cluſters.
2. DIOSCOREA *ſcandens, folio haſtato, fructu racemoſo. Houſt.* Climbing Dioſcorea, with a ſpear-ſhap'd Leaf, and cluſtered Fruit.
3. DIOSCOREA *ſcandens, folio ſubrotundo acuminato, fructu racemoſo. Houſt.* Climbing Dioſcorea, with a roundiſh Leaf ending in a Point, and cluſtered Fruit.

Theſe Plants, all of them, grow wild in *America*; the firſt and third Sorts were found in great Plenty in the woody Parts of *Jamaica*, by the late Dr. *Houſtoun*; but the ſecond Sort he found at *Carthagena*, from whence he ſent Seeds of this Plant to *England*. They generally grow under Trees or Hedges, and twiſt up the Stems of whatever Plants grow near them.

In *Europe* theſe Plants are preſerved in ſome curious botanic Gardens, for Variety; but they have no great Beauty, ſo are ſeldom admitted into other Gardens. They may be propagated by ſowing of their Seeds on a Hot-bed early in the Spring; and when the Plants are come up, they ſhould be each tranſplanted into a ſmall Pot, filled with light freſh Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to water and ſhade them until they have taken new Root; after which time, they ſhould have a large Share of freſh Air admitted to them in warm Weather, and muſt be frequently watered. In this Bed the Plants may remain till Autumn, when they ſhould be removed into the Bark-ſtove, and plunged into the Tan, under the other Plants; for theſe die to the Root every Winter, and riſe again in the Spring; ſo that the Roots muſt not be over watered, when the Plant is quite decayed to the Ground. Theſe Roots will abide ſeveral Years, provided they are thus managed, and in three Years after ſowing will flower in *England*.

DIPSACUS, [διψακὸς, *Gr.* i. e. *thirſty*. It is ſaid to have taken its Name by way of contrary, becauſe it receives the Dew or Rain in the hollow *Sinus* of its Leaves that cohere together, by which it drives away the Injuries of Thirſt. It is alſo call *Labrum Veneris*, from the Poſition of its Leaves, which form a Sort of Baſon which contains a Liquor that beautifies the Face] The Teaſel.

The *Characters* are;

The whole Flower hath no proper Calyx, but Leaves repreſenting the Perianthium encompaſſing the Bottom of the Head; the little Flowers, which are produc'd ſingly from between the Scales, are collected into a Head ſomewhat like a Bee-hive; theſe are ſucceeded by longiſh four-corner'd Seeds.

The *Species* are;

1. DIPSACUS *ſylveſtris, aut virga paſtoris major. C. B.* The Greater Wild Teaſel.
2. DIPSACUS *ſylveſtris, capitulo minore, vel virga paſtoris minor. C. B.* Small Wild-Teaſel or Shepherd's Rod.
3. DIPSACUS *folio laciniato. C. B.* Cut-leav'd Teaſel.
4. DIPSACUS *ſativus. C. B.* Manured Teaſel.

The firſt of theſe Plants is very common upon dry Banks in moſt Parts of *England*, and is ſeldom cultivated in Gardens, unleſs for the ſake of Variety.

The ſecond is alſo found wild in many Parts of *England*, tho' leſs common than the firſt.

The third is a Variety, which differs from the firſt, in having the Leaves deeply cut or jagged.

But it is the fourth Sort only which is cultivated for Uſe, which is call'd *Carduus Fullorum*, or *Fullonum*, being of ſingular Uſe in raiſing the Nap upon Woollen Cloth; for which Purpoſe there are great Quantities of this Plant cultivated in the Weſt Country.

This Plant is propagated by ſowing the Seed in *March*, upon a Soil that has been well dry'd: About one Peck of this Seed will ſow an Acre; for the Plants ſhould have Room to grow, otherwiſe the Heads will not be ſo large, nor in ſo great Quantity. When the Plants are come up, you muſt hough them in the ſame Manner as is practis'd for *Turnips*, cutting down all the Weeds, and ſingling out the Plants to about ſix or eight Inches Diſtance; and as the Plants advance, and the Weeds begin to grow again, you muſt hough them a ſecond Time, cutting out the Plants to a wider Diſtance; for they ſhould be at laſt left at leaſt a Foot aſunder: And you ſhould be particularly careful to clear them from Weeds, eſpecially the firſt Summer; for when the Plants have ſpread ſo as to cover the Surface of the Ground, the Weeds will not ſo readily grow between them. The ſecond Year after Sowing, the Plants will ſhoot up to Heads, which will be fit to cut about the Beginning of *Auguſt*, at which Time they ſhould be cut, and ty'd up in Bunches, ſetting them in the Sun, if the Weather be fair, but if not, they muſt be ſet in Rooms to dry them. The common Produce is about an hundred and ſixty Bundles or Staves upon an Acre, which they ſell for about one Shilling a Stave. Some People ſow *Caraway* and other Seeds amongſt their *Teaſels*: But this not a good Method, for the one ſpoils the other; nor can you ſo eaſily clear them from Weeds, as when alone.

DITTANY. *Vide* Dictamnus.

DOCK. *Vide* Lapathum.

DODARTIA. [*This Plant was ſo named by Dr.* Tournefort, *from Monſieur* DODART, *a Member of the Academy of Sciences at* Paris.] *We have no* Engliſh *Name for this Plant.*

The *Characters* are;

It hath a perſonated tubulous Flower, conſiſting of one Leaf, having two diſtinct Lips; the upper Lip is bifid, and the under one is divided into three Parts; from whoſe Calyx ariſes the Pointal, fixed like a Nail in the hinder Part of the Flower, and afterwards becomes a roundiſh Fruit, divided into two Cells, which are filled with ſmall Seeds.

The *Species* are;

1. DODARTIA *orientalis, flore purpuraſcente. Tourn. Cor. Eaſtern* Dodartia, with a purpliſh Flower.
2. DODARTIA *bellidis folio, flore albo ſpicato.* Dodartia with a Daiſy-leaf, and white Flowers growing in a Spike.

Theſe Plants may be propagated by ſowing their Seeds on a Bed of freſh Earth in the Spring; and when the Plants are come up an Inch high, they ſhould be tranſplanted, ſome into ſmall Pots, and the others into warm Borders (for they require ſome Protection in Winter): thoſe which are planted in Pots, ſhould be placed under a Hot-bed Frame in Winter, where they may be covered in froſty Weather; but in mild Weather they ſhould have as much free Air as poſſible, otherwiſe they will draw up very weak, and their Stems will rot off at Bottom in the Spring. The ſecond Year after ſowing, theſe Plants will flower, and ripen their Seeds, and very often decay ſoon after; though, if the Plants are very ſound, they will ſometimes remain three or four Years.

DOG'S TOOTH. *Vide* Dens Canis.

DOG-WOOD. *Vide* Cornus.

DORIA.

The *Characters* are;

It hath a perennial fibroſe Root; the Leaves are almoſt whole, and oblong; the Cup of the Flower is cylindrical, and in Form of a Tube; The Flowers grow upon the Summits of the Branches, and are diſpos'd either in Form of an Umbel, or in a looſe Panicle, which are radiated like the Ragwort.

The *Species* are;

1. DORIA *Narbonnenſium. Hort. Eyſt.* The *Narbonne* Doria.
2. DORIA *quæ Jacobæa, foliis integris & mucronatis. Mor. Hiſt.* Doria with whole ſharp-pointed Leaves.
3. DORIA *quæ Jacobæa Orientalis, limonii folio. T. Cor.* Eaſtern Doria, with a Sea-Lavender Leaf.
4. DORIA *Americana, lato rigido folio. Boerh. Ind. American* Doria, with a broad ſtiff Leaf.
5. DORIA *Africana arboreſcens, craſſis & ſucculentis foliis, atriplicem referentibus. Boerh. Ind. African* Tree Doria, with thick ſucculent Leaves, ſomewhat like thoſe of *Atriplex*.
6. DORIA *quæ Jacobæa Africana, hederæ terreſtris folio repens. Hort. Amſt. African* creeping Doria, with a Ground-Ivy Leaf.
7. DORIA *quæ Jacobæa Africana fruteſcens, coronopi folio. Hort. Amſt. African* ſhrubby Doria, with a Hart's-horn Leaf.
8. DORIA *quæ Jacobæa Africana fruteſcens, craſſis & ſucculentis foliis. Hort. Amſt. African* ſhrubby Doria, with thick ſucculent Leaves.

The four firſt Sorts are very hardy, and will endure in the open Air; theſe may be propagated by parting of their Roots either in Spring or Autumn, and will grow in almoſt any Soil or Situation, but are too large and rambling for a ſmall Flower-Garden, eſpecially the firſt Sort, which creeps greatly at the Root, and will over-run a large Spot of Ground in one Year; theſe are ſeldom preſerved except in Botanick Gardens for Variety.

The other four Sorts are beautiful Flowering Plants, and well worth propagating in every good Garden: Theſe are increas'd by planting Cuttings of any of the Kinds during the Summer Months, in a Bed of light, rich Earth, obſerving to water and ſhade them until they have taken Root: Then you muſt carefully tranſplant them into Pots fill'd with the like rich light Earth, ſetting them in the Shade until they have taken

Root ; after which, they may be expos'd with *Geraniums*, &c. until *October*, when they muſt be remov'd into the Green-houſe, where they ſhould be plac'd as near the Glaſſes as poſſible, that they may have free Air whenever the Weather will permit, and muſt have frequent Refreſhings with Water. Theſe Plants produce their Flowers towards the latter End of Summer, and continue moſt Part of the Autumn in Beauty, but ſeldom produce good Seeds with us.

DORONICUM: [Some derive it of Δῶρον, a *Gift*, or *Palm*, and Νίκη, *Victory*, q. d. a *Triumphant Crown* ; but others will have it deriv'd from an *Arabick* Word] Leopards-Bane.

The *Characters* are ;

It hath an intricate knotted Root ; the Leaves are produc'd alternately on the Branches ; the Stalks are a little branch'd ; the Flowers (which grow on the Tops of the Stalks) are radiated like the Greater Starwort ; *the Half-Florets in the Disk of the Flower are trifid : The Cup of the Flower is expanded, and cut into many Parts almoſt to the Bottom, and is not ſcalely, but each ſingle Segment is in the Form of a Diſh.*

The *Species* are ;

1. Doronicum *radice Scorpii. C. B.* Scorpion-rooted Leopards-Bane.
2. Doronicum *plantaginis folio. C. B.* Plantain-leav'd Leopards-Bane.
3. Doronicum *plantaginis folio, alterum. C. B.* Another Plantain-leav'd Leopards-Bane.
4. Doronicum *plantaginis folio, hirſutum. Vaill.* Rough Plantain-leav'd Leopards-Bane.

The firſt of theſe Plants is ſometimes us'd in Medicine with us, as is the third Sort in *Germany* : Theſe are all Plants of no great Beauty ; but as they will thrive in almoſt any Soil or Situation, ſo they may be allow'd a Place in a ſhady Border, for Variety-ſake. They all increaſe abundantly by their ſpreading Roots, which may be parted either in Spring or Autumn ; as alſo by Seeds, which ſhould be ſown ſoon after they are ripe. They produce their Flowers for ſeveral Months in the Summer, as in *May*, *June*, *July*, and *Auguſt*, and their Seeds ripen ſoon after.

DORSIFEROUS PLANTS, [of *Dorſum* the *Back*, and *fero*, Lat. *to bear*] ſuch Plants as are of the Capillary Kind, without Stalk, and that bear their Seeds on the Back-ſide of their Leaves.

DORSTENIA. [*This Plant was ſo named by Father* Plumier, *from Dr.* Dorſten, *a* German *Phyſician, who publiſhed a Hiſtory of Plants in Folio*] Contrayerva.

The *Characters* are ;

It hath a thick fleſhy Placenta, which is flat, and ſituated vertically ; upon which are placed many apetalous Flowers, which are ſucceeded by roundiſh Seeds, ſomewhat like thoſe of Gromewell.

The *Species* are ;

1. Dorstenia *dentariæ radice, ſphondylii folio, placenta ovali. Houſt.* Contrayerva, with a Tooth-wort Root, Cow-parſnip Leaf, and an oval Placenta.
2. Dorstenia *dentariæ radice, folio minus laciniato, placenta quadrangulari & undulata. Houſt.* Contrayerva, with a Tooth-wort Root, leſs jagged Leaf, and a quadrangular undulated Placenta.
3. Dorstenia *ſphondylii folio ſerrato, placenta quadrangulari, radice dentariæ.* Contrayerva, with a Tooth-wort Root, ſawed Cow-parſnip Leaf, and a quadrangular Placenta.

The firſt of theſe Plants was diſcovered by my late ingenious Friend Dr. *William Houſtoun*, near *Old Vera Cruz* in *New Spain*. The ſecond was found by the ſame Gentleman, on the rocky Grounds about *Campeachy*. The third Sort was found in great Plenty in the Iſland of *Tobago*, by Mr. *Robert Millar*, Surgeon. But the Roots of all theſe Species are indifferently brought over and uſed in Medicine, and for Dying.

Theſe Plants are at preſent very rare in *Europe*, nor was it known what the Plant was whoſe Roots were imported, and had been long uſed in Medicine in *England*, until the late Dr. *Houſtoun* informed us ; for altho' Father *Plumier* had diſcovered one Species of this Plant, and given the Name of *Dorſtenia* to the Genus, yet he ſeems not to have known, that the *Contrayerva* was the Root of that Plant.

It will be difficult to obtain theſe Plants, becauſe the Seeds are ſeldom to be found good ; nor will they grow if they are kept long out of the Ground ; ſo that the only ſure Method to obtain them, is to have the Roots taken up at the Time when their Leaves begin to decay, and planted pretty cloſe in Boxes of Earth, which may be brought very ſafe to *England* ; provided they are preſerved from Salt-water, and are not over-watered with freſh Water in their Paſſage ; when the Plants arrive they ſhould be tranſplanted each into a ſeparate Pot, filled with freſh Earth, and plunged into the Bark-ſtove, which ſhould be kept to a moderate Heat, and the Plants muſt be frequently refreſhed with Water during the Summer Seaſon, but in Winter, when the Leaves are decayed, it ſhould be given to them more ſparingly : With this Management theſe Plants may not only be maintained, but may be alſo increaſed by parting their Roots in the Spring, before the Plants put out their Leaves.

DORYCNIUM, [Δορύκνιον, of Δόρυ, Gr. a *Spear*] Shrub Trefoil.

The *Characters* are ;

It hath papilionaceous Flowers, which are ſucceeded by ſhort Pods, in each of which is contain'd one ſingle Seed ; to which may be added, the Leaves are ſingle, and divided to the Bottom into five Segments.

We have but one *Species* of this Plant in *England*, which is ;

Dorycnium *Monſpeſulanum fruticoſum. J. B.* Shrub Trefoil of *Montpelier*.

This Shrub riſes with us to the Height of five or ſix Feet, and produces Cluſters of ſmall Flowers at the Extremity of the ſlender Branches, which are ſucceeded by ſhort Pods of Seeds. There is very little Beauty in this Plant, but it is preſerv'd in Botanick Gardens for Variety. It may be propagated by ſowing the Seeds in the Spring, either on a moderate Hot-bed, or on a warm Border under a Wall, where they will riſe very well, and may be afterwards tranſplanted into Pots, to be ſhelter'd in Winter ; or if planted in a warm Border and a dry Soil, will endure our common Winters very well in the open Air.

DOUGLASSIA.

This Plant was ſo named by the late Dr. William Houſtoun, *in Honour to Dr.* James Douglaſs, *an eminent Phyſician at* London.

The *Characters* are ;

It hath an anomalous Flower, conſiſting of one Leaf, whoſe lower Part is tubulous, but the upper Part is expanded, and divided into five Segments ; the Fruit, which is roundiſh, is divided into two Parts, which contain two Seeds.

There is but one *Sort* of this Plant at preſent known, viz.

1. Douglassia *frutescens & ſpinoſa, liguſtri folio, flore albo. Houſt. Paliuro affinis liguſtrifolia ſpinoſa, flore monopetalo difformi, fructu ſicco ſubrotundo. Sloan. Cat. Jam.* Shrubby prickly Douglaſſia, with a privet Leaf, and a white Flower.

This Shrub grows in great Plenty in the Woods and Savannas in *Jamaica* and *Barbadoes* ; where it riſes to the Height of ten or twelve Feet, and ſpreads into many Branches, at the Extremity whereof there are ſent forth Cluſters of white Flowers which are ſucceeded by roundiſh Fruit.

It may be propagated by Seeds, which muſt be obtained from the Countries of its Growth, for it doth not produce Seeds in this Country : This Seed muſt be ſown in Pots filled with light rich Earth, and then plunged into a Hot-bed of Tanners-bark, obſerving to water the Pots frequently to keep the Earth moiſt, otherwiſe the Seeds will not vegetate ; in about a Month after ſowing (if the Seeds are freſh) the Plants will appear above Ground, when they muſt be carefully watered three Times a Week, provided the Bed is warm ; and in the Day-time, when the Sun is warm, the Glaſſes of the Hot-bed ſhould be raiſed a little with Stones, to admit freſh Air to the Plants, as alſo to give Vent for the Steam of the Bed to paſs off : With this Management the Plants will be fit to tranſplant in about three Weeks or a Month's Time after their Appearance above Ground ; when they ſhould be carefully ſhaken out of the Pots, and ſeparated, being cautious how you part their Fibres, not to tear them ; then plant each into a ſeparate ſmall Pot filled with light rich Earth, and plunged into the Hot-bed again, being careful to ſhade the Plants until they have taken Root ; after which Time they muſt be duly watered, and the Glaſſes of the Hot-bed muſt be raiſed every Day, in proportion to the Warmth of the Seaſon, to admit freſh Air to the Plants, that they may increaſe in Strength, in proportion to their growing in Height. Theſe Plants may remain in the Hot-bed until *Michaelmas* (provided there is Room for them to ſtand without touching of the Glaſſes); then the Plants ſhould be removed into the Stove, and plunged into the Bark-bed, for the Winter Seaſon. In the Winter theſe Plants muſt be frequently watered, but there ſhould not be too much given to them at each Time; but in Summer they will require to be more plentifully watered. Theſe Plants being Natives of warm Countries, will not thrive, if they are expoſed to the open Air in this Country; ſo that they ſhould be conſtantly kept in the Stove, being careful to give them a large Share of Air in Summer, when the Weather is warm. With this Management the Plants will make good Progreſs; and in two or three Years will begin to produce their Flowers, and will continue ſeveral Years to flower; but they never produce ripe Seeds in this Country. This Plant continues green throughout the Year, ſo will afford an agreeable Variety in the Stove, among other tender exotic Plants of the ſame Country.

DRACOCEPHALON, of δράκων, a Dragon, and κεφαλὴ, a Head, *i. e.* Dragon's-head.

The *Characters* are;

It hath a labiated Flower conſiſting of one Leaf, whoſe upper Lip, which is Creſted, and its under Lip, which is divided into three Segments, end in Chops or Jaws, and have the Repreſentation of a Dragon's-Head: Out of the Flower-cup riſes the Pointal, fixed like a Nail in the hinder Part of the Flower; and is accompanied by four Embryos, which become ſo many Seeds, ſhut up in the Flower-cup.

There is but one *Species* of this Plant, *viz.*

Dracocephalon *Americanum. Breyn. prod. American* Dragon's-head.

This Plant hath been ranged amongſt the Foxgloves by ſeveral botanic Writers; but tho', from the Shape of the Flower, it ſeems to have ſome Affinity to that Genus; yet by the Flowers growing in Whorles round the Stalks, and each Flower being ſucceeded by four naked Seeds, it plainly belongs to the verticillate Tribe. This is propagated by parting of the Roots in the Spring (for it ſeldom produces good Seeds in *England*); theſe ſhould be planted in Pots, filled with freſh rich Earth, and during the Summer Seaſon they ſhould be expoſed in a Place where they may be ſheltered from ſtrong Winds; and they muſt be conſtantly watered in dry Weather, otherwiſe they will not flower ſtrong. In *July* theſe Plants will produce long Spikes of beautiful purple Flowers, and ſometimes in a good Seaſon they will produce Seeds. In Autumn theſe Plants die to the Ground, when the Pots ſhould be placed under a Hot-bed Frame, where they may be ſheltered from ſevere Froſt in Winter; but in mild Weather they ſhould have as much free Air as poſſible. In *March* theſe Plants may be taken out of the Frame, when they ſhould be new potted, and the Roots parted, to increaſe them; but this ſhould be done before the Plants begin to ſhoot up.

DRACO HERBA, [i. e. *Dragons-wort*] Tarragon, *vulgo.*

The *Characters* are;

The Leaves, which are like thoſe of Hyſſop, *are produc'd alternately on the Branches; the Lower being divided, and the Upper ones are whole; the Flowers are ſmall, diſcous, and diſpos'd into a long Spike.*

There is but one *Species* of this Plant, which is,

Draco-Herba. *Dod.* Herb-Dragon or Tarragon.

This Plant was formerly in great Eſteem for Sallads and Soops, but at preſent it is not ſo much us'd: It propagates it ſelf faſt enough by its creeping Roots, which in a ſhort Time will ſpread very far; or it may be increas'd by planting Cuttings or Slips in the Spring of the Year; which, if kept ſupply'd with Water, will take Root in a ſhort Time. This Plant will grow in almoſt any Soil or Situation, but beſt in that which is light and moiſt.

DRACO ARBOR. *Vide* Palma.

DRACUNCULUS; [*q. d.* Little Dragon] Dragon.

The *Characters* are;

The Leaves are like thoſe of Arum, *but are divided into many Parts; the Stalk is ſpotted, but in other reſpects it agrees with the* Arum.

The *Species* are;

1. Dracunculus *polyphillus. C. B.* Many-leav'd Dragon.

2. Dracunculus *polyphyllus, foliis ex luteo variegatis. H. R. Par.* The yellow ſtrip'd-leav'd Dragon.

3. Dracunculus *polyphyllus, foliis ex albo variegatis.* The white ſtrip'd-leav'd Dragon.

4. Dracunculus *Canadenſis triphyllus pumilus. Tourn.* Dwarf *Canady* Dragon, with three Leaves.

5. Dracunculus *Indicus, folio trifido. Tourn. Indian* Dragon, with a trifid Leaf.

6. Dracunculus *Indicus, folio quinquifido. Tourn. Indian* Dragon, with a quinquifid Leaf.

7. Dracunculus *Americanus, colocaſiæ foliis laciniatis. Tourn. American* Dragon, with a jagged Colocaſia Leaf.

8. Dracunculus *Americanus ſcandens, triphyllus & auritus. Tourn.* Climbing *American* Dragon with three Leaves, which have Ears to them.

9. Dracunculus *polyphyllus major Indicus ſerotinus, immaculato caule. Tourn.* Greater many-leav'd late *Indian* Dragon, with an unſpotted Stalk.

10. Dracunculus *Zeylanicus polyphyllus, caule aſpero ex flavo & viridi variegato. Tourn.* Many-leav'd Dragon of *Ceylon*, with a rough Stalk, variegated with Yellow and Green.

11. Dracunculus *Zeylanicus ſpinoſus, polypodii foliis, radice repente. Tourn.* Prickly Dragon of *Ceylon*, with polypody Leaves, and a creeping Root.

12. Dracunculus *Americanus, caule aſpero puniceo, radice cyclaminis. Tourn. American* Dragon, with a rough ſcarlet Stalk, and a Root like that of Sowbread.

13. Dracunculus *Americanus ſcandens. Tourn.* Climbing *American* Dragon.

14. Dracunculus *Zeylanicus polyphyllus, caule aſpero vireſcente, maculis albicantibus notato. Tourn.* Many-leav'd Dragon of *Ceylon*, with a rough green Stalk, mark'd with whitiſh Spots.

The firſt of theſe Sorts is cultivated in Gardens for medicinal Uſes; the ſecond and third are Varieties of the firſt, which are preſerv'd in curious Gardens of Plants. Theſe, tho' they are Plants of no great Beauty, yet for the ſurpriſing Oddneſs of their Flowers, together with their ſpotted Stalks, do deſerve a Place in ſome remote Corner of the Garden.

They are propagated by their knobby Roots, which, if ſuffer'd to remain two or three Years undiſturb'd, will afford many Off-ſets. The beſt Seaſon for tranſplanting theſe Roots is in Autumn, ſoon after the green Leaves decay; for if they are remov'd after they have taken freſh Root, and began to ſhoot, they ſeldom produce Flowers the ſucceeding Summer; or if they do, they are very weak: Theſe will thrive almoſt in any Soil and Situation, but beſt in an open Expoſure, and a light Soil.

The fifth and following Sorts of *Dragon* are very tender Plants, ſo will not live in this Country, unleſs they are preſerved in the warmeſt Stoves: The ſeveral *American* Sorts grow naturally in the Woods in *Jamaica*, and other hot Parts of *America*: The climbing Sorts twiſt themſelves round the Trunks of Trees, into which they faſten their Roots, which are ſent forth from their Joints; and riſe to the Height of thirty or forty Feet. Theſe climbing Sorts are eaſily propagated by Cuttings, which being very ſucculent, may be brought over to *England* in a Box of dry Hay, if they are packed up ſeparate, ſo as not to injure each other by the Moiſture, which is apt to flow out at the Part where they are cut off; which may occaſion a Fermentation, and thereby rot the Cuttings. When the Cuttings arrive, they ſhould be planted in ſmall Pots, filled with light freſh Earth, and plunged into a Hot-bed of Tanners-bark; being very careful not to let them have too much Moiſture until they have taken Root, leſt it rot them: When they have taken Root, they muſt be frequently refreſhed with Water, but it muſt not be given to them in large Quantities; when the Weather is warm, the Glaſſes of the Hot-bed ſhould be raiſed every Day, to admit freſh Air to the Plants; and when they are grown pretty large, they ſhould be placed in the Bark-bed in the Stove, where they muſt be placed near ſome ſtrong Plants, to which they may faſten themſelves, otherwiſe they will not thrive; for tho' they will ſend forth Roots at their Joints, which will faſten to the Mortar of the Stove, when placed againſt the Wall; yet they will not thrive near ſo well as againſt a ſtrong Plant, which will afford them Nouriſhment.

The other Sorts are propagated by Off-ſets from their Roots; theſe may be procured from the Countries of their Growth, and ſhould be planted in Tubs of Earth about a Month before they are put on board the Ship to tranſport them. Theſe Tubs ſhould be placed in a ſhady Situation, until they have taken Root; but they ſhould not have much Water given to them, leſt it rot them. In their Paſſage, great Care ſhould be had to keep them from Salt-water, as alſo not to let them have too much Water given them; for if they have a little Water once or twice a Week at moſt, while they are in a hot Climate, and when they come into a cooler Climate, once in a Fortnight will be ſufficient to water them; and this ſhould be done ſparingly, leſt it rot them: for if the Tops of the Plants ſhould decay in their Paſſage, if the Roots are not rotted, they will ſoon recover with proper Care.

When the Plants arrive, they ſhould be tranſplanted into Pots, filled with light freſh Earth, and plunged into a Hot-bed of Tanners-bark, and gently watered, until they have taken good Root; after which Time they will require to be frequently refreſhed with Water; but as their Stems are very ſucculent, ſo they muſt not have too much Moiſture, for that will rot them. Theſe Plants ſhould be conſtantly kept in the Stove, where in hot Weather they ſhould have freſh Air admitted to them; but in Winter they muſt be kept very warm, otherwiſe they cannot be preſerved in this Country.

Theſe Plants will riſe to the Height of three, four, or five Feet, and will afford a very agreeable Variety amongſt other tender exotic Plants in the Stove.

The Dwarf *Canady* Sort, is pretty hardy, and will endure the Cold of our ordinary Winters in the open Air, provided they are planted in a warm Soil and Situation: If they are planted under Trees, they will thrive much better than when placed in a more open Situation.

DRACUNCULUS PRATENSIS. *Vide* Ptarmica.

DRAGON. *Vide* Dracunculus.

DROSION. *Vide* Ros Solis.

DULCOMARA. *Vide* Solanum.

DUNGS are deſign'd to repair the Decays of exhauſted or worn-out Lands, and to cure the Defects of Land, which are as various in their Qualities as the *Dungs* are that are us'd to meliorate and reſtore them: Some Lands abound too much in Coldneſs, Moiſture, and Heavineſs; others again are too light and dry: And ſo to anſwer this, ſome *Dungs* are hot and light, as that of Sheep, Horſes, Pigeons, *&c.* Others again are fat and cooling, as that of Oxen, Cows, Hogs, *&c.*

And as the Remedies that are to be us'd muſt be contrary to the Diſtempers they are to cure, ſo the *Dung* of Oxen, Cows, and Hogs, muſt be given to clean, dry, light Earths, to make them fatter and cloſer; and hot and dry Dungs to meliorate cold, moiſt, and heavy Lands.

There are two peculiar Properties in *Dungs*, the one is to produce a certain ſenſible Heat, capable of producing of ſome conſiderable Effect; which Properties are ſeldom found but in the *Dungs* of Horſes and Mules, while it is newly made, and a little moiſt: The other Property of *Dung* is, to fatten the Earth, and render it more fruitful.

The *Dung* of Horſes and Mules is of admirable Uſe in Gardens in the Winter-time, becauſe it then animates and enlivens all Things, and ſupplies the Office which is perform'd by the Heat of the Sun in the Summer-time, affording us all the Novelties of the Spring, as *Aſparagus*, *Cucumbers*, *Radiſhes*, *Melons*, *Sallads*, &c. *Horſe-Dung* is the beſt Improvement for *cold*, *jejune* Lands that we can procure in any Quantity: but yet, *Horſe-Dung* being us'd alone, or when 'tis too new, is frequently prejudicial to ſome Lands; and if it be ſpread thin over Lands in the Summer-time, it is of very little Service, becauſe the Sun drawing out all the Virtue and Goodneſs of it, renders it little better than Thatch or dry Straw: And tho' too much of it can ſcarcely be us'd in a Kitchen-Garden for *Cabbages*, *Colliflowers*, and all other Plants that grow there, and require abundance of Nouriſhment, yet it may be a Fault to lay too much of it on Corn-Lands, becauſe it produces abundance of Weeds.

Horſe-Dung being of a very hot Nature, is beſt for cold Lands; and *Cow-Dung* for hot Lands: And being mix'd together, may make a very good Manure for moſt Sort of Soils, and for ſome they may be mix'd with Mud.

Sheep's-Dung and *Deer's-Dung* differ not much in their Quality, and are eſteem'd by ſome the beſt of *Dungs* for cold Clays: Some recommend them to be beat into Powder, and ſpread very thin over Autumn or Spring Crops, about four or five Loads to an Acre, after the ſame Manner as *Aſhes*, *Malt-duſt*, &c. are ſtrew'd.

In *Flanders*, and other Places, they houſe their Sheep at Night in Places ſpread with clean Sand, laid about five or ſix Inches thick; which being laid on freſh every Night, is clear'd out once a Week, and the *Dung* and *Urine* of the Sheep is a very rich Manure, and bears a conſiderable Price, and is an excellent Manure for ſtubborn Lands; and Mr. *Quinteney* is of Opinion, that 'tis the greateſt Promoter of Fruitfulneſs in all Sorts of Ground.

Others recommend *Hog's-Dung* as the fatteſt and moſt beneficial of all Sorts of *Dungs*, and ſay, that one Load of it will go as far as two Loads of other *Dung*, and that it is the beſt of all *Dungs* for Fruit-Trees, eſpecially for *Pear* and *Apple-Trees* in a light Soil, and a very rich *Dung* for *Graſs*. I have often uſed this Dung to Fruit-Trees, when it was well rotted, and have found it the moſt beneficial to them of any Manure.

The *Dung* of *Pigeons*, *Hens*, and *Geeſe*, are great Improvers of Meadow or Corn-Land; the firſt of theſe being the beſt ſuperficial Improvement that can be laid on Meadow or Corn-Land: But before it is us'd, it ought to have lain abroad out of the Dove-houſe ſome time, that the Air may have a little ſweeten'd it, and mollify'd the fiery Heat that is in thoſe *Dungs*.

Eſpecially it is good for cold, wet, clayey Lands; but it ought to be dry'd before it be ſtrew'd, becauſe 'tis naturally apt to clod in Wet, and it ſhould be mix'd with Earth to keep it from clinging together, that it may be ſtrew'd thin, being naturally very hot and ſtrong.

Some recommend the *Dung* of Pigeons, and alſo of other Fowls, as the beſt Manure for *Aſparagus*, *Strawberries*, or any Sorts of Flowers.

Monſieur *Gentil* approves of *Pigeon's-Dung*, as being good for ſuch Trees whoſe Leaves are apt to turn *yellow*, if they grow in free Soils that are rather cold than hot, provided the Heat of it has been abated by lying two or three Years in the Dunghil; but this ſhould be applied in Autumn, and in ſmall Quantities.

This being ſpread about an Inch thick at the Foot of a Tree, whoſe Leaves are *yellow*, and being left there till *March*, he recommends as very uſeful in cold and moiſt Soils.

The *Dung* of Poultry being hot and full of Salts, tends much to facilitate Vegetation, and is abundantly quicker in its Operation than the *Dung* of Animals which feed on Herbs.

Sir *Hugh Plat* ſays, One Load of Grain will inrich Ground more than ten Loads of common *Dung*; which, if it be true, it is rational to ſuppoſe, That if ſimple Grain by only Infuſion in the Mixture of Compoſts, has a very good Effect, it will be more powerful when it has paſs'd thro' the Bodies of Animals.

Human Dung is a great Improver of all cold ſour Lands, and eſpecially if it be mix'd with other *Earths* or *Dungs* to give it a Fermentation.

But there is not any Sort of Manure equal to the cleanſing of *London* Streets for all ſtubborn clayey Soils, the Parts of which will be better ſeparated, and in a much leſs Time with this Manure than any other Compoſt whatever, and where it can be obtain'd, is extremely well worth procuring either for Corn, Graſs, or Garden-Land.

DWARF-TREES. Theſe were formerly in much greater Requeſt than they are at preſent; for, tho' they may have many Advantages to recommend them, yet the Diſadvantages attending them do greatly over-balance; and ſince the introducing of *Eſpaliers* into the *Engliſh* Gardens, *Dwarf-Trees* have been deſtroy'd in moſt good Gardens, for the following Reaſons.

1ſt, The Figure of a *Dwarf-Tree* is very often ſo much ſtudied, that in order to render the Shape beautiful, little Care is taken to procure Fruit, which is the principal Deſign in planting theſe Trees.

2dly, The Branches being ſpread horizontally near the Surface of the Ground, render it very difficult to dig, or clean the Ground, between them.

3dly, Their taking up too much Room in a Garden, (eſpecially when they are grown to a conſiderable Size) for nothing can be ſown or planted between them.

4thly, Theſe Trees ſpreading their Branches near the Ground, do continually ſhade the Surface of the Earth, ſo that neither the Sun nor Air can paſs freely round their Roots and Stems, to diſſipate noxious Vapours, whereby the circumambient Air will be continually replete with crude rancid Vapours, which being drawn in by the Fruit and Leaves, will render its Juices crude and unwholſome as well as ill-taſted.

Theſe Evils being intirely remedied by training the Trees to an *Eſpalier*, hath juſtly gain'd them the Preference; however, if any one has a Mind to have *Dwarf-Trees*, notwithſtanding what has been ſaid, I ſhall lay down a few Rules for their Management.

If you deſign to have *Dwarf Pear-Trees*, you ſhould bud or graft them on *Quince-Stocks*; but as many Sorts of *Pears* will not take, if they are immediately budded, or grafted on *Quince-Stocks*; ſo ſome of thoſe Sorts which will take freely, ſhould be firſt budded on the *Quince-Stocks*; and when theſe have ſhot, the Sorts you intend to cultivate, ſhould be budded into theſe; for Free-Stocks are apt to make them ſhoot ſo vigorouſly, as not to be kept within Bounds: Theſe Grafts or Buds ſhould be put in about four or ſix Inches above the Surface of the Ground, that the Heads of the Trees may not be advanc'd too high; and when the Bud or Graft has ſhot out four Eyes, you ſhould ſtop the Shoot, to force out lateral Branches.

Two Years after Budding, theſe Trees will be fit to tranſplant where they are to remain; for tho' many People chuſe to plant Trees of a greater Age, yet they ſeldom ſucceed ſo well as young ones. The Diſtance theſe Trees ſhould be planted is twenty-five Feet ſquare, for leſs will not do, if the Trees thrive well: The Ground between them may be cultivated for Kitchen-Garden Herbs, while the Trees are young, but you ſhould not ſow or plant too near their Roots.

In order to train your Trees regularly, you ſhould drive Stakes into the Ground round the Tree, to which the Branches ſhould be nail'd down with Liſt in an horizontal Poſition; for if they are ſuffer'd to take a perpendicular Figure while young, they can't be afterwards reduc'd without great Violence to any tolerable Figure. The neceſſary Directions to be afterwards follow'd are, not to ſuffer any Branches to croſs each other; and always in ſhortning any Shoots beſure to leave the uppermoſt Eye outwards, whereby the Hollowneſs in the Middle of the Tree will be better preſerv'd, and be careful to rub off all perpendicular Shoots in the Middle of the Trees, ſo ſoon as they are produc'd. The other neceſſary Rules you'll find under the Article of *Pruning*.

The Sorts of *Pears* which do beſt in *Dwarfs*, are all Summer and Autumn Fruits; for Winter *Pears* are not worth planting in *Dwarfs*, for they ſeldom bear well, nor are ever well-taſted, and commonly are very ſtony.

Apples are alſo planted in *Dwarfs*, moſt of which are now budded or grafted on *Paradiſe* Stocks; but as theſe are for the moſt part of a ſhort Duration, ſo they are not profitable, and are fit only for ſmall Gardens, as a Matter of Curioſity, producing Fruit ſooner and in greater Plenty, than when they are upon *Crab* or *Apple* Stocks.

The Diſtance theſe Trees ſhould be planted, if on *Paradiſe* Stocks, ſhould be ſix or eight Feet; but if on *Crab* Stocks, ſixteen or twenty Feet aſunder each Way. The Management of this being the ſame with *Pears*, I need not repeat it.

Some Perſons alſo plant *Apricocks* and *Plums* for *Dwarfs*, but theſe ſeldom ſucceed well, as being of a tender Conſtitution; and thoſe which will produce Fruit on *Dwarfs*, are much more likely to do ſo when train'd on an *Eſpalier*, where they can be much better manag'd, and therefore I judge it much the better Method, as being more certain, and the Trees will make a better Figure.

E A

EARTH is the principal Matter whereof our Globe conſiſts; the Character of which, according to Dr. *Boerhaave*, is, That it is a *Foſſil Body, neither diſſoluble by Fire, Water, nor Air; that it is inſipid, and tranſparent; more fuſible than Stone; ſtill friable, and containing uſually a Share of Fatneſs.*

There is no ſuch Thing as a ſtrictly ſimple *Earth*; Mr. *Boyle* ſays, That it doth not appear, that Nature any more than Art affords an elementary *Earth*; at leaſt, ſome which appear of the ſimpleſt Sorts are found, upon Examination, to have Qualities not aſcrib'd to pure *Earth*.

Of ſuch *Earths*, ſome are ſimple, and immutable, as *Chalk, Pumice*, and *rotten Stone*; others compound and fatty; of which Kind are all *Boles*, red, white, and brown; *Fullers Earth*; and divers Kinds of Medicinal *Earths*, as the *Cretica, Hungarica, Lemnian Earth*, and others.

Which *Earths* are all reſolvable into Oil, a little acid Salt, *&c.* and a *Calx*, which is the *Baſis*, or the *Earth* properly ſo call'd.

Sand is by Naturaliſts generally rank'd as a Species of *Earth*, tho' not very properly; in that *Sands*, ſtrictly ſpeaking, are a Sort of Cryſtals, or little tranſparent Pebbles, and are calcinable, and by the Addition of a fix'd Alcaline Salt, fuſible, and convertible into Glaſs.

The fat *Earth* is render'd fertile by the Means of *Sand*, and becomes fit to feed and nouriſh Vegetables, *&c.* for pure *Earth* is liable to coaleſce into a hard coherent Maſs, as in Clay; and Earth thus imbodied, and as it were glu'd together, would be very unfit for the Nouriſhment of Plants.

But if hard *Sand*, i. e. *Cryſtals*, which are indiſſoluble in Water, and ſtill retain the ſame Figure, be intermix'd with ſuch *Earth*, they will keep the Pores of the *Earth* open, and the *Earth* itſelf looſe and incompact, and by that means give Room for the Juices to move, aſcend, *&c.* and for Plants to be nouriſh'd thereby.

Thus a Vegetable being planted either in the *Sand* alone, or in the fat *Glebe* and *Earth* alone, receives no Growth or Increment, but is either ſtarv'd or ſuffocated; but mix the two, and the Maſs becomes fertile.

In effect, by means of *Sand* the *Earth* is render'd, in ſome meaſure, Organical, Pores and Interſtices being hereby maintain'd or preſerv'd, ſomething analagous to Veſſels is effected; by which the Juices of the *Earth* may be convey'd, prepar'd, digeſted, circulated, and at length excern'd and thrown off in the Roots of Plants.

The *Earth* is made up of two Parts: The firſt the *containing* Part, *i. e.* the *Body, Bed*, or *Couch*; the ſecond Part *contained*, and thoſe are the *nitrous* or *ſulphureous Particles* or *prolifick Salts*. The firſt is a lifeleſs inanimate Maſs, and is only the Receptacle of the other: For the Earth conſider'd ſimply, and abſtracted from the before-mention'd *nitrous* and *prolifick Salts*, is a lifeleſs, dead, and inanimate Maſs; but by the Co-operation of Water, Sun, and Air, is put into Motion, and promotes the Work of Vegetation: But if it were ſtript of thoſe prolifick Salts and ſpirituous Particles, would produce no Manner of Plant, Herb, *&c.* that ſhould be planted or ſown in it.

Theſe *nitrous Particles* or *prolifick Salts*, are of various and different Qualities; and according as the *Earth* is more or leſs ſtor'd with all or ſome of them, it is more or leſs productive; and according as it abounds with ſome of them more than others, differing from one another in Contexture, it conſtitutes the different Species or Kinds of Soils adapted to the Propagation of different Plants, the Pores of whoſe Roots are form'd to receive, and whoſe Nature is to attract thoſe Salts that are congenial to them.

Some diſtinguiſh *Earths* into three Claſſes, *Sand, Loam*, and *Clay*; as thoſe upon one or other of which all others do in ſome reſpects depend.

Gravel, and all the open Soils, till the *Loam* is come at, are of the ſandy Kind.

Thoſe binding *Earths* from the *Loam* downwards, till the Stiffneſs of Chalk may be come at, may be reckon'd of the *Clay* Kind.

All theſe Sorts of *Earths* have a little Tendency to Vegetation, and have their Salts proper for it, but in a different Proportion; as a Peck of *Clay* may probably have double the Quantity of *Salts* in it that a Peck of *Loam* has; and a Peck of *Loam* may have twice the Quantity of *Salts* that Peck of *Sand* has.

Loam. Some call the ſuperficial *Earth* that we meet with in *England* by this Name, without having regard to what Proportions of *Sand* and *Clay* it contains: Others again call that *Earth Loam* that inclines more to *Clay* than *Sand:* Some by *Loam* mean that Sort of *Earth* that equally partakes of *Sand* and *Clay*, being a Medium between *Sand* and *Clay*, which they call *Mother-Earth*.

This *Mother-Earth*, they ſay, may be in Colour either black or yellow; and of which of theſe Colours ſoever it be, Plants of all Sorts will grow in it.

Sand and *Clay* likewiſe produce certain Plants which are natural to each of them, and conſequently will thrive better in them than in any other Soil.

But *Sand* is apt to precipitate thoſe Plants that are ſet in it, earlier than *Clay*, and will cauſe them to germinate near a Month ſooner than thoſe that grow in *Clay*, and that for this Reaſon, that the *Salts* which are in the *Sand* are liable to be put in Motion by the leaſt Approach of the Warmth of the Sun; but as *Sand* is quick in the Operation, ſo the *Salts* are ſoon exhal'd and ſpent.

Clay: The Parts of *Clay* are more cloſely compacted together, and do not ſo eaſily give out thoſe *Salts* that are contain'd in it; nor can the Fibres of every tender Plant make their Way thro' it in queſt of their proper Nutriment.

But if the Parts of the *Clay* be open'd, by digging and breaking it into ſmall Particles, and thoſe Parts be kept open by a Mixture of ſome ſharp Sand, or ſome other Body of the like Quality, the Effects of its Vigour will plainly appear.

Some diſtinguiſh the ſeveral Temperaments of the *Earth* either into a *light, ſandy*, or *looſe* Contexture, or into thoſe of a *ſtiff, clayey*, or *cloſe* one; either of which have their reſpective good Qualities, and all of them, when they are in their Extremes, require Art to render them uſeful and beneficial in the Production and Growth of Plants.

A *light, ſandy*, or *looſe Earth* requires a proper Ligature, and ſhould have a Compoſt of a heavier Nature; and thoſe that are *heavy, clayey*, and *cloddy*, ſhould have a Compoſt of a more fiery, ſprightly Nature, that will inſinuate itſelf into the *heavy, lumpy,*

lumpy, indigeſted Clods, which would otherwiſe very much obſtruct the Buſineſs of Vegetation.

Some Authors who treat of the Qualities of *Earth*, ſay, a good *Earth* ſhould be of a *blackiſh* Colour, *gravelly*, *fat*, *pliant*, or *eaſy* to be digg'd, and that it ſhould be neither *cold* nor *light*; that it ought to have no ill Smell nor Taſte; and that it ought to be of the ſame Quality three or four Feet deep for Trees, which, if they have not that Depth, will languiſh and decay, after they have been planted ſix Years. But this is not true in Fact; for moſt Trees will thrive very well, if they have two Feet Depth of good *Earth*, eſpecially Fruit-Trees, which produce the moſt generous Fruits when their Roots ſpread near the Surface of the Earth.

In order to know whether the *Earth* has any ill Smell or Taſte, they direct to lay a Handful of it to ſoak in Water for ſeven or eight Hours, and afterwards to ſtrain it, and taſte and ſmell it; by which, the Taſte or Smell will eaſily be perceiv'd.

EARWIGS.

Theſe are very troubleſome Vermin in a Garden, eſpecially where *Carnations* are preſerved; for they are ſo fond of theſe Flowers, that if Care is not taken to prevent them, they will intirely deſtroy them, by eating off the ſweet Part at the Bottom of the Leaves. To prevent which, moſt People have Stands erected, which have a Baſon of Earth or Lead round each Supporter, which is conſtantly kept fill'd with Water. See the Article *Carnation*.

Others hang the hollow Claws of Crabs and Lobſters upon Sticks in divers Parts of the Garden into which theſe Vermin get; and by often ſearching them, you will deſtroy them without much Trouble; which will be of great Service to your Wall-Fruit, for theſe are great Deſtroyers thereof.

EBULUS. *Vide* Sambucus Humilis.

ECHINATE SEEDS; [of *Echinus*, Lat. a *Hedge-hog*] ſuch Seeds of Plants as are prickly and rough.

ECHYNOMELOCACTUS. *Vide* Melocactus.

ECHINOPHORA; of 'Εχίνος, a *Hedge-hog*, and φὲρω, Gr. *to bear*] Prickly-headed Parſnip.

The *Characters* are;

The Cup of the Flower conſiſts of one Leaf, which is divided into five Parts, and expands in Form of a Star, in which is included the Foot-ſtalk of the Umbel; the Fruit conſiſts of one prickly Veſſel, in which is contain'd one long Seed.

We have but one *Specie* of this Plant, which is,

ECHINOPHORA, *paſtinacæ folio. C. B.* Echinophora, with a Parſnip-Leaf.

There is no great Uſe or Beauty in this Plant; but it is preſerv'd in curious Botanick Gardens, for Variety-ſake. It may be propagated by ſowing the Seeds ſoon after they are ripe, or very early in the Spring; and when the Plants are come up, they ſhould be ſingled out, ſo as to remain about eight or ten Inches aſunder. The ſecond Year after ſowing they will produce ripe Seeds.

ECHINOPUS; [of 'Εχίνος, a *Hedge-hog*, becauſe the Heads of this Plant reſemble this Animal] Globe-Thiſtle, *vulgo*.

The *Characters* are;

It hath the whole Appearance of a Thiſtle; *the Leaves are produc'd alternately; the Florets conſiſt of one Leaf, which is divided into five Segments, and is hollow; and each ſingle Floret has a ſcaly Cup; the Florets are collected into a ſpherical Head, which has one common Cup or Covering.*

The *Species* are;

1. ECHINOPUS *major. J. B.* Greater Globe-Thiſtle.
2. ECHINOPUS *major humilior, floribus albidis. Flor. Bat.* Greater Dwarf Globe-Thiſtle, with whitiſh Flowers.
3. ECHINOPUS *minor annuus, capite magno. Tourn.* Leſſer annual Globe-Thiſtle, with a large Head.

The firſt of theſe Plants hath been an old Inhabitant of the *Engliſh* Gardens, where it hath had a Place more for Variety, than any particular Beauty.

The ſecond Sort is a Variety which hath been obtain'd from Seeds of the former. Theſe Plants may be propagated by ſowing their Seeds in the Spring of the Year in a light Soil: And when the Plants are ſtrong enough to remove, they may be tranſplanted into the Middle of large Borders, or in any abject Part of the Garden; for they are too large to ſtand amongſt nicer Plants, which would be greatly injured by their large Leaves. The ſecond Year after ſowing they will produce Flowers; and if the Autumn is not too cold or wet, will perfect Seeds: But the Roots of theſe will abide three or four Years, and produce Flowers and Seeds annually.

The third Sort is an annual Plant, and requires to be ſown early, as alſo to have an open warm Situation; otherwiſe it will not produce good Seeds in this Country. This Plant is of ſmall Growth, and ſo may the better be preſerv'd in a warm Border amongſt other curious Plants.

ECHINUS; *Lat.* is the prickly Head, or Cover of the Seed, or Top of any Plant; ſo call'd, from its Likeneſs to a *Hedge-hog*.

ECHIUM; [of 'Εχίς, Gr. a *Viper*, becauſe the ripe Seed of this Plant reſembles the Head of a Viper. It is call'd *Herba Viperaria*, becauſe the Antients believ'd that this Plant kill'd Vipers] Vipers Bugloſs.

The *Characters* are;

The Cup of the Flower is large, and divided into five long ſlender Segments; the Flower conſiſts of one Leaf, is ſhap'd like a Funnel, and ſomewhat inflected, having its upper Part ſtretch'd out to a greater Length than the lower; the upper Part or Galea of the Flower is divided into two, and the lower Part or Beard into three Parts; in the Middle of the Flower are produc'd five Stamina (or Threads) which are reflex'd; each Flower is ſucceeded by four Seeds, which are in form of a Viper's Head.

The *Species* are;

1. ECHIUM *vulgare. C. B.* Common Vipers Bugloſs.
2. ECHIUM *majus & aſperius, flore albo. C. B.* Great rough Vipers Bugloſs, with a white Flower.
3. ECHIUM *majus & aſperius, flore dilute purpureo. Bot. Monſ.* Great rough Vipers Bugloſs, with a Flower of a pale purple Colour.
4. ECHIUM *ampliſſimo folio, Luſitanicum. Tourn. Portugal* Vipers Bugloſs, with a large Leaf.
5. ECHIUM *Creticum latifolium rubrum. C. B.* Broad-leav'd *Candia* Vipers Bugloſs, with a red Flower.
6. ECHIUM *Creticum anguſtifolium rubrum. C. B.* Narrow-leav'd *Candia* Vipers Bugloſs, with a red Flower.
7. ECHIUM, *foliis anguſtis & villoſis. Tourn.* Vipers Bugloſs, with narrow hairy Leaves.

There are ſeveral other Varieties of this Plant, which are preſerv'd in curious Botanick Gardens; but theſe here mention'd are the chief Sorts which I have obſerv'd in *England*. The firſt Sort is found wild upon dry chalky Hills and gravelly Soils in divers Parts of *England*, and is ſometimes uſed in Medicine: But there are none of the Varieties which are cultivated for their Beauty; tho' I think the firſt, fifth, and ſixth Sorts do deſerve a Place in ſome dry abject Part of the Garden, where little elſe will grow, for the ſake of Variety, and the long Continuance of their Flowers. They are moſt of them biennial Plants; the Seeds being ſown in the Spring, will the ſecond Summer after produce Flowers and Seeds, after which they ſeldom continue: They all delight in a rubbiſhy gravelly Soil, and will grow upon the Tops of old Walls or Buildings, where when once they have eſtabliſh'd themſelves, they will drop their Seeds, and thereby maintain a Succeſſion of Plants without any Care; and on theſe Places they appear very beautiful.

EDERA QUINQUEFOLIA. *Vide* Vitis.

EDGINGS. The beſt and moſt durable Plant for *Edgings* in a Garden, is *Box*, which, if well planted, and rightly manag'd, will continue in Beauty for ſeveral Years: The beſt Seaſon for planting this, is either in the Autumn, or very early in the Spring; for if you plant it late, and the Seaſon ſhould prove hot and dry, it will be very ſubject to miſcarry, unleſs great Care is taken to ſupply it with Water. The beſt Sort for this Purpoſe is the *Dwarf Dutch-Box*.

Theſe *Edgings* are only planted upon the Sides of Borders next Walks, and not (as the Faſhion was ſome Years ago) to plant the *Edgings* of Flower-beds, or the *Edges* of Fruit-borders in the Middle of Gardens, unleſs they have a Gravel Walk between them, which renders it proper to preſerve the Walks clean, by keeping the Earth of the Borders from waſhing down in hard Rains.

It was alſo the Practice formerly, to plant *Edgings* of divers Sorts of Aromatick Herbs, as *Thyme*, *Savory*, *Hyſſop*, *Lavender*,

der, &c. But theſe being ſubject to grow woody, ſo that they can't be kept in due Compaſs, and in hard Winters being often kill'd in Patches, whereby the *Edgings* are render'd incomplete, they are now ſeldom us'd for this Purpoſe.

Some People alſo make *Edgings* of *Daiſies*, *Thrift*, *Catchfly*, and other flowering Plants; but theſe alſo will require to be tranſplanted every Year, in order to have them handſome; for they ſoon grow out of Form, and are ſubject alſo to decay in Patches, ſo that there is not any Plant which ſo compleatly anſwers the Deſign as *Dwarf-Box*, which muſt be preferr'd to all others.

EFFLORESCENCE, *Lat.* The *Blowing out of a Flower.*

To EGERMINATE, *Lat.* To *bud* or *ſpring out.*

ELATERIUM; [ἐλατήριον, of ἐλαύνω, Gr. *to agitate*, as tho' a bent Bow which returns to its former State: Or it is ſo call'd of its Fruit, which if it be touch'd lightly, ſcatters itſelf; but the ripe Fruit is carefully to be gather'd between Cloths, or in a Pitcher, that it may diſcharge itſelf in that, that it may not affect the Eyes] The Wild Cucumber.

The *Characters* are;

The Branches are ſomewhat like thoſe of the Cucumber, *but have no Tendrils; the Fruit is prickly, and when ripe, burſts with great Elaſticity, and abounds with fœtid Juice.*

We have but one *Specie* of this Plant, which is;

ELATERIUM *officinarum. Boerh. Ind.* This is the *Cucumis ſylveſtris, Aſininus dictus*, of *Caſpar Bauhin.* Wild Cucumber.

This Plant is cultivated in ſome Gardens for Medicinal Uſe, but is chiefly preſerv'd in curious Gardens for its Variety, as alſo for Diverſion; for when the Fruit is ripe, if you offer to gather it, it burſts and caſts its Juice and Seeds with great Elaſticity, for which it is call'd by ſome *Noli me Tangere*, or *Touch me not:* Which Appellation may be given to many other Plants on this Account.

It may be propagated by ſowing the Seeds in the Spring of the Year in an open warm Border; and when the Plants are come up, they may be tranſplanted into open Beds or Borders, about 6 or 8 Feet Diſtance from each other; for the Vines will ſpread very far, eſpecially if the Ground is good in which they are planted: Theſe produce their Fruit in Autumn, which if you ſuffer to fall off, and emit their Seeds, will afford a plentiful Supply of Plants without any farther Care.

ELATINE. *Vide* Linaria.

ELÆAGNUS; [from ἔλαια, an Olive, and ἁγνὸς, *vitex*; becauſe this Plant hath Leaves like thoſe of the Chaſte-Tree, and a Fruit like an Olive] Oleaſter, or Wild Olive.

The *Characters* are;

It hath a tubulous Flower, conſiſting of one Leaf, and cut into four Segments, whoſe Calyx afterward becomes a Fruit ſhaped like an Olive, incloſing a Stone of the ſame Form.

The *Species* are;

1. ELÆAGNUS *orientalis latifolius, fructu maximo. Tourn. Cor.* Eaſtern broad-leav'd Wild Olive, with a large Fruit.
2. ELÆAGNUS *orientalis anguſtifolius, fructu parvo, olivæformi ſubdulci. Tourn. Cor.* Eaſtern Wild Olive, with narrow Leaves, and a ſmall ſweet Olive-ſhap'd Fruit.
3. ELÆAGNUS *orientalis anguſtifolius, fructu minimo rotundiori & ſubacido. Tourn. Cor.* Eaſtern narrow-leav'd Wild Olive, with a ſmall roundiſh and acid Fruit.
4. ELÆAGNUS *non ſpinoſa, foliis anguſtis & longiſſimis, fructu parvo olivæformi.* Wild Olive without Spines, narrow long Leaves, and a ſmall Olive-ſhap'd Fruit.

The firſt and third Sorts Dr. *Tournefort* obſerved growing in ſeveral Iſlands of the *Archipelago*; the ſecond Sort is found in great Plenty upon the Hills in *Spain*, *Italy*, and ſome Parts of *Germany*; the fourth Sort is the moſt common in the *Engliſh* Gardens, and hath been by moſt botanic Authors mentioned for the ſecond Sort; tho' by comparing of them together, they appear very different; for the Leaves of the ſecond are much ſhorter than thoſe of the fourth; and the Branches are beſet with ſharp Thorns between the Leaves; whereas the fourth Sort hath no Spines on it: But where this is a Native, I cannot determine, tho' probably it was found with the ſecond Sort in ſome of the Southern Parts of *Europe.*

Theſe Plants may be propagated by laying down the young Shoots in Autumn, which will take Root in one Year, when they may be cut off from the old Trees, and either tranſplanted into a Nurſery for two or three Years, to be trained up, or into the Places where they are to remain. The beſt Seaſon for tranſplanting of theſe Trees, is in the latter End of *February*, or the Beginning of *March*, tho' they may be removed at *Michaelmas*, provided the Roots are mulched to protect them from ſevere Froſt in Winter. Theſe Plants ſhould be placed where they may be protected from ſtrong Winds; for they grow very freely, and are very ſubject to be ſplit down by the Wind, if they are too much expoſed.

Theſe Trees commonly grow to eighteen or twenty Feet high; and when they are intermixed with other Trees of the ſame Growth, make a pretty Diverſity; for the Leaves of theſe Trees are of a ſilver Colour, ſo are eaſily diſtinguiſhed at a Diſtance. In *June* theſe Trees produce great Quantities of ſmall yellowiſh Flowers of a very ſtrong Scent, and ſometimes they produce Fruit in *England.*

ELEPHANTOPUS; [of ἔλεφας, an Elephant, and πȣ̃ς, a Foot] Elephant's-Foot; ſo called by Monſieur *Vaillant*; becauſe, he ſays, the under Leaves of the firſt Sort ſomewhat reſemble an Elephant's Foot.

The *Characters* are;

It hath a diſcous Flower, compoſed of ſeveral Florets which are hermaphrodite, contained in one Flower-cup, which is cut into ſeveral Segments almoſt to the Bottom; the Bottom of the Calyx is flat, and filled with Ovaries, which are beſet on the Top with Hairs; the Diſks are jointed upon a common Placenta, and form a ſort of Sheaf garniſhed with a Foliage.

The *Species* are;

1. ELEPHANTOPUS *conyzæ folio. Vaill. Mem. Acad. Scien.* 1719. Elephant's-Foot, with a fleabane Leaf.
2. ELEPHANTOPUS *folio ſinuato. Vaill. Mem. Acad. Scien.* 1719. Elephant's-Foot with a ſinuated Leaf.
3. ELEPHANTOPUS *helenii folio, flore purpuraſcente.* Elephant's-Foot, with an elecampane Leaf, and purpliſh Flowers.

The firſt Sort grows in great Plenty in *South Carolina*, where it is a very common Weed; for from the Earth in which ſome Plants were brought over from thence, I have frequently had this Plant come up as a Weed. The ſecond and third Sorts are very common in *Jamaica*, and in ſeveral Parts of the *Spaniſh Weſt-Indies*; from whence I have received Seeds and Specimens, which were collected by my late ingenious Friend Dr. *William Houſtoun.*

Theſe Plants are propagated by Seeds, which ſhould be ſown on a Hot-bed in the Spring; and when the Plants are come up, they muſt be tranſplanted into Pots filled with light freſh Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to water and ſhade them until they have taken Root; then you ſhould let them have a large Share of freſh Air in warm Weather, and give them plenty of Water: With this Management the firſt and ſecond Sorts will flower in *Auguſt*, and if the Autumn proves favourable, will ripen their Seeds in *October*; but the Plants ſhould be placed in a Stove after the Seeds are perfected, if you deſign to preſerve them through the Winter.

The third Sort is hardier than either of the former, and may be preſerved thro' the Winter in a Green-houſe, without any additional Heat; this Plant dies to the Root every Autumn, and riſes again the following Spring; but it ſeldom flowers, unleſs the Seaſon be very warm, or that the Plants are forwarded by a Hot-bed in the Spring. This Plant hath been long known in the *European* Gardens, under the Title of *Scabioſa Indica Bontii.*

ELEPHAS. *This Plant was ſo named, from the Reſemblance which the Flower has to an Elephant's Head.*

The *Characters* are;

It hath an anomalous perſonated Flower, conſiſting of one Leaf, which hath two diſtinct Lips; the upper one reſembles an Elephant's Trunk, but the under one is divided into ſeveral Parts; from whoſe Cup ariſes the Pointal, fixed like a Nail in the hinder Part of the Flower, which afterward becomes a Fruit divided into two Cells, which contain many oblong Seeds.

The *Species* are;

1. ELEPHAS *Italica, flore magno, proboſcide ſurrecta. Tourn.* *Italian* Elephas, with a large Flower, whoſe upper Lip or Trunk is erect.
2. ELEPHAS *orientalis, flore parvo, proboſcide ſurrecta. Tourn.* Eaſtern Elephas, with a ſmall Flower, whoſe upper Lip or Trunk is erect.

3. ELEPHAS *orientalis, flore magno, proboſcide incurva. Tourn.* Eaſtern Elephas, with a large Flower, whoſe upper Lip or Trunk is bent downward.

The firſt Sort grows naturally in ſome Parts of *Italy*, from whence the Seeds have been procured by ſome curious Perſons; but this Plant is very rare in *England* at preſent. The other two Sorts were diſcovered by Dr. *Tournefort*, in the *Levant*, who ſent the Seeds to the *Royal Garden* at *Paris*; where the Plants were raiſed, and have ſince been diſtributed to ſeveral curious Perſons in *Europe*.

Theſe Plants may be propagated by Seeds, which ſhould be ſown on a Bed of light freſh Earth the Beginning of *March*; when the Plants begin to appear, they ſhould be kept clear from Weeds; and in dry Weather they muſt be frequently watered, which will greatly promote their Growth. When the Plants are about two Inches high, they ſhould be carefully taken out of the Bed, and tranſplanted, ſome of them into ſmall Pots, filled with light freſh Earth, and the others into a Bed of freſh Earth in a warm Situation. Theſe Plants muſt be ſcreened from the Sun until they have taken Root; after which time they may be expoſed to the open Air, obſerving to water them in dry Weather, as alſo to keep them clear from Weeds: when thoſe Plants, which were planted in Pots, have grown ſo much as to fill the Pots with their Roots, they muſt be ſhaken out of them, and their Roots pared, and then put into Pots a little larger than the former; which muſt be filled with freſh Earth, and then placed into an open Situation, obſerving to water them duly in dry Weather. In this Place they may remain until the Beginning of *November*, when they ſhould be removed and placed under a Hot-bed Frame, where they may be ſheltered from ſevere Froſt in Winter; but in mild Weather they ſhould have as much free Air as poſſible; ſo that the Glaſſes of the Hot-bed muſt be taken off every Day when the Weather is good. In the Spring ſome of theſe Plants may be ſhaken out of the Pots, and planted in a warm Border, where they will thrive, and produce their Flowers, and ſometimes will perfect their Seeds in this Country.

Thoſe Plants which are planted in a Bed of good Earth, will require no other Culture but to keep them clear from Weeds, and in dry Weather they muſt be duly watered; but if the Winter ſhould prove very ſevere, it will be proper to cover them with Mats or Peaſe-haulm, to protect them from the Froſt; and in the Spring, the Plants may be taken up, and tranſplanted into the Borders of the Pleaſure-garden, where they are deſigned to remain. As theſe Plants are in danger of being deſtroyed in very cold Winters, ſo it will be proper to keep two or three Plants of each Kind in Pots, which may be ſheltered from ſevere Froſt, in order to preſerve the *Species*.

ELICHRYSUM, or HELIOCHRYSON: [ἐλιόχρυσον is compos'd of ἥλιος, *Sol*, the *Sun*; and of χρυσὸς, *Aurum*, *Gold*, becauſe the Cup of the Flower is for the moſt part of a Gold-colour] Eternal Flower.

The *Characters* are;

The Disk of the Flower contains many hermaphrodite Florets; in the Centre of each of theſe ariſes the Ovary, which is crown'd with Hairs, and is ſupported by a naked Placenta; theſe are all contain'd in a ſcaly Cup, which conſiſts of dry Membranes, and is, for the moſt part, of a ſplendid Colour.

The *Species* are;

1. ELICHRYSUM, *ſeu ſtœchas citrina anguſtifolia. C. B.* Goldylocks or Caſſidony.

2. ELICHRYSUM *montanum, flore rotundiori candido. Tourn.* Cats-foot or Mountain Caſſidony, with a white round Flower.

3. ELICHRYSUM *montanum, flore rotundiori variegato. Tourn.* Cats-foot or Mountain Caſſidony, with a round variegated Flower.

4. ELICHRYSUM *Americanum latifolium. Tourn.* Broad-leav'd *American* Eternal-Flower.

5. ELICHRYSUM *ſylveſtre latifolium, flore parvo ſingulari. Tourn.* Broad-leav'd wild Eternal-Flower, with a ſmall ſingle Flower.

6. ELICHRYSUM *ſylveſtre latifolium, flore magno ſingulari. Tourn.* Broad-leav'd wild Eternal-Flower, with a ſingle large Flower.

7. ELICHRYSUM *ſylveſtre latifolium, capitulis conglobatis. C. B.* Broad-leav'd wild Eternal-Flower, with many Heads cloſely united.

8. ELICHRYSUM, *flore ſuave rubente. Hort. Cath.* Eternal-Flower, with a ſoft Red-colour'd Flower.

9. ELICHRYSUM *Africanum fœtidiſſimum, ampliſſimo folio, calyce argenteo. Tourn.* Stinking *African* Eternal-Flower, with a broad Leaf and a ſilver-colour'd Cup.

10. ELICHRYSUM *Africanum, fœtidiſſimum, ampliſſimo folio, calyce aureo. Tourn.* Stinking *African* Eternal-Flower, with a broad Leaf and a gold-colour'd Cup.

11. ELICHRYSUM *Orientale. C. B. Eaſtern* Eternal-Flower.

12. ELICHRYSUM *arboreum Africanum, ſalviæ folio odorato. Boerh. Ind. African*-Tree Eternal-Flower, with a ſweet-ſmelling Sage-Leaf.

13. ELICHRYSUM *Africanum, folio oblongo, ſubtus incano, ſupra viridi, flore luteo. Boerh. Ind. African* Eternal-Flower, with a longiſh Leaf, hoary underneath, but green on the upper Part, and a yellow Flower.

14. ELICHRYSUM *Africanum fruteſcens, foliis crithmi marini. Hort. Amſt.* Shrubby *African* Eternal-Flower, with Leaves like the Samphire.

15. ELICHRYSUM *Africanum fruteſcens, foliis ſtœchados citrinæ, flore aureo. Boerh. Ind.* Shrubby *African* Eternal-Flower, with Leaves like the Golden Caſſidony.

16. ELICHRYSUM *Africanum lanuginoſum latifolium, calyce floris argenteo & ampliſſimo. Olden.* Woolly *African* Broad-leav'd Eternal-Flower, with an ample ſilver-colour'd Cup.

17. ELYCHRYSUM *Africanum tomentoſum fruteſcens, calyce argenteo. Com. Pl. Rar. African* ſhrubby Eternal-Flower, with woolly Leaves and a ſilver-colour'd Flower-Cup.

18. ELICHRYSUM *Africanum fruteſcens, anguſtis & longioribus foliis incanis. Hort. Amſt.* Shrubby *African* Eternal-Flower, with long narrow hoary Leaves.

19. ELICHRYSUM *anguſtiſſimo folio. Tourn.* The moſt narrow-leav'd Golden Caſſidony.

20. ELICHRYSUM *umbellatum maritimum Hiſpanicum. Tourn. Spaniſh* maritime umbellated Golden Caſſidony..

21. ELICHRYSUM *ſeu Stœchas citrina latifolia. C. B. P.* Broad-leav'd Golden Caſſidony.

22. ELICHRYSUM *Germanicum, calyce ex aureo rutilante. Tourn. German* Goldylocks, with a reddiſh golden Empalement.

23. ELICHRYSUM *Germanicum, calyce ſanguineo. Tourn. German* Goldylocks, with a Blood-coloured Empalement.

24. ELICHRYSUM *anguſtifolium incanum, maximo flore. Tourn.* Hoary narrow-leav'd Golden Caſſidony, with a large Flower.

25. ELICHRYSUM *lavendulæ folio breviori, floribus conglobatis minime luteis. D. Sherard. Raii ſup.* Golden Caſſidony, with a ſhorter lavender Leaf, and conglobated Flowers, which are very little yellow.

26. ELICHRYSUM *latifolium Hiſpanicum, corymborum ſquamulis & floribus amplis ſulphureis. Pluk. Almag.* Broad-leav'd *Spaniſh* Golden Caſſidony, with large yellow Flowers.

27. ELICHRYSUM *latifolium villoſum, alato caule, odoratiſſimum. Pluk. Phyt.* The moſt ſweet-ſmelling hairy broad-leav'd Golden Caſſidony, with a winged Stalk.

28. ELICHRYSUM *orientale, foliis amplioribus ſubrotundis. Tourn.* Eaſtern Golden Caſſidony, with larger roundiſh Leaves.

29. ELICHRYSUM *orientali ſimile, calyce florum argenteo. Tourn.* Golden Caſſidony reſembling the Eaſtern one, with a ſilver Empalement.

30. ELICHRYSUM *orientale vernum anguſtifolium. Tourn.* Narrow-leav'd Eaſtern Spring Golden Caſſidony.

31. ELICHRYSUM *orientale, leucoii folio viridi. Tourn.* Eaſtern Golden Caſſidony, with a green July-flower Leaf.

32. ELICHRYSUM *orientale glutinoſum, lavendulæ folio. Tourn.* Glutinous Eaſtern Golden Caſſidony, with a Lavender Leaf.

33. ELICHRYSUM *Africanum, folio oblongo anguſto, flore rubello poſtea aureo. Boerh. African* Golden Caſſidony, with a narrow oblong Leaf, and a red Flower turning to a Yellow.

34. ELICHRYSUM *Africanum lanuginoſum latifolium, calyce floris argenteo & ampliſſimo. Oldenl.* Broad-leav'd woolly *African* Golden Caſſidony, with a very large ſilver Empalement.

35. ELICHRYSUM *Africanum lanuginoſum, anguſtiſſimo folio, calyce floris argenteo & ampliſſimo. Oldenl.* Woolly *African* Golden Caſſidony, with a very narrow Leaf, and a large ſilver Empalement.

36. ELICHRYSUM *Africanum fruteſcens, coridis folio. Oldenl.* Shrubby *African* Goldylocks, with a Coris Leaf.

37. ELICHRYSUM *Africanum incanum tomentoſum, foliis ſubrotundis. Oldenl.* Woolly hoary *African* Goldylocks, with roundiſh Leaves.

38. Eʟɪᴄʜʀʏsᴜᴍ *Africanum umbellatum odoratum luteum. Oldenl.* Yellow ſweet-ſmelling umbellated *African* Goldy-locks.

The firſt of theſe Sorts hath no great Beauty, but it being a medicinal Plant, is preſerv'd in Phyſick Gardens. This ſeldom produces good Seeds in *England*, but is very eaſily propagated by planting Slips or Cuttings in a ſhady Border, any time from *April* to *Auguſt*; which, if carefully ſupply'd with Water, will puſh out Roots in a Month's time, and may then be remov'd to the Place where it is to remain for good.

This delights in a dry warm Soil, that is not too rich; for if the Soil be wet, or over-dung'd, it will cauſe this Plant to make ſtronger Shoots in Summer, but then it will be liable to be deſtroy'd with a little cold Weather in Winter. This Plant may be train'd up to a regular Head, if proper Care be taken of it while young, and will grow to the Height of three or four Feet.

The ſecond and third Sorts are Inhabitants of the Northern Mountains in *Yorkſhire*, *Cumberland*, &c. Theſe Plants grow very cloſe to the Ground, and increaſe very faſt from the Off-ſets, which are produc'd in great Plenty on every Side the Plants, which emit Roots from their Joints as they trail upon the Ground, ſo that in a ſhort time they will overſpread the Ground where they are planted.

Theſe Plants produce ſmall Bunches of ſoft dry Flowers, which if gather'd when they are in Beauty, and preſerv'd in a dry Place, will continue freſh and fair for ſome Years, for which Reaſon they deſerve a Place in every good Garden, to increaſe the Varieties of theſe Flowers, which will afford Pleaſure at a Seaſon when the Ground is ſo lock'd up, that none of the flowery Tribe abroad appears above-ground. Theſe Plants will grow in a ſhady dry Place in any remote Part of a Garden, and are by ſome planted for Edgings to North Borders.

The fourth Sort is a great Rambler in a Garden, and ſhould therefore be either confin'd to Pots, or planted in ſome abject Part of the Garden, in a Place by itſelf; for if it ſtand near any other Plants or Flowers, it will be apt to over-run and deſtroy them; for the Roots creep far under-ground, and will ariſe at a great Diſtance from the old Plant: But however as the Flowers are very beautiful amongſt others of the perpetual Kind, they ſhould not be wanting in a good Garden. This, though ſtil'd an *American* Plant, yet is thought to be a Native of ſome of the warm European Countries. It delights in a dry warm Soil, and increaſes plentifully by the Off-ſets.

The fifth and ſixth Sorts are Plants of no great Beauty: They are preſerv'd in Botanick Gardens for Variety ſake, but are ſeldom cultivated in Gardens for Pleaſure. They may be propagated, either by ſowing their Seeds in the Spring on a moderate Hot-bed, or by planting Cuttings or Slips in any of the Summer Months: But theſe Plants producing Seeds in Plenty, it is the common Method to increaſe or maintain them by Seeds. Theſe muſt be planted in Pots fill'd with light ſandy Earth, and muſt be ſhelter'd in Winter, giving them as much free open Air as poſſible in mild Weather, and often refreſhing them with Water: With this Management they may be train'd up to the Height of three or four Feet, and will grow ſhrubby; but if ſuffer'd to remain abroad, they will not ſurvive the Winter.

The ſeventh Sort is an Annual, and is a Plant of very little Beauty, and is only preſerv'd for Variety, and will require no farther Care than to ſuffer the Seeds to fall upon the Ground, which will ariſe, and afford an abundant Supply of Plants.

The eighth Sort is an abiding Plant, which deſerves a Place in the moſt curious Gardens for the Beauty of its Flowers. This is propagated by planting Cuttings in any of the Summer Months, which ſhould be put into Pots fill'd with light ſandy Soil, and plung'd into a moderate Hot-bed, to facilitate their Rooting; after which they may be expos'd to the open Air, and ſome of them may be planted into a warm dry Border, where they will endure the Cold of our ordinary Winters without any Shelter; but 'tis adviſeable always to preſerve ſome in Pots under Cover in Winter, leſt thoſe abroad ſhould be deſtroy'd, as it ſometimes happens in very ſevere Froſts.

This Plant producing Flowers which are of a fine ſoft red Colour, are a very great Ornament in Winter, when intermix'd with the ſeveral Varieties of Eternal Flowers, in Glaſſes or Baſons fill'd with dry Sand, which being preſerv'd from Wet, will afford a great deal of Pleaſure, when other Flowers are not to be procur'd.

The ninth and tenth Sorts are Biennial Plants. Theſe ſeldom continue after they have flower'd and produc'd Seeds. They may be ſown in the Spring upon a warm and dry Border; and when the Plants are come up pretty ſtrong, they may be tranſplanted out either into Pots or in warm Borders, allowing them at leaſt eight or ten Inches Room; for when they grow ſtrong, they ſhoot out many Branches from their Sides, and produce Bunches of dry Flowers like the other Plants of this kind, which being preſerv'd, do add to the Variety.

But theſe Plants while freſh, do emit a violent ſtrong Smell upon the leaſt Touch, for which they have been by many People rejected. They will endure our ordinary Winters in the open Air, if planted in a dry Soil; but in ſevere Cold, are apt to be demoliſh'd.

The eleventh Sort is one of the moſt beautiful of all this Tribe, producing large Bunches of bright Yellow-colour'd Flowers. This is preſerv'd in *Portugal* and *Spain* for adorning their Places of Worſhip in the Winter-ſeaſon, as alſo for the Ladies to adorn their Heads; for which Purpoſes it is preferable to any of the flowery Tribe.

This Plant ſeldom produces Seeds in *England*, but is propagated by planting Cuttings in the Summer-ſeaſon, which muſt be ſet in Pots of light Earth, and plung'd into a moderate Hot-bed, to facilitate their ſtriking root; then you muſt put each Plant into a ſeparate Pot fill'd with the like freſh Earth, and during the Summer-ſeaſon you may expoſe them with *Oranges*, *Myrtles*, &c. but in Winter they muſt be put either under a Hot-bed Frame, or into an airy Green-houſe, placing them near the Windows, that they may enjoy the free Air, whenever the Weather will permit the Glaſſes to be open'd; for if they are crowded amongſt other Plants, they are apt to draw, and their under Branches and Leaves will rot and decay: It muſt alſo have frequent, but gentle Waterings. This produces its Flowers in *May*, which when fully grown, ſhou'd be cut, and preſerv'd in clean white Papers, and kept from the Air, which greatly diminiſhes their Beauty: And this cutting off the Flowers will cauſe them to puſh out many Side-ſhoots whereby the Plant may be increas'd.

The twelfth Sort grows to be a very large Tree, where it hath the Advantage of a warm Climate, that it may be planted in the full Ground: And here in *England* there are ſeveral Trees of pretty large Growth: We have ſome in the Phyſick Garden, which are upward of twelve Feet high, and have conſiderable Stems, and fine regular Heads, to which they may be eaſily train'd, provided Care be taken in their Direction while young.

This is propagated by planting Cuttings, as was directed for the former Sort, and requires to have a freſh light Soil, and frequent Waterings: In Winter it muſt be hous'd with Bays and other hardy Kinds of Ever-greens, where it may have free open Air in mild Weather. I have ſometimes known Plants of this Kind endure abroad in moderate Winters; but in ſevere Cold they never eſcape.

The 14th, 15th, 16th, 17th and 18th Sorts are all propagated by Cuttings, as was before directed. Theſe may be train'd up to Shrubs with regular Stems, and will grow to the Height of ſix or ſeven Feet: They are pretty hardy, and require only to be ſecur'd from our ſevere Froſts, and muſt have free open Air and frequent Waterings in mild Weather. Theſe are all pretty Varieties in Collections of Exotick Plants; and altho' ſome of the Flowers have no great Beauty in them, yet they are worth preſerving, for the ſake of Variety.

The 19th Sort is very common in the *Engliſh* Gardens, and has been taken for the *Stœchas citrina* of the Diſpenſatory, by many good Botaniſts, but is very different from it. This will riſe to the Height of three Feet, and become ſhrubby; it is hardy, and may be eaſily propagated by planting Cuttings of it, in *April*, in a ſhady Border, obſerving to refreſh them with Water, and keep them clear from Weeds. Theſe Cuttings will have made good Roots in about two Months; when they may be taken up with a Ball of Earth to their Roots, and tranſplanted where they are deſigned to remain. Theſe Plants may be kept in a regular Form, by pruning off their Side Branches, and ſupporting them with Stakes: but the Shoots muſt not be ſhortned in the Spring or Summer Months, for that will prevent their flowering.

The thirteen following Sorts are more rare in *England* than the 19th, and are of humbler Growth. Theſe may be propagated by Slips, which ſhould be planted in Pots, filled with light rich Earth, and then plunged into a very moderate Hot-bed of Tanners-bark; obſerving to ſcreen them from the Sun until they have taken Root, when they ſhould be inured t bear the open Air by degrees. In Summer theſe Plants ſhoul be placed abroad in a ſheltered Situation, obſerving to wate them duly in dry Weather: but in Winter they ſhould be placed under a Hot-bed Frame, where they muſt have as muc free Air as poſſible in mild Weather; for they are pretty hardy, and only require to be protected from ſevere Froſt. Th following Spring ſome of the Plants may be ſhaken out of th Pots, and planted in a warm Border near the Shelter of Wall; where they will produce their Flowers, and may abid ſeveral Years, provided the Winters do not prove very ſever

However, it will be proper to keep a Plant or two of each Kind in Pots, which may be ſheltered in Winter, ſo that if thoſe which were planted abroad ſhould be deſtroyed, theſe may be preſerved to maintain the Sorts.

The ſix laſt-mentioned Kinds, are ſomewhat tenderer than the former; ſo require a little more Care to preſerve them in Winter. Theſe may be propagated by Cuttings, in the ſame manner as the former; which when rooted muſt be planted in Pots, filled with light freſh Earth, and placed in a ſhady Situation until they have taken new Root; after which time, they may be expoſed with other hardy exotic Plants, in a warm Situation, where they may be defended from ſtrong Winds; in which Place they may remain until the Middle of October, at which time they ſhould be removed into an open airy Green-houſe; where they ſhould have as much free Air as poſſible in mild Weather, to prevent their making long weak Shoots; which will not only render them unſightly, but alſo cauſe them to flower ſparingly. Theſe Plants require to be frequently watered in Winter, when the Weather is mild; which may ſoon be diſcovered by the hanging of their Leaves; but at this Seaſon they muſt not have ſo large Quantities of Water as in Summer, for that will ſometimes rot them.

Some of theſe Sorts may be trained up to the Height of three or four Feet, and if they are rightly managed, may be reduced to regular Heads; whereby they will become very ornamental in a good Garden: for as they continue to produce their Flowers through moſt of the ſummer Months, and many of them produce Flowers late in Autumn, which will continue in Beauty moſt part of the winter Seaſon; ſo they afford an agreeable Variety at a Seaſon when other Flowers are very ſcarce. Beſides, the different Appearance which theſe Plants have from their hoary and woolly Leaves, makes an agreeable Diverſity amongſt other Plants in the Green-houſe, when they are wholly diveſted of their Flowers.

The Flowers of all theſe Sorts of Plants, if they are gathered when in Perfection, and laid in a dry Place where they may be kept from Duſt and Air, will continue freſh and in Beauty for ſeveral Years; ſo that from the ſeveral Varieties of theſe Flowers, a Baſon or Flower-pot may be furniſhed in Winter, when few other Flowers can be procured, which will have a pretty Effect, in Rooms or Halls; but the Stalks of theſe Flowers muſt not be placed in Water, nor ſhould any Moiſture come to their Flowers, for that will decay them.

ELM. *Vide* Ulmus.

EMERUS; [This Name was given it by *Theophraſtus*, and reſtor'd by *Cæſalpinus*: It is by others call'd *Colutea*] Scorpion Sena, *vulgo*.

The *Characters* are;

It hath Leaves like thoſe of the Colutea; *the Flowers are papilionaceous; the Pods are ſlender, and contain two or three Cylindrical-ſhap'd Seeds in each.*

The *Species* are;

1. EMERUS. *Cæſalp.* Scorpion Sena, *vulgo*.
2. EMERUS *minor. Tourn.* The leſſer Scorpion Sena.

The firſt of theſe Shrubs is very common in all the Nurſeries near *London*, but the ſecond is at preſent in very few Gardens; theſe are both of them extreme fine Flowering Shrubs, and are great Ornaments to ſmaller Wilderneſs Quarters of Shrubs which are of equal Growth. The firſt will riſe to the Height of ſeven or eight Feet, and may be reduced to a regular Figure, if proper Care be taken while they are young. The ſecond ſeldom riſes above two or three Feet high, but may be train'd into a handſome Figure. Theſe Shrubs continue Flowering through the greateſt Part of the Summer; therefore the beſt Seaſon to prune them, in order to reduce them into Shape, is about the Middle of *September*, ſoon after they have done flowering; for if you cut them in Summer, it will prevent their Flowering in Autumn, unleſs it be done in *May*, which will deſtroy the firſt Crop of Flowers, and prevent their producing Seeds.

Theſe Shrubs are eaſily propagated by ſowing their Seeds (which they commonly produce in great Plenty) in *March* upon a Bed of light ſandy Earth, obſerving to keep the Bed clear from Weeds; and in very dry Weather you muſt often refreſh the Bed with Water, which ſhould be given carefully, leſt the Seeds ſhould be waſh'd out of the Ground by haſty watering. When the Plants are come up, you muſt continue the ſame Care; and the *Michaelmas* following (if your Plants have thriven well) you may draw out the largeſt, which may be tranſplanted into a Nurſery, at three Feet Diſtance Row from Row, and one Foot aſunder in the Rows; this will give Room to thoſe Plants which are left to grow in the Seed-bed, in which Place they may remain another Year, when they will alſo be fit to tranſplant into a Nurſery, where they ſhould be train'd up in the manner you deſign them to grow, either in round Heads, or in rude Plants: In two or three Years more they will be fit to plant out, where they are to remain for good; in doing of which, you ſhould be careful, in taking them up, not to break or wound the Roots: nor ſhould they remain too long in the Nurſery before they are tranſplanted; for they are ſubject to ſhoot downright Roots, which, when cut off, oft-times proves the Death of the Tree. In all other reſpects it muſt be treated like other Flowering Shrubs, amongſt which this is commonly ſold at the Nurſeries. It delights in a dry Soil; and may alſo be propagated by laying down the tender Branches, which will take Root in about a Year's Time, and may then be tranſplanted into a Nurſery, and managed in the ſame manner as the Seedlings.

EMPETRUM; [Ἔμπετρον, of ἐν *in*, and πέτρα, Gr. a *Rock* or *Stone*, becauſe this Tree grows in Stony Places] Black-berry'd Heath.

The *Characters* are;

It hath Leaves like thoſe of the Heath; *the Flowers are Male and Female, which grow in different Parts of the ſame Plant; the Male Flowers have no Petals; the Female Flowers are ſucceeded by* Black-berries, *in each of which are contain'd three or four hard Seeds.*

We have but one *Species* of this Plant in *England*, which is;

EMPETRUM *montanum, fructu nigro. Tourn.* Black-berry'd Heath, Crow-berries, or Crake-berries.

This little Shrub grows wild upon the Mountains of *Staffordſhire*, *Derbyſhire*, and *Yorkſhire*, and is ſeldom propagated in Gardens, unleſs for Variety-ſake: but it may be cultivated in ſhady Places where the Soil is ſtiff in Gardens, and will thrive very well; and may be propagated by ſowing the Seeds, ſoon after they are ripe, in a moiſt ſhady Place, which ſhould be kept clear from Weeds, and ſuffer'd to remain undiſturb'd until the ſecond Year, at which time the Plants will come up, and the Year following may be tranſplanted where they are to remain, and will require no farther Care than to clear them from Weeds.

EMUSCATION, the Clearing a Tree of Moſs. *Lat.*

ENUCLEATION; a Taking-out the Nut or Kernel of any Fruit. *Lat.*

ENULA CAMPANA. *Vide* Helenium.

EPHEDRA, Shrubby Horſe-tail, *vulgo*.

The *Characters* are;

It hath an apetalous Flower, conſiſting of many Stamina, which are for the moſt part barren, for the Embryos grow on different Parts of the ſame Plant, or on other Plants which have no conſpicuous Flowers: Theſe Embryos afterwards become ſoft Berries, in which are contained many oblong Seeds.

The *Species* are;

1. EPHEDRA *maritima major. Tourn.* Greater Sea Horſe-tail.
2. EPHEDRA *maritima minor. Tourn.* Leſſer Sea Horſe-tail.
3. EPHEDRA *ſive Anabaſis. Bellon. Tourn.* Climbing Sea Horſe-tail.
4. EPHEDRA *Hiſpanica arboreſcens, tenuiſſimis & denſiſſimis foliis. Tourn. Spaniſh* Tree-like Horſe-tail, with narrow cluſtery Leaves.
5. EPHEDRA *Cretica, tenuioribus & rarioribus flagellis. Tourn. Candy* Horſe-tail, with narrower and fewer Branches.
6. EPHEDRA *orientalis procerior, flagellis durioribus, & mediæ craſſitiei. Tourn.* Taller Eaſtern Horſe-tail, with harder and thicker Branches.

The firſt of theſe Plants is pretty common in the *Engliſh* Gardens, but the others are at preſent pretty rare in this Country; and are only cultivated in botanic Gardens for the ſake of Variety, there being little Beauty in theſe Plants, nor are they uſed in Medicine.

They may be propagated by Off-ſets, which they ſend forth in great Plenty; for they creep under Ground by their Roots, and ſend forth Suckers, which may be taken off to tranſplant in the Spring. They love a pretty moiſt ſtrong Soil, and will endure the Cold of our ordinary Winters very well in the open Air. The firſt, fourth, and ſixth Sorts will riſe to the Height of three or four Feet, provided their Roots are kept pretty clear from Suckers; otherwiſe they will ſpread very far, and ſend forth great plenty of Suckers, which will prevent their riſing in Height. Some of theſe Plants were formerly preſerved in Pots, and were houſed in Winter, but by later Experience they are found to thrive better in the full Ground.

EPHEMERON; ['Εφήμερον, of ἐπὶ, and ἡμέρα, Gr. a *Day*, becauſe the Flowers of this Plant ſeldom continue longer blown than one Day] *Virginian* Spider-wort, *vulgo*.

The *Characters* are;

The Cup of the Flower conſiſts of three Leaves; the Flower alſo hath three Petals, which expand in form of a Roſe, *and hath three Stamina (or Threads) which ſurround the Ovary; the Fruit is oblong, and divided into three Cells, which are fill'd with Seeds like a Grain of Wheat.*

The *Species* are;

1. EPHEMERUM *Virginianum, flore cœruleo majori. Tourn.* *Virginian* Spider-wort, with a large blue Flower.
2. EPHEMERUM *Virginianum, flore purpureo majori. Tourn.* *Virginian* Spider-wort, with a large purple Flower.
3. EPHERUM *Virginianum, flore azureo majori. Tourn.* *Virginian* Spider-wort, with a large azure Flower, *commonly called*, the *Savoy* Spider-wort.
4. EPHEMERUM *Virginianum, flore cœruleo minore. Tourn.* *Virginian* Spider-wort, with a ſmall blue Flower, *commonly called*, *John Tradeſcant*'s Spider-wort.
4. EPHEMERUM *Virginianum, flore albo. Tourn.* *Virginian* Spider-wort, with a white Flower.
6. EPHEMERUM *Virginianum, flore purpureo minore. Tourn.* *Virginian* Spider-wort, with a ſmall purple Flower.

The ſeveral Varieties of this Plant are eaſily propagated, by parting their Roots either in Spring or Autumn; and ſhould be planted in a moiſt Soil, where they will thrive and increaſe exceedingly, and are extreme hardy, enduring our ſevereſt Cold in the open Air.

Theſe are very proper for large Borders, where they may have Room to grow; but if they are planted in ſmall Borders, they ſhould be parted into ſmall Heads every Year, otherwiſe they will grow too large for ſuch Places. They may be planted in ſhady Borders, where their Flowers will continue longer than if expos'd too much to the great Heat of the Sun. This Flower ſeldom ſurvives the Day, but is ſucceeded by new ones daily, for ſeveral Months; ſo that it may deſerve a Place for the long Continuance of its Flowering.

EPIMEDIUM; ['Επιμήδιον, of ἐπὶ, and μήδιον, q. d. *over-and-above* Three-leav'd, as tho' the Great Trefoil, becauſe the Leaves of this Plant are large, and always by Threes] Barren-wort.

The *Characters* are;

The Stalks are divided into three Branches, each ſingle Branch ſuſtaining three Leaves, which are ſhap'd ſomewhat like Ivy; *the Calyx conſiſts of four Leaves; the Flower conſiſts of four Petals, which are hollow, and expand in form of a Croſs; the Pointal of the Flower becomes a Pod with one Cell, having two Valves, in which are contain'd round flat Seeds.*

We have but one *Species* of this Plant at preſent in *England*, which is,

EPIMEDIUM. *C. B.* Barren-wort.

This is a Plant of no great Beauty, yet, for Diverſity, may have a Place in a Garden: It is eaſily propagated, by parting the Roots (which increaſe very faſt under-ground) either in the Spring or Autumn, and ſhould be planted in a moiſt Soil, and a ſhady Situation. This Plant produces its Flowers in *May*, but ſeldom ripens Seeds with us: This may be owing to its ſpreading Roots, which exhauſt the Nouriſhment from the Flowers and Fruit, and might, perhaps, be procur'd, by confining the Roots to a Pot. The Roots thereof, if planted in a good Border, ſhould be every Year reduc'd, ſo as to keep it within Bounds; otherwiſe it will overſpread the whole Spot, and deſtroy whatever Plants grow near it.

EPIPHYLOSPERMOUS PLANTS [of *'ἐπὶ, upon*, φύλλον, *a Leaf*, and Σπέρμα, *Gr. Seed*] ſuch Plants as bear their Seeds on the Back of their Leaves; the ſame as *Capillaries*.

EQUINOCTIAL, ÆQUINOCTIAL, [of *Æquus*, Equal, and *Nox*, *Lat.* Night] a great and immoveable Circle of the Sphere, under which the *Equator* moves in its Diurnal Motion.

The *Equinoctial*, or *Equinoctial-Line*, is ordinarily confounded with the *Equator*: But there is a Difference; the *Equator* being moveable, and the *Equinoctial* immoveable; and the *Equator* drawn about the Convex Surface of the Sphere; but the *Equinoctial*, on the Concave Surface of the *Magnus Orbis*.

The *Equinoctial* is conceiv'd, by ſuppoſing a Semi-diameter of the Sphere, produc'd thro' a Point of the *Equator*, and there deſcribing a Circle on the immoveable Surface of the *Primum Mobile*, by the Rotation of the Sphere about its Axis.

Whenever the *Sun* comes to this Circle, in his Progreſs thro' the Eclíptick, it makes Equal Day and Night all around the Globe; as then ariſing due *Eaſt*, and ſetting due *Weſt*, which he never does at any other Times of the Year.

The People who live under this Circle have their Days and Nights conſtantly Equal; and the *Sun* is in their Zenith at Noon, and caſts no Shadow.

EQUINOXES, are the Times when the *Sun* enters into the Equinoctial Points, which are the two Points where the *Equator* and *Ecliptick* interſect each other; the one being in the firſt Point of *Aries*, call'd the *Vernal Equinox*; and the other in the firſt Point of *Libra*, call'd the *Autumnal Equinox*.

So the *Equinoxes* happen when the *Sun* is in the *Equinoctial* Circle, when, of Conſequence, the Days are equal to the Nights throughout the World; which is the Caſe twice a Year, *viz.* about the 10th of *March*, and the 12th of *September*; the firſt of which is the *Vernal*, and the ſecond the *Autumnal Equinox*.

EQUISETUM, [of *Equus*, an *Horſe*, and *Seta* a *Briſtle*, becauſe the Leaves and Branches repreſent the Briſtles or Hair of a Horſe's Main or Tail. It is by the *Greeks* call'd 'Ιππουρις, of ῞Ιππος, an *Horſe*, and Οὐρὰ, a *Tail*; and *Hippoſeta*, of ῞Ιππ, and *Seta*] Horſe-Tail.

There are ſeveral *Species* of this Plant, which are found in *England*, on the Sides of Ditches, or in ſhady Woods: But as they are Plants which are never cultivated in Gardens, ſo I ſhall paſs them over in this Place.

ERANTHEMUM. *Vide* Adonis.

ERICA ['Ερεική, of 'ερείκω, or 'ερίκω, Gr. to *break*, becauſ this Plant is ſaid to have the Virtue of Breaking the Stone in the Bladder] Heath.

The *Characters* are;

It is a Shrub of low Stature; the Leaves are ſmall, and abid green all the Year; the Flower conſiſts of one Leaf, is naked and for the moſt part ſhap'd like a Pitcher; the Ovary, (which i produc'd in the Bottom of the Flower) becomes a roundiſh Fruit which is divided into four Cells, in which are contain'd man ſmall Seeds.

The *Species* are;

1. ERICA *vulgaris glabra. C. B.* Common ſmoot Heath.
2. ERICA *vulgaris hirſuta. C. B.* Common rough-leav' Heath.
3. ERICA *tenuifolia. Ger.* Fine narrow-leav'd Heath.
4. ERICA *vulgaris, flore albo. C. B.* Common Heath with a white Flower.
5. ERICA *Brabantica, folio coridis, hirſuto quaterno. J.* *Low-Dutch* Heath.
6. ERICA *foliis coridis, multiflora. J. B.* Fir-leav'd Heat with many Flowers.
7. ERICA *Cantabrica, flore maximo, foliis myrti, ſubtus i canis. Tourn.* Hoary Myrtle-leav'd Heath, with a lar Flower.

Theſe Plants grow wild upon barren uncultivated Places, divers Parts of *England*: but notwithſtanding their Commo neſs, yet they deſerve a Place in ſmall Quarters of humb flowering Shrubs, where, by the Beauty and long Continuan of their Flowers, together with the Diverſity of their Leav they afford a very agreeable Proſpect.

Theſe are ſeldom propagated in Gardens, and ſo not to had from the Nurſeries; but may be taken up, with a Ball Earth to their Roots, from the natural Places of their Grow either in Spring or Autumn, and may be tranſplanted into

Gard

Garden. The Soil where they are planted ſhould not be dung'd; nor ſhould you beſtow any other Culture on them, than clearing them from Weeds; for the leſs the Ground is dug, the better theſe will thrive: And they commonly ſhoot their Roots near the Surface, which, in digging, are ſubject to be hurt, whereby the Plant is often deſtroy'd: Theſe may alſo be propagated by Seeds; but this being a tedious Method, the other is much preferable to it.

ERICA BACCIFERA. *Vide* Empetrum.

ERIGERON. *Vide* Senecio.

ERUCA, [is ſo call'd of ἐρύειν, to *attract*, or of *crudere* to *gnaw out*, becauſe this Plant has a hot biting Savour.] Rocket.

The *Characters* are;

The Flower conſiſts of four Leaves, which expand in Form of a Croſs; the Pointal becomes a Pod, which is divided into two Cells by an intermediate Partition, to which the Valves adhere on both Sides; theſe Cells are full of roundiſh Seeds; to which may be added, The whole Plant hath a peculiar fœtid Smell.

The *Species* are;

1. ERUCA *ſylveſtris major lutea, caule aſpero. C. B.* Greater wild Rocket, with a rough Stalk, and yellow Flower.

2. ERUCA *tenuifolia perennis, flore luteo. J. B.* Narrow-leav'd perennial Rocket, with a yellow Flower.

3. ERUCA *bellidis folio. Mor. Hiſt.* Daizy-leav'd Rocket.

4. ERUCA *tanacetifolia. H. R. Par.* Tanſy-leav'd Rocket.

5. ERUCA *major ſativa annua, flore albo ſtriato. C. B.* Great Garden Rocket, with a white ſtrip'd Flower.

6. ERUCA *ſativa, foliis magis diſſectis. Hort. Edin.* Garden Rocket, with deeply-cut Leaves.

The four firſt Sorts are Varieties which are preſerv'd in curious Botanick Gardens, but are Plants of no great Beauty or Uſe: The firſt is very common upon dry Banks and old Walls in divers Parts of *England*.

The fifth Sort was formerly very much cultivated in Gardens as a Sallad-Herb, but at preſent is very little us'd.

The ſixth is a Variety of the fifth, from which it differs in having the Leaves deeply cut or jagged.

Theſe may be all propagated by ſowing their Seeds in the Spring on a Bed of light Earth, where they will ſoon come up; and being Plants of quick Growth, will be large enough for Uſe in a ſhort Time: for if they are ſuffer'd to grow large, they become too ſtrong to be eaten in Sallads. Some of the Plants may be left for Seeds, which they will produce in great Plenty the ſame Summer.

ERUCAGO, [ſo call'd of *Eruca* a *Rocket*, becauſe this Plant reſembles the *wild Rocket.*] Corn-Rocket.

The *Characters* are;

The Flower conſiſts of four Leaves, which expand in Form of a Croſs; the Pointal becomes a four-corner'd Fruit, reſembling a creſted Club, which is for the moſt part divided into four Cells, in which are contain'd roundiſh Seeds which have a Beak.

We have but one *Species* of this Plant, which is,

ERUCAGO *ſegetum. Tourn.* Corn-Rocket.

This Plant grows wild in the warm Parts of *France* and *Spain*, and is preſerv'd, for the ſake of Variety, in curious Botanick Gardens. It may be propagated in like manner as the *Rocket*; but being a Plant of no Beauty or Uſe, is hardly worth cultivating.

ERVUM, [of ἐρέπτω to *eat*, and Βοῦς, Gr. an *Ox*, becauſe this Herb is eaten by Oxen.] Jointed podded bitter Vetch.

The *Characters* are;

It hath a papilionaceous Flower, out of whoſe Empalement riſes the Pointal, which becomes a jointed Pod, undulated on both Sides, and in a manner knotted, which is full of roundiſh Seeds: To which may be added, The Leaves grow by Pairs on a Mid-rib.

The *Species* are;

1. ERVUM *verum Camer.* The true Ervum of *Camerarius*. This is alſo call'd *Orobus ſiliquis articulatis*. And the Seeds of this are ſometimes uſed in Medicine.

2. ERVUM *ſemine minore. Tourn.* Small-ſeeded Ervum.

3. ERVUM *ſemine obtuſo triangulo. Tourn.* Ervum with an obtuſe triangular Seed.

4. ERVUM *Orientale alopecuroides perenne, fructu longiſſimo. T. Cor. Oriental* perennial Ervum, with a very long Fruit.

Theſe Plants are very common in the Fields in warmer Countries, but are preſerv'd in curious Botanick Gardens for Variety. They may be propagated in the ſame manner as Peas, but require a warm Soil, and an open Situation, otherwiſe they will not ripen their Seeds with us. In the hotter Countries they uſe them for Food, but with us they are of little Uſe.

The fourth Sort is an abiding Plant; the Roots will continue ſeveral Years, provided they are not tranſplanted, and will produce long Spikes of Flowers every Year; but the Plant dies to the Root every Autumn: this is alſo propagated by Seeds, which ſhould be ſown where the Plants are to remain.

ERYNGIUM, ['Ερύγγιον, Gr. *Goat's-beard*, becauſe the Heads of this Plant, before the Stalks and Leaves are grown, reſemble the Beard of a Goat.] Sea-Holly or Eryngo.

The *Characters* are;

The Leaves are produc'd alternately on the Branches; the Flowers conſiſt of five Leaves, which are plac'd orbicularly, and are reflex'd back to the Center of the Flower; the Empalement afterwards becomes a Fruit, compos'd of two Seeds, which are ſometimes foliated, and ſometimes plain; to which may be added, The Flowers are collected into a ſquamoſe Head, which is prickly.

The *Species* are;

1. ERYNGIUM *maritimum. C. B.* Sea-Holly or Eryngo.

2. ERYNGIUM *vulgare. C. B.* Common Eryngo.

3. ERYNGIUM *latifolium planum. C. B.* Broad-leav'd plain Eryngo.

4. ERYNGIUM *latifolium planum, caule ex viridi palleſcente, flore albo. C. B.* Broad-leav'd plain Eryngo, with a greeniſh white Stalk, and a white Flower.

5. ERYNGIUM *montanum amethyſtinum. C. B.* Purple Violet-coloured Mountain Eryngo.

6. ERYNGIUM *Alpinum amethyſtinum, capitulo majore palleſcente. Tourn. Alpine* Eryngo, with a large pale-colour'd Head.

7. ERYNGIUM *Orientale, foliis trifidis. T. Cor. Oriental* Eryngo, with trifid Leaves.

The firſt of theſe Species grows in great Plenty on the ſandy and gravelly Shores in divers Parts of *England*, the Roots of which are candy'd, and ſent to *London* for medicinal Uſes, and is the true *Eryngo*.

The fifth and ſixth Sorts are beautiful Plants in Gardens; tho' at preſent they are very uncommon in *England*, but do deſerve a Place in the moſt curious Flower-Gardens.

The other Species are preſerv'd in very fine Gardens of Plants, for the ſake of Variety, but have no great Beauty in them.

Theſe Plants may all be propagated by parting of their Roots, or ſowing their Seeds: The firſt being the moſt expeditious Method, is chiefly us'd; this muſt be done in *February*, or the Beginning of *March*, before the Roots have ſhot out their Leaves. The Soil in which theſe delight moſt, is Gravel, or Sand: but if it be very dry, they will require to be often watered in Summer, eſpecially the firſt Sort. The ſecond Year after planting they will produce Flowers, but it is very rare that they do it the firſt; therefore it is the beſt Way to let the Roots remain unremov'd for three or four Years, by which Method your Flowers will be ſtronger, and in greater Plenty. Theſe Plants commonly produce good Seeds, if the Seaſon is not over-wet, which is ſometimes apt to rot their Heads before the Seeds are ripe.

If you would propagate theſe Plants by Seed, it ſhould be ſown ſoon after it is ripe; for if it be kept until Spring before it is ſown, the Plants ſeldom ariſe until the ſucceeding Year. When they are come up, they ſhould be carefully weeded; and in very dry Weather they ſhould be refreſh'd with Water two or three times a Week, which will greatly promote their Growth: In this Place they ſhould continue until the ſucceeding Spring, at which Time they ſhould be tranſplanted out to the Places where they are to remain; for they do not care to be often remov'd: The third Year after ſowing they commonly produce their Flowers, and continue for many Years ſo to do, provided they are not diſturb'd.

The firſt and ſecond Sorts creep very far under-ground, by which they greatly increaſe: but their Roots are of little Uſe, for they ſeldom grow to any conſiderable Size in a Garden.

ERYSIMUM, [Ἐρύσιμον, of ἐρύω, Gr. to *draw out*, becauſe this Plant, by means of its hot Quality, has the Virtue of drawing any thing out of the Body in which it lies hid.] Hedge-Muſtard.

The *Characters* are;

The Flower conſiſts of four Leaves, which expand in Form of a Croſs; the Pointal becomes a long ſlender bivalve Pod, which is divided into two Cells by an intermediate Partition, in which are contain'd many round Seeds.

The *Species* are;

1. ERYSIMUM *vulgare. C. B.* Common Hedge-Muſtard.
2. ERYSIMUM *latifolium majus glabrum. C. B.* Great broad-leav'd ſmooth Hedge-Muſtard.
3. ERYSIMUM *polyceratium vel corniculatum. C. B.* Hedge-Muſtard, with many crooked Pods.
4. ERYSIMUM *anguſtifolium majus. C. B.* Great narrow-leav'd Hedge-Muſtard.
5. ERYSIMUM *Sophia dictum. Raii Syn. Ed.* 3. Flixweed.

There are ſeveral other Varieties of this Plant, which are preſerv'd in Botanick Gardens: but as they are Plants of little Uſe or Beauty, ſo they are ſeldom propagated in any other Garden.

The firſt, ſecond, and fifth Sorts are very common upon dry Banks in divers Parts of *England:* but the third and fourth Sorts are Natives of a warmer Country.

Theſe may all be propagated by ſowing their Seeds ſoon after they are ripe, which will come up in a ſhort Time, and will ſtand Abroad, and endure the Winter's Cold very well; and early in the Spring they will ſhoot up to Flower, and produce ripe Seeds in *June* or *July:* but if they are ſown in the Spring, the Seeds ſeldom come up ſo well; nor do the Plants arrive at half the Strength of thoſe ſown in Autumn; for when the Heat comes on, they ſoon run up to Flower, and thereby produce not half the Quantity of Seeds.

The firſt and fifth Sorts are us'd in Medicine; but particularly the fifth, the Seed of which is by many People ſaid to be an extraordinary Medicine for the Stone and Gravel.

ESCHYNOMENOUS, ÆSCHYNOMENOUS PLANTS, [Αἰσχυνόμενοι, of αἰσχύνομαι, Gr. to be *aſhamed.*] The Senſitive Plants, which, when one comes near them, or touches them, will ſhrink in, or let their Leaves fall down.

ESCULENT PLANTS, [of *Eſculentus*, Lat. *Eatable.*] Such Plants, or the Roots of them, that may be eaten, as *Beets*, *Carrots*, *Jeruſalem Artichokes*, *Leeks*, *Onions*, *Parſnips*, *Potatoes*, *Radiſhes*, *Horſe-radiſh*, *Scorzonera*, &c.

ESPALIERS.

Are either Rows of Trees planted about a whole Garden or Plantation, or in Hedges, ſo as to incloſe Quarters or ſeparate Parts of a Garden, which are train'd up flat in a cloſe Hedge, for the Defence of tender Plants againſt the Violence and Injury of Wind and Weather. See *Hedges*.

The moſt commonly receiv'd Notion of *Eſpaliers*, are Hedges of Fruit-Trees which are train'd up regularly to a Lattice of Wood-work, form'd either of Aſh Poles, or ſquare long Timbers cut out of Fir, &c. and it is of this Sort of *Eſpalier* that I ſhall treat in this Place.

Eſpaliers of Fruit-Trees are commonly planted to ſurround the Quarters of a Kitchen-Garden, for which Purpoſe they are of admirable Uſe and Beauty: for by laying out the Walks of this Garden regularly, which are bounded on each Side by theſe Hedges, when they are handſomely managed, they have a wonderful Effect in ſheltering the Kitchen-Plants in the Quarters, and alſo ſcreening them from the Sight of Perſons in the Walks; ſo that a Kitchen-Garden well laid out in this manner, and regularly manag'd, will be equal to the fineſt Paterre for Beauty.

The Trees chiefly planted for *Eſpaliers*, are *Apples*, *Pears*, and ſome *Plums*; but the two former are moſtly uſed: ſome plant *Eſpaliers* of *Apples* grafted upon *Paradiſe*-Stocks; but theſe being of a ſhort Duration, are not ſo proper for this Purpoſe; therefore I ſhould rather adviſe the having them upon *Crab*-Stocks, or (if in ſmaller Gardens, where the Trees cannot be allow'd to grow ſo high) upon *Codlin*-Stocks, which will cauſe them to bear ſooner, and prevent their growing too luxurious.

In chuſing the Trees for an *Eſpalier*, endeavour, as near as poſſible, to plant the ſeveral Sorts which are nearly of the ſame Growth in one Line, that the *Eſpalier* may be the more regular, and of an equal Height, which greatly adds to their Beauty; for if you plant Trees which ſhoot very unequally in the ſame Line, it will be impoſſible to make the *Eſpalier* regular: beſides, the Diſtance the Trees are to be planted muſt be directed hereby; for ſome Trees, *viz.* thoſe of a large Growth, ſhould be planted twenty or twenty-five Feet aſunder, whereas thoſe of ſmaller Growth need not be above ſixteen or eighteen Feet Diſtance from each other.

The Width of the Walks between theſe large *Eſpaliers* ſhould (in a large Garden) be fourteen or ſixteen Feet at leaſt; and if they are deſign'd to be carry'd up pretty high, the Diſtance ſhould be greater, that each Side may receive the Advantage of the Sun and Air; which is abſolutely neceſſary, if you would have the Fruit well-taſted. And if your Ground is ſo ſituated, that you are at full Liberty which Way to make the *Eſpaliers*, I ſhould adviſe the placing the Lines from the Eaſt a little inclining to the South, and toward the Weſt a little inclining to the North, that the Sun may ſhine between the Rows in the Morning and Evening when it is low; for in the Middle of the Day, when the Sun is advanced far above the Horizon, it will ſhine over the Tops of the *Eſpaliers*, and reach the Surface of the Earth about their Roots; which is a Matter of more Conſequence than many People are aware of.

The Sorts of *Apples* proper for *Eſpaliers*, are the *Golden Pippen*, *Nonpareil*, *Rennette Griſe*, *Aromatick Pippen*, *Holland Pippen*, *French Pippen*, *Wheeler's Ruſſet*, *Pile's Ruſſet*, with ſeveral others. The Seaſon for Planting, and the Method of Pruning and Training theſe Trees, you'll ſee under the Articles of *Apples* and *Pruning*.

The Sorts of *Pears* proper for an *Eſpalier*, are Summer and Autumn Fruits; for Winter *Pears* ſeldom ſucceed well in an *Eſpalier*. Theſe Trees, if deſign'd for a ſtrong moiſt Soil, ſhould be upon *Quince*-Stocks; but if for a dry Soil, upon Free-Stocks. Their Diſtance of Planting muſt alſo be regulated by the Growth of the Trees, which are more unequal in *Pears* than *Apples*, and ſhould therefore be more carefully examin'd before they are planted. As for thoſe *Pears* upon Free-Stocks, the Diſtance ſhould never be leſs than eighteen Feet for moderate growing Trees; but for vigorous Shooters, twenty-five Feet are little enough, eſpecially if the Soil be ſtrong, in which Caſe they ſhould be planted at a greater Diſtance. The particular Sorts of *Pears* I would recommend for an *Eſpalier*, are the *Jargonelle*, *Blanquete*, *Poire ſans Peau*, *Summer Boncretien*, *Hamden's Burgamot*, *Poire du Prince*, *Poire ſans Pepin*, *Beurre du Roy*, *St. Michael*, *Le Marquis*, *Monſieur John*, *Creſſane*, with many others of leſs Note. As to the Method of Planting, ſee the Article *Pear*; and for Pruning and Managing, ſee *Pruning*.

I ſhall now give Directions for making the *Eſpalier*, to which the Trees are to be train'd: But this I would not have done until the third Year after the Trees are planted; for while they are young, it will be ſufficient to drive a few ſhort Stakes into the Ground on each Side of the Trees, to which the Branches ſhould be faſten'd in a horizontal Poſition, as they are produced; which Stakes may be plac'd nearer, or at a farther Diſtance, according as the Shoots produc'd may require, and will be ſufficient for the three firſt Years; for ſhould you frame the *Eſpalier* the firſt Year the Trees are planted, the Poles would rot before the *Eſpalier* is cover'd. The cheapeſt Method to make theſe *Eſpaliers* is with *Aſh*-Poles, of which you ſhould have two Sorts; one of the largeſt Size, which contains thirteen Poles in a Bundle, and the othe Size thoſe of half a hundred: The firſt or largeſt Size Pole ſhould be cut about ſeven Feet and a half long; theſe are intended for Upright Stakes, and muſt be ſharpen'd at the large End, that they may with more Eaſe be driven into the Ground theſe ſhould be plac'd at a Foot Diſtance from each other in direct Line, and of an equal Height, about ſix Feet abov Ground; then you ſhould nail a Row of ſtrait ſlender Pol along upon the Tops of the upright Stakes, which will kee them exactly even, and continue to croſs the Stakes with th ſmaller Poles, and the Tops which were cut off from th larger ones, at about nine Inches Diſtance, Row from Ro from the Top to the Bottom of the Stakes. Theſe Rows Poles ſhould be faſten'd with Wire, and the largeſt End of th Poles ſhould be nail'd to the upright Stakes, which will ſecu t the *Eſpalier* almoſt as long as the Poles will endure: whereas, if your Faſtening is not ſtrong, the Poles will be continually diſplac'd with every ſtrong Wind.

When your *Eſpalier* is thus fram'd, you muſt faſten the Branches of the Trees thereto, either with ſmall Oſier Twigs, or ſome ſuch Binding, obſerving to train them in an horizontal Poſition, and at equal Diſtances; being careful not to croſs any of the Branches, nor to lay them in too thick: The Diſtance I would allow for the Branches of *Pears* and *Apples*, ſhould be proportion'd according to the Size of their Fruit; ſuch of them whoſe Fruit is large, as the *Summer Boncretien*, *Monſieur John*, and *Beurre du Roy Pears*, and the *Rennet Griſe*, *Holland Pippin*, *French Pippin*, and other large *Apples*, ſhould have their Branches ſix or eight Inches Diſtance at leaſt; and to thoſe of leſſer Growth, four or five Inches will be ſufficient. But for farther Directions, I ſhall refer to the Articles of the ſeveral Fruits, as alſo that of *Pruning*, where the Particulars will be ſufficiently explain'd.

But beſides this Sort of *Eſpalier* made with *Aſh*-Poles, there is another Sort that is by many People preferr'd, which is framed with ſquare Timbers cut to any Size, according to the Strength thereof, or the Expence the Owner is willing to go to; theſe, tho' they appear more ſightly, when well fixed and painted, yet are not of longer Duration than one of the former, provided it is well made, and the Poles are ſtrong which are ſet upright: nor do they anſwer the Purpoſe better, tho' they are vaſtly more expenſive; for the greateſt Beauty conſiſts in the diſpoſing the Branches of the Tree, which, eſpecially in Summer, when the Leaves are on, will intirely hide from the Sight the Frame of the *Eſpalier*: therefore all Expence in erecting theſe is needleſs, farther than making Proviſion to ſecure the Branches of the Trees in a regular Order.

Fruit-trees thus planted, and well managed, are much preferable to thoſe train'd up in any other Figure, upon ſeveral Accounts; as, *firſt*, theſe take up very little Room in a Garden, ſo as to be hurtful to the Plants which grow in the Quarters; and, *2dly*, the Fruit upon theſe are better taſted than thoſe which grow upon Dwarfs, the Sun and Air having freer Acceſs to every Part of the Tree, whereby the Dampneſs ariſing from the Ground is ſooner diſſipated; which is of ſingular Advantage to Fruit-trees, (as hath already been ſhewn.)

EVER-GREEN THORN. *Vide* Pyracantha.

EVERLASTING PEA. *Vide* Lathyrus.

EUONYMUS, [Εὐώνυμος, of εὐ, *good*, and ὄνομα, a *Name*, ſo call'd by way of Antiphraſis, becauſe it is hurtful to Animals.] The Spindle-tree, or Prickwood.

The *Characters* are;

It has four reddiſh Lines running along the Branches, which make them appear in ſome meaſure quadrangular: the Flowers, for the moſt part, conſiſt of four Leaves, which are ſucceeded by quadrangular Fruit, containing four red Seeds in each.

The *Species* are;

1. Euonymus *vulgaris, granis rubentibus. C. B.* The common Spindle-tree.

2. Euonymus *latifolius. C. B.* Broad-leav'd Spindle-tree.

3. Euonymus *Africanus, Lycii craſſioribus foliis, ſempervirens, capſula triloculari aſperata rubente. Boerh. Ind.* Ever-green African Spindle-tree, *commonly call'd* African Barberry.

4. Euonymus *Virginianus, pyracanthæ foliis, ſempervirens, capſula verrucarum inſtar aſperata rubente. Pluk. Phyt.* 115. f. 5. Virginian Ever-green Spindle-tree, with rough, warted, ed Seed-veſſels.

The firſt of theſe Species is very common in Hedges in di-ers Parts of *England*, where it ſeldom riſes to any conſider-ble Stature: but if planted amongſt other Trees in Wilder-eſs Quarters, may be train'd up ſo as to become a large hand-me Tree; and in the Autumn Seaſon, when the Fruit is pe, doth make a very handſome Shew. The Wood of this ree is uſed by the Inſtrument-makers, for Toothing of Or-ans and Virginal-Keys, Tooth-pickers, Spindles, and to ake Scures, *&c.* The Broad-leav'd Sort, tho' very common moſt Parts of *Europe*, yet is rarely to be found in *England*, cept in curious Collections of Trees and Shrubs. Theſe o Plants are very hardy, in reſpect to Cold, and may be opagated either by ſowing the Seeds, or laying down the anches: but the firſt being a tedious Method, is ſeldom ctiſed; for the Seeds remain in the Ground until the ſecond ear before the Plants come up, and afterwards make but little Progreſs during the three or four firſt Years, whereas thoſe raiſed by Layers will make handſome Trees in three or four Years Time.

The other two Sorts being Natives of a warm Country, will not endure the Cold of our Climate in the open Air, and muſt therefore be preſerved in a good Green-houſe in Winter. Theſe may be propagated by planting Cuttings any Time from *May* to *September*, which ſhould be ſet into Pots fill'd with freſh light Earth, and plung'd into a moderate Hot-bed, and carefully water'd and ſhaded until they have taken Root; after which, they may be tranſplanted each into a ſeparate Pot, and expoſed to the open Air till *September*, when they ſhould be removed into the Green-houſe, where, during the Winter Seaſon, they muſt have as much free open Air as the Weather will admit of, as alſo frequent, but gentle Waterings: in other reſpects they may be managed as *Orange-trees*, obſerving to ſhift the Plants into freſh Earth every Year.

The third Sort grows to be a Shrub of five or ſix Feet in Height, and will produce great Quantities of Fruit, which ripen in Winter, and make a very good Appearance in the Green-houſe at that Seaſon. This is the tendereſt Plant of them all.

The fourth Sort ariſes with us to the Height of ten or twelve Feet, and may be train'd up to a regular Head; and when grown to be large, will annually produce Flowers and Fruit; which, altho' they have no great Beauty, yet the Tree, for Variety, deſerves a Place in every good Collection of Plants. This is pretty hardy, and only requires to be ſhelter'd from extreme Froſts in Winter, and therefore ſhould be early expoſed to the open Air in Spring, and ſuffer'd to remain abroad in Autumn.

EUPATORIOPHALACRON, Naked-headed Hemp-agrimony.

The *Characters* are;

It is a corymbiferous Plant, which in ſome Species *have radiated Flowers, whoſe Florets are hermaphrodite, and the Half-florets are Female; but in other* Species *the Flowers are produced in a Diſk, and are for the moſt part hermaphrodite. The Ovaries have naked Heads, and are placed on a woolly Placenta; all theſe Parts are contained in a Flower-cup, which is divided into many Parts to the Placenta; to theſe Notes muſt be added, the Leaves growing oppoſite on the Branches.*

The *Species* are;

1. Eupatoriophalacron *balſaminæ fœminæ folio, flore albo diſcoide. Vaill.* Naked-headed Hemp-agrimony, with a female-balſam Leaf, and a white diſcous Flower.

2. Eupatoriophalacron *menthæ arvenſis folio. Vaill.* Naked-headed Hemp-agrimony, with a water-calaminth Leaf.

3. Eupatoriophalacron *foliis anguſtis, rarius dentatis, flore radiato. Vaill.* Naked-headed Hemp-agrimony, with narrow indented Leaves, and a radiated Flower.

4. Eupatoriophalacron *folio trinervi ſubrotundo, flore minore luteo radiato. Vaill.* Naked-headed Hemp-agrimony, with a roundiſh trinervated Leaf, and a ſmaller yellow radiated Flower.

5. Eupatoriophalacron *folio trinervi ſubrotundo, flore majore luteo radiato. Vaill.* Naked-headed Hemp-agrimony, with a roundiſh trinervated Leaf, and a larger yellow radiated Flower.

6. Eupatoriophalacron *perſicæ folio trinervi, flore minimo luteo diſcoide. Vaill.* Naked-headed Hemp-agrimony, with a trinervated Peach-leaf, and the leaſt yellow diſcous Flower.

7. Eupatoriophalacron *ſcrophulariæ folio trinervi. Vaill.* Naked-headed Hemp-agrimony, with a trinervated Figwort Leaf.

8. Eupatoriophalacron *ſcrophulariæ folio trinervi, caule alato. Vaill.* Naked-headed Hemp-agrimony, with a trinervated Figwort Leaf, and a winged Stalk.

9. Eupatoriophalacron *Indicum ſcrophulariæ folio, capitulo parvo radiis quinis ad baſin ornato, hiſpidis & glutinoſis. Act. Phil.* Indian Naked-headed Hemp-agrimony, with a Figwort Leaf, and a ſmall Head adorned with five Rays, which are prickly and glutinous.

10. Eupatoriophalacron *Americanum procumbens, origani folio, flore luteo. Houſt.* Trailing *American* Naked-headed Hemp-agrimony, with an origany Leaf, and a yellow Flower.

All theſe Plants are annual, ſo muſt be ſown every Spring on a Hot-bed, and muſt be tranſplanted afterward to another, in order to bring them forward, otherwiſe they will not perfect their Seeds in this Country; for moſt of them are Natives of the warmer Parts of *America*, therefore they muſt be treated after the Manner of *Amaranths*, bringing them forward on Hot-beds until *June*; about the Middle of which Month, they may be tranſplanted into Beds or Borders of rich Earth; where, if they are duly watered in dry Weather, they will produce their Flowers in *July*, and their Seeds will ripen in *September*. There is no great Beauty in theſe Plants, ſo they are ſeldom cultivated but in Botanick Gardens for the ſake of Variety.

EUPATORIUM, [Εὐπατόριον, of King *Eupato*, who firſt brought this Plant into Uſe; or of ἡπατίτης, of ἧπαρ Gr. the *Liver*, becauſe this Plant is good for Diſeaſes of the Liver; or of εὐπατὴρ, i. e. *good Father*, or, *a Son beloved by his Father*, which Name many of the Kings of *Egypt* have borne] Hemp-Agrimony.

The *Characters* are;

It hath a perennial fibroſe Root; the Leaves are placed oppoſite upon the Stalks; the Cup of the Flower is long, taper, and ſcaly; the Flowers are collected into an Umbel upon the Tops of the Stalks, which conſiſt of many long bifid Threads.

The *Species* are;

1. EUPATORIUM *Cannabinum. C. B.* Common Hemp-Agrimony.
2. EUPATORIUM *urticæ foliis, Canadenſe, flore albo. H. L.* Canada Hemp-Agrimony, with Nettle Leaves, and a white Flower.
3. EUPATORIUM *Novæ Angliæ, urticæ foliis, floribus purpuraſcentibus, maculato caule. H. L. New England* Hemp-Agrimony, with Nettle Leaves, purpliſh Flowers, and ſpotted Stalks.
4. EUPATORIUM *folio oblongo rugoſo, caule purpuraſcente. Tourn.* Canada Hemp-Agrimony, with a long rough Leaf, and purpliſh Stalk.
5. EUPATORIUM *Novæ Angliæ, Betonicæ foliis villoſis, flore albo. Par. Bat. New England* Hemp-Agrimony, with Betony Leaves, and a white Flower.
6. EUPATORIUM *Americanum, ſcandens, haſtato magis acuminato folio. Vaill.* Climbing American Hemp-Agrimony, with a Spear-like ſharp-pointed Leaf.
7. EUPATORIUM *Americanum, foliis rotundioribus abſque pediculis. Vaill.* American Hemp-Agrimony, with round Leaves without Foot-ſtalks.
8. EUPATORIUM *ſcandens, foliis ſubrotundis lucidis, floribus ſpicatis albis. Houſt.* Climbing Hemp-Agrimony, with roundiſh ſhining Leaves, and white Flowers growing in a Spike.
9. EUPATORIUM *Americanum, teucrii folio, flore niveo. Vaill. Mem. Acad. Scien. American* Hemp-Agrimony, with a tree-germander Leaf, and a white Flower.
10. EUPATORIUM *Virginianum, ſalviæ foliis longiſſimis acuminatis, perfoliatum. Pluk. Almag. Virginian* Hemp-Agrimony, with long ſage-like Leaves cloſely ſurrounding the Stalk.
11. EUPATORIUM *betonicæ folio glabro & carnoſo, flore cœruleo. Houſt.* Hemp-Agrimony, with a fleſhy ſmooth betony Leaf, and a blue Flower.
12. EUPATORIUM *Americanum arboreſcens, mori folio, floribus albicantibus. Houſt.* Tree-like *American* Hemp-Agrimony, with a Mulberry-leaf, and white Flowers.
13. EUPATORIUM *Americanum fruteſcens, balſaminæ luteæ foliis, nigris maculis punctatis. Houſt. American* ſhrubby Hemp-Agrimony, with yellow Balſamine Leaves ſpotted with black Marks.
14. EUPATORIUM *Peruvianum, folio ſubrotundo trinervi utrinque acuto, flore cœruleo. Vaill. Mem. Acad. Scien. Peruvian* Hemp-Agrimony, with roundiſh Leaves ending in a ſharp Point, and blue Flowers.

The firſt of theſe Plants is found wild by Ditches and River Sides in moſt Parts of *England*, and is the only Species of this Genus which is a Native in *Europe*: but *America* abounds with a vaſt Number of Species, many of which are annually brought over, and preſerved in curious Botanick Gardens; tho' the firſt Sort is only at preſent uſed in Medicine.

Theſe Plants are moſt of them hardy enough to endure the Cold of our Winters in the open Air, provided they are planted in a dry Soil, and may be propagated by parting their Roots in *March*, or *October*: but if you do this in the Spring, you muſt obſerve to water and ſhade the Plants until they have taken Root, if the Weather ſhould prove dry; and thoſe that are tranſplanted in Autumn, ſhould be protected from ſevere Froſts in Winter, which would be apt to deſtroy them before they have got faſt Rooting in the Ground.

Theſe Plants may alſo be propagated by ſowing their Seeds, which ſhould be done early in the Spring, upon a Bed of light Earth, obſerving to water them in dry Weather: but they ſeldom come up until the ſecond Year; and it is not till the third Year that they produce Flowers: therefore, if the Plants are not too thick in the Seed-bed, they may be permitted to remain there till after their Flowers are paſt; and in *October* remove them to the Places where they are deſign'd to grow. Theſe Plants have little Beauty in them, and therefore are ſeldom preſerved, unleſs in Botanick Gardens, for Variety.

The eighth, eleventh, twelfth, thirteenth and fourteenth Sorts, are ſomewhat tenderer than the others before-mentioned, and require to be ſheltered in Winter: the eighth Sort dies to the Root every Autumn, and riſes again the following Spring. This may be propagated by parting of the Roots in *April*, juſt before they begin to ſhoot; this Plant muſt be frequently watered in dry Weather, during the Seaſon of its Growth; but in Winter, when the Stems are decayed, it ſhould have but little Water; for too much Wet at that Seaſon will rot the Roots.

The ninth, twelfth, thirteenth and fourteenth Sorts, may be propagated by Cuttings during the ſummer Seaſon; which ſhould be planted into Pots, filled with freſh light Earth, and plunged into a moderate Hot-bed, where they ſhould be ſhaded and watered until they have taken Root, when they may be expoſed to the open Air by degrees. Theſe Plants may be placed in the open Air in Summer, among other hardy exotic Plants; but in Winter they ſhould be placed in a good Greenhouſe, obſerving to let them have the free Air in mild Weather; and they muſt be frequently refreſhed with Water. With this Management theſe Plants will flower every Year, and may be allowed a Place in ſuch Gardens where other exotic Plants are preſerved.

EUPHORBIUM, [Εὐφόρβιον, ſo named by King *Juba*, from *Euphorbus*, the Brother of *Antonius Muſa*, who was his Phyſician.]

The *Characters* are;

It hath Flowers and Fruit like the Spurge, *and is alſo full of a hot, ſharp, milky Juice; the Plants are angular, and ſhaped ſomewhat like the* Cereus *or* Torch Thiſtle; *it is commonly beſet with Spines, and, for the moſt part, hath no Leaves.*

The *Species* are;

1. EUPHORBIUM *verum antiquorum. Raii Hiſt.* The true *Euphorbium* of the Ancients.
2. EUPHORBIUM *tetragonum & pentagonum, ſpinoſum, Canarinum. Boerh. Ind.* Canary *Euphorbium*, with four or five Angles, and beſet with Spines.
3. EUPHORBIUM *trigonum & tetragonum, ſpinoſum, ramis compreſſis. D'Iſnard.*
4. EUPHORBIUM *Cerei effigie, caulibus craſſioribus, ſpinis validioribus armatum. Breyn. Prod.* Thick-ſtalk'd *Cereus*, like *Euphorbium*, arm'd with ſtrong Spines.
5. EUPHORBIUM *Cerei effigie, caulibus gracilioribus. Boerh. Ind.* Slender-ſtalk'd *Cereus*, ſhaped like *Euphorbium*.
6. EUPHORBIUM *Afrum, caule ſquamoſo tuberoſo. Boerh. Ind.* African *Euphorbium*, with ſcaly Stalks and a tuberoſe Root.
7. EUPHORBIUM *Afrum, caule ſquamoſo tuberoſo, minus. Boerh. Ind.* Leſſer African *Euphorbium*, with ſcaly Stalks, and a tuberoſe Root.
8. EUPHORBIUM *Afrum, caule craſſo ſquamoſo, ramis in capitis Meduſæ ſpeciem cincto. Boerh. Ind.* African *Euphorbium*, with thick ſcaly Stalks, and branching at the Top like *Meduſa*'s Head, *commonly call'd* the Snake-*Euphorbium*.
9. EUPHORBIUM *Afrum, facie fructus pini. Boerh. Ind.* African *Euphorbium*, with the Face of the Pine-Fruit, *commonly call'd* Little *Meduſa*'s Head.
10. EUPHORBIUM *anguloſum, foliis nerii latioribus. Boerh. Ind.* Angular *Euphorbium*, with broad Oleander Leaves.
11. EUPHORBIUM *heptagonum, ſpinis longiſſimis, in apice frugiferis. Boerh. Ind.* *Euphorbium* with ſeven Angles, and long Spines bearing Fruit upon the Tops.
12. EUPHORBIUM *quod Anteuphorbium. Dod.* The *Anti-Euphorbium: Vulgo.*

All theſe Plants being Natives of warm Countries, muſt with great Care be preſerved in Stoves during the Winter; and being replete with a milky Juice, they require very little Moiſture: nor ſhould they be planted in a rich Soil, which is very hurtful to them. They are all (ſo far as we are acquainted with their Places of Growth) Inhabitants of rocky hard barren ſoils: therefore the moſt proper Earth for them, is one half Sea-ſand, one quarter light freſh Earth, and a quarter part Lime-Rubbiſh: this ſhould be mix'd up well together two or three Months before it is uſed, obſerving to turn it over three or four times, that the ſeveral Parts may be the better united; and afterwards, it will be proper to ſcreen it, in order to take out the large Stones.

Theſe Plants are propagated by planting Cuttings: the beſt Seaſon for this is in *June* or *July*: the Cuttings ſhould be taken off from the old Plants at a Joint; for if they are cut in the Middle of the Joint, the Cutting will decay, as will alſo that Part of the Branch left on the old Plant to the next Joint, and ſometimes it will mortify and decay the whole Plant. Theſe ſhould be cut off a Week or Fortnight before they are planted; during which Time, they ſhould lie in a dry ſhady Place, that the Part which adhered to the old Plant may be dried and harden'd, otherwiſe the Cuttings will rot: then plant them into ſmall Half-penny Pots fill'd with the above-mention'd Earth, giving them a little Water to ſettle the Earth to them, and let the Pots be ſet for a Day or two in a Place where they may have only the Morning Sun: after this, plunge them into a moderate Hot-bed of Tanners Bark, obſerving, in the great Heat of the Day, to ſhade the Glaſſes with Mats, as alſo, once a Week, to give them a gentle Refreſhing with Water: but you muſt be very careful not to give them too much, which will immediately rot them, eſpecially before they have taken Root.

In about five or ſix Weeks time the Cuttings will have ſhot out ſome Roots, which you may eaſily perceive, by carefully obſerving the Tops of the Cuttings, which will then begin to advance in Height, and appear of a lighter Green Colour than the lower Part; at which time you muſt begin to give them Air by degrees, raiſing the Glaſſes with Bricks in the Middle of the Day, and ſo increaſing the Quantity of Air daily, until at laſt you remove them quite out of the Bark-bed, which ſhould be done towards the latter End of *Auguſt*, when you ſhould place them into the Stove, obſerving not to expoſe them too much to the Air; alſo being very careful not to let them have too much Moiſture, which is very deſtructive to theſe Plants.

During the Winter Seaſon they muſt be placed in a warm Part of the Stove, which ſhould always be kept to the Temperate Heat, as mark'd on Mr. *Fowler's Botanical Thermometers*, which I find does better agree with all the Sorts of this Plant, than a greater Degree of Heat. The firſt, third, and eleventh Sorts are the tendereſt, and ſhould therefore be placed nearer to the Fire-place in the Stove than the other Sorts, eſpecially the eleventh, which ſhould be placed to receive as much Light as poſſible, and muſt not have one Drop of Water from *October* till *March*; for it is very ſubject to rot, upon receiving the leaſt Moiſture at that Seaſon; but the other Sorts will require a little Water every Fortnight or three Weeks, eſpecially if they ſtand in a Stove where the Heat is regularly kept up; this will preſerve the Plants from ſhrinking, which they are ſometimes ſubject to, when they are kept too dry.

Theſe Plants ſhould not be expoſed to the open Air in Summer, but always allowed to continue in the Stove, obſerving to place them as near the Windows as conveniently you can, that they may enjoy as much free Air as poſſible: When the Weather will permit, the Glaſſes ſhould be open'd; but they ſhould never be expoſed in the Night, or to hard Rains.

July is the beſt Seaſon for ſhifting theſe Plants, when you ſhould be provided with a Quantity of the before-mention'd Earth, and after having ſhaken them out of the Pots they before grew in, you ſhould with your Hands take off as much of the Earth round the Roots of the Plants as poſſible, without breaking them; then having put a few Stones in the Bottom of the Pots, to drain off the Moiſture, you ſhould fill the Pots about half full of the new Earth, and ſet the Plants in the Middle of the Pots, filling up the Vacancies with the Earth, and preſſing it down gently with your Hands, to ſettle the Earth cloſe to the Roots of the Plants: Afterwards give them a little Water, and then remove them into the Stove again; obſerving, if the Weather ſhould be very hot and dry, to ſcreen the Glaſſes of the Stove in the Middle of the Day, until the Plants are well rooted again.

N. B. You muſt never put thoſe Plants into large Pots; for as they are moſt of them Inhabitants of Rocky Places, ſo they ſhould be pretty much confined in their Roots; for if the Pots are too big, the Plants, if they don't rot, will make but ſmall Progreſs therein.

The firſt of theſe Sorts is by many learned Authors ſuppoſed to be the true *Euphorbium* of the Antients; tho' I believe, what we now uſe, is taken from more Species of this Plant than one. And I am credibly inform'd by a very curious Gentleman, who lived many Years in the *Canaries*, That the greateſt Part of the *Euphorbium* uſed in *England* came from thence, and is produced from the ſecond Sort. And by carefully looking over ſome of this Drug in a Shop, I found ſeveral Spines amongſt it, which exactly agreed with thoſe of that Plant.

The twelfth Sort is by ſome ſuppoſed to be an Antidote to the *Euphorbium*; but with how much Juſtice, I can't ſay: However, as it has been by moſt Authors ranged amongſt thoſe Plants, I thought proper to continue it there; tho' indeed it has little Affinity with them in its outward Appearance, nor is its Juice milky or hot: But as it hath not as yet produced any Flowers in *Europe*, ſo we can't tell how to diſpoſe it under a particular Genus, which may be more fit for it than this to which it is at preſent fix'd.

This Plant requires a leſs Degree of Heat in Winter, and to be oftener water'd than any of the other Kinds, and is much eaſier increaſed, whereby it is more common than the others, and is leſs eſteem'd, as being very difficult to reduce to any regular Figure.

The eleventh Sort is one of the moſt beautiful, and by far the moſt rare of any of the Species, and is only to be found at preſent in two or three very curious Gardens in *England*. This is very difficult to preſerve, as alſo to increaſe; for the Cuttings, if they are not well dried before they are planted, will certainly rot.

The firſt is alſo a very beautiful Plant, and is pretty rare: but as it is eaſily propagated, ſo it will ſoon become more common in *England*; as will alſo the third Sort, which is at preſent leſs common than many of the others.

But the ſecond is a Plant of a wonderful Structure; the Branches coming out from every Side of the main Stem, and turning upwards, do very much reſemble the branch'd Candleſticks in Churches: This is pretty common in *England*, and has been an old Inhabitant of the *Engliſh* Gardens.

EUPHRASIA, Eye-bright.

The *Characters* are;

It hath an anomalous perſonated Flower of one Leaf, divided into two Lips; the upper one upright and parted into ſeveral Diviſions, and the lower one is divided into three Parts, each of which is again divided into two: out of the Flower-cup riſes the Pointal, which afterwards turns to a Fruit or oblong Huſk, divided into two Parts, and replete with ſmall Seeds.

The *Species* are;

1. EUPHRASIA *officinarum. C. B. P.* Common Eye-bright.
2. EUPHRASIA *ramoſa pratenſis, flore albo. Hort. Eyſt.* Branched Meadow Eye-bright, with a white Flower.
3. EUPHRASIA *minus ramoſa, flore ex cœruleo-purpuraſcente. Hort. Eyſt.* Eye-bright leſs branched, with a purple blue Flower.
4. EUPHRASIA *Alpina parva, luteis floribus. C. B. P.* Small Mountain Eye-bright with yellow Flowers.

The firſt Sort is very common in the Meadows in moſt Part of *England*, where the Herb-women gather it to ſupply the Markets, it being very much uſed for Diſorders of the Eyes. The other Sorts are not common in *England*, nor are they ever gathered for Uſe: they are all of them annual Plants, which drop their Seeds in the Places of their Growth, and riſe again without any Culture. Theſe Plants are difficult to keep in Gardens, for unleſs their Seeds are permitted to fall when ripe, and the Plants ſuffered to come up in the ſame Places, they ſeldom ſucceed; nor do their Seeds ſcarce ever grow, if they are kept out of the Ground till Spring; ſo that they muſt be ſown ſoon after they are ripe. But as the only Sort which is uſed in Medicine grows plentifully in the Fields in this Country, ſo it is not cultivated in Gardens. The beſt Time to gather this Herb for Uſe, is in *June*, when it is in Flower.

EXCORTICATION, [*Excorticatio*, Lat.] a Pulling or Peeling off the outward Bark of Trees.

EXOTICKS, [*Exotica*, Lat.] *Exotick Plants*, are ſuch as are Natives of Foreign Countries.

F A

FABA, [of φαγεῖν, Gr. *to eat*; becauſe the Seed of it is very much eaten] The Bean.

The *Characters* are;

It hath a papilionaceous Flower, which is ſucceeded by a long Pod, which is fill'd with large flat Kidney-ſhaped Seeds: The Stalks are firm, and hollow; the Leaves grow by Pairs, and are faſten'd to a Mid-rib.

The *Species* are;

1. FABA *major recentiorum. Lob. Icon.* The common Garden-Bean.
2. FABA *minor, ſeu Equina. C. B.* The Horſe-Bean.

There are ſeveral Varieties of theſe two Sorts of *Beans*, which differ either in Colour or Size; but as theſe are only ſeminal Variations, ſo I think it needleſs to mention them here, ſince every one who has cultivated them, knows that they every Year vary in their Colour and Size. The particular Direction for their Culture, you will ſee under the Article of *Bean*.

FABA ÆGYPTIA. *Vide* Arum Ægyptiacum.

FABA CRASSA. *Vide* Anacampſeros.

FABAGO, Bean-Caper, [is ſo call'd of *Fabis*, Lat. *Beans*, becauſe its Leaves reſemble thoſe of Beans; and *Capers*, of *Capparis*] the Fruit of this Plant being like that of the Caper.

The *Characters* are;

The Leaves are produced by Pairs upon the ſame Foot-ſtalk, which Foot-ſtalks grow oppoſite at the Joints of the Stalks: the Cup of the Flower conſiſts of five Leaves: The Flowers alſo conſiſt of five Leaves, which expand in Form of a Roſe, and have many Stamina or Threads that ſurround the Style in the Center of the Cup; which Style becomes a cylindrical Fruit, and is, for the moſt part, five-corner'd, divided into five Cells by intermediate Partitions, each of which contains many flat Seeds.

The *Species* are;

1. FABAGO *Belgarum, ſive Peplus Pariſienſium. Lugd.* Bean-Caper, *vulgo*.
2. FABAGO *Africana, arboreſcens, flore ſulphureo, fructu rotundo. Com. Rar. African* Tree Bean-Caper, with a Sulphur-colour'd Flower, and a round Fruit.
3. FABAGO *Africana, fruteſcens, folio latiori, fructu tetragono. African* ſhrubby Bean-Caper, with broader Leaves, and a four-corner'd Fruit.

The firſt of theſe Plants is pretty hardy, and will endure the Cold of our Winters in the open Air, provided it be planted in a dry Soil, and a warm Situation: This is propagated by ſowing the Seeds in the Spring, either on a warm Border or a moderate Hot-bed; and when the Plants are come up, they may be planted into Pots fill'd with light ſandy Earth, or in warm Borders under Walls or Hedges of the like Soil; for they do not care for a rich dung'd Soil, nor a ſtrong or moiſt Earth. The Diſtance theſe Plants ſhould be planted at, muſt not be leſs than two Feet each Way; for they grow to be very large, and form a ſtrong Head: The Branches die away every Winter to the Head, and ſhoot again the ſucceeding Spring, and will produce great Plenty of Flowers and Roots annually, and their Roots will abide many Years, but are very apt to die if removed after they are grown large.

This Plant is of no Uſe at preſent in *England*, but for the Variety of its Flowers deſerves a Place in good Gardens.

The other two Sorts, being Natives of a warm Country, will not endure the Cold of our Climate abroad, but muſt be preſerved in a Green-houſe: They may be propagated by ſowing their Seeds upon a Hot-bed in the Spring; and when the Plants come up, they ſhould be planted into Pots fill'd with freſh ſandy Earth, and may be expoſed during the Summer with other Green-houſe Plants, but in Winter ſhould be placed in an airy Part of the Houſe, and muſt not be crowded with other Plants, which will cauſe them to mould, and ſhed their Leaves, and many Times deſtroy the whole Plant: They ſhould alſo have frequent Refreſhings with Water, but ſhould not have too much at a Time, for that very often deſtroys theſe Plants.

They may alſo be increaſed by planting Cuttings in any of the Summer Months into Pots of light Earth, which ſhould be plunged into a moderate Hot-bed, to facilitate their Rooting, obſerving to ſhade them from the Violence of the Sun, as alſo to give them Water frequently: When they are rooted, which will be in about two Months after planting, they may be tranſplanted into ſeparate Pots fill'd with the ſame light Earth, and ſhould be expoſed to the open Air by degrees, and afterwards may be treated as was before directed for thoſe rais'd from Seeds.

Theſe Plants are generally preſerv'd in all curious Collections of Plants for Variety, but are of no Uſe with us at preſent.

FAGONIA. *This Plant was ſo named by Dr.* Tournefort, *in Honour to Dr.* Fagon, *who was Superintendant of the Royal Garden at* Paris.

The *Characters* are;

The Flower conſiſts of many Leaves, which are placed orbicularly, and expand in Form of a Roſe; out of whoſe Center riſes the Pointal, which afterward becomes a channelled round pointed Fruit, conſiſting of many Cells, and compoſed of many Huſks, each containing one roundiſh Seed.

The *Species* are;

1. FAGONIA *Cretica ſpinoſa. Tourn.* Thorny Trefoil of *Candy*.
2. FAGONIA *Hiſpanica non ſpinoſa. Tourn. Spaniſh* Fagonia without Thorns.

The firſt of theſe Plants is peculiar to *Crete*, from whence it hath been brought by ſome curious Botaniſts, and is preſerved in botanic Gardens. The other Sort was diſcovered by Dr. *Tournefort*, in *Spain*, who ſent the Seeds to the Royal Garden at *Paris*; from whence it hath been diſtributed to ſeveral curious botanic Gardens.

Theſe Plants may be propagated by Seeds, which ſhould be ſown in *March*, on a Border of light Earth, covering them about a Quarter of an Inch with Earth; in *April* the Plants will appear above Ground, when they ſhould be carefully weeded, and in dry Weather they muſt be frequently watered, which will greatly promote their Growth; toward the latter End of *May* the Plants will be ſtrong enough to tranſplant, at which Time they ſhould be carefully taken up, and planted about ſix Inches aſunder, in a Bed or Border of freſh light Earth, obſerving to ſhade them from the Sun until they have taken Root; after which Time they muſt be kept clear from Weeds, and in dry Weather they ſhould be refreſhed with Water. In this Place the Plants may remain till *Michaelmas*, when they ſhould be taken up with Balls of Earth to their Roots, and tranſplanted into the Borders where they are deſigned to remain; and the following Summer they will produce their Flowers, when they will add to the Variety amongſt other hardy Plants.

FAGOPYRUM; [of Φάγω, *to eat*, and πυρὸς, *Bread-corn*, becauſe an edible Grain; or of *Fagus*, the *Beech-tree*, becauſe it has triangular Seeds like thoſe of the *Beech*] Buck-Wheat.

The *Characters* are;

The Flowers are ſpecious, growing in a Spike, or branch'd from the Wings of the Leaves; the Cup of the Flower is divided into five Parts, which reſemble the Petals of a Flower; the Seeds are black, and three-corner'd.

The *Species* are;

1. FAGOPYRUM *vulgare erectum. Tourn.* Common upright Buck-Wheat.
2. FAGOPYRUM *vulgare ſcandens. Tourn.* Common creeping Buck-Wheat.

The firſt of theſe Plants is cultivated in many Parts of *England*, and is a great Improvement to dry barren Lands. The beſt Seaſon for ſowing the Seed is in *May*: One Buſhel will ſow an Acre. The Ground ſhould be plough'd and dreſs'd in the ſame Manner as for *Barley*; and if the Soil is not very lean, it will yield a very great Increaſe, as fifty or ſixty Buſhels upon an Acre, and is excellent Food for Hogs, Poultry, *&c.* The Flour of it is very white, and makes a very good Sort of Pancake, if mix'd with a little Wheat-flour. The Straw is good Fodder for Cattle; and the Grain given to Horſes amongſt their Oats, will make them thrive; but it muſt be broken in a Mill, otherwiſe it is apt to paſs thro' the Cattle whole.

It is commonly late in the Seaſon before it is ripe, but there is no great Danger of the Seeds falling, nor of ſuffering by Wet after it is mown: It muſt lie ſeveral Days to dry, that the Stalks (which are hard) may wither before it is hous'd.

Buck-Wheat is ſometimes ſown very thick, and ſuffer'd to grow until it is near flowering, and is then plough'd in, which makes a very good Lay for *Wheat* or *Rye*: But ſome People eſteem it the better Way to feed Cattle with it, eſpecially Milch-Cows, which they ſay, will cauſe them to give a great deal of Milk, and make both the Butter and Cheeſe very good. This will alſo afford Food for Cattle in the drieſt Time, when all other Graſs is burnt up.

The ſecond Sort is found wild in divers Parts of *England*, but is ſeldom cultivated for Uſe.

FAGUS; [is ſo call'd of φάγω, Gr. *to eat*, becauſe its triangular Nuts are edible, and afford good Nutriment: It is call'd in *Greek* ὀξύα, of ὀξύνη, of ὀξὺς, Gr. *ſharp*, becauſe its Fruit is acuminated] The Beech-Tree.

The *Characters* are;

It hath Leaves ſomewhat reſembling thoſe of the Horn-bean; *the Male Flowers grow together in a round Bunch, and are produc'd at remote Diſtances from the Fruit on the ſame Tree; the Fruit conſiſts of two triangular Nuts, which are incloſ'd in a rough hairy Rind, divided into four Parts.*

The *Species* are;

1. FAGUS. *Dod.* The Beech-Tree.
2. FAGUS *foliis ex luteo variegatis.* The yellow-ſtrip'd Beech-Tree.
3. FAGUS *foliis ex albo variegatis.* The white-ſtrip'd Beech-Tree.

There is but one Specie of this Tree at preſent known, (except the two Varieties with ſtriped Leaves, which are accidental) tho' the Planters would diſtinguiſh two or three Sorts; one of which they call the *Mountain-Beech*, and, as they ſay, affords a much whiter Timber than the other which they call the *Wild Beech*: But as theſe have never been diſtinguiſh'd by the *Botaniſts*, nor can I perceive any real Difference amongſt all the Trees of this Kind I have yet ſeen, ſo I rather think the Difference in the Colour of the Wood is occaſion'd by the Places of their Growth; which is often obſerv'd to be the Caſe with moſt other Sorts of Timber.

This Tree is propagated by ſowing the Maſt; the Seaſon for which is any Time from *October* to *February*, only obſerving to ſecure the Seeds from Vermin when early ſow'd; which if carefully done, the ſooner they are ſown the better, after they are fully ripe: A ſmall Spot of Ground will be ſufficient for raiſing a great Number of theſe Trees from Seed, but you muſt be very careful to keep them clear from Weeds; and if the Plants come up very thick, you ſhould not fail to draw out the ſtrongeſt of them the Autumn following, that thoſe left may have Room to grow: So that if you huſband a Seed-bed carefully, it will afford a three Years Draught of young Plants; which ſhould be planted in a Nurſery, and if deſign'd for Timber-trees, at three Feet Diſtance Row from Row, and eighteen Inches aſunder in the Rows.

But if they are deſign'd for Hedges, (to which the Tree is very well adapted) the Diſtance need not be ſo great; two Feet Row from Row, and one Foot in the Rows will be ſufficient. In this Nurſery they may remain two or three Years, obſerving to clear them from Weeds, as alſo to dig up the Ground between the Roots, at leaſt once a Year, that their tender Roots may the better extend themſelves each Way; but be careful not to cut or bruiſe their Roots, which is injurious to all young Trees, and never dig the Ground in Summer, when the Earth is hot and dry, which by letting in the Rays of the Sun to the Roots, is often the Deſtruction of young Trees.

This Tree will grow to a conſiderable Stature, tho' the Soil be ſtony and barren, as alſo upon the Declivities of Hills, and chalky Mountains, where they will reſiſt the Winds better than moſt other Trees; but then the Nurſeries for the young Plants ought to be upon the ſame Soil; for if they are raiſed in a good Soil and a warm Expoſure, and afterwards tranſplanted into a bleak, barren Situation, they ſeldom thrive; which holds true in moſt other Trees: Therefore I would adviſe the Nurſery to be made upon the ſame Soil where the Plantation is intended: But of this I ſhall ſay more under the Article of *Nurſery*.

The Tree is very proper to form large Hedges to ſurround Plantations or large Wilderneſs Quarters, and may be kept in a regular Figure, if ſhear'd twice a Year, eſpecially if they ſhoot ſtrong; in which Caſe, if they are neglected but a Seaſon or two, it will be difficult to reduce them again. The Shade of this Tree is very injurious to moſt Sorts of Plants which grow near it, but is generally believed to be very ſalubrious to human Bodies.

The Timber is of great Uſe to Turners for making *Trenchers*, *Diſhes*, *Trays*, *Buckets*; and likewiſe to the Joyner for *Stools*, *Bedſteads*, *Coffers*, &c. The Maſt is very good to fat *Swine* and *Deer*; it alſo affords a ſweet *Oil*, and hath in ſome Families ſupported Men with Bread.

The two Sorts with variegated Leaves, may be propagated by budding or grafting them upon the common Beech, obſerving not to plant them in a good Earth, which will cauſe the Buds or Cyons to ſhoot vigorouſly, whereby the Leaves will become plain, which often happens to moſt variegated Plants.

FARINA FOECUNDANS, is the impregnating Meal or Duſt on the *Apices* of Flowers, which being convey'd into the *Uterus* or *Vaſculum Seminale* of Plants, fecundates the Rudiments of the Seeds in the *Ovary*, which otherwiſe would decay and come to nothing. See *Generation of Plants*.

FEATHERFEW or FEAVERFEW. *Vide* Matricaria.

FEBRUARY.

Work to be done in the KITCHEN-GARDEN.

If the Weather be mild in this Month, there is a great deal of Buſineſs to be done in the Kitchen Garden, which, if omitted, will be of bad Conſequence, moſt of the principal Crops being now to be ſown or planted; which if done later in the Year, do ſeldom ſucceed ſo well, eſpecially upon dry Land.

You muſt now dig and prepare your Ground for Carrots, Parſnips, Onions, Leeks, Radiſhes, Spinach, and Cabbage-Lettuce, which ſhould now be ſown; but where it is only for the Supply of a Family, there ſhould not be too much of each Sort ſown at once; For it is a much better Way to ſow three or four Times of each Sort at about ten Days Diſtance from each other, that there may be a Continuation of them for the Kitchen, than to truſt to one Sowing, which will laſt but a ſhort Time: Beſides, if the firſt or ſecond Sowing ſhould miſcarry, it is probable the other may do well, and then there will be no Diſappointment of a Crop.

This is alſo the Seaſon for ſowing Scorzonera, Salſafy, Beets, Skirrets, Parſley, Corn-Sallet, with moſt other hardy Plants; theſe are beſt ſown in ſeparate Beds, and afterwards thinn'd to the proper Diſtance which each requires; for where they are ſown with other Crops, they do not thrive ſo well; nor ſhould they be left too cloſe, for then the Plants will draw each other up weak, and become ſmall.

Make moderate Hot-beds for ſowing ſome Cauliflower-feed, for Summer-plants to ſupply the Kitchen, after thoſe which were ſown in *Auguſt* are gone; but theſe are only fit for a moiſt Soil; for in a dry Ground they ſeldom produce large Heads.

Plant Garlick, Shallots, Rocambole and Cives; as alſo Onions, to draw up for Scallions in *April*, when the dry Onions will be gone, and the *Michaelmas* Onions will be too ſmall for many Kitchen Uſes.

If the laſt Month was ſo ſevere that little Work could be done in the Garden, then there will be a Neceſſity for forwarding Buſineſs in this, provided the Seaſon is favourable; therefore now ſhould be planted out ſome of the Sugar-loaf and Long-ſided Cabbages, to ſucceed thoſe which were planted in *November*. You muſt alſo tanſplant your Cauliflower-plants out of the Winter-beds to the Places where they are to grow, and towards the End of the Month you muſt ſlip your old Artichoke-ſtocks, and plant out ſome of the cleareſt and moſt promiſing Plants for a new Plantation; theſe will produce Fruit in Autumn, after thoſe on the old Stocks are gone. The particular Directions for doing this are exhibited under their proper Heads.

Continue to plant Beans, and ſow Peaſe every Fortnight, that there may be no want of theſe Things in the Kitchen during the Seaſon: But now it is proper to plant only the *Windſor*-Bean; and ſome of the larger Sorts of Peaſe ſhould now be ſown, particularly the *Spaniſh* Morotto, which is a plentiful bearing Sort, and a very good Pea for eating.

Make new Hot-beds for Aſparagus to ſucceed thoſe which were made the laſt Month, for otherwiſe there will be a want in the Kitchen, one of theſe Beds ſeldom continuing much more than a Fortnight in good Order; ſo that in this Month there ſhould be two Beds made, at about ſixteen or eighteen Days Diſtance, that they may ſucceed each other regularly.

The Cucumber and Melon-plants which were rais'd the laſt Month, will now be fit to tranſplant; therefore there muſt be new Beds made for them, which ſhould be well wrought; but the Plants muſt not be planted therein, until the violent Heat of the Bed is over, which ſeldom laſts above a Week, eſpecially if the Dung had been well prepar'd before it was uſ'd. At this Seaſon you muſt attend very cloſely to your Hot-beds, if you would have them ſucceed; for a ſmall Neglect at this Seaſon will deſtroy all your Plants, and put you greatly backward.

Plant ſome Kidney-Beans upon a moderate Hot-bed for an early Crop, obſerving, when the Plants are come up, to give them Air whenever the Weather will permit, othewiſe the Plants will draw up weak, and not produce Fruit. The beſt Sort for this Purpoſe is the Dwarf *Batterſea*-Bean, which ſeldom runs much to haulm, and is a plentiful Bearer.

If the Weather be favourable, toward the End of this Month you muſt plant your *Cos*, *Sileſia* and *Imperial* Lettuces, from the Beds or Borders where they grew in the Winter; but ſome of the Plants ſhould be left to remain for Cabbaging, becauſe they will come earlier than thoſe which are remov'd. You ſhould alſo ſow ſome Seeds of theſe Sorts upon a Spot of good Ground, to come after the Winter Lettuces are gone.

The latter End of the Month you may ſow ſome Cabbages and Savoys for Winter uſe; and upon Hot-beds or warm Borders muſt be ſown ſome ſmall Sallet-herbs, as Lettuce, Creſſes, Muſtard, Rape, Radiſh, Turnips, *&c.* that there may be a conſtant Supply of theſe Things for the Table.

Sow ſome Celery Seeds upon a Bed of rich Earth, in a warm Situation, to come up early; and you ſhould now ſow Aſparagus Seed in a Bed of good Earth, for Plants againſt the next Year, to make freſh Plantations.

Tranſplant Cabbages, Savoys, Leeks, Parſnips, Carrots, and Beets for Seed, if it was not done the former Month, obſerving (as was there directed) to hang up the Cabbages and Savoys in a dry Place for five or ſix Days, that the Wet may drain out from between the Leaves, which, if left in, would rot them.

Plant Potatoes and Jeruſalem-Artichokes, obſerving to plough or trench the Ground deep, that the Roots may be plac'd at leaſt ſix or eight Inches below the Surface, otherwiſe they will not ſucceed ſo well.

Dung and trench the Ground well, where you intend to plant Aſparagus, letting it remain in Ridges until the Seaſon for planting, which will be the latter End of next Month.

The Cauliflower-plants which were plac'd under Bell or Hand-Glaſſes in *October* laſt, ſhould, toward the End of this Month, be parted, leaving only one of the ſtrongeſt Plants under each Glaſs; but in doing of this you muſt be careful not to diſturb the Roots of thoſe Plants which are left; and if they are grown ſo large as to preſs againſt the Glaſſes, you ſhould raiſe the Earth in a Border about the Plants, that the Glaſſes may be advanc'd ſo as not to cruſh the Plants.

The Peaſe and Beans which were ſown in Autumn, and have ſtood thro' the Winter, will now begin to advance; therefore the Ground between them ſhould be houghed, and the Earth drawn up to their Stems, which will ſtrengthen them, and guard their Stems from the Injury of Froſt.

Products of the KITCHEN-GARDEN.

Cabbages, Savoys, Borecole, Broccoli, Carrots, Parſnips, Turnips, Beets, Skirrets, Scorzonera, Salſafy, Coleworts, Spinach, Potatoes, Jeruſalem-Artichokes; and in ſome warm Borders there are Radiſhes which were ſown in Autumn. Upon Hot-beds all Sorts of ſmall Sallet-herbs, as Lettuce, Creſſes, Coriander, Turnip, Rape, Radiſh and Muſtard. You have alſo Endive and Celery; and on the Hot-beds made in *December*, you have Aſparagus, which towards the middle of this Month, when there begins to be ſome ſunny Weather to colour it, will be very good.

Work to be done in the FRUIT GARDEN.

You may now continue to prune ſuch of your Fruit-trees as were not before prun'd, either againſt Walls, Eſpaliers, or Standards, obſerving to do the more hardy Sorts firſt, and let the tender Kinds alone till laſt, when there will be leſs Danger of their ſuffering by cold.

The Fig-trees, which were cover'd in froſty Weather to protect their tender Branches from Injury, ſhould be open'd in warm Weather to admit freſh Air, otherwiſe they will be in Danger of growing mouldy, which would decay them.

Where-ever your Eſpaliers are decay'd, and have not been repair'd the former Months, it ſhould be no longer deferr'd, becauſe the Buds of the Fruit-trees will now begin to ſwell, and thereby be in Danger of rubbing off, and ſuch of your Trees as have not been train'd to the Eſpaliers already, muſt now be prun'd and faſten'd thereto regularly, and at their proper Diſtances, that when their Leaves to come out, there may be no Confuſion.

Tranſplant all Sorts of Fruit-trees, where they are wanting, this being the moſt proper Seaſon for moiſt Land (in which it is not ſo well to plant in Autumn) but you muſt obſerve to work the Ground well, and break the Clods before planting, that the Earth may the better join to every Part of the Roots. The Heads of theſe Trees ſhould alſo be left on until they begin to puſh, when they muſt be carefully cut down, after the manner directed under the Article of *Planting*.

The latter End of this Month (if the Seaſon be mild) you muſt begin to graft Pears, Plums, Cherries, and other hardy Kinds of Fruit, being very careful that they are well clay'd, that the Wind can't enter to the Graft, upon which chiefly depends your Succeſs.

You may now ſow the Kernels and Stones of hardy Fruits for Stocks, to bud and graft the more generous Kinds upon, obſerving to cover them equally with Earth, that none may appear above-ground to entice the Mice or other Vermin to them, which often deſtroy whole Beds of Seeds, if they are not prevented.

In moiſt Weather clear your Fruit-trees from Moſs (where they are infeſted with it) which at this Seaſon may be eaſily done with an Iron Inſtrument ſhap'd like a Hough, and hollow'd in the middle to the Size of the Branches, which are to be ſcrap'd; ſo that there ſhould be three Sizes of theſe Inſtruments, which will be ſufficient for all the different Branches; and the Moſs being tender at this Time, may be eaſily rubb'd off.

The early Fruit-frame or Forcing-frame muſt now be duly attended to give them Air, as the Seaſon may require, as alſo to keep up the Heat, without which the tender Fruit will drop off, and come to nothing.

Fruits in prime, or yet laſting.

Pears; Winter Boncretien, Beſſy de Caſſoy, Citron d'Hyver, Winter Ruſſelet, Bugi, or Bergamot de Paſque, Lord Cheyne's Green Pear, Portail; and for baking, the Cadillac, Union, or Pickering, *Engliſh* Warden, and Black Pear of Worceſter.

Apples; Rennett Griſe, Aromatick Pippen, Golden Ruſſets, Nonpareil, Golden Pippen, Holland Pippen, *French* Pippen, *Kentiſh* Pippen, Stone Pippen, John Apple, Harvey Apple, Pile's Ruſſet, Wheeler's Ruſſet, Winter Pearmain, *with ſome* others of leſs Note.

Work to be done in the PLEASURE GARDEN.

If the Weather be mild, you may now plant out your choice Carnations into the Pots where they are to flower; in doing of which, you ſhould not take too much of the Earth from their Roots; and when they are planted, it will be proper to place the Pots in a warm Situation (but not too near Walls, or Pales, which will draw them up weak) and arch them over with Hoops, that in bad Weather they may be cover'd with Mats; for at this Seaſon they ſhould acquire Strength before the Heat comes on, otherwiſe they will not produce large Flowers.

You may yet ſow Auricula and Polyanthos-ſeeds in Tubs or Pots of light rich Earth, placing them where they may have the Morning Sun till *April*, when they muſt be remov'd into a more ſhady Situation, there to remain during the Summer Seaſon.

If your Auricula's in Pots were not freſh earth'd the laſt Month, that ſhould now be done, in the manner directed in *January*; for now their Flower-buds will begin to ſhew apace; ſo that if it be not done in a ſhort Time, their Flowers will not be improv'd by it.

Stir the Surface of the Ground of your Flower-beds, and clear them from Weeds, Moſs, and whatever Filth may appear thereon, which will be very ſerviceable to the Flowers, and add a Neatneſs to the Garden.

Dig and prepare your Ground in the Flower-Nurſery for ſowing of Seeds, and to receive Plants the next Month, when you will have much Buſineſs of different Kinds to do; ſo that if you do not get Things in Forwardneſs this Month, you will be ſo much hurry'd in the next, that many Things muſt be omitted, or but ſlightly perform'd.

Tranſplant Canterbury Bells, *French* Honeyſuckles, Daizies, Roſe-Campions, Fox-Gloves, Pinks, Sweet-Williams, Perennial Catch-fly, Campanula's, Thrift, Scarlet-Lychnis, Columbines, Starworts, Golden-rods, with many other fibroſe rooted Plants, into the Borders of your Pleaſure Garden where they are deſign'd to flower; but this is better to be don at *Michaelmas*, where the Ground is dry, becauſe the Plants will have taken good Root, and obtain Strength before the dry Weather of the Spring comes on, and ſo will produce a greater Quantity of Flowers.

In dry froſty Nights you muſt cover your Beds of choice Ranunculus's, Anemonies and Tulips with Mats, to protect them from the Injury of the Weather, otherwiſe they will be in danger of ſpoiling, at leaſt their Flowers will not be ſo fair, nor numerous, and many times the Roots are deſtroy'd by Froſt at this Seaſon.

You may now tranſplant all Sorts of hardy Flowering-trees and Shrubs, as Lilacks, Laburnums, Bladder Senna's, Scorpion Senna's, Roſes, Honeyſuckles, Jaſmines, *&c.* and moſt Sorts of Foreſt-trees may now be tranſplanted with Safety; but Evergreens ſhould not be remov'd till the Beginning of *April*, when they are juſt ready to puſh out their Buds, which is the ſafeſt Seaſon to tranſplant them in.

Plant *Dutch*-box for Edgings to Borders; but it is a better Seaſon in *September*, eſpecially for dry Ground, becauſe it will be firmly rooted before the Drought of the Spring, which is often very deſtructive to ſuch Edgings as are late planted.

Break up your Gravel-Walks, and turn them; but do not rake them until the middle of next Month, by which Time they will be well ſettled.

The latter End of this Month you ſhould take and clean the Quarters of your Wilderneſs, becauſe the Flowers which are under the Trees will now begin to blow; ſo that there is a Neceſſity of making the Place clean, that it may appear ſightly. The Edges of the Graſs-Walks ſhould alſo be cut by a Line, that they may be even; and the Water-Tables on the Sides of the Walks ſhould be dug and rak'd, that they may be clear from Weeds and Moſs.

Make Hot-beds for your tender annual Flowers, which require to be brought forward early in the Spring, which otherwiſe are in Danger of not ripening their Seeds; as the Amaranthus's, Amaranthoides, Double-flowering Stramonium, Double-ſtrip'd Balſamine, with ſome others. You muſt alſo plant ſome Tuberoſes on a Hot-bed to come early in the Summer, provided you did not do it the laſt Month.

Plants now in Flower in the PLEASURE GARDEN.

Winter Aconite, Helleboraſter or Bear's-foot, True Black Hellebore, Green-flower'd Black Hellebore, Snow-drops, ſeveral Sorts of Spring Crocus's, Single-Anemonies, Spring Cyclamen, Great Snow-drop, Early White and Blue Hyacinths, Starry Hyacinth, *Perſian* Iris, Hepatica's, Single Wallflower, Early Tulips, Polyanthus's, Fennel-leav'd Perennial Adonis, Omphaloides pumila Verna, *&c.* with ſome others.

Hardy Trees and Shrubs now in Flower.

Lauruſtinus two or three Sorts, Mezerion Red and White, Spurge Laurel, *Spaniſh* Travellers-joy, Cherry-Plum, White-flower'd Almond, Cornelian Cherry, Filberts, Hazle-Nuts, and ſome others.

Work to be done in the NURSERY.

You may now tranſplant moſt Sorts of hardy Foreſt Trees and flowering Shrubs, provided the Seaſon be favourable, otherwiſe it will be better to defer it a little later. If you did not take off the Layers of Elms, Limes, and other hardy Foreſt-trees, or Shrubs, at *Michaelmas*, it ſhould now be done, planting them into the Nurſery in Rows three Feet aſunder, and eighteen Inches Diſtance in the Rows; where they may ſtand five or ſix Years to obtain Strength, in order for tranſplanting where they are to remain.

The Ground where you intend to plant a Nurſery of Evergreens ſhould now be carefully trenched, obſerving to cleanſe it from the Roots of all noxious Weeds, particularly Couch-graſs, which if left in the Ground, will mix with the Roots of the new planted Trees, and prove very injurious to them, and will be very difficult to get out again.

Where the Ground between the Trees in the Nurſery was not dug the former Month, it ſhould now be done, obſerving (as was before directed) not to injure their Roots; but ſhorten ſuch as were extended far from their Stems, in order to force out young Roots nearer, that they may be fitted for tranſplanting: This ſhould be particularly obſerved in Hollies and other Evergreens, which ſhould be conſtantly dug round every Year, cutting off all downright Roots, and ſuch as extend themſelves from the Plants, which will occaſion a great Quantity of ſtrong Fibres to be ſent forth near their Stems, and render them much ſafer to remove, becauſe theſe will maintain a Ball of Earth to their Roots, when they are carefully taken up, the Want of which renders it almoſt impracticable to tranſplant ſuch Trees as have remain'd many Years, without having been dug round.

You muſt now plant *Cheſnuts*, and ſow the *Seeds*, *Maſt* or *Berries* of other hardy Trees and Shrubs, being careful to cover them with Earth, for if any of them are left expoſed, it will intice Mice and other Vermin, whereby your Seeds will be eaten up, and your whole Seminary deſtroyed.

Toward the latter End of this Month, you ſhould cut off the Heads of your Stocks which were budded with Fruit the preceding Summer, about four or five Inches above the Buds, always obſerving to cut the Stock ſloping from the Bud, that it may not be injured by the flowing of the Sap from the wounded part of the Stock.

If this Month proves mild, you muſt graft *Cherries*, *Plums*, *Pears*, *Apples*, and other hardy Fruits; but if there are hard Froſts and drying Winds, it will be better to defer it a little later, for ſuch Weather is very deſtructive to Grafts.

You may now plant Cuttings of Currants, Gooſeberries, and other Trees which will grow from Cuttings, in ſhady Borders, obſerving to cloſe the Earth well about them, otherwiſe the drying Winds of *March*, will penetrate the Ground and deſtroy them.

Make Layers of all your hardy exotick Trees, which you want to increaſe in this Month, after all hard Froſts are over; for ſome of theſe are too tender to be laid in Autumn, the Wet of the Winter ſucceeded by Froſt being very deſtructive to moſt of theſe tender Plants, when laid.

Work to be done in the GREEN-HOUSE *and* STOVE.

If the Weather be mild, and the Air ſoft, you ſhould begin to let Air into your Green-houſe; but this muſt be done with Care at firſt, and never open the Glaſſes when the Wind is ſharp, at leaſt not on the Side on which the Wind blows; for a ſharp Air at this Seaſon will do great Damage to your Plants now they are tender. Myrtles, Oranges, Geraniums, and other hardy Plants, muſt now be frequently refreſh'd with Water; but let them have it moderately and often, too much Wet at this Seaſon being very injurious to them.

Pick off all dead and decay'd Leaves from your Plants, and ſtir the Surface of the Earth in the Pots or Tubs, clearing them from Weeds, and if you add a little very rotten Neats-dung upon the Tops of the Tubs or Pots, it will be ſerviceable to the Plants. You ſhould at the ſame time bruſh down all Cobwebs, and make the Houſe clean in every Part, Neatneſs being as neceſſary to the Health of Plants as of Animals.

Make Hot-beds to ſow tender Exotick Seeds upon, which are brought from very hot Countries, obſerving to work the Dung well, that the Beds may retain their Heat, and ſettle equally; for when the Dung is not equally ſtirr'd, and beat down with the Fork, it will ſettle in Holes, which is a great Fault in theſe Beds, becauſe when they are water'd the Water will run into the Holes and cauſe thoſe Places to be over-wet, when the other Parts of the Bed will receive little or no Benefit from it.

If any of your Orange-trees have ſuffer'd by ill Management, ſo much that their Heads are decay'd, you ſhould now prune them cloſe, and ſhift them into freſh Earth, and then prepare a moderate Hot-bed in a Glaſs Stove, into which they muſt be plac'd to force them out early in the Spring, that their Shoots may have Time to harden before Winter. But in ſhifting them you ſhould be careful to cut off all mouldy or decay'd Roots, and to cleanſe both Roots and Stems from any Filth they may have contracted: And when they are plac'd in the Hot-bed, you muſt be careful that the Heat be not too great, and frequently refreſh them with Water, not only to their Roots, but over every part of their Stems, which will ſupple their Barks, and cauſe them to puſh out vigorouſly. But when the Sun begins to ſhine with great Force, the Glaſſes of the Houſe ſhould be ſhaded with Mats or Cloths, otherwiſe it will ſcorch their Leaves, and dry the Bark of the Shoots; ſo that they will greatly ſuffer, if too much expos'd thereto; but this heading and forcing of Orange-trees ſhould not be too often practis'd on them, for it will weaken the Trees when repeated too frequently; therefore where they are not in a very bad Condition, it will be the better way to let them be ſhifted if there be occaſion, and place them in a ſhady Situation when they are brought out of the Green-houſe, where, if they are duly ſupplied with Water, they will break out again very ſtrong and well.

The Bark in the Beds of the Stoves will now require to be ſtirr'd up, and ſome freſh Bark added to them to renew their Heat, which will now begin to decline, and, if not timely renew'd, the Plants will ſuffer greatly: But this muſt be done in a warm Day, when the Air is ſoft; for in very cold Weather the Glaſſes muſt not be open'd, ſo that the Bark could not be then put in.

Waſh and clean the Leaves of your Coffee-trees and other woody Plants in the Bark-Stove from Inſects and Filth, and pick off all decay'd Leaves, which, if left on, would infect the Air of the Houſe. The Surface of the Earth in the Pots ſhould alſo be frequently ſtirr'd, to prevent its binding, and muſt always be kept free from Weeds.

The Anana Plants will now ſhew their Fruit apace, ſo that they ſhould be frequently water'd to bring them forward; and the Heat of the Stove muſt be kept up; for if that is ſuffer'd to decline, the Plants will change their Colour, and the Fruit will be render'd ſmall and worth little. Toward the End of this Month you muſt prepare ſome freſh Bark to make the Summer-beds for the Anana's, into which they ſhould be plung'd ſome time the next Month.

The Aloes, Euphorbiums, Torch-Thiſtles, Melon-thiſtles, and other tender ſucculent Plants, ſhould have very little Water given them at this Seaſon; but the Ficoides's, Sedums, Cotyledons, and other hardy Kinds muſt be frequently refreſh'd: But theſe muſt not have it in too large Quantities, becauſe much Wet at this Seaſon will often rot them. You muſt now make freſh Hot-beds of Tan, to ſow the Seeds of ſuch tender Exoticks as are annual, or that you may have received from abroad; into which you ſhould plunge ſmall Pots filled with light freſh Earth, that the Mould may be warm before the Seeds are ſown. This Method of ſowing the Seeds in Pots, is preferable to any other, becauſe the Plants may be ſhaken out of the Pots, when they are fit to tranſplant, with the Earth about their Roots, whereby they will be in little Danger of ſuffering, becauſe their Roots will be preſerved intire.

Plants now in Flower in the GREEN-HOUSE *and* STOVE.

Indian yellow Jaſmine, Ilix-leav'd Jaſmine, *Spaniſh* Jaſmine, Geranium with a ſcarlet Flower, Geranium with a variegated Flower, ſeveral Sorts of Ficoides's, Polygala arboreſcens, Aleppo Cyclamens, Senecio Africanus folio retuſo, Doria Africana atriplicis folio, Doria Africana Coronopi folio, Hermannia Alni folio, Aloes of ſeveral Sorts, Anemonoſpermos's, Turnera, Euphorbiums, Cotyledon with broad cut Leaves, *Malpighia mali punici facie*, with ſome others.

FENCES. In hotter Climates than *England*, where they have not Occaſion for Walls to ripen their Fruit, their Gardens lie open, where they can have Water-Fences and Proſpects; or elſe they bound their Gardens with Groves, in which are Fountains, Walks, *&c.* which are much more pleaſing to the Sight than a dead Wall: but in colder Countries and in *England* we are oblig'd to have Walls to ſhelter and ripen our Fruit, altho' they take away much from the pleaſant Proſpect of the Garden.

Since therefore we are under a Neceſſity to have Walls to ſecure our Gardens from the Injury of Winds, as well as for the Conveniency of Partitions or Incloſures, and alſo to ripen our Fruit, Brick-Walls are accounted the warmeſt and beſt for Fruit: And theſe Walls being built Pannel-wiſe, with Pillars at equal Diſtances, will ſave a great deal of Charge; in that the Walls may be built thinner, than if they were built plain without theſe Pannels; for then it would be neceſſary to build them thicker every where: and beſides, theſe Pannels make theſe Walls look the handſomer.

Stone-Walls are to be preferr'd to thoſe of Brick, eſpecially thoſe of ſquare-hewn Stones. Thoſe that are made of rough Stones, tho' they are very dry and warm, yet, by reaſon of their Unevenneſs, are inconvenient to nail up Trees to, except Pieces of Timber be laid in them, here and there, for that Purpoſe.

But in large Gardens it is better to have the Proſpect open to the Pleaſure-Garden, which ſhould be either ſurrounded with Water, or a Foſſe, ſo that from the Garden the adjacent Country may be view'd.

A Kitchen-Garden, if rightly contriv'd, will contain Walling enough to afford a Supply of ſuch Fruits as require the Aſſiſtance of Walls for any Family; and this Garden being ſituated on one Side of the Houſe, may be ſurrounded with Walls, which will ſcreen the Kitchen-herbs from the Sight of Perſons in the Pleaſure-Garden; and being lock'd up intire, the Fruit will be much better preſerv'd than it can be in the publick Garden: And the having too great a Quantity of Walling, is often the Occaſion that ſo many ſcandalous Trees are frequently to be ſeen in large Gardens, where there is not due Care obſerv'd in their Management.

And beſides, the Borders of Pleaſure-Gardens are generally too narrow for the Roots of Fruit-Trees, as will be ſhewn in its proper Place.

The Height of Garden-Walls ſhould be twelve Feet, which is a moderate Proportion; and if the Soil be good, it may in Time be well furniſh'd with bearing Wood in every Part, eſpecially that Part planted with *Pears*, notwithſtanding the Branches being train'd horizontally from the Bottom of the Walls.

I would recommend the *White Thorn*, the *Holly*, the *Black Thorn*, and *Crab*, for outward Fences to a good Ground; but I do not approve of the intermixing them.

The *White Thorn* is the beſt *Quick* to plant; becauſe it is the moſt common, and may be clipp'd ſo as to render it the cloſeſt and hardieſt Fence of any other Tree, and being very durable, is preferr'd to all others for outward Fences, or for the Diviſion of Fields, where they are expoſed to Cattle, *&c.*

The *Black Thorn* and *Crab* make very good Fences, and are to be rais'd as the *White Thorn*. But if the Kernels of *Apples* or *Crabs* be ſown, it is beſt to ſow the *Pommace* with them, and they will come up the ſooner, *i. e.* the firſt Year.

If *Crab*-Stocks be planted while young, in the ſame Manner as *Quick*, they make excellent Hedges, and ſo will ſome Sorts of *Plums*.

The *Black Thorn* is not accounted ſo good for *Fences* as the *White Thorn*, becauſe it is apt to run more into the Ground, and is not certain as to the Growing; eſpecially if the Plants are not ſet very young: But then, on the other Hand, the Buſhes are by much the better, and are alſo more laſting than the *White Thorn*, or any other, for dead Hedges, or to mend Gaps: Nor are they ſubject to be cropt by Cattle, as the others are. The richer the Mould is, the better they will proſper; but yet they will grow on the ſame Sort of Soil that the *White Thorn* does.

The *Holly* will make an excellent *Fence*, and is preferable to all the reſt: But it is difficult to be made to grow at the firſt, and is a ſlow Grower; but when once it does grow, it makes amends by its Height, Strength, and Thickneſs.

It is raiſed either of *Sets* or *Berries*, as the *White Thorn* is; and will lie as long in the Ground before it comes up. It delights moſt in ſtrong Grounds, but will grow upon the drieſt Gravel, amongſt Rocks or Stones.

The *Berries* lie till the ſecond Spring before they come up, therefore they ſhould be prepar'd before they are ſown. (For this, ſee the Article *Aquifolium.)* It will be beſt to ſow 'em in the Place where you deſign they ſhould grow; and they ſhould be well weeded both before they come up, and afterwards.

French Furs will alſo do well upon dry ſandy Banks, where few other Plants will grow; but they muſt be kept very clean at the Bottom, and cut thin, and never ſuffer'd to grow too high: Nor ſhould they be cut in dry Weather, nor late in Autumn, nor early in the Spring; the doing either of which, is ſubject to make it die in Patches, which is irrecoverable: Nor will it ever break out again from old Wood, if cut cloſe in, after it has been ſuffer'd long to grow out.

Fences may likewiſe be made of *Elder*: If the Soil be any Thing good, you may ſtick Sticks of *Elder*, or Truncheons ten or twelve Feet long, ſlopewiſe in your Bank, ſo as to make Chequer-work, and they will make a *Fence* for a Garden the quickeſt of any Thing, and be a good Shelter.

Elder planted on a Bank, the Side of which is waſh'd with a River or Stream, will make an extraordinary *Fence*, and will preſerve the Bank from being undermin'd by the Water; becauſe it is continually ſending Suckers from the lower Roots, which is of great Advantage where the Stream waſhes away the Bank.

For middle *Fences* in a Garden, the *Yew* is the more tonſile, governable, and durable Plant.

For ſurrounding Wilderneſs Quarters, *Elm*, *Lime*, *Hornbeam*, and *Beach* are very proper.

FENNEL. *Vide* Fœniculum.

FENNEL-FLOWER. *Vide* Nigella.

FERRUM EQUINUM; [ſo call'd, becauſe the Huſk and Seed are ſo bended as to reſemble a Horſe-ſhoe] Horſe-ſhoe Vetch.

The *Characters* are;

It hath a papilionaceous Flower, which is ſucceeded by a flat Pod, diſtinguiſh'd into Joints reſembling a Half-Moon, or an Horſe-ſhoe, containing Seeds of the ſame Form.

The *Species* are;

1. FERRUM EQUINUM *ſiliqua ſingulari. C. B.* Horſe-ſhoe Vetch, with a ſingle Pod.

2. FERRUM EQUINUM *ſiliqua multiplici. C. B.* Horſe-ſhoe Vetch, with many Pods.

3. Ferrum Equinum *Germanicum, ſiliquis in ſummitate. C. B.* Common Horſe-ſhoe Vetch.

There are ſome other Varieties of this Plant, which are preſerv'd in curious botanic Gardens; but it is rare that any of them are propagated, except for Variety-ſake, they having no great Beauty. The two firſt Species are brought from Abroad; but the third Sort grows wild upon Chalky Hills in divers Parts of *England*.

They may be propagated by ſowing their Seeds in *March* upon a dry Soil, in the Places where they are to remain; for they do not well bear Tranſplanting. The Diſtance they ſhould be allow'd, ought to be at leaſt a Foot from each other; for they ſpread upon the Ground, and will cover that Space: Theſe produce their Flowers in *June*, and perfect their Seeds in *Auguſt* and *September*.

FERULA; [takes its Name of ***Ferendo***, Lat. becauſe the Stalks of this Plant are made uſe of in ſupporting the Branches of Trees; or of ***Feriendo***, becauſe in Old Time, Sticks or Staves were made of them with which School-Maſters uſed to correct their Scholars] Fennel-Giant.

The *Characters* are;

It hath a large ſucculent Milky Root; the Stalks are ſpongy and fill'd with Pith; the Flowers conſiſt of many Leaves, which expand in form of a Roſe, *and grow in an Umbel; each Flower is ſucceeded by two large Oval-ſhap'd flat Seeds, which are very thin, and for the moſt Part turn black when they are ripe; to which may be added, The Leaves are like thoſe of* Fennel.

The *Species* are;

1. Ferula *major, ſeu fœmina Plinii. M. Umb. Pliny's* Female Fennel-Giant.
2. Ferula *galbanifera. Lob. Obſ.* Broad-leav'd Fennel-Giant.
3. Ferula *Tingitana, folio latiſſimo lucido. H. Edin.* Broad-leav'd ſhining Fennel-Giant from *Tangier*.
4. Ferula *Tingitana, folio anguſto lucido. H. L.* Narrow-leav'd Fennel-Giant from *Tangier*.
5. Ferula *tenuiore folio.* Narrow-leav'd Fennel-Giant.
6. Ferula *Africana galbanifera, folio & facie liguſtici. Par. Bat. African* Fennel-Giant, with the Face and Leaf of Lovage.
7. Ferula *Africana galbanifera, folio Myrrhidis. H. Amſt. African* Fennel-Giant with a Seſeli Leaf.

There are ſeveral other Varieties of this Plant, which are preſerv'd in curious botanic Gardens; but as they are of no great Uſe or Beauty, I ſhall paſs them over in this Place.

The firſt of theſe Plants is pretty common in the *Engliſh* Gardens: This, if planted in a good Soil, will grow to the Height of ten or twelve Feet and more, and divides into many Branches, ſo that it ſhould have a great deal of Room: For if it be planted too near to other Plants, it will over-bear and deſtroy them. It dies to the Surface every Autumn, and riſes again the ſucceeding Spring. The Flowers are produc'd in *June*, and the Seeds are ripe in *September*.

Mr. *Ray* ſays, That the People of *Sicily* uſe the Pith of this Plant for Tinder to light their Fires. And if this was practis'd by the Antients, we may eaſily gueſs why the Poets feign'd, that *Prometheus* ſtole Fire from Heaven, and carry'd it to the Earth in an hollow *Ferula*.

The ſecond, ſixth, and ſeventh Sorts are ſuppos'd by ſome Authors to afford *Galbanum*, which, they ſay, is an Exudation from ſome of theſe Plants: But this at preſent is not determin'd; for, if any of the three, the ſeventh is thought to be the beſt.

Theſe Plants are all very hardy; except the ſixth and ſeventh Sorts, which being Natives of a warm Country, do require to be hous'd in Winter. They are all propagated by ſowing their Seeds, which ſhould be done ſoon after they are ripe: But if they are kept until Spring, they ſeldom grow until the following Spring; they muſt be ſown very early, and in a ſhady Situation, otherwiſe the Seeds are ſubject to miſcarry. They delight in a light, moiſt Soil, and muſt be planted at leaſt two Feet and an half aſunder; for they ſpread very far. The Roots will abide many Years, if ſuffer'd to remain undiſturb'd: But if they are tranſplanted when old, they ſeldom thrive well afterwards. Theſe being Plants only for Curioſity, one of each Sort is ſufficient for a Garden; ſince they are of no great Beauty, and require much Room.

The ſixth and ſeventh Sorts ſhould be ſown ſoon after the Seeds are ripe, in a Pot of good Earth, which ſhould be plac'd under a Hot-bed Frame during the Winter-Seaſon, to preſerve it from the Froſts: And when the Plants are come up in the Spring, they ſhould be tranſplanted each into a ſeparate Pot, and may be expos'd in Summer, but in Winter ſhould be defended from Froſts. They muſt be ſhifted into larger Pots, as they increaſe in Bulk. The beſt Seaſon for removing them is in *September*, before they are hous'd. They require frequent Waterings, and to have as much Air as poſſible in mild Weather.

FICOIDEA. [This Plant is ſo called from its Reſemblance to the Ficoides.]

The *Characters* are;

It hath a ſtamineous Flower, whoſe Calyx is divided into five roundiſh Segments: When the Flower is paſt, the Pointal (which is terminated by five Threads) becomes a five-corner'd Fruit; which when ripe opens into five Cells, each of which is filled with ſmall Seeds.

The *Species* are;

1. Ficoidea *procumbens, portulacæ folio. Acad. Reg. Scien.* Trailing Ficoidea, with a purſlain Leaf.
2. Ficoidea *Hiſpanica annua, folio longiore. Vaill.* Annual *Spaniſh* Ficoidea, with a longer Leaf.

Theſe two Plants are propagated by Seeds, which ſhould be ſown on a Hot-bed in the Spring, and when the Plants are come up, they ſhould each be tranſplanted into a Half-penny Pot, and plunged into another moderate Hot-bed, obſerving to let them have Air in proportion to the Warmth of the Seaſon; and they muſt be frequently refreſhed with Water. Toward the End of *June*, they ſhould be inured to bear the open Air by degrees; and in *July* they may be removed into the open Air, and placed amongſt Ficoides's and other hardy ſucculent Plants, where they will flower, and produce ripe Seeds in Autumn.

FICOIDES; [is ſo call'd of *Ficus*, Lat. a *Fig*, becauſe the Fruit of it reſembles a Fig; it is alſo call'd *Aizoides*, of Αιζωον, Gr. i. e. *Ever-living*, becauſe it is always green, and reſembles the *Sedum*] Fig-Marygold.

The *Characters* are;

The whole Plant is ſucculent, and has the Appearance of Houſeleek: *The Leaves grow oppoſite by Pairs; the Cup of the Flower is fleſhy, and divided into five Parts almoſt to the Bottom; the Flower conſiſts of many Leaves, which are divided into ſmall Parts, and do expand in form of a* Marygold; *the Flower is ſucceeded by a ſucculent Fruit, which is divided into five or more Cells, which are full of ſmall Seeds.*

The *Species* are;

1. Ficoides *ſeu ficus Aizoides, Africana major, procumbens triangulari, folio enſiformi. H. L. Boerh. Ind.* Great trailing *African* Ficoides, with a triangular Sword-ſhap'd Leaf.
2. Ficoides *ſeu ficus Aizoides, Africana major, procumbens triangulari, folio fructu maximo eduli. Ficus Hottentottorum, vulgo. H. L.* Great trailing *African* Ficoides, with a triangular Sword-ſhap'd Leaf, and a large eatable Fruit, *commonly call'd*, the *Hottentot* Fig.
3. Ficoides *Afra, caule lignoſo erecta, folio triangulari, enſiformi ſcabro, flore luteo magno. Boerh. Ind.* Upright *African* Ficoides, with a woody Stalk, and a triangular rough Sword-ſhap'd Leaf, and a large yellow Flower.
4. Ficoides *Afra, arboreſcens erecta, folio triangulari, longiſſimo confertim nato purpuraſcente, flore luteo magno. Boerh. Ind.* Upright Tree-like *African* Ficoides, with a long triangular Leaf, and a large yellow Flower, *commonly call'd*, Pink-leav'd Ficoides.
5. Ficoides *Afra, folio triangulari enſiformi, glauco craſſo, ad margines laterales paucis, inermibus ſpinis aculeato, flore in longo pedunculo aureo. Boerh. Ind. African* Ficoides, with a thick triangular Sword-ſhap'd Leaf, arm'd with Spines on the Edges, and a yellow Flower growing upon a long Foot-ſtalk, *commonly call'd*, the Dog's-Chap Ficoides.
6. Ficoides *Afra, folio triangulari enſiformi, craſſo brevi, ad margines laterales multis, majoribuſque ſpinis aculeato, flore aureo ex calyce longiſſimo. Boerh. Ind. African* Ficoides, with a triangular Sword-ſhap'd Leaf, having many large Spines upon their Edges, and a yellow Flower with a long Calyx, *commonly call'd*, the prickly Dog's-Chap Ficoides.
7. Ficoides *Afra, folio triangulari ſecuris forma, flore aureo ſtellato. Boerh. Ind. African* Ficoides, with a triangular Hatchet-ſhap'd Leaf, and a yellow ſtarry Flower, *commonly call'd*, the Stag's-Horn Ficoides. This Sort expands its Flowers only in the Evening.
8. Ficoides *Afra, folio triangulari longo, marginis inferioris ſupremo aculeato, flore violaceo. Boerh. Ind.* African

Ficoides, with a long triangular Leaf, having Spines at the Extremity on the under Part of the Leaves, and a Violet-colour'd Flower, *commonly call'd* the Daiſy-colour'd *Ficoides.*

9. FICOIDES *Africana fruteſcens perfoliata, folio triangulari glauco punctato, cortice lignoſo candido tenui. T. Ac. Reg.* Shrubby African *Ficoides*, with perfoliated, triangular, glaucous Leaves, and a ſlender, white, lignous Bark, *commonly call'd* the leſſer Horn'd *Ficoides.*

10. FICOIDES *Afra, folio triangulari glauco perfoliato breviſſimo, apice ſpinoſo. Boerh. Ind. flore purpureo.* African *Ficoides*, with a triangular, ſhort, perfoliate, glaucous Leaf, having Spines upon the Top, and a Purple Flower, *commonly call'd*, the large Horn'd *Ficoides.*

11. FICOIDES *Africana, aculeis longiſſimis, & foliatis naſcentibus ex alis foliorum. Tourn. Ac. Reg.* African *Ficoides*, with long Spines growing from the Wings of the Leaves.

12. FICOIDES *Afra, folio triangulari enſiformi breviſſimo, flore dilute purpuraſcente filamentoſo. Boerh. Ind.* African *Ficoides*, with a ſhort triangular Sword-ſhap'd Leaf, and a purpliſh-colour'd Flower.

13. FICOIDES, *ſeu ficus aizoides Africana, folio triangulari craſſo glauco brevi, ad tres margines aculeato. Boerh. Ind. flore purpuraſcente.* African *Ficoides*, with a ſhort, thick, glaucous, triangular Leaf, with three Spines on the Edges, and a purpliſh Flower.

14. FICOIDES *Afra folio triangulari, glauco breviſſimo craſſiſſimo, margine non ſpinoſo. Boerh. Ind. flore purpuraſcente.* African *Ficoides*, with a very ſhort, thick, triangular, glaucous Leaf, without Spines on the Edge, and a purpliſh-colour'd Flower.

15. FICOIDES *Afra, folio triangulari glauco breviſſimo craſſiſſimo, margine ſpinoſo, caule & flore purpureo.* African *Ficoides*, with a very ſhort, thick, glaucous Leaf, with Spines upon the Edge, and a purple Stalk and Flower.

16. FICOIDES *Afra fruticans, folio triangulari ſcabro tenui, flore violaceo. Boerh. Ind.* African ſhrubby *Ficoides*, with a triangular, rough, narrow Leaf, and a Violet-colour'd Flower.

17. FICOIDES *Afra, folio triangulari viridi longo aſpero, flore violaceo. Boerh. Ind.* African *Ficoides*, with a long green, rough, triangular Leaf, and a Violet-colour'd Flower.

18. FICOIDES *Afra, folio triangulari craſſo ſucculentiſſimo. Boerh. Ind. flore aureo.* African *Ficoides*, with a thick, ſucculent, triangular Leaf, and a yellow Flower.

19. FICOIDES *Afra, folio triangulari longo ſucculento, caulibus rubris. Boerh. Ind. flore luteo.* African *Ficoides*, with a long, ſucculent, triangular Leaf, red Stalks, and a yellow Flower.

20. FICOIDES, *ſeu ficus aizoides Africana erecta arboreſcens lignoſa, flore radiato, primo purpureo, dein argenteo, interdiu clauſo, noctu aperto. Boerh. Ind.* African upright Tree-like *Ficoides*, with a radiated Flower, firſt of a Purple, and afterwards a Silver Colour, opening in the Night, but clos'd in the Day.

21. FICOIDES *Afra arboreſcens, folio tereti, flore candido, noctu aperto, interdiu clauſo. Boerh. Ind.* African Tree-like *Ficoides*, with a taper Leaf and white Flower, opening in the Night, but ſhut in the Day.

22. FICOIDES *Afra arboreſcens, folio tereti glauco, apice purpureo, craſſo. Boerh. Ind. flore violaceo.* African Tree-like *Ficoides*, with a thick, taper, glaucous Leaf, tipt with Purple, and a Violet-colour'd Flower.

23. FICOIDES *Afra, folio tereti, procumbens, flore coccineo. H. L.* African trailing *Ficoides*, with a taper Leaf, and a ſcarlet Flower.

24. FICOIDES, *ſeu ficus aizoides Africana, folio longo tenui, flore aurantio. Boerh. Ind.* African *Ficoides*, with a long narrow Leaf, and an Orange-coloured Flower.

25. FICOIDES *Afra fruticoſa, caule lanuginoſo, folio tereti parvo brevi guttato, flore violaceo. Ind.* African ſhrubby *Ficoides*, with a woolly Stalk, a ſmall, taper, ſpotted Leaf, and Violet-colour'd Flower.

26. FICOIDES *Afra fruticoſa, caule lanugine argentea ornato, folio tereti parvo longo, guttulis argenteis quaſi ſcabro, flore violaceo. Boerh. Ind.* African ſhrubby *Ficoides*, with a white woolly Stalk, a long, taper, Silver-ſpotted, rough Leaf, and a Violet-coloured Flower.

27. FICOIDES, *ſeu ficus aizoides, Africana, folio variegato aſpero, ad apicem ſtella ſpinoſa ornato, flore violaceo. Boerh. Ind.* African *Ficoides*, with a rough Party-coloured Leaf, tip'd with a Star of Spines, and a Violet-coloured Flower.

28. FICOIDES *Afra lignoſa, folio tereti aſpero, ad apicem ſtella ſpinoſa, flore violaceo.* African woody *Ficoides*, with a taper rough Leaf, tip'd with a Star of Spines, and a Violet-coloured Flower.

29. FICOIDES, *ſeu ficus aizoides Africana erecta, tereti folio, floribus albis umbellatis. Par. Bat.* Upright African *Ficoides*, with a taper Leaf, and white Flowers, growing in an Umbel.

30. FICOIDES *folio tereti, caule viridi ramoſiſſimo, flore parvo candido.* African *Ficoides*, with a taper Leaf, a green branching Stalk, and a ſmall white Flower.

31. FICOIDES *Africana, folio tereti longo tenui guttulis argenteis, flore parvo purpuraſcente, radice craſſiſſima.* African *Ficoides*, with a long taper Leaf ſpotted with white, a ſmall purpliſh Flower, and a thick knobbed Root.

32. FICOIDES *Africana humilis, folio tereti craſſo ſucculento, flore ſulphureo, pedunculo brevi.* Dwarf African *Ficoides*, with a thick taper ſucculent Leaf, and a Sulphur-colour'd Flower, with a ſhort Foot-ſtalk, *commonly call'd*, the Quince-leav'd *Ficoides.*

33. FICOIDES *Africana, procumbens, folio tereti longo, flore violaceo.* African trailing *Ficoides*, with a long taper Leaf, and Violet-colour'd Flower.

34. FICOIDES *Afra acaulos, foliis latiſſimis craſſis lucidis conjugatis, flore aureo ampliſſimo. Tourn. Ac. Reg.* African *Ficoides* without Stalks, and with broad thick ſhining Leaves growing by Pairs, and a large yellow Flower.

35. FICOIDES *Afra acaulos, foliis latiſſimis craſſiſſimis lucidis conjugatis, flore aureo amplo, ſine pedunculo. Boerh. Ind.* African *Ficoides* without Stalks, and broad thick ſhining Leaves growing by Pairs, and a large yellow Flower without Foot-ſtalks.

36. FICOIDES *Afra foliis latiſſimis craſſis lucidis cruciatim poſitis. Boerh. Ind.* African *Ficoides*, with broad thick Leaves, growing croſs-wiſe.

37. FICOIDES *Africana procumbens, foliis latis craſſis cruciatim poſitis, flore albo, medio purpuraſcente.* African trailing *Ficoides*, with broad thick Leaves growing croſs-wiſe, and a white Flower with a purpliſh Middle.

38. FICOIDES *Africana procumbens, foliis latis conjugatis, flore candido.* African trailing *Ficoides*, with broad Leaves growing by Pairs, and a white Flower.

39. FICOIDES *Africana, folio plantaginis undulato, micis argenteis adſperſo. Tourn. Ac. Reg.* African *Ficoides*, with a wav'd Plantain Leaf cover'd with Silver Drops, *commonly call'd* the Diamond *Ficoides.*

40. FICOIDES *Hiſpanica annua, Lychnidis folio. Jeſſ.* Spaniſh annual *Ficoides* with a Campion Leaf.

41. FICOIDES *Canarienſis procumbens, portulacæ folio. Jeſſ.* Canary trailing *Ficoides*, with a Purſlain Leaf.

42. FICOIDES *Neapolitana, flore candido. H. L. Neapolitan* Ficoides, with a white Flower, commonly called *Egyptian Kali.*

43. FICOIDES *folio viridi triangulari tenuiore, flore luteo in extremitate rubente. Schw. Cat.* Fig-marygold, with a narrow green triangular Leaf, and a yellow Flower with red Tops.

44. FICOIDES *ſeu Ficus aizoides Africana, folio viridi, mici quaſi glaciatis ſplendentibus ornato, flore coccineo. Boerh. Ind* 1. *African* Ficoides with green Leaves, beſet with ſhining glaſs-like Drops, and a ſcarlet Flower.

45. FICOIDES *Africana, folio calamiforme, flore flaveſcente. African* Ficoides, with a quill-ſhaped Leaf, and a yellowiſh Flower.

46. FICOIDES *Africana procumbens, foliis ſempervivi congeſtis, flore candido. African* trailing Ficoides, with houſleek Leaves, and a white Flower.

47. FICOIDES *Africana procumbens, foliis ſempervivi expanſis, flore flaveſcente. African* trailing Ficoides, with an expanded houſleek Leaf, and a yellowiſh Flower.

The firſt thirty eight Sorts are all abiding Plants, and ma be propagated by planting Cuttings of any of the Kinds, eithe in *June* or *July*; obſerving to let them lie two or three Days or more, in a dry Place after they are cut off from the Plants before they are planted, according as they are more or leſs ſucculent: The Sorts that are woody, need only to be planted upon an old Hot-bed, ſhading and watering them according t the Heat and Drought of the Seaſon; but the ſucculent Kind ſhould be planted in Pots fill'd with light ſandy freſh Earth and ſhould be plung'd into a moderate Hot-bed, to facilitat their taking Root; and theſe ſhould have but little Moiſture eſpecially before they are rooted, for much Wet will certainly deſtroy them.

When the Plants have taken Root, which will be in about Month's Time, you ſhould expoſe them to the open Air gradually: Thoſe which were planted in Pots, may be draw out of the Hot-bed at firſt, and remov'd into a Glaſs Stove where they may be inur'd, by Degrees, to bear the Weather

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But thoſe planted upon the old Hot-bed may remain unremov'd until *Auguſt*, when they ſhould be carefully taken up, and planted into Pots fill'd with light freſh ſandy Earth, and ſet in a Situation where they may enjoy the Morning Sun only, until they have taken freſh Root, when they may be expos'd to the open Air until the latter End of *September*, or the Beginning of *October*; at which time they muſt be remov'd into the Conſervatory, which ſhould be a light airy Glaſs-caſe, ſo built and contriv'd as to admit of a large Portion of free Air whenever the Weather is mild; but in hard froſty Weather, the Cold may be excluded. The Structure of this will be defin'd under the Article *Stove*, to which I ſhall refer the Reader.

During the Winter-ſeaſon you muſt carefully obſerve to open the Glaſſes every Day when the Weather is mild; for if you keep them cloſely ſhut up, the Plants will grow ſickly, and drop their Leaves. You muſt alſo obſerve to pick off all decay'd Leaves as often as they appear, which, if ſuffer'd to remain upon the Plants, would communicate a Diſtemper to them, and be very apt to rot them. You ſhould alſo give them frequent Waterings in mild Weather, eſpecially ſuch of 'em as are woody: but do not give 'em too much at once; for when the Earth, in Pots which are placed in the Houſe, is too much ſaturated with Moiſture, it will not dry again during the Winter-ſeaſon, for want of the Benefit of the Sun and Air, which are the two great Inſtruments in diſſipating Humidity; and this is often the entire Deſtruction of the Plant: whilſt on the other hand, ſome People, out of too great Care to theſe Plants, let them ſuffer for want of Water and free Air in Winter, under a Notion of their being ſo very tender as to be impatient of the leaſt Cold or Moiſture: whereas in fact, they are very hardy, and are ſeldom deſtroy'd with leſs Cold than hard Froſt; for I have had ſome Sorts endure the open Air in a warm Border for two or three Winters which prov'd mild; and ſuch of theſe Plants as had thus endured the Cold, produced a much greater Quantity of Flowers, than thoſe which had been preſerv'd in a Stove with great Care: and it hath been chiefly owing to our managing them tenderly in Winter, that we annually loſt ſo many of them; for ſince I have treated 'em in a different Manner, I have rarely loſt a ſingle Plant.

The 39th, 40th, and 41ſt Sorts are Annuals, and require to be ſown every Year. The 39th Sort is a very beautiful Plant, being all over ſet very thick with tranſparent Cryſtal-like Drops, as if cover'd with ſmall Iſicles; from whence it is, by ſome, call'd the *Froſty Ficoides*. The Seeds of this Plant ſhould be ſown very early in the Spring upon a good Hot-bed; and when the Plants are come up, they muſt be planted into ſmall Pots fill'd with freſh light ſandy Earth, and plung'd into another Hot-bed; and as that Hot-bed declines its Heat, they ſhould be remov'd into a third Hot-bed, which will bring them forward towards Flowering; and in *July* theſe Plants may be expoſed to the open Air by Degrees, by which Time their Flowers will appear, and be hereby render'd ſtrong, and capable to produce good Seeds: But you ſhould always confine in ſmall Pots ſuch Plants as you deſign for Seed, never ſuffering them to root thtough the Hole in the Bottom of the Pot into the Ground, which would occaſion their growing to be much larger and ſtronger Plants: But then their Strength would be diverted from the Seed-veſſels to nouriſh and produce ſtrong Shoots; ſo that it ſeldom happens that the ſtrongeſt Plants produce good Seeds. But if you would have ſome of theſe Plants of a large Growth, you ſhould ſhake them out of the Pots into an old Hot-bed of Tanners Bark, where their Roots and Branches will extend to a conſiderable Length. I have had one of theſe Plants in ſuch a Bed, which has ſpread above a Yard ſquare; and the Leaves and Branches were of a prodigious Size.

The Flowers of this Plant are of no great Beauty; but the Oddneſs of the whole Plant renders it worthy of a Place in every curious Garden.

The fortieth Sort is a Plant of little Beauty; and is ſeldom preſerv'd but in curious Botanick Gardens, for Variety.

The 1ſt, 2d, and 21ſt Sorts I have never yet ſeen flower, altho' there are many large Plants of each Kind in divers Gardens in *England*. I had one Plant of the 21ſt Sort, which had been planted into an open Border againſt a Wall, that was ſet very thick with Buds in almoſt every Part of the Plant, late in the Autumn 1726; but a ſudden, ſharp Froſt happening, deſtroy'd the whole Plant.

The 3d, 4th, 16th, 17th, 22d, 23d, 24th, and 25th Sorts do branch out and grow ſhrubby, and produce large Quantities of very beautiful Flowers; which being expanded in the Heat of the Day, afford a very agreeable Proſpect, and are well worth cultivating in every Collection of Plants, for their Beauty; as are all the Dwarf ſucculent Sorts, for their Oddneſs: and ſome of them produce beautiful Flowers, tho' not in ſuch Plenty as the former.

Theſe are, ſome or other of their Sorts, continually in Flower; but their chief Seaſon of flowering is from *April* to *September*; and many of them produce good Seeds: But as their Cuttings ſeldom fail to take Root, ſo they are rarely propagated by Seeds in *England*.

The 40th Sort is the *Kali*, the Aſhes of which is brought into *England*, and is an Ingredient in making clear Glaſs, as alſo in making the beſt hard Soap.

The forty ſecond Kind is an annual Plant, which ſhould be ſown on a Hot-bed early in the Spring; and when the Plants are come up, they ſhould be tranſplanted each into a ſeparate ſmall Pot, filled with light ſandy Earth, and plunged into a moderate Hot-bed of Tanners-bark; being careful to admit a large Share of Air to them in warm Weather, otherwiſe they will draw up weak. In *July* theſe Plants ſhould be inured to bear the open Air by degrees, when they ſhould be taken out of the Hot-bed, and placed in a warm Situation, where they will produce their Flowers; and if the Autumn proves favourable, will perfect their Seeds. This is the *Egyptian Kali*, or Glaſs-wort, whoſe Aſhes is ſo uſeful in making of Glaſs and hard Soap.

The other Sorts are propagated by Cuttings, as above directed.

FICUS; the Fig-tree.

The *Characters* are;

The Flowers, which are always incloſed in the Middle of the Fruit, conſiſt of one Leaf, and are Male and Female in the ſame Fruit: The Male Flowers are ſituated toward the Crown of the Fruit; and the Female, which grow near the Stalk, are ſucceeded by ſmall hard Seeds: The intire Fruit is, for the moſt part, turbinated and globular, or of an oval Shape, is fleſhy, and of a ſweet Taſte.

The *Species* are;

1. Ficus *ſativa, fructu violaceo longo, intus rubente. Tourn.* The long blue Fig.
2. Ficus *ſativa, fructu oblongo albo mellifluo. Tourn.* The long white Fig.
3. Ficus *ſativa, fructu præcoci albidi fugaci. Tourn.* The early white Fig, *by ſome falſly call'd the Marſeilles* Fig.
4. Ficus *ſativa, fructu globoſo albo mellifluo. Tourn.* The great round white Fig.
5. Ficus *ſativa, fructu parvo fuſco, intus rubente. Tourn.* The ſmall brown Fig.
6. Ficus *ſativa, fructu longo majori nigro, intus purpuraſcente. Tourn.* The great long black Fig.
7. Ficus *ſativa, fructu globoſo fuſco, intus rubente.* The *Brunſwick* Fig.
8. Ficus *ſativa, fructu præcoci ſubrotundo albido ſtriato, intus roſeo. Tourn.* The roundiſh white-ſtriped Fig.
9. Ficus *ſativa, fructu viridi, longo pediculo inſidente. Tourn.* The green Fig.
10. Ficus *ſativa, fructu parvo ſerotino albido, intus roſeo, mellifluo, cute lacera. Tourn.* The *Marſeilles* Fig.
11. Ficus *ſativa, fructu flaveſcente, intus ſuave rubente. Tourn.* The Yellow Fig.
12. Ficus *ſativa, fructu majori violaceo oblongo, cute lacera. Tourn.* Great long Violet Fig.
13. Ficus *ſativa, fructu magno rotundo depreſſo ſpadiceo, circa umbilicum dehiſcente, intus ſuave rubente. Garid.* The Roſe Fig.
14. Ficus *ſativa, fructu magno rotundo albo mellifluo, foliis magis diſſectis.* The great White Turkey Fig, with deeply-cut Leaves.
15. Ficus *ſativa, fructu longo majori nigro, intus albo ſerotino. Tourn.* The great Black Fig, with a white Pulp.
16. Ficus *ſylveſtris Cretica, folio non diviſo, leviter crenato. T. Cor.* The Candia wild Fig, with undivided Leaves, *falſly call'd the* Sycamore-tree.
17. Ficus *Americana, latiori folio venoſo, ex Curacao. Pluk. Alm.* The Broad-leav'd *American* Fig.
18. Ficus *Malabarenſis, folio cuſpidato, fructu rotundo parvo gemino. D. Syen. Pluk. Alm.* The *Malabar* Fig, or *Indian* God Tree.

The firſt fifteen Sorts are cultivated in curious Gardens for their Fruits, which are eſteem'd, by all delicate Palates, amongſt the richeſt Sorts of Fruits; tho' few vulgar Taſtes care for 'em, ſo that they are often planted in Places expos'd, where few other Fruits would eſcape being ſtolen. In *England* we have but few Sorts of this Fruit, compar'd with the vaſt Varieties with which the Southern Parts of *France* and *Italy* abound: Tho' it is to be hop'd that in a few Years we ſhall be ſupply'd with moſt of their curious Sorts; eſpecially ſince we ſee yearly, that great Numbers of People come to reliſh them. But one great Diſcouragement to the Propagation of theſe Trees, was the Unſkilfulneſs of the *Engliſh* Gardeners in their Culture and Management. I ſhall therefore begin with an Account of the Planting, Increaſing, and Pruning of theſe Trees; which I ſhall treat as clear as poſſibly I can, and only mention the Methods uſed, with which I have had great Succeſs.

The common Method of propagating theſe Trees is from Suckers which come up from the Roots of old Trees. But this is what I would never adviſe; for theſe Plants, when grown large, are much more ſubject to produce Suckers again, than thoſe raiſed by Layers, which are by far the beſt rooted and moſt promiſing Plants: Therefore I would always make choice of the latter Method, eſpecially ſince they are very eaſy to be propagated that way; for if you lay down the Branches in *February*, they will be fit to remove by the ſucceeding *February*, which is the beſt Time to tranſplant them; becauſe thoſe planted in Autumn are very apt to be deſtroy'd, eſpecially if the Winter ſhould prove hard, or the Soil be moiſt into which they are planted.

The beſt Soil for *Figs* in *England*, is ſuch as hath a gravelly, chalky, or ſtony Bottom, with a light dry Surface: for altho' a ſtrong Soil will produce vigorous Branches and large Leaves; yet the Fruit will not be in ſuch Plenty, nor ſo well taſted, as thoſe which grow on a poor and dry Soil.

Fig-trees ſhould always be planted in a free open Situation, not under the Drip of Trees, nor ſhaded by Buildings, *&c.* But there are very few Sorts that will ripen well with us in *England*, moſt of them requiring a good South, South-Eaſt, or South-Weſt Wall: for although they will grow very well againſt a North or Eaſt-aſpected Wall; yet the Fruit will be very poor, (if any are produc'd) ill-taſted, and late ripe.

Thoſe Trees which are planted for Standards in the open Air will require very little Culture or Management: The chief Thing to be obſerv'd, is, to cut out all dead or decaying Branches, as alſo all ſuch as croſs each other, that the Middle of the Tree may not be too much crowded with Branches. The beſt Seaſon for this Work is in *October*, when the Leaves begin to decay; at which time you ſhould alſo diveſt the Branches of all the latter Crop of *Figs*, which, by being ſuffer'd to remain upon the Tree, will, with the firſt Froſt, rot and decay, and thereby infect the tender Branches: For by ſeveral Experiments made by the Reverend and Learned Dr. *Hales* and myſelf, we found that all thoſe Branches which were diveſted of the *Figs* at that Seaſon, remain'd perfectly ſound, and produc'd Fruit in plenty the ſucceeding Year; whereas the other Branches of the ſame Tree whereon the Fruit were left, were almoſt totally deſtroy'd in the Winter. The Reaſon for my making choice of this Seaſon, is becauſe at that Time they are not ſo ſubject to bleed; and the Wounds then made, if cut cloſe and ſmooth, will heal over in a ſhort Time: but it muſt be done early in the Autumn, before the froſty Weather comes on, which would be very apt to enter the Places where ſuch Wounds were made, and prove very hurtful to the Tree.

But I ſhall next treat of the Management neceſſary for *Wall Fig-trees*, which is, perhaps, as little underſtood as any Part of Gardening, not only in *England*, but alſo in *France*, *Holland*, and moſt other Countries. In *France*, great Numbers of theſe Trees are planted in Tubs or Caſes, and are every Winter preſerv'd in Green-houſes, with Oranges, Myrtles, *&c.* This indeed may be a very good Method to obtain early *Figs*, provided they are rightly manag'd; which, I think, can hardly be done, if intermix'd with other Kinds of Trees, whereby their Branches are apt to mould and ſuffer, for want of a ſufficient Quantity of free Air, which theſe Trees ſhould always have in open mild Weather. Beſides, the Fruit will be apt to come out very early in the Spring, eſpecially if the Houſe is kept warm, whereby they will be liable to many Accidents when they are expoſed to the open Air. So that, upon the whole, I would never adviſe this Practice in *England*, unleſs in ſuch Places where they have an open airy Glaſs-caſe, in which there are no other Sorts of Plants.

Therefore the ſureſt Method is, to plant 'em againſt warm Walls, and upon a dry warm Soil. The Diſtance theſe Trees ſhould be planted ought never to be leſs than twenty Feet, ſuppoſing the Wall to be fourteen or more Feet in Height; for when they are planted too near, the Branches are train'd upright, and thereby cover the Walls in a few Years with old Wood, ſo that there are no younger Branches to produce Fruit but what are ſituated at the extreme Parts of the Tree, or ſtand forward from the Wall, which is a very great Fault, as ſhall be hereafter demonſtrated. In the Middle, between the *Fig-trees*, may be planted a Vine, which may be preſerv'd to bear Fruit until the *Fig-trees* do cover the Wall; at which Time they ſhould be intirely taken away; for they ſhould by no means be ſuffer'd to intermix their Shoots amongſt the *Figs*, which would prevent the Ingreſs of the Air, which is abſolutely neceſſary to give the Fruit a fine racy Flavour.

In the Summer, when the *Fig-trees* begin to ſhoot, you ſhould train the Branches horizontally to the Walls, (as is directed for other Fruit-trees) for if they are ſuffer'd to grow all the Summer without Management, their Shoots will be too ſtubborn to be drawn regularly to the Wall: Nor ſhould you ſuffer any foreright Shoots to be produc'd upon your young Trees; but, on the contrary, as faſt as they appear, you ſhould rub off their Buds. At *Michaelmas*, (as I ſaid before) is the beſt Seaſon for pruning and nailing theſe Trees, not only for the Reaſons before aſſign'd, but alſo becauſe their Shoots being nail'd cloſe to the Wall before the ſevere Froſts come on, will be leſs liable to be injur'd thereby.

The main Things to be obſerv'd in the pruning of older Trees, are, 1ſt, Always to take care to have a Supply of young Branches in every Part of the Tree, for it is thoſe only which produce Fruit: 2dly, Never to ſhorten any of the Shoots at the Autumn Pruning, which would intirely deprive you of Fruit, ſince it is chiefly upon the Wood of the laſt two Years that it is produc'd: 3dly, Always obſerve to nail your young Fruit-branches cloſe to the Wall, whereby they will not be deſtroy'd by Froſt, and the Fruit will be forwarded at leaſt a Fortnight or three Weeks in the Spring, which is of great Conſequence to us in *England*: 4thly, Never lay in your old Branches too thick, which is a very common Fault amongſt Gardeners; for as the Shoots are vigorous, and the Leaves of theſe Trees very large, ſo their Diſtance ought never to be leſs than ten or twelve Inches: So that as young Branches increaſe, the old ones ſhould be intirely cut out; which may be done in the Autumn with as much Safety as to any other Tree: 5thly, In order to produce young Branches, you may ſtop the leading Bud of young vigorous Shoots in *April*, or the Beginning of *May*, which will occaſion the Side-buds to break out into lateral Branches, whereby the Wall may be kept conſtantly furniſh'd with young Wood; but I would by no means adviſe the doing of this too often, nor ſhould it be done later in the Year; for multiplying Branches too much, is of as bad Conſequence as having too few, for it will occaſion their being weak and unfruitful; and if it is done in *June* or *July*, it will only occaſion the Buds to produce *Figs* in great Plenty, which will never come to good ſo late in the Year, and will greatly weaken the tender Fruit-branches, and prevent their bearing the next Spring.

If the Winter ſhould prove extreme ſharp, it will be neceſſary to cover your choiceſt Sorts of *Fig-trees*, either with Straw, Reeds, Peaſe Haulm, or ſome other ſuch like Covering, which will preſerve the tender Fruit-branches from being injur'd; for want of which Care, in the Winter *Anno* 1728, the *Fig-trees* ſuffer'd very much in moſt Parts of *England*: By this Method your Fruit will be greatly forwarded, but you ſhould be very careful not to remove your Covering too early in the Spring, nor to do it all at once, but open them firſt in the Day-time, and cover them again at Night, and ſo by Degrees inure them to the open Air. In ſome Places where this Method has been carefully obſerv'd, I have ſeen ripe *Figs* almoſt a Month ſooner than where they were not cover'd, and the Fruit in much greater Plenty.

Theſe Trees do very well againſt the warm Side of a Houſe, or other large Building, where they have a great Compaſs of Walling; and the higher theſe Trees are train'd from the Ground, the better the Fruit is taſted, eſpecially, if it b againſt a Chimney, where it may enjoy ſome Share of Warmt thro' the Bricks: And *Figs*, tho' the moſt delicate of Fruits being very little eſteem'd by vulgar Palates, are leſs liable to b ſtolen by Servants or common People than ſome of the mor common Sorts of Fruits.

I am aware, that what I have here advanc'd, in relation t the pruning and dreſſing of *Fig-trees*, will be condemn'd b great Numbers of People, who will not give themſelves Tim to conſider and examine the Reaſons upon which I have founded this Practice, nor to make one ſingle Experiment to try t Truth of it, as being vaſtly different from the general Practic of moſt Gardeners, who always imagine, that *Fig-trees* ſhou never have much pruning, or at leaſt, that they ſhould alwa be ſuffer'd to grow from the Wall to ſome Diſtance: That b this Management, I have often ſeen great Quantities of Frui I cannot deny, but then this has been only in mild Winter for it is very certain, that in ſharp Froſts few of theſe outſi Shoots eſcape being greatly injured; whereas it rarely happe that thoſe Shoots which are cloſely nail'd to the Wall at *M*

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chaelmas, do ſuffer the leaſt Damage, and the Fruits are always produc'd a Fortnight ſooner upon theſe Branches than they are upon thoſe which grow from the Wall.

The Seaſon alſo for pruning, which I have laid down, being vaſtly different from the common Practice and Opinion of moſt Gardeners, will alſo be objected againſt; but this I am ſure, if any one will but make Trial of it, I doubt not but his Experience will confirm what I have here advanc'd; for as one great Injury to this Tree proceeds from the too great Effuſion of Sap at the wounded Parts, ſo by this Autumn-pruning this is prevented; for at that Seaſon, all the Parts of *European* Trees which caſt their Leaves, are leſs replete with Moiſture than at any other Time of the Year; for by the long Continuance of the Summer's Heat, the Juices of Plants having been exhauſted in the Nouriſhment and Augmentation of Wood, Leaves, Fruits, *&c.* and alſo great Quantities being evaporated by Perſpiration, the Root not being able to ſend up a Supply equivalent to this great Conſumption, the Branches muſt contain a much leſs Quantity of Sap than in the Spring, when it has had ſeveral Months Supply from the Root, which tho' but ſmall in proportion to what is ſent up when the Heat is greater, yet there being little or no Waſte, either by Perſpiration or Augmentation, there muſt be a greater Quantity contain'd in the Branches; which alſo is eaſily to be obſerv'd, by breaking or cutting off a vigorous Branch of a *Fig-tree* at both Seaſons (the Sap being milky may be readily diſcern'd) when that cut in Autumn ſhall be found to ſtop its bleeding in one Day's Time, or leſs; whereas that cut in the Spring will often flow a Week or more, and the Wound will be proportionably longer before it heals.

Tho' the Liſt of *Figs*, which I have here added, may be greater in Number of Sorts than many People at preſent know, yet it is very ſmall when compared with the great Variety of Sorts which are known in the more Southern Countries of *Europe*; from whence I am in Hopes, in a ſhort Time, I ſhall be ſupply'd with many more Kinds than are here mentioned: Nor do I think there is any Sort of Fruit deſerves more our Care to cultivate and improve than this; and yet it rarely happens that we meet with more than four or five Sorts in moſt of our curious Fruit-Gardens, when at the ſame time, perhaps, the Walls are fill'd with great Collections of *Pears* and *Plums*, few of which either deſerve the Place or Care taken in their pruning, *&c.* or at leaſt would thrive as well if planted in Eſpaliers or Standards.

Fig-trees do very well in Eſpaliers, eſpecially the ſmall White, the early Blue, and the *Brunſwick Figs*; but theſe are liable to Injury from ſharp Froſts in Winter, being more expoſed than thoſe planted againſt Walls: However, if we ſhould be at the Expence of covering them in hard Winters, there is no doubt but they would ſucceed very well.

The ſixteenth Sort is by many People ſuppoſed to be the true *Sycamore-tree* mention'd in Scripture, which is a Sort of *Fig* which produces its Fruit out of the old Wood of the Tree, and is very ſmall; but as this Tree has not produced any Fruit with us, ſo I cannot determine whether it be the right Kind, or not.

It may not be improper in this Place to mention the great Pains which the Inhabitants of the *Levant* are at in the Culture of their *Figs*; and without which (it is generally ſaid by all the Travellers who have wrote on this Subject, as alſo by *Pliny*, and other old Naturaliſts) that their Fruit would fall off, and be good for nothing. I ſhall here ſet it down, as I find it in the *Travels* of Monſieur *Tournefort*, chief Botaniſt to the late King of *France*.

“ *Pliny* (ſays he) obſerv'd, that in *Zia* they uſed to dreſs their *Fig-trees* with much Care; they ſtill continue to do ſo. To underſtand aright this Huſbandry of *Figs*, (call'd in Latin *Caprificatio*) we are to obſerve, that in moſt of the Iſlands of the *Archipelago*, they have two Sorts of *Fig-trees* to manage: The firſt is call'd *Ornos*, from the old Greek *Erinos*, a wild *Fig-tree*: or *Caprificus* in Latin; the ſecond is the Domeſtick or Garden *Fig-tree*: The wild Sort bears three Kinds of Fruit, *Fornites*, *Cratitires*, and *Orni*, of abſolute Neceſſity towards ripening thoſe of the Garden *Fig*.

“ The *Fornites* appear in *Auguſt*, and continue to *November* without ripening; in theſe breed ſmall Worms, which turn to a Sort of Gnats, no where to be ſeen but about theſe Trees: In *October* and *November* theſe Gnats of themſelves make a Puncture into the ſecond Fruit, which is call'd *Cratitires*, and don't ſhew themſelves till towards the End of *September*; and the *Fornites* gradually fall away after the Gnats are gone: The *Cratitires*, on the contrary, remain on the Tree till *May*, and incloſe the Eggs depoſited by the *Fornites* when they prick'd them. In *May* the third Sort of Fruit begins to put forth from the ſame wild *Fig-trees* which produced the other two; this is much bigger, and is call'd *Orni*: When it grows to a certain Size, and its Bud begins to open, it is prick'd in that Part by the Gnats of the *Cratitires*, which are ſtrong enough to go from one Fruit to the other to diſcharge their Eggs.

“ It ſometimes happens, that the Gnats of the *Cratitires* are ſlow to come forth in certain Parts, while the *Orni* in thoſe very Parts are diſpos'd to receive them: In which Caſe the Huſbandman is obliged to look for the *Cratitires* in another Part, and fix them at the End of the Branches of thoſe *Fig-trees*, whoſe *Orni* are in fit Diſpoſition to be prick'd by the Gnats: If they miſs the Opportunity, the *Orni* falls, and the Gnats of the *Cratitires* fly away. None but thoſe who are well acquainted with this Sort of Culture, know the critical Minutes of doing this; and in order to it, their Eye is perpetually fix'd on the Bud of the *Fig*; for that Part not only indicates the Time that the Prickers are to iſſue forth, but alſo when the *Fig* is to be ſucceſsfully prick'd: If the Bud be too hard, and too compact, the Gnat can't lay its Eggs, and the *Fig* drops when this Bud is too open.

“ Theſe three Sorts of Fruit are not good to eat; their Office is to help ripen the Fruit of the Garden *Fig-trees*, in manner following: During the Months of *June* and *July*, the Peaſants take the *Orni* at a Time that their Gnats are ready to break out, and carry them to the Garden *Fig-trees*: If they don't nick the Moment, the *Orni* falls, and the Fruit of the Domeſtick or Garden *Fig-tree* not ripening, will, in a very little Time, fall in like manner. The Peaſants are ſo well acquainted with theſe precious Moments, that every Morning, in making their Inſpection, they only transfer to their Garden *Fig-trees* ſuch *Orni* as are well-condition'd, otherwiſe they loſe their Crop. 'Tis true, they have one Remedy, tho' an indifferent one; which is, to ſtrew over the Garden *Fig-trees* the *Aſcolimbro's*, a very common Plant there, and in whoſe Fruit there are a Sort of Gnats proper for pricking: Perhaps they are the Gnats of the *Orni*, which are us'd to hover about and plunder the Flowers of this Plant.

“ To ſum up all in a Word: The Peaſants ſo well order the *Orni*, that their Gnats cauſe the Fruit of the Garden *Fig-tree* to ripen in the Compaſs of forty Days. Theſe *Figs* are very good green: When they would dry 'em, they lay 'em in the Sun for ſome Time, then put 'em into an Oven to keep 'em the reſt of the Year. Barley-bread and dry'd Figs are the principal Subſiſtence of the Boors and Monks of the *Archipelago*. But theſe *Figs* are very far from being ſo good as thoſe dry'd in *Provence*, *Italy*, and *Spain*; the Heat of the Oven deſtroys all their Delicacy and good Taſte: But then, on the other hand, this Heat kills the Eggs which the Prickers of the *Orni* diſcharged therein; which Eggs would infallibly produce ſmall Worms that would prejudice theſe Fruits.

“ What an Expence of Time and Pains is here for a *Fig*, and that but an indifferent one at laſt! I could not ſufficiently admire the Patience of the *Greeks*, buſied above two Months in carrying theſe Prickers from one Tree to another. I was ſoon told the Reaſon; One of their *Fig-trees* uſually produces between two and three hundred Pounds of *Figs*, and ours in *Provence* ſeldom above twenty-five.

“ The Prickers contribute, perhaps, to the Maturity of the Fruit of the Garden *Fig-tree*, by cauſing to extravaſate the nutritious Juice, whoſe Veſſels they tear aſunder in depoſiting their Eggs: Perhaps too, beſides their Eggs, they leave behind them ſome Sort of Liquor proper to ferment gently with the Milk of the *Fig*, and to make their Fleſh tender. Our *Figs* in *Provence*, and even at *Paris*, ripen much ſooner for having their Buds prick'd with a Straw dipt in Olive-oil. *Plums* and *Pears* prick'd by ſome Inſect, do likewiſe ripen much the faſter for it; and the Fleſh round ſuch Puncture is better-taſted than the reſt. It is not to be diſputed but that conſiderable Change happens to the Contexture of Fruits ſo prick'd; juſt the ſame as to the Parts of Animals pierc'd with any ſharp Inſtrument.

“ 'Tis ſcarce poſſible well to underſtand the ancient Authors who have treated of Caprification, (or huſbanding and dreſſing the wild *Fig-tree*) if one is not well appriz'd of the Circumſtances; the Particulars whereof were confirmed to us not only at *Zia*, *Tinos*, *Micone*, and *Scio*, but in moſt of the other Iſlands.”

The ſeventeenth and eighteenth Sorts here mentioned are very tender Plants, being Inhabitants of very warm Countries: I receiv'd Seeds of both theſe Sorts from *Jamaica*, from which I rais'd many Plants, ſome of which are grown to a conſiderable Size; and the ſeventeenth Sort has puſh'd out many ſmall *Figs* from the Joints, but they dropt off in a ſhort Time without coming to Maturity.

The eighteenth Sort is call'd the *Indian God-tree*, it being a Tree under which the religious *Indians* perform their Worſhip.

Theſe are both very handſome Plants, and deſerve a Place in all curious Collections of Exotick Trees: They may be propagated by Layers, as the common *Fig*, but ſhould be planted in Pots of freſh Earth, and preſerv'd in Stoves: In the Summer they may be expos'd during the Months of *July* and *Auguſt*, but muſt be removed into Shelter early in *September*. During the Winter-ſeaſon they will require frequent Waterings, provided the Stove is kept to a good Degree of Heat, otherwiſe they muſt be watered very ſparingly. The Temper of Heat which theſe Plants do beſt agree with in the Winter, is about the temperate Point, as mark'd on Mr. *Fowler's Botanical Thermometers*; for in a much greater Degree of Heat they will grow too freely in Winter; and in a leſs, they will be apt to drop their Leaves, and loſe their leading Bud, whereby the Beauty of the Tree will be greatly impaired. But if you are deſirous to have theſe Trees grow to a large Size, and in a ſhort Time, you ſhould plunge their Pots into Tanners Bark, which will cauſe them to make a conſiderable Progreſs. I have had Plants of the ſeventeenth Sort, which, by this Management, have been eight Feet high in two Years from the Time of ſowing the Seeds, and the Leaves have been prodigiouſly large and fair.

FICUS INDICA. *Vide* Opuntia.

FILACEOUS ROOTS; ſuch as are full of Filaments, *i. e.* of ſmall Threads or Strings.

FILAGO. *Vide* Gnaphalium.

FILBERT. *Vide* Corylus.

FILIPENDULA, [of *Filum*, a *Thread*, and *pendere*, Lat. to *hang*; ſo called of pendent Threads of the Roots, having little Nodes at the Ends] Dropwort.

The *Characters* are;

It hath a fibroſe Root, with oblong Bulbs or Tubers faſtened to the Bottom of the Fibres: The Leaves are finely cut into narrow Segments: The Flowers, which conſiſt of ſix or ſeven Petals, are diſpoſed into a looſe Panicle: The Fruit is almoſt round, containing many Seeds, which are gather'd into a Head reſembling a Tub.

The *Species* are;

1. FILIPENDULA *vulgaris, An, Molon Plinii. C. B.* Common Dropwort.
2. FILIPENDULA *vulgaris, An, Molon Plinii folio variegato. H. R. Par.* Common Dropwort, with a variegated Leaf.
3. FILIPENDULA *omni parte major, folio anguſtiori. Boerh. Ind.* Larger Dropwort, with a narrower Leaf.

The firſt of theſe Species is uſed in Medicine, but is ſeldom cultivated in Gardens: It grows wild in moſt Parts of *England* upon open Heaths and Commons, as alſo upon chalky Hills.

The ſecond Sort is a Variety of the firſt, with ſtriped Leaves, and is preſerved in ſome curious Gardens by ſuch as delight in variegated Plants.

The third Sort I brought from *Holland*, *Anno* 1727. This differs from the common Sort in being larger in every Part; but the Leaves are narrower, and finer cut.

Theſe Plants may be eaſily propagated by taking up their Roots in Autumn when the Leaves begin to decay, and parting them into ſmall Heads; which, if planted in an open Situation, will thrive and increaſe exceedingly. They may alſo be propagated by ſowing their Seeds in Autumn, which will come up the ſucceeding Spring, and the ſecond Seaſon will flower: But this is not the ſureſt Way to preſerve the Kinds; for they may be apt to vary from the Sorts ſown.

FILIUS ANTE PATREM, [i. e. *the Son before the Father*] an Expreſſion which *Botaniſts* apply to Plants whoſe Flower comes out before their Leaves.

FILIX, Fern. There are great Varieties of this Plant in the different Parts of the World, but particularly in *America*, as may be ſeen in the *Natural Hiſtory of Jamaica*, publiſhed by Sir *Hans Sloane*, Bart. and in *Plumier's American Ferns*: But as they are Plants which are ſeldom propagated in Gardens, I ſhall paſs them over in this Place.

FILM; that woody Skin which ſeparates the Seeds in the Pods of Plants.

FIMBRIATED; [of *Fimbria*, Lat. a *Fringe*] a Term relating to the Leaves of Plants when they are jagged on the Edges, having, as it were, a Fringe about them.

FIRE. However foreign, at the firſt View, this Article may ſeem to our preſent Purpoſe, yet I am of Opinion, that a tolerable Acquaintance with its Nature, as far as it can be attain'd, and its Effects, will contribute no ſmall Aſſiſtance in forwarding the Work of Vegetation. And tho' the Theory of *Fire* is indeed Philoſophical; yet the Conſideration of its Effects, and how it operates on Vegetables, will be of no ſmall Uſe in the Culture of them.

That which beſt defines and diſtinguiſhes *Fire* from every Thing elſe, is its Heating; and ſo it may be defined, whatſoever warms or heats Bodies.

Heat is ſomething, the Preſence of which is beſt perceiv'd by the Dilatation of the Air or Spirit in the Thermometer. So then, *Fire* is a Body, and a Body in Motion too. The Motion of it is prov'd by its expanding the Air, and that it is a Body, by Experiment.

Pure *Mercury* being incloſed in a Phial with a long Neck, and kept in a gentle Heat for the Space of a Year, will be reduced into a Solid, and the Weight alſo will be increaſed conſiderably; which Increaſe cannot proceed from any Thing elſe but the Acceſſion of *Fire*.

The Nature of *Fire* is ſo obſcure and wonderful, that it was held, by many of the Antients, as a Deity; and ſeveral Authors of prime Note have taken great Pains to diſcover the Myſtery of it, without having been able to explain many of the principal Effects thereof. The learned *Herman Boerhaave* has uſed no leſs Induſtry in making a new Set of Experiments in order to come to a clearer Knowledge of them; and having laid down a new Doctrine of *Fire*, in a Courſe of Publick Lectures, I ſhall briefly take notice of ſuch of them as I apprehend may be of Uſe.

" *Fire*, (ſays he) in effect, appears to be the general Inſtrument of all the Motion in the Univerſe: The conſtant Tenor of a great Number of Experiments leaves no Room to doubt, but that if there were no *Fire*, all Things would inſtantly become fix'd and immoveable. Of this there are Inſtances every Winter: For while Froſt prevails, the Water, which before was fluid, by a mere Privation of Heat, becomes ſolid, *i. e.* hardens into Ice, and ſo remains, 'till reſolv'd again by *Fire*. Thus, were a Man intirely deſtitute of Heat, he would immediately freeze into a Statue. And thus the Air itſelf, which is found in continual Motion, being always either expanding, or condenſing, would, upon the Abſence of *Fire*, contract itſelf, and cohere into a firm, rigid Maſs. So alſo Animals and Vegetables, all Oils, Salts, *&c.* would, upon the like Occaſion, immediately congeal."

Altho' this Doctrine of *Fire*, here laid down by *Boerhaave*, ſeems new and extraordinary, at leaſt to thoſe who have been us'd to conſider *Fire* in the Light that it has been ſet in by the Lord *Bacon*, Mr. *Boyle*, and Sir *Iſaac Newton*; and tho' we ought to pay great Veneration to thoſe illuſtrious Authors; yet, in the Judgment of themſelves, we ſhould be inexcuſable, if we ſhould abſolutely acquieſce in what they have done, and ſhut the Door againſt farther and better Information.

It may reaſonably be ſuppos'd that Dr. *Boerhaave* has had an Opportunity of going beyond them; in that, beſides all the Experiments and Obſervations that they have had to build upon, he has had the Advantage of a new Set, which they were unacquainted with.

As to the Nature of *Fire*, the great and fundamental Difference is, Whether it be originally ſuch, form'd thus by the Great Creator Himſelf, at the Beginning of Things? or, Whether it be mechanically producible from other Bodies, by inducing ſome Alteration in the Particles of it?

Among the modern Writers, *Homberg*, *Boerhaave*, the Younger *Lemery*, and Dr. *Graveſande* maintain the former, and the *Engliſh* Authors chiefly maintain the latter.

Monſ. *Homberg* holds, That the Chymical Principle or Element *Sulphur*, which is ſuppos'd one of the Simple, Primary, Pre-exiſtent Ingredients of all Natural Bodies, is Real *Fire*; and of Conſequence, *Fire* is coeval with all Bodies. *Eſſai du Souffre Principe*, Mem. de l'Acad. Anno 1705.

Dr. *Graveſande* proceeds much on the ſame Principle: According to him, *Fire* enters the Compoſition of all Bodies, is contain'd in all Bodies, and may be ſeparated or procured from all Bodies, by rubbing them againſt each other, and thus putting their *Fire* in Motion. And he adds, That *Fire* is by no means generated by ſuch Motion. *Elem. Phyſ. tom.* 2. *cap.* 1.

Mr. *Lemery* the Younger aſſerts the abſolute and ingenerable Nature of *Fire*; and alſo extends it farther. Not contented to confine it, as an Element, to Bodies, he endeavours to ſhew, that it is "Equably diffus'd thro' all Space; is preſent in all Places; in the void Space between Bodies, as well as the inſenſible Interſtices between their Parts." *Mem. de l'Acad.* Anno 1713.

This laſt Sentiment falls in with that of *Boerhaave*.

Of the contrary Opinion is the Lord *Bacon*, who, in his Treatiſe *de Forma Calidi*, deduces from a great Number of Particulars, That *Heat* in Bodies is no other than *Motion*; only a Motion ſo and ſo circumſtantiated; ſo that, to produce *Heat* in a Body, nothing is requir'd but to excite ſuch Motion in the Parts of it.

His Opinion is ſeconded by Mr. *Boyle*, in his Treatiſe of the *Mechanical Origin of Heat and Cold*, where he maintains the ſame Doctrine, with new Obſervations and Experiments; of which, two are as follow:

He ſays, "In the Production of *Heat*, there appears nothing on the Part either of the Agent or Patient but Motion, and its natural Effects. When a Smith briſkly hammers a ſmall Piece of Iron, the Metal thereby becomes exceedingly hot; yet there is nothing to make it ſo, except the forcible Motion of the Hammer, impreſſing a vehement and variouſly-determin'd Agitation on the ſmall Parts of the Iron; which being a cold Body before, becomes, by that ſuper-induc'd Commotion of its ſmall Parts, *Hot*: firſt, in a more looſe Acceptation of the Word, with regard to ſome other Bodies, compar'd with which, it was Cold before: then, ſenſibly Hot; becauſe this Agitation ſenſibly ſurpaſſes that of the Parts of our Fingers. And in this Inſtance, oftentimes the Hammer and Anvil continue cold after the Operation, Which ſhews, that the Heat acquir'd by the Iron was not communicated by either of theſe Implements, as Heat, but produc'd in it by a Motion great enough ſtrongly to agitate the Parts of ſo ſmall a Body as the Piece of Iron, without being able to have the like Effect upon ſo much greater Maſſes of Metal as the Hammer and Anvil: Tho' if the Percuſſions were often and briſkly renew'd, and the Hammer were ſmall, this alſo might be heated: Whence it is not neceſſary that a Body itſelf ſhould be hot, to give Heat.

"If a large Nail be driven by a Hammer into a Plank of Wood, it will receive ſeveral Strokes on its Head e're it grows hot: but when it is once driven to the Head, a few Strokes ſuffice to give it a conſiderable Heat. For while at every Blow with the Hammer the Nail enters farther into the Wood, the Motion produc'd is chiefly progreſſive, and is of the whole Nail tending one Way: but when the Motion ceaſes, the Impulſe given by the Stroke being unable to drive the Nail farther on, or break it, muſt be ſpent in making a various, vehement, and inteſtine Commotion of the Parts among themſelves, wherein the Nature of Heat conſiſts." See *Heat*.

That *Fire* is the real Cauſe of all the Changes in Nature, will appear from the following Conſideration.

All Bodies are either *ſolid* or *fluid*; the *ſolid* of themſelves are either commonly ſuppos'd to be unactive or motionleſs; the *fluid* both move, and are moved.

And all Solids are found to be ſo much the more firm and contracted, as they have the leſs *Fire* in them: This is evident in Iron, which, when heated, expands itſelf into a much greater Space than when it was cold; ſo that any ſolid and hard Body, by being freed from all *Fire*, would ſink into a much leſs Bulk, and its Parts would cohere more nearly, and with greater Force than before.

As to *Fluids*, they all harden, ſo as to be viſible to the Eye upon the Abſence of Fire: as Water, by the Cold of a ſevere Winter, will form itſelf into a ſolid Globe, and yet even then contains a great deal of *Fire*; as appears evidently upon applying a Thermometer to it, which is capable of falling twenty Diviſions lower before it arrive at the Point of the moſt intenſe Cold: And hence it is that the Spirit of Wine is kept from freezing in the Thermometer, which would undergo the common Fate of other Things, were there not abundantly more *Fire* in it.

So the Air itſelf expands by a greater Quantity of *Fire*, and condenſes by a leſs; but it ſtill contains a large Quantity of *Fire* where it is moſt of all contracted: This is evident from the ſtriking of a Flint againſt a Steel, which is follow'd by Sparks of *Fire*.

Likewiſe, if this *Fire* could be taken from the *Air*, it would become ſolid and perfectly at reſt, and by Conſequence uncapable of Change.

"*Fire* (ſays Dr. *Graveſande*, in *Element. Phyſ.*) naturally unites itſelf with Bodies: And hence it is that a Body brought near to the Fire grows *Hot*; in which Caſe it alſo expands or ſwells; which Expanſion is not only obſerv'd in very ſolid Bodies, but in thoſe whoſe Parts do not cohere; which Caſe they likewiſe acquire a great Degree of Elaſticity, as is obſerved in Air and Vapours."

Fire being thus acknowledg'd the Inſtrumental Cauſe of all Motion; it remains, that itſelf be moved. Nay, to move, muſt be more natural and immediate to *Fire* than to any other Body; and hence ſome have ventur'd to make *Motion* eſſential to *Fire*. But as this is inconſiſtent with the Notion of Matter, which is defin'd to be inert and paſſive, and as *Fire* is capable of being prov'd material; we ought rather to agree, that the Motion of *Fire* itſelf is derived from ſome higher and metaphyſical Cauſe. A Property of perpetual Mobility may indeed be ſuperadded to the other Properties of *Fire*: but it has no natural neceſſary Connection with them; nor can it be maintain'd with them otherwiſe than by ſome extrinſick Efficacy of a ſuperior Cauſe.

However, that it is by *Motion* that *Fire* produces its Effects, is evident: And hence the Action of *Fire* cannot make any Alteration in the elementary Subſtance of Bodies: For it is neceſſary that what acts upon an Object, be without that Object; *i. e.* the *Fire* muſt not penetrate the elementary Parts, but only enter the Pores and Interſtices of Bodies: ſo that it does not ſeem capable of making thoſe Tranſmutations which Sir *Iſaac Newton* aſcribes to it.

In effect, as to all our Purpoſes, it may perhaps be ſaid, that *Fire* is always in Motion. For Inſtance: Take ſix ſeveral Sorts of Thermometers, and two Veſſels of Water with *Sal Armoniac* mix'd therein, and apply the Thermometers to it; and the Conſequence will be, that the Air being condenſed in them, the Spirit will deſcend in all of 'em: Remove the Veſſels of Water, and the Air growing warmer, and ſo rarefying, the Spirit will aſcend again. So that the active Force in Air which produces ſo many Effects, does really all ariſe from the *Fire* contain'd in it.

Again: As all Bodies plac'd in a very ſolid Air, do by Degrees grow cold, motionleſs, rigid, &c. *i. e.* tho' there be ſtill ſome Remains of *Fire*; and in Proportion, as that is diminiſh'd, the Effect is accelerated: It follows, that *Cold*, a leſs Degree of *Heat*, is the Effect of a leſſer Action of *Fire*. And ſo, all Action ariſes apparently from the ſame Source.

Then as *Fire* can render the moſt ſolid Bodies, as Stone, Metals, &c. fluid, (as appears very evident in large Burning-Glaſſes, in which Gold itſelf immediately calcines, and emits Fumes, *i. e.* becomes fluid) ſo the Want of *Fire* would convert the moſt fluid Bodies, as Spirits of Wine, &c. into Solids.

Fire is diſtinguiſh'd into two Kinds, call'd *elementary* or *pure Fire*, which is ſuch as exiſts in itſelf, and alone is properly call'd *Fire*; or *common* or *culinary Fire*, which is raiſed and kindled from the former, and is that which agitates and affects ignited, combuſtible, and moveable Bodies, the Particles of which joining with thoſe of the pure *Fire*, conſtitute pure *Flame*.

This latter is improperly call'd *Fire*, in that only a ſmall Part of it is real or pure *Fire*; and in ignited Bodies, that which flames, ſmokes, &c. is not ſimply *Fire*; whereas pure *Fire*, ſuch as is collected in a Burning-Glaſs, yields no Flame, Smoke, Aſhes, or the like.

Fire may be preſent in the greateſt Abundance, yet without any Heat: This is evident in the Tops of the higheſt Mountains, illuminated by the Sun, where the Cold is always extremely pinching, and this even under the *Equator*, there being Mountains there which are perpetually cover'd with Snow, tho' there can be no Want of *Fire*.

So a large Burning-Glaſs has no Effect, the ſmalleſt Warmth cannot be felt in its *Focus*, in a Place where the Sun does not ſhine, or when the Sun is cover'd with a Cloud; but a Piece of Metal may be ſeen to melt the very Moment the Sun emerges.

Fire may be in exceeding ſmall Quantity, and yet burn with great Violence: Thus Spirit of Wine, when ſet on fire, does not burn the Hands, and tho' pour'd on a Piece of red-hot Iron, does not take Fire; ſo that the Fire that is in ſhould not appear very great, yet if it meet with ſome harder Body while it is burning, the Particles of which Body it is capable to agitate by the Attrition of its own, it will yield a fierce Flame capable of burning a harder Body than the Hand.

From this it appears, that the Relation of heterogeneous Particles agitated by the *Fire*, has more Effect in reſpect to Heat than the Action of the *Fire* itſelf: Nor need we be far to ſeek for the mechanical Reaſon of this; for the Particles of

Fire being all equal and ſpherical, muſt of themſelves be harmleſs; but if they carry certain *Spicula*, or any other Bodies along with them, they then become capable of doing much Harm.

Hence, tho' the Flame of a Piece of Wood may give a Senſe of Heat, and burn ſuch Things as are apply'd to it, it does not therefore neceſſarily follow, that there is any pure *Fire* in it, ſo that the Diſtinction of pure and common *Fire* is abſolutely neceſſary: Tho' this Diſtinction has been overlook'd by moſt or all the Authors before Dr. *Boerhaave*, who have written on *Fire*, which has led them into egregious Miſtakes, inſomuch, that moſt of them have held, that the Flame of a Piece of Wood is all *Fire*; which appears to be falſe from what has been already ſaid, and alſo what follows.

Elementary or *pure Fire* is of itſelf imperceptible, and only diſcovers itſelf by certain Effects that it produces in Bodies; and theſe Effects are only to be learnt by the Changes which ariſe in Bodies: Theſe Effects are three; 1ſt, *Heat*; 2dly, *Dilatation* in all ſolid Bodies, and *Rarefaction* in all Fluids; 3dly, *Motion*.

The firſt Effect of *elementary Fire* on Bodies is *Heat*: *Heat* ariſes wholly from *Fire*, and in ſuch a manner, that the Meaſure of Heat is always the Meaſure of *Fire*; and that of *Fire*, of *Heat*; ſo the *Heat* is inſeparable from the *Fire*.

The ſecond Effect of *elementary Fire* is *Dilatation* in all ſolid Bodies, and *Rarefaction* in all Fluids.

Numerous Experiments make it evident, that both theſe are inſeparable from *Heat*: If you heat an Iron Rod, it will increaſe in all its Dimenſions, and the more it is heated, the farther it will be increas'd; and being again expos'd to the Cold, it will contract, and ſucceſſively return thro' all Degrees of its Dilatation, till it arrives at its firſt Bulk, being never two Minutes ſucceſſively of the ſame Magnitude.

The like may be obſerv'd in Gold, the heavieſt of all Bodies, which takes up more Space when it is fuſed than it did before; nay, even Mercury, the heavieſt of all Fluids, has been known to aſcend to above thirty Times its Height, being plac'd over the Fire in a narrow Tube.

The Laws of this Expanſion are;

1ſt, That the ſame Degree of *Fire* rarefies Fluids ſooner and in a greater Degree than it does Solids. Without this, the Thermometer would be of no Uſe; ſince if it were otherwiſe, the Cavity of the Tube would be dilated in the ſame Proportion as the Fluid is rarefied.

2dly, By how much the Liquid is lighter, by ſo much the more it is dilated by *Fire*: Thus *Air*, which is the lighteſt of all Fluids, expands the moſt; and Spirit of Wine the next after Air.

The third Effect of *Fire* on Bodies is *Motion*: For *Fire*, in warming and dilating Bodies, muſt neceſſarily move their Parts. And in effect, all the Motion of Nature ariſes from *Fire* alone; and if this were taken away, all Things would become immoveable. All Oils, Fats, Waters, Wines, Ales, Spirits of Wine, Vegetables, Animals, *&c.* become hard, rigid, and inert upon the Abſence of only a certain Degree of *Fire*; and this Induration will be both the ſooner and the more violent, the leſs the Degree of *Fire* is.

Hence if the *Fire* was abſolutely taken away, and there were the greateſt Degree of Cold, all Nature would grow into one concrete Body, ſolid as Gold, and hard as a Diamond; but upon the Application of *Fire*, it would recover its former Mobility.

And of conſequence, every Diminution of *Fire* is attended with a proportionable Diminution of Motion.

Pure *Fire* is found in two different Manners, either as it exiſts every where, and is diffus'd equally in all Places; or as it exiſts in certain Bodies, in which it makes no great Alteration.

That *Fire* ſhould exiſt in the ſame Quantity in all Places, will ſeem a ſtrange Paradox, and yet that it does ſo, is demonſtrable from innumerable Experiments.

This *elementary Fire* is preſent every where, in all Bodies, all Space, and at all Times, and that in equal Quantities; for let a Perſon go where he will, to the Top of the higheſt Mountains, or deſcend into the loweſt Cavern, whether the Sun ſhine or not; either in the moſt ſcorching Summer, or the ſharpeſt Winter, *Fire* may be collected by ſeveral Methods, as Attrition, or otherwiſe. In a Word, there is no Phyſical Point aſſignable without *Fire*; no Place in Nature where the Attrition of two Sticks will not render it ſenſible.

The *Carteſians*, as *Marriotte*, *Perrault*, &c. hold, That there is a large Stock of *Fire* in a perfect *Vacuum*, *i. e.* a Space out of which all the Air has been exhauſted, as ſuppoſing an abſolute *Vacuum* impoſſible: Now the moſt perfect *Vacuum* that we can arrive at, is that of Mr. *Huygens*'s Contrivance, which is as follows: Heat a Quantity of the pureſt Mercury to the Heat of boiling Water, and pour it into a hot Tube of about forty Inches long; and when the Tube is fill'd, apply a Finger upon the Orifice of it, and thus invert it into a Baſon full of Mercury: The Mercury will now be ſuſpended in the Tube to the whole Height; but then if you give it but a little Shake, it will ſink down to the Height of about twenty-nine Inches, and thus leave a perfect Vacuity of eleven Inches.

Yet here the Philoſophers above-mention'd deny there is any *Vacuum*, and urge, that now ſo much the more *Fire* is enter'd into the Space as there was of other Matter: But this is contrary to Experience, at leaſt, the *Fire* contain'd there is no hotter than the Mercury itſelf; for if a Drop or two of Water be in a froſty Seaſon ſprinkled both upon the upper Part of the Tube, ſuppos'd to be full of *Fire*, and on the lower that is full of Mercury, they will in each Place freeze alike; ſo that there is no more pure *Fire* in a perfect *Vacuum* than in any other Place.

But whereas it has been ſaid, that *Fire* is found in all Bodies: To prove this, ſet Gold againſt the *Vacuum* before-mention'd, and this Gold, tho' the moſt ponderous of all Bodies, will not contain more *Fire* than *Huygens*'s *Vacuum*, as appears from the Thermometer.

But the *Fire* in Gold, when ready to fuſe, is pure *Fire*; for a Maſs of this being once heated red-hot, will retain this *Fire* perfectly for three Days: Nay the Prince of *Mirandola* and others have kept Gold ignited for two Months without any Diminution of Weight.

Mr. *Graveſande*, *Phyſ. Element.* ſays, That Bodies of any Kind being violently mov'd againſt one another, will grow hot by ſuch Friction, and this to a conſiderable Degree, which ſhews that all Bodies have *Fire* in them: For *Fire* may be put in Motion, and ſeparated from a Body by ſuch rubbing, but can never be generated that Way.

Mr. *Boyle*, *Mech. Prod.* of *Heat*, ſays, That whereas Quickſilver is allow'd to be the coldeſt of all Fluids, inſomuch that many deny that it will produce any Heat by its immediate Action on any other Body, and particularly on Gold; but ſeveral Trials have aſſured me, that a particular Mercury may by Preparation be inabled ſuddenly to inſinuate itſelf into the Body of Gold, whether calcin'd or crude, and become manifeſtly hot with it in leſs than two or three Minutes.

Mr. *Graveſande* ſays, That Quickſilver contains *Fire*, is evident hence, that if you ſhake it about in an exhauſted Glaſs, it will appear all luminous.

Elementary Fire of itſelf always lies conceal'd, nay, it may be perfectly undiſcoverable, where it is in the greateſt Quantity, as is evident in the Torrid Zone, where the Snow never melts, notwithſtanding the great Abundance of *Fire*.

This *Fire*, in itſelf thus perfectly latent, may diſcover itſelf to be preſent by five Effects; 1ſt, By rarefying Bodies, and particularly Air; 2dly, By Light; 3dly, By Colour; 4thly, By Heat; and 5thly, By Burning.

That there is a good Quantity of *Fire* even in the coldeſt Places, and in the coldeſt Bodies, is confirmed by the following Experiment: If you take two large Iron Planes, and rub them briſkly together in *Iceland*, which is only twelve Degrees ſhort of the North-Pole, in the moſt froſty Seaſon, and at Midnight, they will grow warm, glow, ſhine, and heat to ſuch a Pitch, as not only to rarefy the Spirit in the Thermometer, but even to ignite, and at laſt to fuſe.

Now the *Fire* here found is either created *de novo*, or it was there before; but nobody will aſſert its Creation, and accordingly, unleſs it be furniſh'd with a proper Fuel, it will be ſoon diſſipated again, but not annihilated, and of conſequence it pre-exiſted, and it appears to be true *Fire* by its rarefying the Spirit in the Thermometer.

From this, and many other Experiments, it is evident, that *Fire* is always found in all Parts of Space, and in all Bodies equally ſpread on the utmoſt Top of the higheſt Mountain, as in the ſubject Valley, or in the deepeſt Cavern under-ground, and in every Climate, and at every Seaſon.

The equable Diſtribution of *Fire* in all Places being prov'd, it ſhould thence follow, that there is the ſame Degree thereof every where; which would really be ſo, were it not that *Fire* happens by one Means or other to be more collected in one Place than another.

But, notwithſtanding, the equable Difference, *&c.* of Fire through all the Mundane Space, does not hinder, but that, to our Senſes, it appears very unequal in different Places: And hence we have two vulgarly reputed Sources or Funds of Fire, viz. in the Sun, and the Centre of the Earth.

As for the firſt, we have the concurrent Opinions of the Philoſophers of all Ages, but one excepted, who held the Sun to be cold.

As to the ſecond, the *central Fire*; it is manifeſt that there is an ample Proportion of *Fire* under ground; and even, that

Fire appears much more abundant there than on the Surface; ſo that at leaſt, a *ſubterraneous Fire* muſt be granted.

Thus they who dig Mines, Wells, *&c.* conſtantly obſerve, that while they are but a little below the Surface, they find it a little cool, and as they proceed lower it proves much colder, as being then beyond the Reach of the Sun's Heat, inſomuch that Water will freeze almoſt inſtantaneouſly; and hence is the Uſe of Ice-Houſes.

But a little lower, about forty or fifty Feet deep, it begins to grow warmer, ſo that no Ice can bear it; and then the deeper they go ſtill the greater the Heat; till at length it endangers the Stoppage of Reſpiration, and puts out their Candles: If they venture yet farther with a lighted Candle, the Place ſhall be immediately found full of Flame, as once happen'd in the Coal-Pits in *Scotland*, where an hardy Digger deſcending to an unuſual Depth, with a Light in his Hand, the Fumes, which were there found very copious, caught Fire thereby, and burnt the whole Mountain down.

Therefore it ſeems as if Nature had lodg'd another Sun in the Centre of the Earth, to contribute on its Part to the giving of Motion to Bodies, and for the promoting of Generation, Nutrition, Vegetation, Germination, *&c.* of Animals, Vegetables, and Foſſils.

As to the Origin of this ſubterraneous Sun, ſome Doubt whether it were form'd there in the Beginning, like the Sun in the Firmament, or gradually produc'd by a ſecondary Collection of vague *Fire* into this Place.

What makes in Favour of the former Opinion, are Vulcano's, or burning Mountains, which ſeem to have exiſted from the firſt Ages; for the Flames of Mount *Ætna* are mention'd as of great Antiquity; and there are likewiſe ſuch Fountains found in the coldeſt Regions, viz. *Nova Zembla*, and *Iceland*, as well as the hotteſt, as *Borneo*, &c.

It cannot be reaſonably pretended, ſays Mr. *Boyle*, that the ſubterraneous Heat proceeds from the Rays of the Sun, ſince they heat not the Earth above ſix or ſeven Feet deep, even in the Southern Countries; and if the lower Part of the Earth were of its own Nature cold, and receiv'd the Heat it affords only from the Sun and Stars, the deeper Men deſcend therein, the leſs Degree of Heat and Steams they would meet with.

The Sun contributes much in bring *Fire* to light, by reaſon of his rapid Motion round his Axis, whereby the fiery Particles, every where diffus'd, are directed and determin'd in parallel Lines towards certain Places where its Effects become apparent.

And from thence it is that the *Fire* is perceiv'd by us when the Sun is above; but that when he diſappears, his Impulſe or Preſſion being then taken away, the Fire continues diſpers'd at large through the Ethereal Space.

There is not, in effect, leſs Fire in our Hemiſphere in the Night-time than there is in the Day-time, only it wants the proper Determination to cauſe it to be perceiv'd.

The Effects of *Elemental Fire* may be increaſed divers Ways; *viz.* firſt, by *Attrition*, or a ſwift rubbing or agitating one Body againſt another. This is very manifeſt in Solids: The Attrition of a Flint againſt a Steel produces Sparks of *Fire:* And likewiſe in Fluids, the violent Agitation of Cream, by churning, will produce a ſenſible Warmth, and ſeparate it into Butter; and this Effect is render'd ſtill more diſcernible by a Barometer.

And the Heat of Animal Bodies is owing to the Agitation and Attrition of the Parts of theſe Juices againſt each other, and the Sides of the Veſſels.

The ſecond Manner of increaſing the Effect of *Elementary Fire*, is by throwing a Quantity of moiſt or green Vegetables, cut down while full of Sap, into a large Heap, and preſſing them cloſe down; by which they grow warm, hot, ſmoak, and break out into Flame.

A third Way, is by mixing certain cold Bodies: Thus Water and Spirit of Wine, being firſt warm'd, grow much hotter by being mixed; alſo Oil of Cloves, Cinnamon, *&c.* being mixed with Spirit of Wine, become exceeding hot, and burſt forth like Vulcano's.

The like Effects may be had from ſeveral hard and dry Bodies, as Sulphur and Steel-filings.

To conclude: Of *Fire*, and the Effects thereof, depend all Fluidity of Humours, Juices, *&c.* all Vegetation, Putrefaction, Fermentation, Animal Heat, *&c.*

As all the four Elements, *Water*, *Air*, *Earth*, and *Fire*, are very conducive to the Work of Vegetation, and no one of them more than this of *Fire*; I conclude, that theſe few Hints, which I have collected from the moſt approved Authors, concerning the Nature and properties of it, as they may be uſeful, would not be unacceptable to the ingenious and ſtudious Practiſers of *Horticulture*, which induced me to inſert them here. See alſo the Article *Heat*.

FIR-TREE. *Vide* Abies.

FISTULAR FLOWERS, [*Flores Fiſtulares*, of *Fiſtula*, Lat. a *Pipe*] ſuch as are compounded of many long, hollow, ſmall Flowers like Pipes.

FLAMMULA JOVIS. *Vide* Clematis.

FLESH, (among *Botaniſts*) is all the Subſtance of any Fruit that is between the Outer Rind and the Stone, or that Part of any Root that is fit to be eaten.

FLORIFEROUS, [*florifer*, Lat.] bearing Flowers.

FLORIST, One who is converſant with, or ſkill'd in Flowers.

FLORULENT, FLORULOUS, [*florulentus*, *florulus*, Lat.] Flowery, full of Flowers; alſo Bloſſoming.

FLOS AFRICANUS. *Vide* Tagetes.

FLOS PASSIONIS. *Vide* Granadilla.

FLOS SOLIS. *Vide* Corona Solis.

FLOS TRINITATIS. *Vide* Viola.

FLOWER: A *Flower* is a natural Production which precedes the Fruit, and yields the Grain or Seed. Tho' a *Flower* is a Thing ſo well known, yet the Definition of this Part of a Plant is as various almoſt as the Authors who define it. *Jungius* defines it to be the more tender Part of a Plant, remarkable for its Colour, or Form, or both, cohering with the Fruit. Yet this Author himſelf confeſſes that this Definition is too narrow; for ſome of thoſe Bodies which he allows to be Flowers, are remote from the Fruit.

Mr. *Ray* ſays, it coheres, *for the moſt part*, with the Rudiments of the Fruit. Thus the Words *for the moſt part*, are hardly to be admitted into Definitions.

Tournefort defines it to be *a Part of a Plant* very often *remarkable for its peculiar Colours*, for the moſt part *adhering to the young Fruit*, *to which* it ſeems *to afford the firſt Nouriſhment*, *in order to explicate its moſt tender Parts*. Which Definition is ſtill more deficient than the preceding, by this uncertain Mode of Expreſſion.

Pontedera, Profeſſor of Botany at *Padua*, defines it to be *a Part of a Plant, unlike the reſt in Form and Nature*; *always, when the Flower has a Tube, adhering or fixed very near to the Embryon, to the Uſe of which it is ſubſervient*; *but if the Flower has no Tube, not adhering to the Embryon*. Which Definition is not much clearer, being ſcarce intelligible to any Perſon who has not ſtudied Botany a conſiderable Time; as Mr. *John Martyn* well obſerves; and alſo, that it is liable to this Objection, that it may include ſome Parts, which no Perſon ever called by the Name. For a Root, or a Stalk, or a Leaf, are Parts of a Plant unlike the reſt in Form and Nature, having no Tube, and ſo adhering to no Embryons; and thus, by *Pontedera*'s Definition, are Flowers.

Monſ. *Jeſſieu*, the *Paris* Profeſſor, ſeems not to have ſucceeded much better in this Affair; he ſays, *that it is properly call'd a Flower which is compos'd of Chives, and a* Piſtillum, *and is of Uſe in Generation*. But this is too defective; for that there are many Plants in which the *Piſtillum* or Stile is found a conſiderable Diſtance from the Chives; many Flowers that have no *Piſtillum*, whether that Word be taken to ſignify the Embryon of the Fruit, or its *Appendix*; and many which have no Chives.

But the late Monſ. *Vaillant* ſeems to be happier, in forming a clearer Idea of this Part of a Plant. We find, in the Lecture he read in the Royal Garden at *Paris*, that the *Flowers*, ſtrictly ſpeaking, ought to be reckon'd the Organs which conſtitute the different Sexes in Plants; ſeeing they are ſometimes found without any Covering, and that the Coats, or Petals, which immediately incompaſs them, are deſign'd only to cover and defend them: But (ſays he) as theſe Coats are the moſt conſpicuous and moſt beautiful Part of the Compoſition, which is call'd by the Name of *Flower*; to theſe Coats therefore I give the Name of *Flower*, of whatſoever Structure or Colour they be, whether they incompaſs the Organs of both Sexes together, or contain only one of them, or only ſome Part, depending on one of them, provided always that they be not of the ſame Figure of the Leaves of the Plant.

But, in my Opinion, Mr. *John Martyn* has been happier, in his Definition of a *Flower*, than all thoſe above-mention'd: He defines a *Flower* to be the *Organs of Generation of both Sexes adhering to a common* Placenta, together with their common Coverings; or of either Sex ſeparately, with its proper Coverings, if it have any.

The Parts of a *Flower* are, 1. The *Ovary*, which is the Rudiment of the Fruit, and ſo is properly the Female Organ of Generation.

2. The *Stile*, which is a Body accompanying the *Ovary*, either ariſing from the Top of it, or ſtanding as an *Axis* in the Middle, with the Embryons of the Seeds round it,

3. The *Summits*, or *Apices*, which are thoſe Bodies that contain the Prolifick Power, analogous to the Male Sperm in Animals; and generally hang upon ſlender Threads, which are call'd the *Chives*.

The *Petals* are thoſe tender, fine-coloured Leaves which are generally the moſt conſpicuous Parts of a *Flower*.

The *Impalement*, or *Calyx*, is thoſe tender Leaves which cover the other Parts of a *Flower*.

Flowers, according to the Number of their *Petals*, are call'd Monopetalous, Dipetalous, Tripetalous, Tetrapetalous, *&c*.

The Structure of *Flowers* is indeed very various: But, according to Dr. *Grew*, the Generality have theſe three Parts in common, *viz.* the *Impalement*, the *Foliation*, and the *Attire*.

Mr. *Ray* reckons that every perfect *Flower* has the *Petala*, *Stamina*, *Apices*, and *Stylus* or *Piſtil*: and ſuch as want any of theſe Parts, he accounts imperfect *Flowers*.

In moſt Pants there is a *Perianthum*, *Calyx* or *Flower-cup*, which is of a ſtronger Conſiſtence than the *Flower* itſelf, and deſign'd to ſtrengthen or preſerve it.

Flowers are diſtinguiſh'd into *Male*, *Female*, or *Hermaphrodite*.

The *Male Flowers* are thoſe in which are the *Stamina*, but bear no Fruit; the ſame which *Botaniſts* call *Stamineous Flowers*.

The *Female Flowers* are ſuch as contain the *Piſtil*, which is ſucceeded with Fruit, and are call'd *Fruitful* or *Knitting Flowers*.

The *Hermaphrodite Flowers* are ſuch in which the two Sexes are contained; *i. e.* the Male and Female Parts are found in the ſame *Flower*, which are the moſt general Kind; ſuch are the *Daffodil*, *Lily*, *Tulip*, *Althæa*, *Geranium*, *Roſemary*, *Sage*, *Thyme*.

The Structure of Parts is much the ſame in thoſe where the Sexes are divided; the Difference between them conſiſting in this, that the *Stamina* and *Apices*, i. e. the Male Parts in theſe are ſeparate from the *Piſtils*, being ſometimes on the ſame Plants, and ſometimes on different ones.

Among the Plants which bear both Male and Female Parts, but at a Diſtance from each other, are reckon'd the *Cucumber*, *Melon*, *Gourd*, *Turkey Wheat*, *Turnſol*, *Wall-nut*, *Oak*, *Beech*, &c.

FLOWERAGE: The ſetting of ſeveral Sorts of *Flowers* together in Huſks, and hanging them up in Strings.

FLUIDITY, [*Fluiditas*, of *fluere*, Lat. *to flow.*] Having Occaſion to mention *Fluids* and *Fluidity*, in ſpeaking of the Properties of the Elements *Air*, *Water*, *Fire*, &c. I thought neceſſary, in this Place, to give the following Account of that Property, which I have extracted from the moſt approved Authors.

A *Fluid*, or *Fluid Body*, is, by ſome, defin'd to be a Body whoſe Particles are but weakly connected, their mutual Coheſion being, in a great meaſure, prevented from ſome external Cauſe: In which Senſe a *Fluid* ſtands oppos'd to a *Solid*; and is, by the excellent Sir *Iſaac Newton*, defin'd to be one whoſe Parts eaſily give Place, or move out of the Way, on any Force impell'd upon them, and by that Means do ſo eaſily move one over another. Which Definition is much better than that of *Des Cartes*, That a *Fluid* is a Body whoſe Parts are in continual Motion: Becauſe 'tis neither apparent that the Parts of all *Fluids* are ſo; nor, that the Parts of ſome *Solid Bodies* are not ſo.

Fluidity is the State or Affection of Bodies, which denominates or renders them *fluid*, and ſtands in direct Oppoſition to *Firmneſs* and *Solidity*.

It is diſtinguiſh'd from *Liquidity* and *Humidity*, in that the Idea of *Fluidity* is abſolute, and the Property contain'd within the Thing itſelf; whereas that of *Humidity* is relative, and implies Wetting, or adhering, *i. e.* ſomething that gives us the Senſation of Wetneſs or Moiſture, and would have no Exiſtence, but for our Senſes.

Thus melted Metals, Air, Æther, and even Smoke, and Flame itſelf, are *fluid* Bodies, and not *liquid* ones; the Parts of them being actually dry, and not leaving any Senſe of Moiſture. See *Liquidity* and *Humidity*.

Fluidity ſeems to conſiſt in this; That the Parts of any Bodies being fine and ſmall, are ſo diſpos'd by Motion and Figure, as that they can eaſily ſlide over one another's Surfaces all manner of ways. Mr. *Boyle* alſo obſerves, That it is requiſite they ſhould be variouſly and ſeparately agitated to and fro, and that they ſhould touch one another but in ſome Parts only of their Surfaces. And the ſame Gentleman ſays, in his *Hiſtory of Fluidity*, That the Conditions requiſite to conſtitute a *fluid Body*, are chiefly the three following:

1ſt: The *Minuteneſs* or *Smallneſs* of its Parts: Thus we ſee the Fire, by dividing Metals into Parts very fine and ſmall, will melt them, and make them fluid. And after the ſame manner do acid Menſtruums diſſolve them, ſuſpend their Liquor, and render them fluid. And that Fire turns the hard Body of common Salt almoſt wholly into a Liquor by Diſtillation: Tho' 'tis not improbable but that the Shape and Figure of theſe ſmall Parts may conduce much towards producing this Quality of *Fluidity*; for it is found in the Diſtillation of *Olive* Oil, (which is a Fluid made only by Preſſure) that moſt of the Oil will, by the Action of the Parts of the Fire, (if it be done in a Retort) be turn'd into a kind of conſiſtent Subſtance like Butter.

Likewiſe *Mercury*, whoſe Parts are, without doubt, much groſſer than thoſe of Oil and Water, is yet more fluid than either of them.

2dly: It ſeems requiſite to *Fluidity*, that there be Store of Vacuities, or vacant Spaces interſpers'd between the Corpuſcles of the fluid Body; for elſe there will not be Room for each Particle to continue its Motion and Agitation on the Surfaces of the neighbouring ones. For,

3dly: The chief Condition requiſite to conſtitute a fluid Body, is, that its Particles be agitated variouſly and apart, either by their own proper Motion, or by ſomething of Subſtance that tumbles them up and down by its Paſſage thro' them.

That this Qualification is chiefly requiſite to *Fluidity*, you may gather from that common Experiment of putting a little dry Powder of *Alabaſter*, or *Plaiſter of Paris*, finely ſifted, in a flat-bottom'd Veſſel over the Fire; for in a little Time it will boil like Water, and imitate all the Motions of a boiling Liquor; it will tumble variouſly over in great Waves *like that*; it will bear ſtirring with a Stick or Ladle without reſiſting, as it will do when cold; nay, if it be ſtirr'd ſtrongly near the Side of the Veſſel, its Waves will apparently daſh up againſt the Sides; yet if any of it be ſpeedily taken out, and laid on a Piece of Paper, you will ſee nothing but a dry Powder.

So that it is evident from hence, that there is a real Difference between a *fluid Body* and a *wetting Liquor*; for not only this boiling Powder and melted Metals, but the Air and Æther, and even Flame itſelf, are properly fluid Bodies, tho' not moiſt Liquors.

This ingenious Gentleman found alſo, that, by blowing the Smoke of *Roſemary* into a Glaſs Pipe, and then holding the Pipe (when fill'd) upright, the Surface of the Smoke would accommodate itſelf to a level Situation; and which Way ſoever the Tube was inclin'd, the Superficies of the Smoke would be parallel to the Horizon; and when the Glaſs was much inclin'd, would run along it like Water.

From whence he infers, that, in order to the rendring a Body fluid, there is no Need that its Parts ſhould be cloſely condens'd as thoſe of Water are.

And Dr. *Hook*, in his *Micograph.* p. 12. preſents us with a very pretty Experiment or two to prove this Account of *Fluidity*; viz. That a Diſh of Sand being ſet on a Drum-head, briſkly beaten by the Sticks, or on the upper Stone of a Mill, turning ſwiftly round on the (empty) lower one, it in all reſpects emulates the Properties of a fluid Body; for a heavy Body will immediately ſink in it to the Bottom, and a light one emerge to the Top; each Grain of Sand hath a conſtant vibrating, dancing Motion; and if a Hole be made in the Side of the Diſh, the Sand will ſpin out like Water.

The Corpuſcular Philoſophy, before it was wonderfully improv'd by Sir *Iſaac Newton*, did not go to the Bottom of this Matter; for it gave no Account of the Cauſe of the chief Condition requiſite to conſtitute a fluid Body, viz. *the various Motions and Agitations of its Particles*: But this may, in a great meaſure, be accounted for, for if it be ſuppoſed to be one of the primary Laws of Nature, that as all Particles of Matter do attract one another when they come within a certain Diſtance, ſo likewiſe do they fly away from, and avoid one another, at all greater Diſtances from one another.

For then, tho' their common Gravity may keep them together in a Maſs, (it may ſometimes be) together with the Preſſure of other Bodies upon them, yet their continual Endeavours to avoid one another *ſingly*, and the adventitious Impulſes of Light, Heat, or other external Cauſes, may make the Particles of Fluids continually move round about one another, and ſo produce this Quality.

It is indeed a Difficulty not eaſily got over, to account for the Particles of Fluids always keeping at ſuch a Diſtance from one another, as not to come within the Sphere of one another's Attraction.

The Fabrick and Conſtitution of that fluid Body, Water, is amazing; that a Body ſo very rare, and which has a vaſt Over-proportion of Pores, or interſper'd Vacuity, to ſolid Matter, ſhould yet be perfectly incompreſſible by the greateſt Force; and yet this Fluid is eaſily reducible to that firm, tranſparent, friable Body which we call Ice, by being only expos'd to a certain Degree of Cold.

One would think, that tho' the Particles of Water cannot come near enough to attract each other; yet the intervening frigorifick Matter doth, by being mingled *per minima*, ſtrongly attract them, and is itſelf likewiſe ſtrongly attracted by them, and ſo wedges or fixes all the Maſs into a firm Body; which ſolid Body loſes its Solidity again, when, by Heat, the *Vinculum* is ſolved, and theſe frigorifick Particles are disjoin'd from thoſe of the Water, and are forced to fly out of it; and, perhaps, juſt thus may the Fumes of Lead fix Quickſilver.

When a firm, ſolid Body, ſuch as a Metal, is, by Heat, reduc'd into a Fluid, doth not the Fire disjoin and ſeparate its conſtituent Particles, which *mutual Attraction* caus'd to cohere before, and keep them ſuch a Diſtance from each other, as that they are without the Sphere of one another's Attraction as long as that violent Motion laſts? And don't they, when that is over, and the Heat is flown out, come nearer to, attract one another, and coaleſce again?

As therefore the Cauſe of Coheſion of the Parts of ſolid Bodies appears to be their mutual Attraction, ſo the chief Cauſe of *Fluidity* ſeems to be a contrary Motion impreſs'd on the Particles of Fluids, by which they avoid and fly one another, as ſoon as they come at, and as long as they keep at ſuch a Diſtance from each other.

It is obſerved alſo in Fluids, that the Direction of their Preſſure againſt the Veſſels which contain them, is in Lines perpendicular to the Sides of ſuch Veſſels; which Property being the neceſſary Reſult of the Particles of any Fluids being ſpherical, it ſhews that the Parts of all Fluids are ſo, or of a Figure nearly approaching thereto.

Dr. *Clark* ſays, That if the Parts of a Body do not touch each other, or eaſily ſlide over one another, and are of ſuch a Magnitude as that they may be eaſily agitated by Heat, and the Heat be ſufficiently great to agitate them; tho', perhaps, it may be leſs than ſuffices to prevent Water from freezing; or even tho' the Parts be not actually mov'd, yet if they be ſmall, ſmooth, ſlippery, and of ſuch a Figure and Magnitude, as diſpoſes them to move and give way, that Body is fluid:

And yet the Particles of ſuch fluid Bodies do, in ſome meaſure, cohere; as is evident hence, that *Mercury*, when well purg'd of Air, will be ſuſtain'd in the Barometer to the Height of ſixty or ſeventy Inches; that Water will aſcend in capillary Tubes, even in *Vacuo*; and that the Drops of Liquors in *Vacuo* run into a ſpherical Form, as adhering by ſome mutual Coheſion, like that between poliſh'd Marble Planes.

To this may be added, That theſe fluid Bodies, if they conſiſt of Particles, which are eaſily intangled with each other, as *Oil*; or if they be capable of being ſtiffen'd by Cold, and joined by the Interpoſition of certain *Cunei* or Wedges, as *Water*, they are eaſily render'd hard: But if their Particles are ſuch as can neither be intangled, as *Air*, nor ſtiffen'd by Cold, as *Quickſilver*, then they never grow hard and fixed.

In ſhort, the *Carteſians* define a *Fluid* to be a Body, the Parts of which are in continual inteſtine Motion; and Dr. *Hook*, Mr. *Boyle*, and Dr. *Boerhaave*, tho' they differ in Opinion widely from *Carteſianiſm*, ſubſcribe to the Definition, and alledge Arguments to prove, that the Parts of Fluids are in continual Motion; and even that it is this Motion which conſtitutes Fluidity; and the latter of them aſcribes this and all Motion to Fire. See *Fire*.

Fluids then are either natural, as *Water*, and *Mercury*; or animal, as *Blood*, *Milk*, *Bile*, *Lympha*, *Urine*, &c. or factitious, as *Wines*, *Spirits*, *Oils*, &c.

FŒNICULUM; [This Plant ſeems to take its Name of *Fœnum*, Lat. *Hay*, q. d. *ſmall* or *fine Hay*; but ſome derive it from *Venus*, becauſe this Plant ſows itſelf among others, and becomes fruitful, or becauſe it provokes the *Semen* in Men.] Fennel.

The *Characters* are;

It is an umbelliferous Plant, whoſe Leaves are divided into capillaceous Jags: The Petals of the Flower are intire, and plac'd orbicularly, expanding in form of a Roſe: Each Flower is ſucceeded by two oblong, thick, gibboſe Seeds, which are channel'd on one Side, and plain on the other.

The *Species* are;

1. Foeniculum *vulgare Germanicum. C. B.* Common Fennel.
2. Foeniculum *foliis atro-virentibus. H. Edin.* Common Fennel, with dark-green Leaves.
3. Foeniculum *dulce. C. B.* Sweet Fennel.
4. Foeniculum *ſylveſtre. C. B.* Wild Fennel.
5. Foeniculum *dulce Azoricum. Pluk. Almag. Finochia*; vulgo.

The firſt Sort is ſo common in *England*, that it will be needleſs to ſay any thing concerning it.

The ſecond Sort is a Variety of the firſt, which is very common amongſt it in moſt Gardens in *England*.

The third Sort is the *Sweet Fennel*, whoſe Seeds are us'd in Medicine: This is by many People ſuppos'd to be only a Variety of the common Sort, or at leaſt that the common Sort is a Degeneracy from it; but this is a great Miſtake, for the *Sweet Fennel* is an annual Plant, and never ſurvives a Winter with us, whereas the common Sort will abide many Years.

The firſt and ſecond Sorts are promiſcuouſly brought to the Markets for Kitchen Uſes. Theſe are propagated by ſowing the Seeds ſoon after they are ripe; and when the Plants are come up, they ſhould be either tranſplanted or houghed out to the Diſtance of ſixteen or eighteen Inches, Plant from Plant, for they will ſpread and increaſe in Bulk greatly: Their Roots will abide many Years, but you muſt be careful not to ſuffer their Seeds to ſhed upon the Ground; for the Plants will come up, and over-run every thing that grows near them, and they are with much Difficulty extirpated.

The *Sweet Fennel* is an Annual, and muſt be ſown upon a warm Soil, and in an open Situation in *February* or the Beginning of *March*; and when theſe Plants are come up, they ſhould be houghed out to ten Inches or a Foot Diſtance from each other, and kept clear from Weeds: In *Auguſt* this Plant will perfect its Seeds, and ſoon after the Roots will decay. The Seeds of this Plant which are ſav'd in *England*, are not near ſo good as thoſe which are brought from abroad, which are generally imported at a very reaſonable Price, ſo that it is not worth cultivating with us.

The *Finochia* is a Plant which of late Years has been introduced into the *Engliſh* Gardens, where it is cultivated as a Sallad-herb, and is by ſome People very much eſteem'd, tho' the Generality of *Engliſh* Palates do not at preſent reliſh it; but ſince it is likely to become of more general Uſe, I ſhall give a ſhort Account of its Culture.

Firſt, you muſt provide yourſelf with a Parcel of good Seeds from *Italy*, for thoſe ſav'd in *England* are very apt to degenerate: In *February* you may ſow ſome for the firſt Crop, which ſhould be in a warm Situation, and upon a light dry Soil. The manner of doing this is as follows: After having well dug and levell'd the Ground ſmooth, you ſhould make a ſhallow Rill by a Line, into which you muſt ſcatter your Seeds pretty thin; for if your Plants are ſix Inches aſunder in the Rows, it will be full near enough; but however, you muſt expect ſome of your Seeds to fail; and therefore you ſhould ſcatter them about two Inches Diſtance; then cover the Seeds about half an Inch thick with Earth, laying it ſmooth: Theſe Rills ſhould be made ſixteen Inches aſunder, or more, that there may be Room to clear the Ground, as alſo to earth up the Plants when they are full grown. When the Plants come up, which will be in about three Weeks or a Month after ſowing, you muſt with a ſmall Hough cut up all the Weeds between them, and cut out the Plants to about four Inches Diſtance; and as they advance, and the Weeds ſpring again, ſo they ſhould, from Time to Time, be hough'd: And at the laſt Time of thinning them, they ſhould be left ſix or ſeven Inches aſunder at leaſt. If your Kind be good, the Stems of the Plants will increaſe to a conſiderable Bulk juſt above the Surface of the Ground, which Part ſhould be earth'd up in the manner of Celery, to blanch, about a Fortnight before it is us'd, and this will cauſe it to be very tender and criſp.

Your ſecond Crop ſhould be ſown about three Weeks after the firſt, and ſo continue ſowing every three Weeks or a

Month till *July* ; after which Time it will be too late for the Plants to come to any Perfection. But you ſhould obſerve to ſow in *April* and *May* on a moiſter Soil than that which you ſow'd the firſt on : As alſo what you ſow in the latter Part of *June*, or the Beginning of *July*, ſhould be ſown on a drier Soil, and in a warmer Situation ; becauſe this Crop will not be fit for Uſe till late in the Autumn, and therefore will be ſubject to Injuries from too much wet or cold Weather, if on a moiſt Soil. But as the Ground is very often extreme dry in *June* and *July*, and ſo the Seeds are more apt to miſcarry, or not to come up, you ſhould therefore obſerve to water and ſhade the Beds where this Seed is ſown at that Seaſon until the Plants come up.

A ſmall Bed of this Plant will be ſufficient at each Sowing for a middling Family ; and for a large Family, a Bed of about twenty Feet long, and four Feet broad, will be full enough at a Time.

FŒNUM BURGUNDIACUM. *Vide* Medica Sativa.

FŒNUM GRÆCUM, [*Grecian Hay*, is ſo call'd, becauſe being dry'd, it looks like Hay, and the Seeds were brought from *Greece*. It is alſo call'd *Buceras*, from Βοῦς an *Ox*, and Κέρας a *Horn*, q. d. *Ox-horn*, from the Shape of the Huſk ; alſo *Ægoceras*, of Αἲξ αἰγὸς a *Goat*, and Κέρας a *Horn*, q. d. *Goat's-horn*, from the ſame Cauſe.] Fenugreek.

The *Characters* are ;

It hath a papilionaceous Flower, out of whoſe Impalement riſes the Pointal, which afterwards becomes a Pod ſomewhat plain, ſhap'd like a Horn, and full of Seeds, for the moſt part Rhomboid, or Kidney-ſhap'd.

The *Species* are ;

1. Foenum Græcum *ſativum. C. B.* Common Fenugreek.
2. Foenum Græcum *ſylveſtre. C. B.* Wild Fenugreek.
3. Foenum Græcum *ſylveſtre alterum polyceration. C. B.* Another wild Fenugreek with many Pods.

There are ſeveral other Varieties of this Plant, which are preſerv'd in curious Botanick Gardens : but as they are Plants of little Uſe or Beauty, ſo I ſhall omit mentioning them here.

The firſt Sort here mentioned, is that of which the Seeds are us'd in Medicine.

The other two Sorts are Varieties which are preſerv'd in ſome Gardens. They may be propagated by ſowing their Seeds in *February* or *March* upon a light Soil, and in an open Expoſure. The Plants, when they come up, ſhould be ſingled out to about four or five Inches Diſtance each Way ; and the Ground ſhould be conſtantly kept clear from Weeds, which, if ſuffer'd to grow, would ſoon overſpread and deſtroy the Plants : But you muſt obſerve, theſe Plants will not bear tranſplanting, therefore they ſhould be ſown in the Places where they are to remain. In *June* they will flower, and their Seeds will be perfected in *Auguſt*.

This Plant is cultivated in the open Fields in the South Parts of *France* and *Italy*, from whence the Seed is brought to *England* for Uſe ; for it is too uncertain a Crop to cultivate here, being very apt to miſcarry in cold wet Summers.

FOLIATION, is one of the Parts of a Flower of a Plant, being a Collection of thoſe fine-colour'd Leaves which conſtitute the Compaſs of the Flower.

FOOT-HUSKS are ſhort Heads out of which Flowers grow.

FOUNTAINS are Sources or Springs of living Water ariſing out of the Ground. As to the Original of them, ſee under the Article *Springs*.

Of artificial *Fountains* there is a great Variety ; the Mechaniſm of which not being to my Purpoſe, I will not dwell upon it : Tho' I may aſſert, that they are not only great Ornaments to a fine Garden, but alſo of great Uſe. But they ought not to be plac'd too near the Houſe, by reaſon of the Vapours that ariſe from the Water, which may be apt to ſtrike a Damp to the Walls, and ſpoil the Paintings, *&c.* and the Summer Vapours may cauſe a Malignity in the Air, and ſo be prejudicial to the Health of the Family ; and likewiſe the Noiſe may be incommodious in the Night.

Fountains in a Garden ſhould be ſo diſtributed, that they may be ſeen almoſt all at one Time, and that the Water-ſpouts may range all in a Line one with another ; which is the Beauty of them ; for this occaſions an agreeable Confuſion to the Eye, making them to appear to be more in Number than really they are. See *Jet d'Eau*, *Springs*, *Vapours*, *Water*, &c.

FRAGARIA ; [is ſo call'd for its fragrant, aromatick Scent] Strawberry.

The *Characters* are ;

It hath a perennial fibroſe Root : The Leaves are vein'd, growing upon each Foot-ſtalk : The Stalks trail upon the Ground : The Cup of the Flower conſiſts of one Leaf, which is divided into ten equal Parts, and expands in form of a Star : The Flower conſiſts for the moſt part of five Leaves, which expand in form of a Roſe, *and have many* Stamina *in the Middle, round the Baſe of the Ovary : The Fruit is globoſe or oval, and conſiſts of a fleſhy, eatable Pulp, full of Protuberances.*

The *Species* are ;

1. Fragaria *vulgaris. C. B.* Common *or* Wood-Strawberry.
2. Fragaria *fructu albo. C. B.* Common Strawberry, with white Fruit.
3. Fragaria *fructu parvi pruni magnitudine. C. B.* The Hautboy Strawberry ; *vulgo.*
4. Fragaria *Virginiana, fructu coccineo. M. H. Virginian* Strawberry, with ſcarlet Fruit.
5. Fragaria *Chilienſis, fructu maximo, foliis carnoſis hirſutis* ; vulgo *frutilla. Frez. Voy.* Large *Chili* Strawberry.
6. Fragaria *fructu globoſo majore ſuaviſſimo.* The Globe Hautboy Strawberry.
7. Fragaria *fructu parvo ex albo vireſcente.* Strawberry, with a ſmall greeniſh white Fruit.

The firſt and ſecond Sorts of *Strawberry* are found wild in the Woods in divers Parts of *England*, from whence the Plants are taken and tranſplanted into Gardens ; by which the Fruit is improv'd. The beſt Seaſon for this Work is in *September*, that the Plants may be rooted in their new Quarters before the Froſt begins, which is very apt to looſen the Earth ſo much about their Roots, that when the Froſt goes off, the Plants are apt to be turn'd out of the Ground. They may alſo be tranſplanted in *February* ; but then, if the Spring ſhould prove dry, they will require a great Expence of Water to preſerve them alive.

The Soil which is moſt proper for theſe Plants, is a fre hazily Loam, not over-rich, which would cauſe the Plants t ſpread and flouriſh, but they would not be ſo fruitful as upo a moderate Soil. The Ground ſhould be well dug, and clear' from the Roots of all noxious Weeds ; and after it is levell' even, you muſt mark it out into Beds about three Feet and half wide, leaving a Path between each Bed two Feet broa for the Conveniency of walking between them to water a clean them, as alſo to gather the Fruit : In theſe Beds may planted four Rows of Plants, whereby they will be about Foot aſunder Row from Row ; and in the Rows they ſhou be planted at leaſt eight Inches diſtant Plant from Plant ; if they are planted nearer, they will in one Year's Time be thick, that they will not have Room to thrive. *Note*, t Diſtance here aſſign'd being for the Wood-Strawberry, whi is of the leaſt Growth, the other large growing Kinds m have a greater Share of Room, according to their differe Degrees of Growth ; as for Example, the *Scarlet Strawbe* ſhould be planted a Foot ſquare Plant from Plant, and *Hautboy* ſixteen or eighteen Inches Diſtance each Way ; a the *Chili Strawberry* twenty Inches or two Feet.

In the Spring of the Year, when the *Strawberries* begin flower, if the Seaſon be dry, you muſt obſerve to water th plentifully, otherwiſe the Flowers will fall away without p ducing any Fruit. You muſt alſo carefully clean your Beds *Strawberries* from Weeds from Time to Time, as they ſh require ; for if they are once ſuffer'd to over-bear the Pla they will decay in large Patches, and alſo greatly weaken thoſe that may continue alive. About *Michaelmas* you ſho clear off all the Weeds from the Beds, as alſo cut off the Strings or Runners from the Roots, pulling out all w Plants where they are too cloſe ; then dig up the Walks tween the Beds, burying the Seeds that came off in the B tom, and throw a little fine Earth over the Beds between Plants, being very careful not to lay it ſo thick as to bury Plants : This will greatly ſtrengthen them, and cauſe t Fruit to be larger and in greater Quantities, than they w be if left undreſs'd.

Theſe few Rules will be ſufficient, if duly obſerv'd, cultivating theſe Plants. I would only farther obſerve, theſe Beds will not continue bearing well more than Years ; therefore, in order to have a conſtant Supply, ſhould plant a freſh Plat of Ground a Year before you deſtroy the old Beds, otherwiſe (your young Plantation producing few or no Fruit the firſt Year) you will be deſtitute a whole Seaſon.

The *Wood Strawberry* is by many People preferr'd for the Firmneſs of its Fruit, and Delicacy of Flavour: Others greatly admire the Scarlet Sort for its Goodneſs, and the Hautboy is eſteem'd for the Largeneſs of its Fruit. But the Sort with white Fruit is by far the beſt flavour'd of all the Kinds, tho' it is a bad Bearer. The *Chili Strawberry* was brought firſt into *Europe* by Monſieur *Frezier*, Engineer to the late *French* King, and given to Monſieur *de Jeſſieu*, Profeſſor of Botany to the Royal Garden at *Paris*, who hath ſpread it into divers Parts of *Europe*. This Plant, Monſieur *Frezier* ſays, is cultivated in the Fields near *Chili* in great Plenty, and that it differs from the *European* Kinds, in having larger, thicker, and more hairy Leaves: The Fruit is generally as large as a Walnut, and ſometimes as big as an Hen Egg, of a whitiſh red Colour, and ſomewhat leſs delicious in Taſte than our *Wood Strawberries*. This has produc'd Fruit ſeveral Years in the Royal Garden at *Paris*, where Monſieur *Jeſſieu* aſſur'd me, it was commonly as large as a ſmall Apple. I brought ſome of the Plants from *Holland Anno* 1727, which thrive and increaſe exceedingly; but theſe bear very indifferently, and the Fruit being leſs delicate than the Hautboys, few Perſons care to propagate this Sort in *England*. Theſe Plants have been placed in the Sun, and cultivated with Care, but have never ſucceeded where they have been thus treated. I have obſerved, that they have ſucceeded beſt where they have grown under the Shade of Trees, in a loamy Soil, and little more Care taken of them than to keep them clear from Weeds.

The ſixth Sort is now much cultivated by moſt curious Perſons near *London*, it being a more plentiful Bearer than the common *Hautboy*, and is a better taſted Fruit. In a kindly Seaſon I have ſeen this Fruit as large as Walnuts, and of an extraordinary fine Flavour. This may be cultivated in the ſame Manner as the common *Hautboy* Strawberry, and muſt be planted at the ſame Diſtance.

The ſeventh Sort is a very firm Fruit, about the Size of the Wood Strawberry, or a little larger; this is greatly eſteemed for the Firmneſs of the Fruit, and the quick agreeable Flavour; which ſome Perſons have imagined to reſemble the *Pine-apple*, and from thence have given it the Name of the *Pine-apple Strawberry*. This may be propagated in the ſame Manner as the Wood Strawberry, but ſhould be every Autumn carefully diveſted of Suckers; otherwiſe they will grow very thick, and produce but little Fruit.

The *Chili* Strawberry, which is above deſcribed, is now but little eſteemed in *England*, the Fruit being ill-taſted. This Kind has produced Fruit of late Years in many Gardens; but in general the Fruit is not ſo large as thoſe of the *Globe Hautboy Strawberry*, and is of a very irregular Form: This Sort produces more Fruit, where they grow neglected, and under Shade, than when they are planted in an open Situation, and are cultivated with great Care.

FRANGULA; [is ſo call'd of *frangendo*, *breaking*, becauſe of the Brittleneſs of its Wood] Berry-bearing Alder.

The *Characters* are;

It hath roundiſh Leaves, ſomewhat like thoſe of the Alder-Tree, but ſmaller: The Flower conſiſts of five Leaves, which expand in form of a Roſe: The Flowers are ſucceeded by ſmall round Berries, in each of which are contain'd two ſmall flat Seeds.

The *Species* are;

1. Frangula, *ſive Alnus, nigra baccifera. Park. Theat.* Black Berry-bearing Alder.
2. Frangula *rugoſiore & ampliore folio. Tourn.* Berry-bearing Alder, with a larger and rougher Leaf.
3. Frangula *montana pumila ſaxatilis, folio ſubrotundo. Tourn.* Low Mountain rocky Berry-bearing Alder, with a round Leaf.
4. Frangula *montana pumila ſaxatilis, folio oblongo. Tourn.* Low Mountain rocky Berry-bearing Alder, with an oblong Leaf.
5. Frangula *ſempervirens, folio rigido ſubrotundo. Hort. Elth.* Ever-green Berry-bearing Alder, with a round ſtiff Leaf, commonly called the *Hottentot Cherry*.

The firſt Sort is very common in moiſt Woods in divers Parts of *England*, and is rarely cultivated in Gardens, except for Variety: It ſeldom grows above fourteen or ſixteen Feet in Height, and is not very regular in its Growth, ſo that as it is a Plant of no great Beauty, it leſs deſerves a Place in curious Gardens. It may be propagated by Layers, or from Suckers, which ariſe from the Foot of old Plants, and muſt be planted in a moiſt Soil, and a ſhady Situation, where it will thrive exceedingly.

The Fruit of this Tree is often brought into the Markets of *London*, and ſold for *Buckthorn-berries*; of which Cheat, all ſuch as make *Syrup of Buckthorn* ſhould be particularly careful: They may be eaſily diſtinguiſh'd by breaking the Berries, and obſerving how many Seeds are contain'd in each; the Berries of this Tree having but two, and thoſe of *Buckthorn* generally four Seeds in each Berry.

The ſecond Sort is leſs common than the former in *England*, but may be propagated in the ſame Manner as hath been directed for that Sort, and requires a moiſt Situation; this is much like the former in its Growth, and may be admitted for Variety.

The third and fourth Sorts are of humble Growth, ſeldom riſing above two Feet high; theſe grow on the *Pyrenean* Mountains, and are ſeldom preſerved unleſs in botanic Gardens for Variety: They may be increaſed by laying down their Branches, but muſt have a ſtrong Soil, ſomewhat drier than what has been directed for the two former.

The fifth Sort is a Native of *Africa*, and has been a long Time preſerved by the Curious in their Gardens, under the Title of *Ceraſus Hottentotorum*, or *Hottentot Cherry*; but it having produced Flowers and Fruit in the Garden of Dr. *James Sherard* of *Eltham*, is figured and deſcribed by Dr. *Dillenius*, in the *Hortus Elthamenſis*, by the Name I have here given it. This Plant may be propagated by Cuttings, which ſhould be the former Year's Shoots, and muſt be planted the latter End of *April*, in Pots filled with freſh rich Earth; which ſhould be plunged into a moderate Hot-bed of Tanners-bark, being careful to ſhade the Glaſſes in the Heat of the Day, as alſo to refreſh them often with Water; this muſt be duly obſerved, until the Cuttings have taken Root, which cannot be expected ſooner than the Middle of *July*, when they muſt be inured to bear the open Air by degrees; and toward the End of the Month, they muſt be taken out of the Hot-bed, and placed in the open Air, in a warm Situation, where they may be ſcreened from violent Winds; in this Place they may remain till the Beginning of *October*, when they muſt be removed into the Green-houſe, and placed in a warm Situation; and during the Winter Seaſon, they muſt be frequently refreſhed with Water, but this muſt not be given them in too large Quantities, while they continue in the Houſe. In the Spring theſe Plants may be ſhaken out of the Pots, and ſeparated, putting each into a ſmall Pot filled with freſh rich Earth, and placed in a ſhady Situation, until they have taken new Root; after which Time they may be expoſed to the open Air, with *Myrtles*, *Oranges*, and other hardy exotic Plants, till Autumn, when they muſt be houſed with thoſe Trees. This Sort will grow to the Height of twelve or fourteen Feet, and may be trained up with a regular Stem; ſo that it deſerves a Place in every curious Green-houſe; for their thick ſhining ever-green Leaves make a pleaſing Variety amongſt other hardy exotic Plants.

FRAXINELLA, [is ſo call'd of *Fraxinus*, Lat. *the Aſh-tree*; becauſe its Leaves reſemble thoſe of the *Aſh-tree*, q. d. *the little Aſh*: It is call'd *Dictamnus*; becauſe it has the Smell, Taſte, and Virtues of it] Baſtard, or White Dittany.

The *Characters* are;

It hath a perennial Root: The Leaves are pennated like thoſe of the Aſh: *The Flower conſiſts of many Leaves, and are of an anomalous Figure, four of theſe Petals growing on the Upper-ſide, and one or more on the Under-ſide of the Flower; in the Center of which are produced nine or ten crooked* Stamina *or* Threads: *Each Flower is ſucceeded by many Pods, which are turn'd back like a Rams Horn, and open in two Parts, emitting ſeveral large, hard, black, ſhining Seeds.*

The *Species* are;

1. Fraxinella, *Cluſ.* White Baſtard Dittany; or, Fraxinella, with white Flowers.
2. Fraxinella *purpurea major multiflora. H. R. Par.* Great purple Fraxinella, with many Flowers.
3. Fraxinella *minor purpurea Belgarum. H. R. Par.* Small purple white Dittany of *Holland*.
4. Fraxinella *niveo flore. Cluſ. Hiſt.* White Dittany with Snow-white Flowers.

The firſt two Sorts are propagated either by ſowing their Seeds, or parting the Roots: The latter Method being the moſt expeditious, is generally us'd; tho', if we would ſupply ourſelves with a Quantity of theſe Plants, we muſt procure them from Seeds, for the Roots do not multiply very faſt; nor ſhould they be diſturb'd by parting them oftener than every other Year; for if you part them frequently, or into ſmall Heads, the Flowers will be few in Number, and very weak.

The beſt Seaſon to tranſplant theſe Roots, is towards the latter End of *September*, or Beginning of *October*, that they may be rooted before the hard Froſts begin, by which Means they will be enabled to reſiſt the Cold, and produce much fairer Flowers than thoſe which are tranſplanted in the Spring. The Soil in which theſe Plants thrive beſt, is a freſh, rich, gentle Loam, not too ſtiff, or wet, in both of which they are apt to rot in Winter.

If you would propagate them by Seeds, you muſt ſow them on a Bed of good freſh Earth in an open Expoſure, ſoon after the Seeds are ripe; for if they are kept 'till Spring before they are ſown, they either miſcarry, or lie in the Ground 'till the next Spring before they come up: But you muſt carefully obſerve to weed the Bed; for if you ſuffer the Weeds to root deep in the Ground, they will endanger the drawing of the Seeds out of the Earth, when the former are pull'd up. If the Spring ſhould prove dry when your Plants firſt appear, you ſhould gently water the Bed, and ſhade it with Mats in the Heat of the Day, until the Plants have got Strength, obſerving, as before, to keep them clear from Weeds: In this Bed they may remain until *Michaelmas* following; at which Time you ſhould prepare one or more Beds (according to the Number of your Plants) of the like freſh Earth, into which you muſt plant your Plants at about five or ſix Inches Diſtance each Way, being careful, in taking them out of the Seed-bed, not to break or wound their Roots, as alſo to cloſe the Earth faſt to their Roots, when planted, with your Hands, to prevent their being turn'd out of the Ground by Froſt. In theſe Beds they may remain one Year, by which Time, (if they have thriven well) they will be ſtrong enough to produce Flowers the ſucceeding Year; ſo that now it will be Time to tranſplant them into the Borders of the Flower-Garden where they are deſigned to remain.

The third and fourth Sorts are at preſent more rare in *England*, than the two other Kinds; but of late they have been procured by ſome curious Perſons from abroad. Theſe are as hardy as the other Sorts, and may be propagated in the ſame Manner; and as they produce very beautiful Flowers, ſo they add greatly to the Variety in the Flower-Garden; and requiring but little Care to cultivate them, they deſerve a Place in every good Garden.

FRAXINUS; The Aſh-Tree.

The *Characters* are;

It hath pennated Leaves, which moſtly end in an odd Lobe: The Male Flowers (which grow at a remote Diſtance from the Fruit) have no Petals, but conſiſt of many Stamina: *The Ovary becomes a Seed-veſſel, containing one Seed at the Bottom, which is ſhaped like a Bird's Tongue.*

The *Species* are;

1. FRAXINUS *vulgaris. Park. Theat.* The Common Aſh-Tree.
2. FRAXINUS *vulgaris, foliis ex luteo variegatis.* The ſtriped Aſh.
3. FRAXINUS *folio rotundiore. C. B.* The Manna Aſh.
4. FRAXINUS *florifera botryoides. M. H. R. Blaſ.* The flowering Aſh.
5. FRAXINUS *ex Nova Anglia, pinnis foliorum in mucronem productioribus. Rand. New-England* Aſh, with ſharp-pointed Leaves.
6. FRAXINUS *Caroliniana, latiori fructu. Rand. Carolina* Aſh, with broad Keys.

The firſt Sort is a common Timber-Tree in every Part of *England.*

The ſecond is a Variety of the firſt, from which it only differs in having its Leaves beautifully ſtriped with Yellow.

The third Sort is ſuppoſed to be the Tree from whence the true *Calabrian* Manna is taken.

The fourth Sort was rais'd from Seeds by Dr. *Uvedale* at *Enfield*, which were brought from *Italy* by the late curious Botaniſt Dr. *William Sherrard*, who ſuppos'd this was different from Dr. *Moriſon*'s Tree. But by the Specimens now in Poſſeſſion of that worthy Encourager of Botanical Studies, Sir *Hans Sloane*, Bart. it appears to be the very ſame; notwithſtanding Mr. *Ray* ſuppoſes Dr. *Moriſon*'s Tree to be of *American* Growth.

The fifth and ſixth Sorts were both rais'd from Seeds which came from *America*, but are both of them very hardy. All theſe Kinds may be propagated by Budding them into the common *Aſh*, upon which they will all take very well, and become hardier than upon their own Stock.

The common *Aſh* is propagated by ſowing the Keys, in *October* or *November*, on a Bed of freſh Earth, which ſhould be well dug, and cleans'd from Roots, and noxious Weeds: A ſmall Bed will be ſufficient to raiſe a great Quantity of theſe Trees. The Seeds ſhould be ſown pretty thick, and cover'd about half an Inch thick with Earth.

Theſe Seeds, many times, continue until the ſecond Spring before they come up; you ſhould therefore let the Bed remain undiſturb'd, and keep it clean from Weeds. When your Plants come up, you muſt alſo keep them very clear from Weeds; and if the Seaſon ſhould prove very dry, if you give them now and then a little Water, it will greatly promote their Growth: In this Bed they ſhould remain no longer than the Autumn following, provided they have grown well; at which Time you ſhould prepare a Nurſery, which ſhould be well dug, and clear'd, as before; then with your Spade looſen the Roots of the Plants before you draw them up, otherwiſe you will endanger the breaking of them. When you have drawn them out of the Ground, ſhorten the down-right Tap-root; but do not cut off any of the lateral Fibres: Then having prepared your Ground, plant them in Rows, three Feet Diſtance Row from Row, and a Foot aſunder in the Rows, cloſing the Earth to their Roots with your Feet. In this Nurſery they may remain three or four Years, obſerving to keep them clear from Weeds, as alſo to trim up the Side-branches every Winter, and dig the Ground between the Rows; after which Time you may remove them where they are to remain for good.

This Tree will grow upon almoſt any Soil; but the better the Soil is, the more the Tree will increaſe in Bulk. Notwithſtanding which, it ſhould not by any means be planted too near to other Trees or Plants; for it will exhauſt all the Goodneſs of the Soil from them; and the Shade of this Tree is malignant to moſt other Plants. The Diſtance they ſhould be planted is eight Feet ſquare; and after they have been planted one Year, you may cut down every other Tree, chuſing ſuch of 'em as are crooked, within ſix or eight Inches of the Ground; this will cauſe 'em to make many ſtrong, vigorous Shoots, which, in four or five Years time, will be fit for Arbour-poles, or to make Hoops: And the other remaining ſtrait Trees may be ſuffered to grow for other Timber; the Number of which Trees may be leſſen'd as they increaſe in Bulk, leaving ſtill the moſt promiſing ones to grow for larger Timber.

If a Wood of theſe Trees is rightly manag'd, it will turn greatly to the Advantage of its Owner; for by the Underwood, which will be fit to cut every five or ſix Years for the Uſes above-mentioned, there will be a continual Income more than ſufficient to pay the Rent of the Ground, and all other Charges, and ſtill there will be a Stock preſerv'd for Timber, which, in a few Years, will be worth forty or fifty Shillings *per* Tree.

This Timber is of excellent Uſe to the *Wheelright* and *Cartright* for *Ploughs*, *Axletrees*, *Wheel-rings*, *Harrows*, *Bulls*, *Oars*, *Blocks* for *Pullies*, and many other Purpoſes.

The beſt Seaſon for Felling of theſe Trees is from *November* to *February*; for if it be done either too early in Autumn, or too late in the Spring, the Timber will be ſubject to be infeſted with Worms, and other Inſects: But for Lopping of *Pollards*, the Spring is preferable for all ſoft Woods.

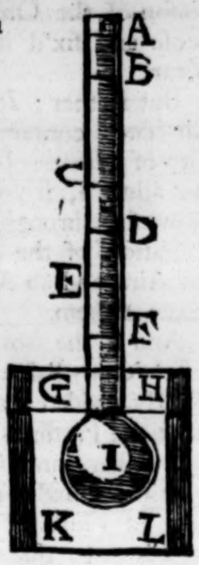
FREEZING, is the fixing of a Fluid, or the depriving it of its natural Mobility by the Action of *Cold*; or it is the Act of converting a *fluid* Subſtance into a *firm*, *coherent*, *rigid* one, call'd *Ice*.

The principal Phænomena of *Freezing*, are;

1ſt: That Water being dilated or rarefied, and all Fluids, *Oil* excepted, *i. e.* in *freezing*, take up more Space, and are ſpecifically lighter than they were before.

That the Bulk and Dimenſions of Water are increas'd by *Freezing*, is found by many Experiments: And it may not be improper here to take notice of the Proceſs of Nature.

A Glaſs Veſſel then, I A, full of Water to A, being immerg'd in a Veſſel of Water mix'd with Salt G H K L, the Water preſently riſes from D to C; which ſeems owing to the ſudden Conſtruction of the Veſſel, haſtily plung'd into ſo cold a Medium: Soon after, from the Point C, it continually deſcends condenſing, 'till it arrives at the Point F; where, for ſome time, it ſeems to remain at reſt: But it ſoon recovers itſelf, and begins to expand, riſing from F to E, and from thence ſoon after, by one violent Leap, mounts to B; and here the Water in I is immediately ſeen all thick and cloudy, and in the very Inſtant of this Leap, is converted into Ice. Add, that while the Ice is growing harder, and ſome of the Water near the Neck of the Veſſel I is *freezing*, the Flux of the Water is continu'd above B towards A, and at length runs out at the Veſſel.



2dly: That they loſe not only of the ſpecifick, but alſo of their abſolute Gravity, by *freezing*; ſo that when they are thaw'd again, they are found conſiderably heavier than before.

3dly: That *frozen* Water is not quite ſo tranſparent as when it was liquid; and that Bodies don't perſpire ſo freely through it.

4thly: That Water, when frozen, evaporates almoſt as much as when fluid.

5thly: That Water does not freeze *in Vacuo*, but requires the Preſence and Contiguity of Air.

6thly: That Water which has been boil'd, does not freeze ſo readily as that which has not.

7thly: That Water being cover'd over with a Surface of Oil of Olives, does not freeze ſo readily as it does without it; and that Nut-oil abſolutely preſerves it under a ſtrong Froſt, when Olive-oil will not.

8thly: That Spirit of Wine, Nut-oil, and Oil of Turpentine, do not freeze at all.

9thly: That the Surface of the Water, in *freezing*, appears all wrinkled; the Wrinkles being ſometimes in parallel Lines, and ſometimes like Rays proceeding from a Centre to the Circumference.

The Theories of *freezing*, or the Method of accounting for theſe *Phænomena*, are very many.

The chief Principles that different Authors have gone upon, are either, that ſome foreign Matter is introduced within the Pores of the Fluid, by Means of which it is fixed, its Bulk increaſed, *&c.*

Or that ſome Mater which was naturally contain'd in the Fluid, is now expell'd; by reaſon of the Abſence of which, the Body becomes fluid, *&c.*

Or that there is ſome Alteration produc'd in the Texture or Form, either of the Particles of the Fluid itſelf, or of ſomething that is contain'd within it.

To ſome one of theſe Principles all the Syſtems of *freezing* are reducible.

The *Carteſians* explicate *freezing* by the Receſs or going out of the Ethereal Matter from the Pores of the Water, or other Liquor; which being once done, the finer Parts are too ſmall and flexible to keep the long, ſlender, and Eel like Particles of Water fluent, or in the Form of a Liquor.

But the *Corpuſcularians*, or *Gaſſendiſts*, aſcribe the *freezing* of Water, with more Probability, to the Ingreſs of Multitudes of cold or frigorifick Particles, as they call 'em; which entring the Liquor in Streams, and diſperſing themſelves every way through it, do croud into the Pores of the Water, and hinder the wonted Agitation of its Parts, and wedge it up, as it were, into the hard or conſiſtent Body of Ice; and from hence proceeds its Increaſe of Dimenſions, Coldneſs, *&c.*

That Ice is ſpecifically lighter than the Water out of which it is by *freezing* made, is certain by its ſwimming in it; and that this Lightneſs of Ice proceeds from thoſe numerous Bubbles which are produced in it by its Congelation, is equally plain: But how thoſe Bubbles come to be generated in *freezing*, and what Subſtance they contain in them, if they are not quite empty, is an Inquiry of great Importance; and, perhaps, if diſcovered, may contribute much to the underſtanding the Nature of Gold.

Mr. *Hobbs* will have it common Air, which intruding into the Water in Congelation, intangles itſelf with the Particles of the Fluid, prevents their Motion, and produces thoſe numerous Bubbles, thus expanding its Bulk, and rendering it ſpecifically lighter.

But, in anſwer to this, no ſuch Ingreſs of Air into Water appears in its Coagulation; and that it does not get into frozen Oil, is plain, becauſe that Body is condens'd by being frozen.

And Mr. *Boyle* has alſo ſhewn, by undoubted Experiments, that Water will freeze in Veſſels hermetically ſealed, and in braſs Bodies or Veſſels cloſely ſtop'd, and into which the Air can have no Ingreſs, hath yet been turn'd into Ice, abounding with theſe Bubbles as numerous as thoſe frozen into the open Air.

He alſo has prov'd by Experiment, that Water kept a while in the exhauſted Receiver, 'till all its Bubbles were emerg'd and gone, being afterwards turn'd into Ice by a *freezing* Mixture, the Ice had ſcarce any Bubbles in it: Whence it is plain, that theſe Bubbles are fill'd with ſome Matter which is within the Water, if they are fill'd with any thing: But he proves alſo, by plain Experiments, that they have none, or exceedingly little true elaſtick Air contained in them.

Others, and thoſe of the greateſt Number, are of Opinion, that the *freezing* Matter is a Salt; and they argue, that an Exceſs of Cold will render Water torpid, but never congeal it without Salt: They ſay, that thoſe Particles that are the chief Cauſe of *freezing*, are ſaline, mix'd in a due Proportion; Congelation bearing a near Relation to Cryſtallization.

This Salt is ſuppoſed to be of the nitrous Kind, and to be furniſh'd by the Air, which is generally found to abound in Nitre.

It is indeed no difficult Matter to account for the Particles of Nitre preventing the Fluidity of Water. Theſe Particles are ſuppos'd to be ſo many rigid pointed *Spicula*, which are eaſily impell'd, or driven into the *Stamina* or Globules of Water; which, by this Means, becoming variouſly mingled and intangled with it, do, by degrees, weaken and deſtroy the Motion of it.

The Reaſon that this Effect ariſes only in ſevere Winter Weather, is, that it is then only that the retracting Action of the nitrous *Spicula* is more than equal to the Power or Principle by which the Fluid is otherwiſe kept in Motion, or diſpos'd for Motion.

Several Experiments of artificial *freezing* ſupport this Opinion.

For if you mix a Quantity of common Saltpetre with Snow, or Ice pulveriz'd, and diſſolve the Mixture in the Fire, and then immerge a Tub full of Water in the Solution; the Water, that Part of it next the Mixture, will freeze preſently, even in a warm Air.

Whence they argue, that the *Spicula* of the Salt is driven through the Pores of the Glaſs, and mix'd with the Water, by the Gravity of the Mixture, and of the incumbent Air: For that it is evident that the Salt has this Effect, inaſmuch as it is certainly known, that the Particles of Water cannot find their Way through the Pores of the Glaſs.

In theſe artificial *freezings*, in whatever Part the Mixture is apply'd, there is preſently a Skin or *Lamma* of Ice produc'd, whether at the Top, Bottom, or Sides; by reaſon that there is always a Stock of ſaline Corpuſcles ſufficient to overpower theſe Particles of Fire, but *natural Congelations* are confin'd to the Top of the Water, where the laſt moſt abounds.

But this Syſtem is oppos'd by the Author of the *Nouvelle Conjecture pour expliquer la Nature de la Glace*, who objects, that it does not appear that Nitre always enters the Compoſition of Ice; but if it did, it would fall ſhort of accounting for ſome of the principal Effects; as,

How ſhould the Particles of Nitre, by entering the Pores of the Water, and fixing the Parts, cauſe the Water to dilate, and render it ſpecifically lighter? They ſhould naturally augment its Weight.

This, and ſome other Difficulties, ſhew the Neceſſity of a new Theory; and therefore the ingenious Author advances this which follows, which ſeems to ſolve the *Phænomena* in a Manner that is more eaſy and ſimple, as not depending upon the Admiſſion or Extruſion of any heterogeneous Matter.

That Water freezes in the Winter only; becauſe its Parts then being more cloſely join'd together, do mutually imbaraſs one another, and loſe all the Motion they had; and that the Air, or rather an Alteration in the Spring and Force of the Air, is the Cauſe of this cloſer Union of Water.

It is evident from Experiment, that there are an infinite Number of Particles of groſs Air interſpers'd among the Globules of Water; and it is allow'd, that each Particle of Air has the Virtue of a Spring: And hence this Author argues, that the ſmall Springs of groſs Air mixed with Water, have more Force in cold Winter Weather, and do then unbend themſelves more than at other Times. Hence thoſe Springs thus unbending themſelves on one Side, and the external Air continuing to preſs the Surface of the Water on the other, the Particles of the Water being thus conſtringed and lock'd up together, muſt loſe their Motion and Fluidity, and form a hard, conſiſtent Body, 'till a Relaxation of the Spring of the Air, from an Increaſe of Heat, reduce the Particles to their old Dimenſions, and leave Room for the Globules to flow again.

But this Syſtem ſeems to be built upon a falſe Principle; for the Spring or Elaſticity of the Air is not increas'd by Cold, but diminiſh'd: Air condenſes by Cold, and expands itſelf by Heat; and it is demonſtrable in Pneumaticks, that the elaſtick Force of expanded Air is of that to the ſame Air as condens'd, as the Bulk when rarefied is to its Bulk when condens'd.

Indeed, ſome Authors, in order to account for the Increaſe of the Bulk and Dimenſion of the ſpecifick Gravity of frozen Water, have advanc'd as follows; *viz.* That the aqueous Particles, in their natural State, were nearly Cubes, and ſo fill'd their Space without the Interpoſition of many Pores; but that they are chang'd from Cubes to Spheres, by Congelation: From whence it will neceſſarily follow, that there muſt be a great deal of empty Space between them.

But, in Oppoſition to this Hypotheſis, the Nature of Fluidity and Firmneſs eaſily ſuggeſts, that ſpherical Particles are much properer to conſtitute a Fluid than cubical ones, and leſs diſpos'd to form a fix'd than cubick one.

But, after all, in order to come at a conſiſtent Theory of *Freezing*, we muſt either have Recourſe to the frigorifick Matter of the *Corpuſcularians*, conſidered under the new Light and Advantages of the *Newtonian* Philoſophy, or to the Ethereal Matter of the *Carteſians*, under the Improvements of Monſ. *Gauteron*.

The true Cauſe of *Freezing*, or the Congelation of Water into Ice, ſay the former, ſeems plainly to be the Introduction of the frigorifick Particles into the Pores or Interſtices between the Particles of the Water, and by that Means getting ſo near them, as to be juſt within the Spheres of one another's *attracting Force*, and then they muſt cohere into one ſolid or firm Body: But Heat afterwards ſeparating them, and putting them into various Motions, breaks this Union, and ſeparates the Particles ſo far from one another, that they get out of the Diſtance of the *attracting Force*, and into the Verge of the *repelling Force*, and then the Water reaſſumes its fluid Form.

Now that *Cold* and *Freezing* do proceed from ſome Subſtance of a ſaline Nature floating in the Air, it ſeems probable from hence;

That all *Salts*, and more eminently ſome particular ones, do prodigiouſly increaſe the Force and Effects of *Cold*, when mix'd with *Snow* or *Ice*. It is alſo evident, that all ſaline Bodies do produce a Stiffneſs and Rigidity in the Parts of thoſe Bodies into which they enter.

It appears, by microſcopical Obſervations upon *Salts*, that the Figure of ſome *Salts*, before they ſhoot into Maſſes, are thin, double-wedg'd, like Particles which have abundance of Surface, in reſpect to their Solidity; and is the Reaſon why they ſwim in Water, when once rais'd in it, tho' ſpecifically heavier.

Theſe ſmall Points getting into the Pores of the Water, whereby they are alſo, in ſome meaſure, ſuſpended in the Winter-time, when the Heat of the Sun is not ordinarily ſtrong enough to diſſolve the Salts into a Fluid, to break their Points, and to keep them in perpetual Motion; being leſs diſturb'd, are at more liberty to approach one another; and, by ſhooting into Cryſtals of the Form above-mention'd, do, by both their Extremities, inſinuate themſelves into the Pores of the Water, and by that Means freeze it into a ſolid Form. And it is apparent, that the Dimenſions of Water are increas'd by *freezing*, the Particles of it being kept at ſome Diſtance from one another by the Intervention of the frigorifick Matter.

But beſides this, there are many little Volumes, or ſmall Particles of Air, included at ſeveral Diſtances, both in the Pores of the watery Particles, and in the Interſtices form'd by their ſpherical Figure. Now, by the Inſinuation of the Cryſtals, the Volumes of Air are driven out of the watery Particles, and many of them uniting, from larger Volumes, which thereby have a greater Force to expand themſelves than when they are diſpers'd; and ſo both enlarge the Dimenſions, and leſſen the ſpecifick Gravity of Water thus congeal'd into Ice.

And hence (ſays Dr. *Cheyne*, from whom this laſt Account is taken) we may gueſs at the Manner how Water impregnated with Salts, Sulphurs, or Earths, which are not eaſily diſſolvable, may Form itſelf into Metals, Minerals, Gums, and other Foſſils; the Parts of theſe Mixtures becoming a Cement to the Particles of Water, or getting into their Pores, change them into theſe different Subſtances.

For the *ſecond*: As an Ethereal Matter or Medium is generally allow'd to be the Cauſe of the Motion of Fluids; and as the Air itſelf has all its Motion from the ſame Principle; it follows, that all Fluids muſt remain in a State of Reſt or Fixity, when that Matter loſes of its neceſſary Force. And conſequently, the Air being leſs warm'd in the Winter-time, by reaſon of the Obliquity of the Sun's Rays, the Air is more denſe and fix'd in Winter than any other Seaſon of the Year.

But farther: It is evident from divers Experiments, that the Air does contain a Salt which is ſuppos'd to be of the Nature of Nitre. If this be granted, and the Denſity of the Air allow'd, it will follow, that the Particles of this Nitre muſt likewiſe be brought nearer together, and thicken'd by the Condenſation of the Air: As, on the contrary, a Rarefaction of the Air, and an Augmentation of its Fluidity, muſt divide and ſeparate them.

And if the ſame happens to all Liquors that have imbib'd or diſſolv'd any Salt; if the Warmth of the Liquid kept the Salt exactly divided; and if the Coolneſs of a Cellar, or of Ice, cauſe the Particles of the diſſolv'd Salt to approach, run into each other, and ſhoot into Cryſtals; Why ſhould the *Air*, which is allow'd to be a Fluid, be exempt from the general Law of Fluids?

'Tis true, that the Nitre of the Air being groſſer in cold Weather than in hot, muſt have a leſs Velocity; but ſtill the Product of its augmented Maſs into the Velocity that remains, will give it a greater *Momentum* or Quantity of Motion. Nor is there any thing farther requir'd to make this Salt act with greater Force againſt the Parts of Fluids; and this may probably be the Cauſe of the great Evaporation in froſty Weather.

This aereal Nitre muſt neceſſarily promote the Concretion of Liquids; for it is not the Air, nor yet the Nitre that it contains, which gives the Motion to Fluids; 'tis the Ethereal Medium: Therefore a Diminution of the Motion of Reſt ariſes from the Diminution of that Force.

Now the Ethereal Matter, which in the Winter-time is weak enough, muſt ſtill loſe more of its Force by its Action againſt Air condens'd, and loaded with large Particles of Salt. It muſt therefore loſe of its Force in cold Weather, and become leſs diſpos'd to maintain the Motion of the Fluids.

In fine: The Air, during Froſt, may be eſteem'd like the Ice impregnated with Salt wherewith Liquors are iced in Summer-time. It is very probable that theſe Liquors *freeze* by reaſon of a Diminution of the Motion of the Ethereal Medium, by its acting againſt the Ice and Salt together; and the Air is not liable to prevent its Concretion by all its ſcorching Heat.

The Air (ſays Mr. *Boyle*) being a Fluid as well as Water, and impregnated with Salts of different Kinds, 'tis not improbable, that what happens in Water impregnated with ſuch Salts, may alſo happen in the Air. Two proper Quantities of different Salts being diſſolv'd in hot Water, they floated undiſtinguiſhably in it, and retain'd a Capacity to act in Conjunction upon ſeveral Occaſions; yet when the Liquor becomes cold, the ſaline Particles of one Kind being no longer agitated by a due Degree of Heat, ſhot into Cryſtals, and loſing their Fluidity and Motion, viſibly ſeparated themſelves from the other, which ſtill continu'd fluid in the Liquor, and capable of acting ſeparately.

We have divers Accounts in the *Philoſophical Tranſactions*, of a *freezing Rain* which fell in the Weſt of *England* in *December* 1672. This Rain, as ſoon as it touch'd any thing above the Ground, as a Bough, or the like, immediately ſettled into Ice, and by multiplying and enlarging, the Iſicles broke all down with its Weight; the Rain that fell on the Snow immediately froze into Ice, without ſinking into the Snow at all.

It made an incredible Deſtruction of Trees beyond any thing in all Hiſtory. A certain Gentleman weigh'd a Sprig of an *Aſh-tree* of juſt three Quarters of a Pound: The Ice which was on it, weigh'd 16 Pounds: That ſome Perſons were frighted with the Noiſe in the Air, 'till they underſtood that it was the Clatter of Icy Boughs daſh'd againſt each other.

Dr. *Beale* obſerves, that there was no conſiderable Froſt obſerv'd on the Ground during the whole time; whence he concludes, that a Froſt may be very fierce and dangerous on the Tops of ſome Hills and Plains; while in other Places it keeps at two, three, or four Feet Diſtance above the Ground, Rivers, Lakes, *&c.* and may wander about very furious in ſome Places, and remiſs in others not far off. The Froſt was followed by glowing Heats, and a wonderful Forwardneſs of Flowers and Fruits.

FRITILLARIA; Fritillary or Chequer'd Tulip.

The *Characters* are;

The Flower conſiſts of ſix Leaves, and is of the Bell-ſhap'd Lily *Flowers, pendulous, naked, and for the moſt part chequer'd:*

quer'd: The Style of the Flower becomes an oblong Fruit, which is divided into three Cells, and fill'd with flat Seeds, lying in a double Row: The Root conſiſts of two fleſhy Knobs, which are for the moſt part ſemi-globular, betwixt which ariſes the Flower-ſtalk.

The *Species* are;

1. **Fritillaria** *ſerotina, floribus ex flavo virentibus. C. B.* The late flowering Fritillary, with greeniſh yellow Flowers, *commonly call'd*, the Leather Coat, or Common Fritillary.

2. **Fritillaria** *alba præcox. C. B.* The early white Fritillary.

3. **Fritillaria** *alba variegata. C. B.* The white chequer'd Fritillary.

4. **Fritillaria** *ſerotina, floribus ex flavo-virentibus, major. Boerh. Ind.* The great late flowering Fritillary, with a greeniſh yellow Flower; or the Common Fritillary, by ſome call'd Snake's-head Iris.

5. **Fritillaria** *flavo flore. Cluſ.* The yellow Fritillary.

6. **Fritillaria** *præcox purpureo-variegata. C. B.* Early purple variegated Fritillary.

7. **Fritillaria** *folio ſplendente, flore majore, ex viridi & purpura variegato, ſplendente. Boerh. Ind.* Shining-leav'd Fritillary, with a large green and purple-ſhining variegated Flower, *commonly call'd* the Monſter.

8. **Fritillaria** *umbellifera. C. B.* Many-leav'd Fritillary.

9. **Fritillaria** *lutea maxima Italica. Park. Par.* Greateſt yellow *Italian* Fritillary.

10. **Fritillaria** *ſerotina, floribus ex flavo-virentibus, flore pleno. H. R. Par.* Late Fritillary, with double greeniſh yellow Flowers.

11. **Fritillaria** *nigra. Lob. Adv.* Black Fritillary.

12. **Fritillaria** *flore ex rubro-purpureo & viridi variegato. Boerh. Ind.* Fritillary with a reddiſh purple Flower ſtrip'd with Green.

13. **Fritillaria** *flore ex pallide-viridi & viete purpureo variegato. Boerh. Ind.* Fritillary with a pale green Flower, variegated with a deep purple.

14. **Fritillaria** *Iſabella dicta, floribus ex pallide rubicundo virentibus. H. L.* Iſabella Fritillary, with a pale red greeniſh Flower.

15. **Fritillaria** *maxima, flore obſoletæ purpuræ. Tourn.* The greateſt Fritillary, of a worn-out purple Colour, *commonly call'd* the Perſian Lily.

16 **Fritillaria** *minima. Swert. Flor.* The leaſt Fritillary, or ſmall Perſian Lily.

17. **Fritillaria** *lutea, folio Polygonati, fructu breviori. Boerh. Ind.* Yellow Fritillary, with a Leaf like Solomon's Seal, and a ſhort Fruit.

There are ſeveral other Varieties of this Flower, which are propagated in curious Flower-Gardens abroad, (eſpecially in *Holland*) which differ in the Colour or Size of their Flowers; but as theſe are only Varieties which were obtain'd from Seeds, ſo it would be needleſs to mention them in this Place, ſince there will be new Varieties obtain'd every Year where Perſons are curious in ſowing their Seeds.

Theſe Plants are propagated either by Seeds, or Off-ſets from the old Roots: By the firſt of which Methods new Flowers will be obtain'd, as alſo a larger Stock of Roots in three Years, than can be obtain'd in twenty or thirty Years by the latter Method: I ſhall therefore treat firſt of their Propagation by Seeds.

Having provided yourſelf with ſome good Seeds, ſav'd from the faireſt Flowers, you muſt procure ſome ſhallow Pans or Boxes, which muſt have ſome Holes in their Bottoms to let out the Moiſture: Theſe you ſhould fill with light freſh Earth, laying a few Potſheards over the Holes, to prevent the Earth from ſtopping them; then having laid the Earth very level in the Boxes, &c. you muſt ſow the Seeds thereon pretty thick, covering it with fine ſifted Earth a Quarter of an Inch thick. The Time for ſowing the Seed is about the Beginning of *Auguſt*; for if it be kept much longer out of the Ground, it will not grow; then place the Boxes or Pans where they may have the Morning Sun until 11 o'Clock, obſerving, if the Seaſon proves dry, to water them gently, as alſo to pull up all Weeds ſo ſoon as they appear; for if they are ſuffer'd to remain until they have taken deep Root into the Earth, they would draw the Seeds out of the Ground whenever they are pull'd up. Toward the latter End of *September* you ſhould remove the Boxes, &c. into a warmer Situation, placing them under a Hedge or Wall expos'd to the South; in which Place they may remain until the Middle of *March*, by which Time the Plants will be come up an Inch high: you muſt therefore remove the Boxes as the Weather increaſes hot, into a more ſhady Situation; for while the Plants are young, they are liable to ſuffer by being too much expos'd to the Sun: And in this ſhady Situation they may remain during the Heat of the Summer, obſerving to keep them clear from Weeds, and to refreſh them now and then with a little Moiſture; but be careful not to give them much Water after their Leaves are decay'd, which would rot the Roots. About the Beginning of *Auguſt*, if the Roots are very thick in the Boxes, you ſhould prepare a Bed of good light freſh Earth, which muſt be levell'd very even, upon which you ſhould ſpread the Earth in the Boxes in which the ſmall Roots are contain'd, equally covering it about one fourth of an Inch thick with the ſame freſh Earth: This Bed ſhould be ſituated in a warm Poſition, but not too cloſe to Hedges, Walls, or Pales, which would cauſe their Leaves to be long and ſlender, and make the Roots weaker than if placed in a more open Expoſure.

In this Bed they may remain until they flower, which is generally the third Year from ſowing; at which Time you ſhould put down a Mark to the Roots of all ſuch as produce fair Flowers; and at the Time of taking them out of the Ground (which ought to be ſoon after their green Leaves are decay'd) they may be ſelected into a Bed amongſt your old Roots of this Flower, which for their Beauty are preſerv'd in the beſt Gardens; but the other leſs valuable Flowers may be planted in the Borders of the Parterre Garden for their Variety, where being intermix'd with other Flowers of different Seaſons, they will make a good Appearance.

The fine Sorts of this Flower ſhould remain undiſturb'd three Years, by which Time they will have produc'd many Off-ſets, and ſhould be therefore taken up when their Leaves are decay'd, and planted into a freſh Bed, taking ſuch of their Off-ſets as are large enough to produce Flowers to plant in the Flower-Garden, but the ſmaller Roots may be planted into a Nurſery-bed until they have obtain'd Strength enough to flower; but you muſt never ſuffer theſe Roots to lie out of the Ground when you remove them, but plant them again immediately, for otherwiſe they will periſh.

During theſe three Years which I have adviſ'd the Roots to remain in the Beds, the Surface of the Earth ſhould be ſtirr'd every Autumn with a Trowel, obſerving not to go ſo deep as to bruiſe the Root, and at the ſame Time lay a thin Cover of very rotten Dung or Tanner's Bark upon the Surface of the Beds; which being waſh'd into the Ground, will cauſe the Flowers to be larger, as alſo the Roots to make a greater Increaſe: You muſt alſo obſerve to keep them conſtantly clear from Weeds, and thoſe Roots which you would preſerve with Care, ſhould not be ſuffer'd to ſeed.

FRITILLARIA CRASSA. *Vide* Aſclepias.

FRONDOSE, [*frondoſus*, Lat.] *full of*, or *apt to bear Leaves*.

FRONTATED, [*frontatus*, Lat.] a Term us'd by Botaniſts, relating to the Leaf of a Flower, which grows broader and broader, perhaps terminating in a Right Line, and is us'd in Oppoſition to *cuſpidated*, i. e. when the Leaves of a Flower end in a Point.

FROST may be defin'd to be an exceſſive cold State of the Weather, whereby the Motion and Fluidity of the Liquors are ſuſpended; or, it is that State of the Air, &c. whereby Fluids are converted into Ice.

By *Froſt*, Metals contract, or are ſhorten'd. Monſ. *Auzout* found by an Experiment, that an Iron Tube twelve Feet long, upon being expos'd to the Air in a froſty Night, loſt two Lines of its Length. But this may be ſuppos'd to be wholly the Effect of Cold.

On the contrary, *Froſt* does not contract Fluids; but, on the other hand, ſwells or dilates them near one tenth of their Bulk.

Mr. *Boyle* gives us ſeveral Experiments of Veſſels made of Metals exceeding thick and ſtrong, which being fill'd with Water, cloſe ſtopt, and expos'd to the Cold, the Water being expanded by freezing, and not finding either Room or Vent, burſts the Veſſels.

A ſtrong Barrel of a Gun with Water in't, being ſtopt cloſe and frozen, was rent the whole Length: And a ſmall Braſs Veſſel five Inches deep, and two in diameter, fill'd with Water, &c. and frozen, lifted up its Lid, which was preſs'd with a Weight of 56 Pounds.

There are alſo related many remarkable Effects of *Froſt* on Vegetables. *Morery Hiſt. de France*, ſays, That Trees are frequently ſcorch'd and burnt up with *Froſt*, as with the moſt exceſſive Heat, and that even in ſo warm a Climate as *Provence*.

Mr. *Bobart* relates, that in the great *Froſt*, *Anno* 1683, *Oaks*, *Aſh's*, *Walnut-trees*, &c. were miſerably ſplit and cleft, ſo as they might be ſeen thro', and this too with terrible Noiſes like the Exploſion of Fire-Arms: That the Clifts were not only in the Bodies, but continu'd to the larger Boughs, Roots, &c. *Philoſ. Tranſact.* Nº 165.

Mr. *Derham* ſays, That the *Froſt* in 1708 was remarkable throughout the greateſt Part of *Europe*; and the greateſt in Degree, if not the moſt univerſal in the Memory of Man: That it extended throughout *England*, *France*, *Germany*, *Denmark*, *Italy*, &c. but was ſcarce felt in *Scotland* and *Ireland*. All the *Orange-trees* and *Olives* in *Italy*, *Provence*, &c. and all the *Walnut-trees* throughout *France*, with an Infinity of other Trees, periſh'd by the *Froſt*.

Monſ. *Gauteron* ſays, They had a Gangrene on them, which he takes to be the Effect of a corroſive Salt, which corrupted and deſtroy'd their Texture. He adds, That there is ſo much Reſemblance between the Gangrene befalling Plants through *Froſt*, and that which the Parts of Animals are liable to, that they muſt have ſome analogous Cauſe. Corroſive Humours burn the Parts of Animals; and the aerial Nitre condens'd, has the ſame Effects on the Parts of Plants. *Memoires de l'Academie Royale des Sciences*, An. 1709.

Mr. *Derham* ſays, That the greateſt Sufferers in the Animal Kingdom were Birds and Inſects; but Vegetables were much the greateſt Sufferers: That few of the tender Sorts of Vegetables eſcap'd the Severity of the *Froſt*; *Bays*, *Laurels*, *Roſemary*, *Cypreſs*, *Alaternus's*, *Phillyrea's*, *Arbutus's*, *Lauruſtinus's*, and even *Furz*, with moſt of the fruteſcent Herbs, as *Lavenders*, *Abrotanums*, *Rue*, *Thyme*, &c. were generally deſtroy'd. He adds, That the Sap of the finer Wall-fruit was ſo congeal'd and deſtroy'd, that it ſtagnated in the Limbs and Branches, and produc'd Diſorders like to Chilblains in Human Bodies, which would turn to Mortifications in many Parts of the Trees. That the very Buds of the finer Trees, both in the Leaf, Buds, and Bloſſom-Buds, were quite kill'd, and dry'd into a farinaceous Matter.

Mr. *Derham* relates it as a common Obſervation, That Vegetables ſuffer'd more from the *Sun* than from the *Froſt*; in that the Sun-ſhine melting the Snow, and opening the Ground, left it more expos'd to the Rigours of the enſuing Night. It was likewiſe obſerv'd, at a Meeting of the *Royal Society*, That the Calamities which befel Trees, aroſe not purely from their being frozen, but principally from the Winds ſhaking and rocking them when they were frozen, which rent and parted their Fibres. *Philoſoph. Tranſact.* Nº 324.

Hoar-froſt or *White-froſt* is the Dew frozen or congeal'd early in cold Mornings, chiefly in Autumn. This (as Mr. *Regis* obſerves) is an Aſſemblage of little Parcels of Ice or Cryſtals, which are of various Figures, according to the different Diſpoſition of the Vapours which met and condenſed by Cold.

Dew is, to all Appearance, the Matter of *Hoar-froſt*; tho' many of the *Carteſians* ſuppoſe it to be form'd of a Cloud, and either congeal'd in the Cloud, and ſo let fall, or ready to be congeal'd as ſoon as it arrives at the Earth.

In the Year $172\frac{8}{9}$, there was a remarkable *Froſt*, which continued for ſome Months, and deſtroyed a great Number of Trees and Plants in ſeveral Parts of *Europe*; a brief Account of which may not be improper to be here inſerted.

The Autumn began with cold North and Eaſt Winds, and early in *November* the Nights were generally froſty; tho' the Froſt did not enter the Ground deeper than the Sun thaw'd the ſucceeding Days: but towards the End of *November*, the Winds blew extremely cold from the North; which was ſucceeded by a great Snow, which fell in ſuch Quantities in one Night, as to break off large Arms, as alſo the Tops of many ever-green Trees, on which it lodged. After the Snow had fallen, it began to freeze again, the Wind continuing to blow from the North; the Days were dark and cloudy for ſome Time, but afterwards it cleared up, and the Sun appeared almoſt every Day; which melted the Snow where expoſed to it, whereby the Froſt penetrated deeper into the Ground. It was obſervable, that during theſe clear Days, a great Miſt or Vapour appeared in the Evenings, floating near the Surface of the Ground till the Cold of the Night came on, when it was ſuddenly condenſed and diſappeared. About the 8th of *December* the Nights were extremely cold, the Spirits in the *Thermometer* fell 18 Degrees below the freezing Point; and on the 10th of the ſame Month, the Froſt was as ſevere as had been known in the Memory of Man; the Spirits in the *Thermometer* fell to 20 Degrees below the freezing Point. At this Time vaſt Numbers of *Lauruſtinus's*, *Phillyrea's*, *Alaternus's*, *Roſemary*, *Arbutus*, and other ever-green Trees and Shrubs, began to ſuffer; eſpecially ſuch as had been trimmed up to Heads with naked Stems, or had been clipped late in the Autumn. At this Time alſo there were great Numbers of large deciduous Trees diſbarked, by the Froſt; as *Pear-trees*, *Plane-trees*, *Walnut-trees*, with many other Sorts; and it was chiefly on the Weſt and South-weſt Side of the Trees, that the Bark came off.

About the Middle of *December* the Froſt abated of its Intenſeneſs, and ſeemed to be at a Stand, till the 23d of the ſame Month, when the Wind blew extreme ſharp and cold from the Eaſt, and the Froſt increaſed again, continuing very ſharp till the 28th Day, when it began to abate again, and ſeemed to be going off, the Wind changing to the South; but it did not continue long in this Point, before it changed to the Eaſt again, and the Froſt returned, tho' it was not ſo violent as before.

Thus the Weather continued for the moſt part froſty, till the Middle of *March*, with a few Intervals of mild Weather, which brought forward ſome of the early Flowers; but the Cold returning, ſoon deſtroyed them; ſo that thoſe Plants which uſually flower in *January* and *February*, did not this Year appear till *March*; and before they were fully blown, were cut off by the Froſt; of this Number were all the Spring *Crocus's*, *Hepatica's*, *Perſian Iris's*, *Black Hellebore's*, *Mezereon's*, with ſome others.

The *Cauliflower-plants* which were planted out of the Beds into the open Ground, during the Intervals between the Froſt, were moſt of them deſtroyed, or ſo much cut, that they loſt moſt of their Leaves; the early *Beans* and *Peaſe* were moſt of them killed, and many Fruit and Foreſt Trees, which had been lately removed, were quite deſtroyed. The Loſs was very great to ſome curious Perſons, who had been many Years endeavouring to naturalize great Numbers of exotic Trees and Shrubs, abundance of which were either totally killed, or deſtroyed to the Surface of the Ground: Amongſt this Number there were many Sorts deſtroyed, which had endured the open Air many Years, without receiving the leaſt Injury from the Cold; ſuch as *Paſſion-flowers*, *Cork-trees*, *Ciſtus's*, *Roſemary*, *Stœchas*, *Sage*, *Maſtick*, and ſome others. In ſome Places the young *Aſh* and *Walnut-trees* were killed; but when the Froſt went off, there appeared to have been much more Damage done in the Gardens, than there really was; which occaſioned many People to dig up and deſtroy large Quantities of Trees and Shrubs, which they ſuppoſed were killed; whereas thoſe who had more Patience, and ſuffered them to remain, fared better; for great Numbers of them ſhot out again, ſome from their Stems and Branches, and others from their Roots, the following Summer.

Nor was the Froſt more ſevere in *England*, than in other Parts of *Europe*, but on the contrary, in compariſon, favourable; for in the Southern Parts of *France*, the *Olives*, *Myrtles*, *Ciſtus's*, *Alaternus's*, and ſeveral other Trees and Shrubs, which grow there almoſt ſpontaneouſly, were either deſtroyed, or at leaſt were killed to their Roots; and about *Paris*, and the Northern Parts of *France*, the Buds of their Fruit-Trees were deſtroyed, altho' they remained cloſed; ſo that there were very few Bloſſoms which opened that Spring. The *Fig-trees* were in ſeveral Parts of *France* quite killed; and in *England*, their tender Branches were deſtroyed; ſo that there was very little Fruit on thoſe Trees the following Summer, except where they were protected from the Froſt.

In *Holland* the *Pines* and *Firs*, with ſeveral other Trees, which are Natives of cold Countries, were greatly injured by the Cold; and moſt of the Trees and Shrubs, which were brought from *Italy*, *Spain*, or the South Parts of *France*, which had been planted in the full Ground, in that Country, were intirely killed; tho' many other Sorts, which had been brought from *Virginia* and *Carolina*, eſcaped very well in the ſame Gardens. But the Perſon who ſuffered moſt in that Country, was the learned Dr. *Boerhaave*, who had been ſeveral Years endeavouring to naturalize as many exotic Trees and Shrubs as he could poſſibly obtain from the ſeveral Parts of the World; great Numbers of which were intirely deſtroyed by the Froſt this Winter.

In ſome Parts of *Scotland* they not only loſt many of their curious Flowers, Plants, and Trees; but great Numbers of Sheep and other Cattle were buried under the Snow, where they periſhed; and many poor People, who went to look after their Cattle, were equal Sufferers with them, being buried in the Snow, which in ſome Places fell eight or nine Feet deep in one Night.

It has been obſerved by *Thermometers*, when that Kind of hovering lambent Fog ariſes, (either Mornings or Evenings) which frequently betokens fair Weather, that the Air, which in the preceding Day was much warmer, has upon the Abſence of the Sun become many Degrees cooler than the Surface of the Earth; which being near 1500 Times denſer than the Air, cannot be ſo ſoon affected with the Alternacies of Heat and

Cold; whence 'tis probable, that thoſe Vapours which are raiſed by the Warmth of the Earth, are by the cooler Air ſoon condenſed into a viſible Form. The ſame Difference has been obſerved between the Coolneſs of the Air, and the Warmth of Water in a Pond, by putting a *Thermometer*, which hung all Night in the open Air in Summer-Time, into the Water, juſt before the riſing of the Sun, when the like Reek or Fog was riſing on the Surface of the Water.

FRUCTIFEROUS, [*fructifer*, Lat.] *Fruit-bearing*, *fruitful.*

FRUCTUS. *Vide* Fruit.

FRUIT is the Production of a Tree or Plant, for the Propagation or Multiplication of its Kind: In which Senſe *Fruit* includes all Kinds of *Seeds*, with their Furniture, *&c.* Botaniſts uſe it to ſignify, properly, that Part of a Plant wherein the Seed is contain'd, which the *Latins* call *Fructus*, and the *Greeks* Καρπὸς.

The Fruit of ſome Plants are produced ſingly, as are their Flowers, and ſometimes they are produced in Cluſters, as in moſt Fruit-Trees, which are alſo fleſhy; but in many Plants they are dry.

The Word *Fruit* is alſo us'd to ſignify an Aſſemblage of Seeds in a Plant, as in a *Pea*, *Bean*, *Ranunculus*, &c. and in its general Signification, for all Kinds of Grain, whether naked or inclos'd in Cover, *Capſula*, or Pod, whether bony, fleſhy, ſkinny, membraneous, or the like.

Fruit is the Product or Reſult of the Flower; or that for whoſe Production, Nutrition, *&c.* the Flower is intended.

The Structure and Parts of different *Fruits* are different in ſome Things; but in all the Species, the eſſential Parts of the *Fruit* appear to be only Continuations or Expanſions of thoſe which are ſeen in the other Parts of the Tree.

Dr. *Beale* ſuggeſts ſome very good Reaſons for a direct Communication between the remoteſt Parts of the *Tree* and the *Fruit*; ſo that the ſame Fibres or *Stamina* which conſtitute the Root, Trunk, and Boughs, are extended into the very *Fruit.*

Thus, if you cut open an Apple tranſverſely, you will find it to conſiſt chiefly of four Parts: *viz.* 1. a *Skin*, or Cortex, which is only a Production of the Skin or outer Bark of the Tree; 2. a *Parenchyma* or Pulp, which is an Expanſion and Intumeſcence of the *Ble* or inner Bark of the Tree; 3. the Fibres or Ramifications of the woody Part of the Tree; 4. the Core, which is the Produce of the Pith or *Medulla* of the Plant, indurated or ſtrengthen'd by Twigs of the Wood and Fibres inoſculated therewith: This ſerves to furniſh a Cell or Lodge for the Kernels, filtrates the Juice of the *Parenchyma*, and conveys it, thus prepar'd, to the Kernel.

Of the Fibres, Authors generally reckon fifteen Branches; of which, ten penetrate the *Parenchyma*, and incline to the Baſis of the Flower; the other five aſcend more particularly from the *Pedicle* or Stalk, and meet with the former at the Baſe of the Flower; to which Branches the *Capſulæ* or Coats of the Kernels are faſten'd.

Theſe Branches being firſt extended thro' the *Parenchyma* to the Flower, furniſh the neceſſary Matter for the Vegetation of it: But as the Fruit increaſes, it intercepts the Aliment; and thus the Flower is ſtarv'd and falls off.

In a *Pear* there are five Parts to be diſtinguiſh'd, *viz.* the *Skin*, *Parenchyma*, *Ramification*, *Stone*, and *Acetarium.*

The three firſt Parts are common to the *Apple.* The Stone, obſerv'd chiefly in *Choke-Pears*, is a Congeries of ſtrong Corpuſcles, that are diſpers'd throughout the whole *Parenchyma*, but in the greateſt Plenty, and cloſeſt together about the Center or *Acetarium*: It is form'd of the ſtony or calculous Part of the nutritious Juice.

The *Acetarium* is a Subſtance of a tart, acid Taſte, of a globular Figure, inclos'd in an Aſſemblage of ſeveral of the ſtony Parts before-mention'd.

In a *Plum*, *Cherry*, &c. there are four Parts, *viz.* a *Coat*, *Parenchyma*, *Ramification*, and *Nucleus* or *Stone.* The *Stone* conſiſts of two very different Parts: The external or harder Part, call'd the *Stone* or *Shell*, is a Concretion of the ſtony or calculous Parts of the nutritious Juice, like the Stone in Pears, within it. The Inner, call'd the *Kernel*, is ſoft, tender, and light, being deriv'd from the Pith or *Medulla* of the Tree by Seminal Branches, which penetrate the Baſe of the Stone.

The *Nut* or *Acorn* conſiſts of a *Shell*, *Cortex*, and *Medulla*: The *Shell* conſiſts of a Coat and *Parenchyma*, deriv'd from the Bark and Wood of a Tree.

The *Cortex* conſiſts of an inner and outer Part: The firſt is a Duplicature of the inner Tunick of the Shell: The ſecond is a Moſſy Subſtance, deriv'd from the ſame Source as the *Parenchyma* of the Shell. But Authors are not agreed, whether the *Medulla* or Pulp of the Kernel does ariſe from the Pith of the Tree, or the cortical Part thereof.

Berries, as *Grapes*, &c. contain (beſides three general Parts, *viz. Coat*, *Parenchyma*, and *Ramification*) Grains of a ſtony Nature, to do the Offices of Seeds.

Fruits in general are ſerviceable in guarding, preſerving, and feeding the inclos'd Seed; in filtrating the coarſer, more earthy, and ſtrong Parts of the nutritious Juice of the Plant, and retaining it to themſelves; ſending none but the moſt pure, elaborated, and ſpirituous Parts to the Seed, for the Support and Growth of the tender, delicate Embryo, or Plantule, which is therein contained.

FRUMENTACEOUS, [*Frumentaceus*, Lat.] a Term apply'd by *Botaniſts* to all ſuch Plants as have a Conformity with Wheat, (call'd in Latin, *Frumentum*) in reſpect either of their Fruits, Leaves, Ears, or the like.

FRUMENTUM INDICUM. *Vide* Mays.

FRUTEX, a Shrub, a Vegetable of a Genus between a Tree and an Herb, but of a woody Subſtance.

FRUTEX *Africanus*, *Ambram Spirans. Volk.* The Amber-Tree, *vulgo.*

This Shrub has, by no Botanick Writers, been reduced to any proper Claſs; ſo I have taken the Liberty of continuing it under its former looſe Name, having never yet ſeen the Fruit; tho', by the Flower, I imagine it will be a Congener to the *Gallium*, or *Ladies Bedſtraw*: But I ſhall not, at preſent, ſay any Thing of its Characters.

This is preſerv'd in moſt curious Gardens, which have Collections of tender Plants. It is eaſily propagated by planting Cuttings during any of the Summer Months, in a Border of light Earth, which will take Root in ſix Weeks Time, provided they are water'd and ſhaded as the Seaſon may require; then they ſhould be taken up, with a Ball of Earth to their Roots, and planted into Pots fill'd with light, ſandy Earth, and may be expoſed to the open Air until *October*, at which Time they ſhould be remov'd into the Conſervatory, where they ſhould be plac'd as free as poſſible from being over-hung with other Plants: And, during the Winter-ſeaſon, they muſt be refreſh'd with Water, but ſhould not have too much given 'em each Time: You may let 'em have as much Air as the Weather would permit; for if they are kept too cloſe, they will be ſubject to grow mouldy, and generally decay ſoon after.

Theſe Shrubs may be train'd up either to form round Heads, or into Pyramids, it being a very manageable Plant; but ſhould not be often cut; for, by ſo doing, 'twill occaſion the Branches to grow very cloſe, whereby the Air will be excluded from the middle Part of the Plant, which will cauſe the Leaves to decay, and the Branches to appear very unſightly: But if you ſuffer it to grow as it is naturally diſpos'd, (only obſerving to tie up the Stem, to make it ſtrait) the Plant will thrive much better.

The Beauty of this Shrub is in its ſmall ever-green Leaves, which grow as cloſe as *Heath*; and being bruis'd between the Fingers, do emit a very fragrant Odour.

FRUTEX *Virginianus trifolius*, *Ulmi ſimilis. Baniſt. Pluk. Alm. American* Shrub Trefoil, with Fruit like the Elm.

The Seeds of this Shrub were ſent from *Carolina* by Mr. *Cateſby*, Anno 1724, from which ſeveral Plants have been rais'd in the Gardens near *London*, where it has flower'd for ſeveral Years paſt, and hath ſeveral Times form'd Seeds, which were very like thoſe of the *Elm-Tree*, but did not ripen.

This Shrub is hardy enough to reſiſt the ſevereſt Cold of our Climate in the open Air, provided it be planted on a dry Soil. It may be propagated by laying down the Side-branches into the Ground in the Spring, obſerving to ſlit them at a Joint, as it is practiſed in laying *Carnations.* When they are pegg'd down, the Earth ſhould be laid two or three Inches thick over the Part that is ſlit; and in dry Weather they ſhould be water'd, which, if duly attended to, will greatly facilitate their rooting; ſo that in one Year they will be rooted ſufficient to be tranſplanted out: But if they are not ſlit, nor the Ground about them watered in dry Weather, it will be two Years before they will be fit to tranſplant.

If the Plant likes the Soil into which it is planted, it will make conſiderable ſtrong Shoots, and the Leaves will be large and fair. There is one of theſe Shrubs in the *Phyſick-Garden* at *Chelſea*, which I rais'd from Seeds, *Anno* 1724, and has been tranſplanted ſeveral Years in the open Air, now upwards of ſix Feet high, and which hath flower'd five or ſix Years paſt; and, for its uncommon Appearance, is worthy a Place in every good Collection of Trees and Shrubs.

FRUTEX *ſcandens, petroſelini foliis, Virginianus, claviculis donatus, Pluk. Mant.* The Pepper-tree, *vulgo*.

This Plant was brought from *Virginia*, where it is found in great Plenty; as alſo in *South Carolina*, where it is one of the moſt common Plants, if we may judge by the Earth which hath been brought from thence; for theſe Plants do come up plentifully in that, as common Weeds. It was rais'd from Seeds in the Gardens of *Samuel Reynardſon*, at *Hillindon* near *Uxbridge*, many Years ſince, from whence it hath been diſtributed into many Gardens near *London*. There is no great Beauty in it; but for its Oddneſs it may have a Place in a Collection of Shrubs. It is extreme hardy, induring our ſevereſt Cold in the open Air, but ſhould be planted on a dry Soil, and will require a Stake to ſupport it; for its Branches are very flexible, and will trail upon the Ground, if they are not ſupported. The Flowers it produces are very ſmall, and of a greeniſh-yellow Colour, growing in Cluſters ſomewhat like thoſe of the Creeper; and the Branches do emit Claſpers, as that doth, to which it appears to me to be nearly related.

This Plant may be propagated by laying down the tender Branches, which in one Year will be rooted enough to tranſplant; or by Suckers from the Roots, which, when the Plants are arriv'd to a convenient Age, they will ſend forth in great Plenty.

FRUTEX PAVONIUS. *Vide* Poinciana.

FRUTICOSE, [*Fruticoſus*, Lat. *a Shrub*] are thoſe Plants which are of an hard, woody Subſtance, and do not riſe to the Height of Trees.

FUCHSIA. This Plant was ſo named by Father *Plumier*, who diſcovered it in *America*, in Honour to the Memory of *Leonard Fuchſius*, a learned Botaniſt.

The *Characters* are;

It hath a funnel-ſhaped Flower conſiſting of one Leaf, and divided into ſeveral Parts at the Brim; whoſe Cup afterward becomes a roundiſh ſoft fleſhy Fruit, which is divided into four Cells, which are full of roundiſh Seeds.

We have but one Sort of this Plant, *viz.*

FUCHSIA *triphylla, flore coccineo. Plum. Nov. Gen.* Three-leav'd Fuchſia, with a ſcarlet Flower.

This Plant is a Native in the warmeſt Parts of *America*; it was diſcovered by Father *Plumier*, in ſome of the *French* Iſlands in *America*, and was ſince found by the late Dr. *William Houſtoun*, at *Carthagena* in *New Spain*; from whence he ſent the Seeds into *England*.

This is propagated by Seeds, which muſt be ſown in Pots filled with rich light Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to moiſten the Earth as often as it appears dry; and if the Nights ſhould prove cold, the Glaſſes of the Hot-bed ſhould be covered with Mats; but in the Day-Time, when the Sun is warm, the Glaſſes ſhould be raiſed with Stones, to let out the Steam which may ariſe in the Bed, and to admit freſh Air. In about a Month after the Seeds are ſown, the Plants will begin to appear, when they ſhould be carefully cleared from Weeds, and frequently refreſhed with Water to promote their Growth; and when they are about two Inches high, they ſhould be ſhaken out of the Pots, and ſeparated carefully; then plant each into a ſeparate ſmall Pot, filled with light rich Earth, and plunge them again into a Hot-bed of Tanners-bark, being careful to ſcreen them from the Sun, until they have taken new Root; after which Time they muſt have freſh Air admitted to them every Day in proportion to the Warmth of the Seaſon, and ſhould be frequently watered. When the Plants have grown ſo as to fill the Pots with their Roots, they muſt be tranſplanted into larger Pots, and plunged into the Hot-bed again, being careful to water them; and if they hang their Leaves on removing, they ſhould be ſcreened from the Sun until they have taken new Root: As the Seaſon advances, ſo the Glaſſes of the Hot-bed ſhould be raiſed higher, to admit a greater Share of Air to the Plants, to prevent their drawing up weak; and when the Plants are grown ſo tall as to reach the Glaſſes, they ſhould be removed into the Bark-ſtove, and plunged into the Tanners-bark. In Winter theſe Plants require to be kept very warm, and at that Seaſon they muſt not have ſo much Water as in Summer, but it muſt be often repeated.

Theſe Plants are too tender to thrive in the open Air in this Country, even in the hotteſt Part of the Year; therefore they ſhould conſtantly remain in the Stove, obſerving to let in a large Shair of freſh Air in Summer, but in Winter they muſt be kept warm: With this Management the Plants will produce their Flowers, and make a beautiful Appearance in the Stove, amongſt other tender exotic Plants.

FUMARIA, Fumatory.

The *Characters* are;

It hath divided Leaves reſembling thoſe of the umbelliferous Plants: The Flowers, which are collected into a Spike, are of an anomalous Figure, ſomewhat reſembling a papilionaceous Flower, conſiſting of two Petals or Leaves, which open like two Lips, the upper Lip ending in a Spur: The Foot-ſtalk is join'd to the Middle Part of the Flower: The Fruit is either of a long or a round Figure, which is like a Pod, in which are contain'd many roundiſh Seeds.

The *Species* are;

1. FUMARIA *Officinarum & Dioſcoridis, flore purpureo. C. B.* The common Fumatory, with a purple Flower.
2. FUMARIA *minor tenuifolia. C. B.* Leſſer narrow-leav'd Fumatory.
3. FUMARIA *ſemper-virens & florens, flore albo. Flor. Bat.* Ever-green Fumatory, with a white Flower.
4. FUMARIA *lutea. C. B.* Yellow Fumatory.
5. FUMARIA *bulboſa radice cava major. C. B.* Great bulbous-rooted Fumatory, or hollow Root.
6. FUMARIA *bulboſa radice cava major, flore albo. C. B.* Great bulbous-rooted Fumatory, with a white Flower.
7. FUMARIA *bulboſa, viridi flore. Tourn.* Bulbous-rooted Fumatory, with a green Flower.
8. FUMARIA *bulboſa, radice non cava, major. C. B.* Great bulbous-rooted Fumatory, with a Root not hollow.

The firſt of theſe Plants is ſometimes uſed in Medicine, but is ſeldom cultivated in Gardens, it being very common in arable Land in moſt Parts of *England*.

The ſecond Sort is not a Native of *England*, but is preſerv'd in ſome curious botanick Gardens for the ſake of Variety. Theſe are both annual Plants.

The third Sort is a perennial Plant, which, if planted in a dry Soil, and a warm Situation, will continue flowering almoſt the whole Year round, which renders it worthy of a Place in every good Garden.

The fourth Sort is alſo an abiding Plant, which requires the ſame Situation and Culture as the former. Theſe two Plants will grow in Joints or hollow Places in old Walls, which will render them leſs ſubject to decay than if they were planted in a rich Soil. They may be propagated by ſowing their Seeds ſoon after they are ripe; for if the Seeds are kept 'till the Spring, they very often miſcarry.

Theſe Plants may be ſuffered to grow on Walls, and in ſome abject Part of the Garden; for if they are admitted into the Borders of the Pleaſure-Garden, they will ſcatter their Seeds, and become troubleſome Weeds.

The fifth, ſixth, ſeventh, and eighth Sorts are propagated by Off-ſets, as other bulbous-rooted Flowers: Theſe produce their Flowers in the Beginning of *April*, and are very pretty Ornaments to Borders in a ſmall Flower-Garden. They are extreme hardy, but do not increaſe very faſt, ſeldom producing Seeds with us; and their Bulbs do not multiply very much, eſpecially if they are often tranſplanted. They love a light, ſandy Soil, and ſhould be ſuffer'd to remain three Years undiſturb'd, in which Time they will produce many Off-ſets. The beſt Seaſon for tranſplanting them is in *May*, when the Leaves begin to die off; for if they are taken up when their Leaves are freſh, it will greatly weaken their Roots.

FURZ. *Vide* Geniſta.

G A

GALE; The Sweet Willow, *or* Dutch Myrtle.

The *Characters* are;

The Leaves are placed alternately on the Branches: It hath Male Flowers, which are produced at the Wings of the Leaves, are naked, and grow in a longiſh Spike: The Fruit, which is produced in ſeparate Parts of the ſame Tree, is of a conical Figure, and ſquamoſe, containing one Seed in each Scale.

The *Species* are;

1. GALE *frutex odoratus, ſeptentrionalium Eleagnus, cordi,*

Chamæleagnus Dodonæi. J. B. Sweet Gale, Sweet Willow, or Dutch Myrtle.

2. Gale *quæ Myrto Brabanticæ ſimilis, Carolinienſis baccata, fructu racemoſo ſeſſeli monopyreno. Pluk. Phyt.* Candle-berry-tree, *vulgo*.

3. Gale *quæ Myrto Brabanticæ ſimilis, Carolinienſis humilior, foliis latioribus, & magis ſerratis. Cateſb. Hiſt. Nat. Carol.* The Dwarf broad-leav'd Candle-berry-tree, with deeply-ſerrated Leaves.

The firſt of theſe Plants is very common in ſeveral Parts of *England*, growing upon Bogs which have an open Situation: This is with Difficulty preſerv'd in Gardens: It muſt have a very moiſt Soil, and ſhould have an open Situation. The beſt Seaſon for tranſplanting theſe Shrubs is in the Beginning of *March*, juſt before their green Leaves appear: In removing them, you ſhould be careful to preſerve as much Earth about their Roots as poſſible; as alſo to water them plentifully, if the Seaſon ſhould prove dry. They are propagated by Suckers, which are produced in great Plenty from their Roots, when they are planted on a proper Soil, but ſeldom do make any conſiderable Increaſe in Gardens: However, any one that has a mind to plant theſe Shrubs in a Garden, or other Plantation, may be ſufficiently ſupply'd from the Bogs, where they grow ſpontaneouſly.

The ſecond and third Sorts are both Natives of *America*, and have been rais'd from Seeds which came from thence, but are both hardy enough to reſiſt the Cold of our Climate in the open Air. Theſe are alſo propagated by Suckers, as the former; which, if they are planted in a moiſt Soil, and ſuffer'd to remain undiſturb'd, they will produce in great Plenty: They may alſo be increas'd by laying down their tender Branches, which ſhould be ſlit, as is practis'd in laying of *Carnations*; and will take Root in one Year, and then may be tranſplanted where they are to remain. The Seeds of theſe Plants, when brought from Abroad, ſhould be ſown in Pots fill'd with freſh loamy Earth, and then plung'd into a moderate Hot-bed, which will greatly forward their coming up: And as the Seaſon advances, the Pots ſhould, by Degrees, be removed out of the Hot-bed into the open Air, that they may be harden'd before Winter; and in *October* you ſhould place the Pots into a common Hot-bed Frame, that may be cover'd in hard froſty Weather, which often injures them while they are young, but afterwards they are not liable to any Misfortune from the Seaſons: The beſt Time to remove theſe is in the Spring, juſt before they begin to ſhoot; but you ſhould cover the Surface of the Ground round their Roots after they are planted, to prevent the Sun and Wind from entering the Ground to dry their Fibres.

Theſe Shrubs are all of a low Stature with us, ſeldom riſing above five Feet high, and ſhould therefore be planted amongſt Shrubs of the ſame Growth; for they will by no means grow under the Shade of other Trees: They are very proper Plants for ſmall Wilderneſs-quarters in a ſwampy Piece of Ground, where few other Plants will thrive well.

The firſt Sort caſts its Leaves in Winter, but the two other Sorts are ever-green: The Leaves of all theſe Plants, when bruis'd, do emit a very pleaſant Odour, not much unlike that of the *Myrtle*; from whence the People have been induc'd to give them that Epithet. The Inhabitants of *America* do prepare a Wax from the Fruit of thoſe two Plants, with which they make very good *Candles*, which burn very well, and have a very agreeable Scent.

The two laſt mentioned Sorts do produce Flowers in ſeveral Gardens near *London*; and the firſt of them did produce Fruit, in the Year 1729, in the curious Garden of Mr. *Peter Collinſon* at *Peckham*; but the laſt Sort hath not, as yet, produced Fruit in *England*, that I have heard.

GALEGA; Goat's Rue.

The *Characters* are;

It hath a perennial Root: The Leaves grow by Pairs, faſten'd to a Mid-rib, terminating in an odd Lobe: The Flower is of the papilionaceous Kind, conſiſting of a Standard, the Wings, and the Keel: The Pointal becomes a long taper Pod, which is fill'd with oblong Kidney-ſhap'd Seeds.

The *Species* are;

1. Galega *vulgaris, floribus cæruleis. C. B.* Common Goat's Rue, with blue Flowers.

2. Galega *vulgaris, floribus penitus candicantibus. C. B.* Common Goat's Rue, with white Flowers.

3. Galega *vulgaris, floribus ex cæruleo purpureis. C. B.* Common Goat's Rue, with bluiſh purple Flowers.

4. Galega *Africana, floribus majoribus, & ſiliquis craſſioribus. Tourn. African* Goat's Rue, with large Flowers, and thick Pods.

5. Galega *Americana, foliis ſubrotundis, floribus coccineis. Houſt. American* Goat's Rue, with roundiſh Leaves, and ſcarlet Flowers.

6. Galega *Americana fruteſcens, flore purpureo, foliis ſericeis. Plum.* Shrubby *American* Goat's Rue, with ſilken Leaves.

The firſt of theſe Plants is propagated in Gardens for medicinal Uſe; and the ſecond and third Sorts are only Varieties of the firſt, from which they only differ in the Colour of their Flowers, and are for Variety preſerv'd in ſome curious Gardens; but the fourth Sort is a diſtinct Species, having much larger Leaves, Flowers, and Pods.

Theſe Plants may be propagated either from Seeds, or by parting of their Roots. The beſt Seaſon for ſowing the Seeds is in the Beginning of *March*, in a light Soil, and an open Situation; and when the Plants are come up, you ſhould either hough between them to deſtroy the Weeds, (as is practis'd for *Onions*, *Carrots*, &c.) or elſe pull out the Weeds with your Hands, cutting down, or pulling up the Plants where they are too cloſe to each other, that thoſe left may have Room to get Strength; and ſo from time to time, as the Weeds come up, you muſt be very careful to deſtroy them, as alſo to cut up, or draw out the Plants, where they are too thick; for they ſhould not be left cloſer than eight or nine Inches Diſtance from each other. The ſecond Year theſe Plants will flower, and produce ripe Seeds: But if you intend to continue your Plants for Uſe, you ſhould cut off the Herb when it is in flower, and not permit it to ſtand until it ſeeds, which very often cauſes the Plants to decay. Theſe Roots may alſo be parted into ſmall Heads in Autumn for Increaſe: But the ſeedling Plants are much preferable to theſe Off-ſets; ſo that the beſt way is to propagate this Plant by ſeeds.

The fifth Sort was diſcovered by the late curious Botaniſt Dr. *William Houſtoun*, at *Campechy*, from whence he ſent the Seeds into *Europe*. Theſe Plants are Annuals, and muſt be raiſed on a Hot-bed early in the Spring; and when they are fit to tranſplant, ſhould be each put into a ſeparate Half-penny Pot, filled with freſh light Earth, and plunged into a moderate Hot-bed of Tanners-bark, obſerving to ſcreen them from the violent Heat of the Sun, until they have taken Root; after which time they ſhould have a large Share of freſh Air admitted to them in warm Weather, and muſt be frequently watered. When theſe Plants have filled the Pots with their Roots, they ſhould be gently ſhaken out, being careful to preſerve as much of the Earth to their Roots as poſſible, and put into Pots a Size larger, filling them up with the like freſh Earth, and plunged into the Hot-bed again, obſerving to water and give Air to them as before: with this Management they will flower in *July*, and in *September* they will perfect their Seeds, and the Plants will ſoon after decay.

The ſixth Sort is alſo a Native of *America*, and was diſcovered by Father *Plumier*; this is alſo propagated by Seeds, which ſhould be ſown on a Hot-bed in the Spring; and when the Plants are come up, they muſt be tranſplanted, and treated in the ſame Manner as hath been directed for the former Sort; but this being a ſhrubby Plant of a longer Continuance, muſt be placed in the Bark-ſtove in the Winter, and ſhould be treated after the Manner of other tender exotic Plants; for it ſeldom flowers until the third Year, and if the Plants are removed abroad in Summer, will ſcarcely ever flower in this Country.

GALEOPSIS; Stinking Dead Nettle.

The *Characters* are;

It hath a labiated Flower of one ſingle Leaf, whoſe upper Lip is hollow like a Spoon, but the under one is divided into three Segments, the middle Part being large: The Cup of the Flower is Funnel-ſhap'd, and divided into five Parts, and each Flower is ſucceeded by four naked Seeds.

The *Species* are;

1. Galeopsis *Hiſpanica fruteſcens, teucrii folio. Tourn. Spaniſh*, ſhrubby, ſtinking Dead Nettle, with a Tree-Germander-leaf.

2. Galeopsis *quod lamium, fruticans, teucrii folio lucido, calyce & flore magno candido, tantilla purpura varie notato. H. C.* Shrubby ſtinking Dead Nettle, with a ſhining Tree-Germander-leaf, and a large white Flower variegated with ſmall purple Spots.

3. Galeopsis *anguſtifolia Cretica viſcoſa. Boerh. Ind. alt.* Narrow-leav'd viſcous ſtinking Dead-nettle of *Candy*.

4. Galeopsis *procerior fœtida ſpicata. Tourn.* Common Hedge-nettle.

5. Galeopsis *ſive urtica iners, flore luteo. J. B.* Yellow Archangel, or Dead-nettle.

6. Galeopsis *procerior fœtidiſſima, ſpicâ longiſſimâ albâ. Michel.* The moſt ſtinking taller Hedge-nettle, with a long white Spike.

The two firſt Plants ariſe to the Height of three Feet, or more, do grow ſhrubby, and may be train'd to regular Heads, whereby they will appear very agreeable, being always green, and continue flowering moſt Part of the Summer; and altho' the Flowers are not very beautiful, yet for their long Continuance in Flower, together with the Variety of their Leaves, they deſerve a Place in every good Garden.

Theſe Plants may be propagated by Seeds or Cuttings, as alſo from Suckers, which ariſe about their Stems: If you would propagate them by Seeds, you muſt prepare a Spot of good freſh light Earth, which ſhould be well digg'd and looſen'd, and made very fine and level; into which in *March* you ſhould ſow the Seeds, covering them with the ſame light Earth about half an Inch thick: When the Plants are come up, which will be towards the Middle or latter End of *April*, you ſhould carefully weed them, and in very dry Weather you ſhould give them a little Water: In *Auguſt* you ſhould take up ſome of the Plants carefully, and plant them into Pots fill'd with freſh light Earth, that they may be ſhelter'd, during the Winter Seaſon, under a common Hot-bed Frame; for theſe Plants are ſomewhat tender while young, but when they are grown woody, will reſiſt the ſevereſt Cold in the open Air, provided they are planted in a dry Soil: In the Spring, after the cold Weather is paſt, you may ſhake the Plants out of the Pots, preſerving the Earth to their Roots, and plant them in the Places where they are to remain, and in the ſucceeding Summer they will produce Flowers and Seeds.

If you would propagate them by Cuttings, you ſhould cut off ſuch only as are young and thriving in *May*, and plant them in a ſhady Border, watering them as the Seaſon requires; and in *Auguſt* you ſhould take up ſuch of them as have taken Root, planting them into Pots, and managing them as was directed for the Seedling Plants.

The third Sort is a Plant of humbler Growth than either of the two Sorts above mentioned; this ſeldom riſes above a Foot high, nor doth it ever become ſo woody; it is very clammy, and has a very ſtrong bituminous Scent. This may be propagated by ſowing of the Seeds in *March*, on an open Bed of light Earth; and when the Plants begin to appear, they ſhould be carefully cleared from Weeds, and in dry Weather muſt be often refreſhed with Water. When the Plants have obtained Strength enough to be tranſplanted, they ſhould be carefully taken up; and ſome of them muſt be put into Half-penny Pots, filled with freſh light Earth; and the others may be planted in warm Borders, obſerving to water and ſhade them until they have taken Root; after which time, thoſe which were planted into the Borders, will require no farther Care but to keep them clear from Weeds, and other Plants; and if the Winter proves favourable, they will ſucceed very well; but for fear theſe ſhould be deſtroyed, you ſhould place thoſe which were planted into Pots, under a common Hot-bed Frame in Winter, where they ſhould be expoſed to the open Air in mild Weather; but in froſty Weather they ſhould be covered to preſerve them. The following Summer, theſe Plants will produce Flowers and Seeds, but the Plants may be preſerved three or four Years, provided they are ſheltered in Winter.

The fourth and fifth Sorts grow wild in moſt Parts of *England*, ſo are ſeldom preſerved, except in botanic Gardens, for the ſake of Variety; theſe grow under Hedges, and in ſhady Woods, where they ſpread and increaſe by their creeping Roots. The fourth Sort is ſometimes uſed in Medicine.

Theſe Plants being eſteemed as Weeds, they are neglected by moſt Perſons; tho', if they are planted under Trees in large Wilderneſs Quarters, they will thrive and make a pretty Appearance when they are in Flower. The Roots of theſe Plants may be taken up at *Michaelmas*, from the Woods and Places of their Growth, and tranſplanted into the Wilderneſs, allowing them a large Share of Room, becauſe they ſpread very far by their creeping Roots; ſo that they ſhould be planted in large Tufts at a great Diſtance from each other; and in the Spring they will riſe about two Feet high, and produce their Flowers in great Plenty, when they will afford an agreeable Variety, in ſuch Places where few other Plants will thrive: ſo that by introducing ſome of theſe common Plants into Gardens, there may be a great Variety produced in Wilderneſſes, where the Ground is often bare, and doth not produce any kind of Plants, which afford no pleaſing Proſpect to Perſons who walk thro' the ſhady Paths of theſe Quarters; for it is much better to ſee any of the moſt common Weeds covering the Surface of the Ground amongſt the Trees, than to have it quite bare. But theſe Plants afford an agreeable Proſpect when they are in Flower, and require very little Culture.

The ſixth Sort was diſcovered in *Italy*, by Seignior *Micheli*, Profeſſor of Botany to the late Duke of *Tuſcany*, who ſent the Seeds into *England*; this is full as hardy as either of the former Sorts, and may be propagated in the ſame Manner.

GALLERIES. In order to make a *Gallery* in a Garden, with Portico's and Arches, a Line muſt firſt be drawn of the Length you deſign the *Gallery* to be; which being done, is to be planted with *Horn-beam*, as directed under the Article *Horn-beam*; which *Horn-beams* thus planted, are to be the Foundation of the *Gallery*.

The Management of them is not very difficult, they require only to be digg'd about and ſhear'd a little when there is Occaſion.

The chief Curioſity requir'd is in the ordering the Forepart of the *Gallery*, and in forming the Arches.

Each Pillar of the Portico's or Arches ought to be four Feet diſtant one from the other; the *Gallery* twelve Feet high, and ten Feet wide, that there may be Room for two or three Perſons to walk a-breaſt.

When the *Horn-beams* are grown to the Height of three Feet, the Diſtance of the Pillars well regulated, and the Ground-work of the *Gallery* finiſh'd, the next thing to be done is to form the Frontiſpiece: To perform which, you muſt ſtop the *Horn-beam* between two Pillars at the Height, and run up a Trellis made for that Purpoſe, which forms the Arch.

As it grows up, you muſt with your Shears even thoſe Boughs that out-ſhoot the others: In time they will grow ſtrong, and may be kept in Form by the Shears.

Portico Galleries may be cover'd with *Lime-trees*.

Theſe *Galleries* were formerly much eſteem'd in *France*, *Italy*, and other hot Countries, but in *England* they are ſeldom made.

GALLIUM; Ladies Bed-ſtraw, *or* Cheeſe-Runnet.

The *Characters* are;

It is a Plant of the ſtellate Kind; the Leaves, which are neither rough nor knappy, are produc'd at the Joints of the Stalks, five or ſix in Number, in a radiant Form: The Flower conſiſts of one Leaf, which is expanded toward the upward Part, and divided into ſeveral Segments; each of theſe Flowers are ſucceeded by two naked Seeds.

The *Species* are;

1. Gallium *luteum. C. B.* Yellow Ladies Bed-ſtraw.
2. Gallium *rubrum. C. B.* Red Ladies Bed-ſtraw.
3. Gallium *nigro-purpureum tenuifolium. Col.* Narrow-leav'd Mountain Ladies Bed-ſtraw, with dark purple Flowers.
4. Gallium *ſaxatile, glauco folio. Bocc. Rar.* Ladies Bed-ſtraw of the Rocks, with a glaucous Leaf.
5. Gallium *ſaxatile, glabro folio. Bocc. Rar.* Ladies Bed-ſtraw of the Rocks, with a ſmooth Leaf.

The firſt of theſe Plants (which is the Sort commonly us'd in Medicine) is very common in moiſt Meadows, and in Paſture-grounds in ſeveral Parts of *England*: The other Varieties are preſerv'd in curious Botanick Gardens; but as they are Plants of very little Beauty, and are ſubject to ſpread very very far, and over-run whatever Plants grow near them, ſo they are ſeldom cultivated in other Gardens.

Theſe Sorts may, any of them, be propagated by parting their Roots, which ſpread and increaſe very faſt, either in the Spring, or Autumn, and will grow almoſt in any Soil or Situation, eſpecially the firſt Sort: The other Sorts do require a drier Soil, but will all grow in any Situation.

GARDENS are diſtinguiſh'd into *Flower-gardens*, *Fruit-gardens*, and *Kitchen-gardens*: The firſt for Pleaſure and Ornament, and therefore to be plac'd in the moſt conſpicuous Parts, *i. e.* next to, or juſt againſt the back Front of the Houſe; the two latter for Service, and therefore made in bye Places.

In the Choice of a Place to plant a *Garden* in, the Situation and Expoſure of the Ground are the moſt eſſential Points to be regarded; becauſe the Succeſs of all depends upon a good Choice: for if a Failure be made in that Point, all the Care and Expence will in a manner be loſt; but if a good Choice be made, the Trees, *&c.* that ſhall be planted on it will in a ſhort Time thrive, and become both tall and beautiful.

In a *Garden*, the principal Things to be conſider'd, are the *Situation*, *Form*, *Soil*, and *Aſpect* or *Expoſure*.

As for the *Form*, a Square, or rather an Oblong, is moſt eligible, when leading from the Middle of the Houſe, with a Gravel Walk in the Midſt, having narrow Verges of Graſs on each Side, and Rows of Variety of Winter-greens on either Side of the Graſs Verges. But if the Ground be irregular, it may be made uniform ſo as to afford a Proſpect no ways inferior to the moſt regular. The moſt irregular Figure may be reduc'd into Order by ſtrait Lines. There is Beauty in a Triangle, as well as a Square; and the moſt irregular Spots of Ground may be brought to thoſe two Figures by Borders and Walks.

An Irregularity is eaſily hid in a large *Garden*, by long Walks and tall Hedges interrupting a diſtant View: And the little Corners and triangular Spaces may be agreeably fill'd up with Borders of Flowers, Dwarf-trees, flowering Shrubs, or Ever-greens. Nor ſhould we be ſolicitous to throw the whole *Garden* into one ſingle View; ſince Irregularities and Unevenneſſes oftentimes afford many uncommon pretty Devices, *&c.*

1ſt. *Situation*: This ought to be ſuch a one as is wholeſome, in a Place that is neither too high nor too low; for if a *Garden* be too high, it will be expos'd to the Winds, which are very prejudicial to Trees: if it be too low, the Dampneſs of low and marſhy Places will be very injurious to Health; beſides, the Vermin and venomous Creatures, that breed in Ponds and marſhy Places, add much to the Inſalubrity of them: Therefore, Situations in mountainous Places, or in the Bottoms of Vallies, ſhould not be choſen; but thoſe which are on the Side of an Hill are the more happy.

A Situation on a riſing Ground is moſt eſteem'd; and indeed, if it be not too ſteep, has the moſt Advantages, if the Slope be eaſy and imperceptible, and a good deal of Level may be had.

If the Declivity be eaſy and inſenſible, and abounds in Springs of Water, the Situation is very happy, and the moſt agreeable that can be; for being ſhelter'd from the Fury of the Winds, and the violent Heat of the Sun, there a temperate Air will be enjoy'd; and the Water that deſcends from the Top of the Hills, either from Springs or Rain, will ſupply Fountains, Canals, and Caſcades, for Ornaments of Gardens; and beſides this, when it has perform'd its Office, will water the adjacent Vallies, and render 'em fertile and wholeſome, if it be not ſuffer'd to ſtagnate there.

Indeed, if the Declivity of the Hill be too ſteep, and the Water in too great a Quantity, then a *Garden* on the Side of it may often ſuffer, by having the Trees torn up by the Torrents and Floods, and the Earth above tumbled down on that below, the Walls thrown down, and the Walks ſpoil'd.

If the Situation be on a Plain or Flat, it has ſeveral Advantages; Floods and Rains make no Spoil: The Air is even more pure than upon the Side of an Hill: There is a continu'd Proſpect of Champains, interſected by Rivers, Ponds, and Brooks, fine Meadows, and Hills cover'd with Buildings or Woods. The level Surface is leſs tireſome to walk on, and leſs chargeable than that on the Side of an Hill, Terrace-walks and Steps not being neceſſary; but the greateſt Diſadvantage of flat Gardens, is the Want of an extenſive Proſpect, which riſing Grounds afford.

2dly, The ſecond thing to be conſider'd in chuſing a Plat for a *Garden*, is a good Earth or Soil.

It is ſcarce poſſible to make a fine *Garden* in a bad Soil: And tho' there are Ways to meliorate Ground, they are very expenſive; and ſometimes, when the Expence has been beſtow'd, of laying good Earth three Feet deep over the whole Surface, when the Roots of the Tree have reach'd the natural Bottom, a whole *Garden* has been ruin'd.

A good Soil is that which of its own Nature is rich and fruitful: And if the Expoſure be Southerly and healthful, and poſſeſs'd of all the Advantages before-mention'd, yet ſtill, if it has not a good Body of Earth, and that which is fertile in it ſelf, it is to be fear'd, that whatever is planted in it, will, in a while, droop and die away.

To judge of the Quality of the Soil, obſerve whether there be any Heath, Thiſtles, or ſuch like Weeds growing ſpontaneouſly therein, which are certain Signs that the Ground is poor. Likewiſe, if there be large Trees growing thereabouts, obſerve whether they grow crooked, ill-ſhap'd and grubby, of a faded Green, and full of Moſs, or infeſted with Vermin; if ſo, the Place is to be rejected; but, on the contrary, if it be cover'd with good Graſs fit for Paſture, then you may be encourag'd to try the Depth of the Soil.

To know this, dig Holes in ſeveral Places ſix Feet wide, and four Feet deep: If you find three Feet of good Earth, it will do well, but leſs than two will not be ſufficient.

The Quality of good Ground, is neither to be ſtony, nor too hard to work; neither too dry, nor too moiſt; nor too ſandy and light; nor too ſtrong, as rank and clayey, which is the worſt of all for *Gardens*.

3dly, The third Requiſite is Water. If this be wanting to a *Garden*, it is one of the greateſt Inconveniencies that can attend it, and will bring a certain Mortality upon whatever is planted. By watering, the great Droughts in Summer are allay'd, which would otherwiſe burn up all the Plants; beſides the Uſefulneſs of it in fine *Gardens*, for making *Jets d'Eau*, *Canals*, *Caſcades*, &c. which are the greateſt Ornaments of a *Garden*.

4thly, The fourth Thing requir'd in a good Situation, is the View and Proſpect of a fine Country; and tho' this is not ſo abſolutely neceſſary as the preceding, yet it is one of the moſt agreeable.

If a *Garden* was planted in a low Place that was bury'd, and that had no kind of Proſpect, it would be both diſagreeable and unwholſome; the Trees themſelves being too much ſhaded and obſcur'd, would not look near ſo beautiful: whereas a fine View, and the Proſpect of a noble Country, are as agreeable Entertainments as a *Garden* can afford.

In ſhort, a *Garden* neceſſarily requires the Sun, a good Soil, the Care of the Gardener, and Water; and the laſt, above all, is indiſpenſably neceſſary: 'Without any of theſe, there's no Good to be expected; and it would be egregious Folly to plant a *Garden* where any of theſe are wanting.'

Of the Deſigning or Manner of Laying out a Fine or Pleaſure-Garden.

The Area of a handſome *Garden* may take up thirty or forty Acres, not more.

And as for the Diſpoſition and Diſtribution of this *Garden*, the following Directions may be obſerved.

1ſt, There ought always to be a Deſcent from the Houſe to the *Garden* not fewer than three Steps. This Elevation of the Building will make it more dry and wholſome: Alſo, from the Head of theſe Steps there will be a farther Proſpect or View of the *Garden*.

In a fine *Garden*, the firſt Thing that ſhould preſent itſelf to the Sight, ſhould be an open level Piece of Graſs, full as broad as the Length of the Front of the Building, which may be ſurrounded by a Gravel Walk, for the Conveniency of walking in wet Weather.

Theſe Pieces of Graſs ſhould not be divided in the Middle with a Gravel Walk, (as is too frequently ſeen;) for it is much more agreeable to view an intire Carpet of Graſs from the Houſe, than to have it interſected by Walks. On the oppoſite Side of the Gravel Walks may be Borders four Feet wide for Flowers, which will ſufficiently anſwer the Purpoſe of *Parterres*; and if from the Back of theſe Borders there are Ever-greens planted in ſuch a manner, as to riſe from the Borders gradually, ſo as to form an Ever-green Slope, it will bound the Proſpect very agreeably; and where there are any Objects worthy the Sight, or diſtant Proſpects to be obtain'd, there ſhould be the Viſta's left.

Groves make the Chief of a *Garden*, being great Ornaments to all the reſt of its Parts; ſo that there cannot be too many of them planted, provided they are not too cloſe to the Building, ſo as to render it damp and unwholſome; nor ſhould they be placed ſo as to obſtruct the Proſpect of agreeable Objects.

To accompany *Parterres*, it is uſual to make Choice of thoſe Deſigns of Wood-work that are the fineſt: as *Groves* open'd in Compartiments, *Quincunces*, *Verdant Halls*, with *Bowling-greens*, *Arbour-work*, and *Fountains* in the Middle.

Theſe ſmall Groves being placed near the Houſe, are ſo much the more agreeable, in that you have no need to go far to find Shades; and beſides this, they communicate a Coolneſs to the Apartments, which is very agreeable in hot Weather.

It would alſo be very proper to plant ſome Groves of Evergreens, that may afford the Pleaſure of ſeeing a Wood always verdant in Winter, when the other Trees and Plants are deprived of their Ornaments; and alſo to plant ſome Squares of them to be a Diverſity from the other Woods.

It is alſo uſual to adorn the Head of a *Parterre* with Baſons, Water-works; and beyond it, with a circular Line of Paliſades or Wood-work cut into a Gooſe-foot, leading into the great Walks, and to fill the Space between the Baſon and the Paliſade with ſmall Pieces of Embroidery or Graſs-work, ſet off with Yews, Vaſes, and Flower-pots.

In *Gardens* which have Terraces either in the Side or Front of the Houſe, where there is a delightful Proſpect, ſo that you cannot ſhut up the *Parterre* by a circular Paliſade; in order to continue the new View, you ſhould lay ſeveral Compartiments of a *Parterre* together, ſuch as *plain Green-plots*, after the modern Faſhion, or *Cut-work*: which ought to be divided at convenient Diſtances by Croſs-walks: But the *Parterre*, or *plain Green-plot*, muſt always be next to the Houſe, becauſe it is very agreeable to the Eye.

The principal Walk muſt be in the Front of the Houſe, and ſhould extend from the *Graſs-plot* next the Houſe, to the End of the *Garden*: If they be very wide, the Side ſhould be turfed next the Borders, and at the Ends they may be terminated by a Foſſe, to continue the View.

If any Part of the Ground be naturally low and marſhy, and you would not be at the Expence of filling it, you may in ſuch Places make *Bowling-greens*, *Water-works*, and *Groves*, raiſing the Allies only to the Levels of thoſe that are near them, and that lead thither.

When the great Lines and chief Walks are laid out, and the Parterres and Works about the Sides and Head of them are diſpoſed ſo as is moſt ſuitable to the Ground, then the reſt of the *Garden* is to be furniſh'd with many different Deſigns; as *Tall Groves*, *Cloſe Walks*, *Quincunces*, *Galleries*, and *Halls of Verdure*, *Green Arbours*, *Labyrinths*, *Bowling-greens*, and *Amphitheatres*, adorn'd with *Fountains*, *Canals*, *Figures*, &c. which Sort of Works diſtinguiſh a Garden well, and do alſo greatly contribute to the rendering of it magnificent.

Alſo the ſeveral Parts of each Piece ought to be diverſify'd: If a Baſon be round, the Walk ought to be octangular: And the like is to be obſerv'd as to *Graſs-plots* and *Bowling-greens* which are the Midſt of *Groves*.

The ſame Works ought never to be repeated on both Sides, except in open Places, where the Eye, by comparing them together, may judge of their Conformity, as in Parterres, Bowling-greens, Groves, open'd in Compartiments and Quincunces: But in ſuch Groves as are form'd of Paliſades and tall Trees, the Deſigns and Out-parts ought always to be varied: But tho' they are to be different, yet however they ought always to have ſuch Relation and Agreement one to the other in their Lines and Ranges, as to make the Openings, Glades, and Viſta's regular and agreeable.

In the Buſineſs of Deſigns, a mean and pitiful Manner ought to be ſtudiouſly avoided, and the Aim ſhould always be at that which is great and noble; not to make *Cabinets* and *Mazes* ſmall, and *Baſons* like Bowl-diſhes, and *Allies* ſo narrow that two Perſons can ſcarce walk in them. It is much better to have but two or three Things pretty large, than four times the Number of ſmall ones, which are but Trifles.

Before the Deſign of a *Garden* be put in Execution, it ought to be conſider'd what it will be in twenty or thirty Years time, when the Paliſades are grown up, and the Trees are ſpread: For it often happens, that a Deſign, which looks handſome when it is firſt planted, and in good Proportion, becomes ſo ſmall and ridiculous in Proceſs of Time, that there is a Neceſſity either to alter it, or deſtroy it intirely, and ſo plant it anew.

The Corners and Angles of every Part of a *Garden* ought to be ſlop'd, or cut hollow: This will make the Croſs-paths more agreeable to the Eye, and more convenient for walking, than to find Points and Corners advancing, which look very ill upon the Ground, and are very inconvenient.

The ſeveral Sorts of *Gardens* may be diſtinguiſh'd under three Heads: 1. *Gardens* on a perfect Level. 2. *Gardens* on an eaſy Aſcent. And, 3. *Gardens* whoſe Ground and Level are ſeparated and interrupted by Falls and Terraces, Banks, Slopes, Flights of Steps, *&c.*

Gardens on a perfect Level are the beſt, as well for the Conveniency of Walking, as that their long Allies and Glades have no Riſings nor Fallings, and are not ſo chargeable to maintain as the other.

Gardens on a gentle Aſcent are not quite ſo agreeable and convenient, altho' the Shelving be ſo little as not to be perceiv'd; for it fatigues and tires a Perſon to walk either up Hill or down Hill, without finding ſcarcely a reſting Place: Theſe ſloping Grounds are alſo liable to be ſpoil'd by Torrents.

There is a peculiar Excellency in *Gardens* that have Terraces; becauſe from the Height of one Terrace, all the lower Parts of the *Garden* may be diſcovered; and from others, the Compartiments are ſeen, which form ſo many ſeveral *Gardens* one under another, and preſent us with very agreeable Views, and different Scenes of Things, if the Terraces are not too frequent, and there be good Lengths of Level between them.

Theſe *Gardens* alſo lie advantageouſly for Water, which may be repeated from one another; but they are a great Charge to keep them up, as well as that they coſt a great deal the making.

The general Diſtribution of a *Garden*, and of its Parts, ought to be accommodated to theſe different Situations: For an excellent Deſign which would be proper for a *Garden* that is flat and upon a Level, would not ſerve for a Ground cut aſunder by divers Terraces, which break off both the Level and the Continuity.

There are, beſides theſe, many other Rules relating to the Proportions, Conformity, and Place of the different Parts and Ornaments of *Gardens*; of which more may be ſeen under other Articles.

GARIDELLA. *This Plant was ſo named by Dr.* Tournefort, *in Honour to Dr.* Garidel, *who was Profeſſor of Phyſick at* Aix *in* Provence.

The *Characters* are;

It hath a Roſe-ſhaped Flower, conſiſting of ſeveral horned Petals, which are bifid, and ranged in a circular Order; from whoſe many-leav'd Cup riſes the Pointal, which afterward becomes a Head compoſed of many oblong Pods, which open lengthways, and are full of roundiſh Seeds.

We know but one *Sort* of this Plant, *viz.*

GARIDELLA *foliis tenuiſſime diviſis. Tourn.* Garidella with very narrow-divided Leaves.

This Plant is very near a-kin to the *Nigella*, or *Fennel-Flower*; to which *Genus* it was plac'd by the Writers of Botany before Dr. *Tournefort*, and was by him ſeparated from it, as differing in the Form of the Flower.

It grows wild in *Candy*, and on *Mount Baldus* in *Italy*, as alſo in *Provence*, where it was diſcovered by Dr. *Garidel*, who ſent the Seeds to Dr. *Tournefort*, for the *Royal Garden* at *Paris*.

This is an annual Plant, whoſe Seeds ſhould be ſown in the Spring, on a Bed or Border of light freſh Earth, where the Plants are deſigned to remain (for they ſeldom thrive, if they are tranſplanted): when the Plants are come up, they muſt be carefully cleared from Weeds; and where they are too cloſe, they muſt be thinned, leaving them about four or five Inches apart; and as they grow up, ſo they muſt conſtantly be kept clear from Weeds, which, if ſuffer'd to grow amongſt the Plants, will ſoon over-bear and deſtroy them. In *June* theſe Plants will produce their Flowers, and in *Auguſt* the Seeds will ripen; which if permitted to fall, will come up in Autumn, and require no other Culture, but to keep them clear from Weeds.

GENERATION, is by Naturaliſts defin'd to be the Act of procreating and producing a Thing which before was not; or, according to the School-men, it is the total Change or Converſion of a Body into a new one, which retains no ſenſible Part or Mark of its former State.

Thus we ſay, Fire is *generated*, where we perceive it to be where before there was only Wood, and other Fuel; or when the Wood is ſo chang'd as to retain no ſenſible Character of Wood: In the like Manner a Chick is ſaid to be *generated*, when we perceive a Chick, where before was only an Egg, or the Egg is changed into the Form of a Chick.

In *Generation* there is not properly any Production of new Parts, but only a new Modification or Manner of Exiſtence of the old ones; and thus *Generation* is diſtinguiſh'd from *Creation*.

Generation alſo differs from *Alteration*, in that in *Alteration* the Subject remains apparently the ſame, and is only chang'd in its Accidents or Affections; as Iron, which before was ſquare, is now made round; or when the ſame Body which is well To-day, is ſick To-morrow.

Again: *Generation* is the Oppoſite to *Corruption*, which is the utter Extinction of a former Thing; as, when that which before was an Egg, or Wood, is no longer either the one, or the other. Whence it appears, that the *Generation* of one Thing is the *Corruption* of another.

The *Peripateticks* explain *Generation* by a Change or Paſſage from a Privation or Want of a ſubſtantial Form, to the having ſuch a Form.

The *Moderns* allow of no other Change in *Generation* than what is *local*; and according to their Notion, it is only a Tranſpoſition, or new Arrangement of Parts; and, in this Senſe, the ſame Matter is capable of undergoing an infinite Number of *Generations*.

As for Example: A Grain of Wheat being committed to the Ground, imbibes the Humidity of the Soil, becomes turgid, and dilates to ſuch a Degree, that it becomes a *Plant*, and, by a continual Acceſſion of Matter, by Degrees, ripens into an Ear, and at length into a Seed: This Seed, when ground in a Mill, appears in the Form of a Flower, which being mix'd up with Water, makes a Paſte, of which *Bread* is *generated* by the Addition of Yeſt, and undergoing the Operation of Fire, *i. e.* by baking; and this Bread being communicated by the Teeth, digeſted in the Stomach, and convey'd thro' the Canals of the Body, becomes *Fleſh*, or, in other Words, *Fleſh is generated.*

Now the only Thing effected in all this Series of *Generation*, is a local Motion of the Parts of the Matter, and their ſettling again in a different Order: So that where-ever there is a new Arrangement or Compoſition of the Elements, there is, in Reality, a new *Generation*; and thus *Generation* is reduced to *Motion*.

Generation is more immediately underſtood of Animal and Vegetable Bodies from Seed, or the Coition of others of different *Sexes*, but of the ſame *Genus* or *Kind*.

Monſ. *Perrault*, and ſome of the modern Naturaliſts after him, maintain'd, That there is not properly any new *Generation*; That God created all Things at firſt; and, That what is by us call'd *Generation*, is no more than an Augmentation and Expanſion of the minute Parts of the Body of the Seed: So that the whole Species which are afterwards produced, were in Reality all form'd at the firſt, and incloſ'd therein, to be brought forth and excloſ'd to View in Time, and according to a certain Order and Oeconomy.

And accordingly Dr. *Garden* ſays, It is moſt probable that the *Stamina* of all the Plants and Animals that have been, or ever ſhall be in the World, have been form'd, *ab Origine Mundi*, by the Almighty Creator, within the firſt of each reſpective Kind: And he who conſiders the Nature of Viſion, that it does not give us the true Magnitude, but only the Proportion of Things, and that which ſeems to our naked Eye but a Point, may truly be made up by as many Parts as ſeem to be in the whole Univerſe, will not think this an abſurd or impoſſible Thing.

Dr. *Blair*, treating of the *Generation* of *Plants*, ſays, That when Almighty God created the World, he ſo order'd and diſpos'd of the *Materies Mundi*, that every Thing produced from it ſhould continue ſo long as the World ſhould ſtand. Not that the ſame individual Species ſhould always remain; for they were, in Proceſs of Time, to periſh, decay, and return to the Earth from whence they came. But that *every Like ſhould produce its Like*, every Species ſhould produce its own Kind, to prevent a final Deſtruction of the Species, or the Neceſſity of a new Creation, in order to continue the ſame Species upon Earth, or in the World.

For which End he laid down certain Regulations, by which each Species was to be propagated, preſerved, and ſupported, 'till in Order or Courſe of Time, they were to be remov'd hence; for, without that, thoſe very Beings which were created at firſt, muſt have continued to the final Diſſolution of all Things; which Almighty God, of his infinite Wiſdom, did not think fit.

But that he might ſtill the more manifeſt his Omnipotence, he ſet all the Engines of his Providence to work, by which one Effect was to produce another by the Means of certain Laws or Rules laid down for the Propagation, Maintenance, and Support of all created Beings: This his divine Providence is call'd *Nature*, and theſe Regulations are call'd the *Laws* or *Rules* of *Nature*, by which it ever operates in its ordinary Courſe; and whatever recedes from that, is ſaid to be preternatural, miraculous, or monſtrous.

Moſes, in his Account of the *Creation*, tells us, that Plants have their Seeds in themſelves, in theſe Words; *And God ſaid, Let the Earth bring forth Graſs, the Herb yielding Seed, and the Fruit-tree yielding Fruit, after his Kind, whoſe Seed is in itſelf upon the Earth.*

The Antients, indeed, diſtinguiſh'd the *Generation of Animals* into two Kinds; *i. e.* into *Regular*, call'd *Univocal*; and *Anomalous*, call'd alſo *Equivocal*, or *Spontaneous*.

The firſt was effected by Parent Animals of the ſame Kind; as that of Men, Birds, Beaſts, *&c.* The ſecond they ſuppos'd to be effected by Corruption, the Sun, *&c.* as that of Inſects, Frogs, *&c.* But this latter is now generally exploded.

Many, indeed, have eſſay'd to treat of the *Generation of Animals*; but few have been able to give that ſatisfactory Account of it that were to be wiſh'd for, and far fewer yet have been able to treat of the *Generation of Plants* ſo as it ought to be; for that which ſtill kept them in the Dark, was,

1ſt: That tho' there were two different Sexes in Animals, by whoſe mutual Aſſiſtance the Species was propagated, yet there was no ſuch Thing then known in Plants.

2dly: That tho' it can now be made appear, that every Animal is produced by *Univocal Generation*, i. e. from an *Egg*, and not by Corruption, *&c.* as moſt of the Antients imagin'd the Inſects were; yet there are ſtill thoſe who maintain, that thoſe which they call *Imperfect Plants*, are the Product of a certain Rottenneſs in the Earth.

The *Generation of Plants* bears a cloſe Analogy to that of ſome *Animals*, eſpecially ſuch as want local Motion, as Muſcles, and other immoveable Shell-fiſh, which are Hermaphrodites, and contain both the Male and Female Organs of *Generation*.

The Flower of a Plant, is found to be the *Pudendum*, or principal Organ of *Generation*; but the Uſe of ſo much Mechaniſm, and ſo many Parts, has been but little known.

The Flower of a *Lily* conſiſts of ſix *Petala*, or Flower Leaves; from the Bottom of which, at the Middle, ariſes a Kind of Tube, call'd the *Piſtillum*; and pretty fine Threads, call'd the *Stamina*, are diſpos'd around it: Theſe *Stamina* are likewiſe from the Bottom of the Flower, and terminate at the Top in little Bunches call'd *Apices*, which are replete with a fine Duſt call'd *Farina*.

This is the general Structure of the Flowers of Plants, altho' they are infinite Ways diverſify'd, and to ſuch a Degree, that ſome have no ſenſible *Piſtil*, and others want the *Stamina*; others again have the *Stamina*, but want the *Apices*; and ſome Plants exceed all others in this, that they have no Flowers: But if it be allow'd, that this before-mention'd be the moſt common Structure of Flowers, it will follow, that theſe Parts that ſeem wanting are uſually only leſs apparent.

The Fruit is uſually at the Baſe of the *Piſtillum*; ſo that when the *Piſtillum* falls with the reſt of the Flower, the Fruit appears in the ſtead of it: But oftentimes the *Piſtillum* is the Fruit itſelf; but ſtill they have both the ſame Situation in the Center of the Flower; and the *Petala*, or Flower-leaves, which are diſpos'd around the little *Embryo*, ſeem to be deſign'd only to prepare a fine Juice in the little Veſſels, for the Support of it during the little Time that they laſt, and it requires: But ſome ſuppoſe the chief Uſe of them to be to defend the *Piſtillum*, &c.

The *Apices* of the *Stamina* are ſmall *Capſulæ*, or Bags full of a *Farina* or Duſt, which falls out when the *Capſula* grows ripe, and burſts.

Monſ. *Tournefort* ſuppos'd this Duſt to be only an Excrement of the Food of the Fruit; and the *Stamina* to be but only excretory Ducts, which filtrated this uſeleſs Matter, and thus diſcharg'd the *Embryo*: But Mr. *Morland*, Mr. *Geoffroy*, and others, find nobler Uſes for this Duſt. On their Principle, the *Stamina*, with the *Apices* and *Farina*, make the Male Part of the Plant; and the *Piſtil*, the Female.

Mr. *Morland* ſays, It hath been long ago obſerv'd, that there is in every particular Seed a ſeminal Plant conveniently lodg'd between the two Lobes, which conſtitute the Bulk of the Seed, and are deſign'd for the firſt Nouriſhment of the tender Plant.

But the admirable Dr. *Grew*, to whoſe generous Induſtry and happy Sagacity we are indebted for the beſt Improvements of this Part of Knowledge, is the only Author I can find, who hath obſerv'd, that the *Farina*, or fine Powder, which is at its proper Seaſon, ſhed out of thoſe *Thecæ*, or *Apices ſeminiformes*, [*i. e.* Seed-forming Caſes] which grow at the Top of the *Stamina*, doth ſome Way perform the Office of Male Sperm. But herein, I think, he falls ſhort, in that he ſuppoſes them only to drop upon the Outſide or *Uterus*, or *Vaſculum Seminale*, and to impregnate the included Seed by ſome ſpirituous Emanations, or energetical Impreſs.

That which is now ſubjected to the Diſquiſitions and Cenſure of ſuch whoſe exquiſite Skill doth conſtitute them Judges of ſuch Performances, is, whether it be not more proper to ſuppoſe that the Seeds which come up in their proper *Involucra*, are at the firſt unimpregnated *Ova* (or Eggs) of Animals; that this *Farina* is a *Congeries* of ſeminal Plants, one of which muſt be convey'd into every *Ovum* before it can become prolifick: That the *Stylus*, in Mr. *Ray*'s Language, or the upper Part of the *Piſtillum*, in Mr. *Tournefort*'s, is a Tube deſigned to convey theſe ſeminal Plants into their Neſts in the *Ova*: That there is ſo vaſt a Proviſion made, becauſe of the Odds there are, whether one, of ſo many, ſhall ever find its Way into and thro' ſo narrow a Conveyance.

To make this Suppoſition the more credible, I ſhall lay down the Obſervations I have made upon the Situation of theſe *Stamina* and the *Stylus* in ſome few Species of Plants.

Firſt, In the *Corona Imperialis*, where the *Uterus* or *Vaſculum Seminale* of the Plant ſtands upon the Center of the Flower; and from the Top of this ariſeth the *Stylus*, the *Vaſculum Seminale* and *Stylus* together repreſenting a *Piſtillum*.

Round this are placed ſix *Stamina*; upon the Ends of each of theſe are *Apices*, ſo artfully fixed, that they turn every Way with the leaſt Wind, being in Height almoſt exactly equal to the *Stylus* about which they play, and which in this Plant is manifeſtly open at the Top, as it is hollow all the Way: To which we muſt add, that upon the Top of the *Stylus* there is a Sort of *Tuft* conſiſting of pinguid *Villi*, which I imagined to be placed there to catch and detain the *Farina* as it flies out of the *Thecæ*; from hence, I ſuppoſe, the Wind ſhakes it down the Tube, 'till it reach the *Vaſculum Seminale*.

In the *Caprifolium*, or *Honey-ſuckle*, there riſes a *Stylus* from the Rudiments of a Berry, into which it is inſerted, to the Top of the monopetalous Flower; from the Middle of which Flower are ſent forth ſeveral *Stamina*, that ſhed their *Farina* out of the Caſes upon the Orifice of the *Stylus*, which, in this Plant, is villous or tufted, upon the ſame Account as in the former.

In *Allium*, or *common Garlick*, there ariſes a *tricoccous Uterus*, or Seed-veſſel; in the Center of which is inſerted a ſhort *Stylus*, not reaching ſo high as the *Apices*, which thus over-topping it, have the Opportunity of ſhedding their Globules into an Orifice more eaſily: For which Reaſon, I can diſcern no Tuft upon this (as in the former) to inſure their Entrance, that being provided for, by its Situation juſt under them.

The Reader, I hope, will excuſe me, if I preſent him now with ſome ſuch Reaſonings or Reflections as the foregoing Account doth ſuggeſt, and will ſupport; and I can't but hope to perſuade thoſe that are candid, that I have aſſign'd to the ſeveral Parts of the Flowers I have mention'd, their true and real Uſe.

For nothing can be more natural than to conclude, that where a fine Powder is curiouſly prepar'd, carefully repoſited, and ſhed abroad at a peculiar Seaſon, where there is a Tube ſo planted as to be fit to receive it; and ſuch Care in diſpoſing this Tube, that where it doth not lie directly under the Caſes that ſhed the Powder, it hath a particular *Apparatus* at the End to inſure its Entrance.

Nothing can be more genuinely deduced from any Premiſes, than it may from this, that this Powder, or ſome of it, was deſigned to enter this Tube. If theſe *Stamina* had been only excretory Ducts, as has been hitherto ſuppoſed, to ſeparate the groſſer Parts, and leave the Juice deſigned for the Nouriſhment of the Seed more reſerved, what Need was there to lodge theſe Excrements in ſuch curious Repoſitories? They would have been convey'd any-where, rather than where there was ſo much Danger of their dropping into the *Seed-veſſel* again, as they are here.

Again: The Tube over the Mouth of which they are ſhed, and into which they enter, leads always directly into the Seed-veſſel.

To which we muſt add, that the *Tube* always begins to die when theſe *Thecæ* are empty'd of their Contents: If they laſt any longer, it is only whilſt the Globules, which enter at their Orifice, may be ſuppos'd to have finiſh'd their Paſſage. Now, can we well expect a more convincing Proof of theſe *Tubes* being deſigned to convey theſe *Globules*, than that they wither when there are not more *Globules* to convey?

If I could now ſhew, that the *Ova*, or unimpregnated Seed, are ever to be obſerved without this *ſeminal Plant*, the Proof would ariſe to a Demonſtration; but having not been ſo happy as to obſerve this, I ſhall content myſelf at preſent with ſuggeſting, that hence one would conclude, that the *Petala* of the Flower were rather deſigned to ſever ſuperfluous Juices from what was left to aſcend in the *Stamina*, than the *Stamina* to perform this Office, either for them, or the unimpregnated *Semina*, and obſerve the Analogy between *Animal* and *Vegetable Generation*, as far as was neceſſary there ſhould be an Agreement between them. I ſhall recommend the Inquiry to thoſe Gentlemen who are Maſters of the beſt Microſcopes, and Addreſs in uſing them; tho', in the mean Time, I have made ſome Steps towards a Proof this Sort, and have met with ſome ſuch Hints, as make me not deſpair of being able, in a ſhort Time to give the World even this Satisfaction.

For not to inſiſt upon this, that the *Seminal Plant* always lies in that Part of the Seed which is always neareſt to the Inſertion of this *Stylus*, or ſome Propagation of it into the Seed-veſſels, I have diſcover'd in *Beans*, *Peaſe*, and *Phaſeols*, juſt under one End of what we call the *Eye*, a manifeſt Perforation (diſcernible by the groſſer Sort of magnifying Glaſſes) which leads directly to the *Seminal Plant*, and at which I ſuppoſe the *Seminal Plant* did enter; and I am apt to think, the *Beans* or *Peaſe* that don't thrive well, may be found deſtitute of it.

But I muſt now proceed to deſcribe ſome other Plants, whereby it will appear, that there is a particular Care always exercis'd to convey this Powder, ſo often mention'd, into a *Tube*, which may convey it to the *Ova*.

Now, in *Leguminous Plants*, if we carefully take off the *Petala* of the Flower, we ſhall diſcover the *Pod* or *Siliqua* cloſely cover'd with an involving Membrane, which, about the Top, ſeparates into ſeveral *Stamina*, each fraught with its Quantity of *Farina*; and theſe *Stamina* are cloſely bound upon the Bruſh, which is obſervable at the End of that *Tube*, which here alſo leads directly to the Pod: It ſtands not upright, indeed, but ſo bended as to make near a right Angle with it.

In *Roſes* there ſtands a Column, conſiſting of many *Tubes* cloſely clung together, tho' eaſily ſeparable, each leading to their particular Cell, the *Stamina* in a great Number planted all round about.

In *Tithymalus*, or *Spurge*, there riſes a tricoccous Veſſel, that, whilſt it is ſmall, and not eaſily diſcernible, lies at the Bottom 'till it is impregnated; but afterwards grows up, and ſtands ſo high upon a tall Pedicle of its own, as would tempt one to think, that there were to be no Communion betwixt this and the *Apices*.

In the *Straw-berries* and *Raſp-beries*, the Hairs which grow upon the ripe Fruit, (which, I ſuppoſe, may be ſurprizing to ſome) are ſo many *Tubes* leading each to their particular Seed; and therefore we may obſerve, that in the firſt opening of the Flower there ſtands a Ring of *Stamina* within the *Petala*, and the whole inward *Area* appears like a little Wood of theſe Hairs or Pulp; which when they have receiv'd and convey'd their *Globules*, the Seeds ſwell, and riſe in a carneous Pulp. Thus far Mr. *Morland*.

We may obſerve a Veſſel at the Bottom of the *Piſtil* of the *Lily*, which Veſſel we may call the *Uterus* or *Womb*; in which are three *Ovaries* fill'd with little Eggs or Rudiments of Seed found in the *Ovaria*, which always decay and come to nothing, unleſs impregnated with the *Farina* of the ſame Plant, or ſome other of the ſame Kind: The *Stamina* alſo ſerve for the Conveyance of the Male Seed of the Plant to be perfected in the *Apices*; which, when ripe, burſt forth in little Particles like Duſt: Some of them fall into the Orifice of the *Piſtil*, and are either convey'd thence into the *Utricle*, to fecundify the Female *Ova*, or lodg'd in the *Piſtil*, where, by their magnetick Virtue, they draw the Nouriſhment from the other Parts of the Plant into the *Embryo's* of the Fruit, making them ſwell, grow, *&c.*

In Flowers that turn down, as the *Cyclamen*, and the *Imperial Crown*, the *Piſtil* is much longer than the *Stamina*, that the Duſt may fall from their *Apices* in ſufficient Quantities on the *Piſtil*, for the Buſineſs of Impregnation.

Mr. *Geoffroy* aſſures us, that in all the Obſervations he had made, the cutting off the *Piſtil* before it could be impregnated by the *Farina*, actually render'd the Plant barren for that Seaſon, and the Fruit abortive.

In many Kinds of Plants, as the *Oak*, *Pine*, *Willow*, &c. the Flowers, Mr. *Geoffroy* obſerves, have their *Stamina* and *Apices*, whoſe *Farina* may eaſily impregnate the Rudiments of the Fruit, which are not far off.

Indeed there is ſome Difficulty in reconciling this Syſtem with a certain Species of Plants, which bear Flowers without Fruit; and another Species of the ſame Kind and Denomination, which bear Fruit without Flowers; ſuch are the *Palm*, *Hemp*, *Hop*, *Poplar*, &c. which are hence diſtinguiſh'd into *Male* and *Female*: For how ſhould the *Farina* of the Male here come to impregnate the *Ova* of the Female?

This Difficulty Mr. *Geoffroy* ſolves, by ſuppoſing the Wind to be the Vehicle that conveys the Male *Duſt* to the Female *Uterus*; which is confirm'd by an Inſtance of *Jovianus Pontanus*, of a ſingle Female *Palm-tree* growing in a Foreſt, which never bore Fruit, till having riſen above the other Trees of the Foreſt, and being then in a Condition to receive the *Farina* of the Male by the Wind, it began to bear Fruit in abundance.

As to the Manner wherein the *Farina* fecundifies, Mr. *Geoffroy* advances two Opinions:

1ſt, That the *Farina* being always found of a ſulphurous Compoſition, and full of ſubtil and penetrating Parts, (as appears from its ſprightly Odour) which falling on the Piſtils of the Flowers, there reſolves, and the ſubtileſt Parts of it penetrating the Subſtance of the Piſtil, excite a Fermentation, which putting the latent Juices of the young Fruit in Motion, occaſions the Parts to unfold the young Plant that is inclos'd in the Embryo of the Seed.

In this Hypotheſis, the Plant in Miniature is ſuppos'd to be contain'd in the Seed, and to want only a proper Juice to unfold its Parts, and make them grow.

The ſecond Opinion is, That the *Farina* of the Male Plant is the firſt Germ or *Semen* of the new Plant, and ſtands in need of nothing to enable it to grow or unfold, but a ſuitable *Nidus* with the Juice it finds prepar'd in the Embryo of the Seed or Ovary.

It may be obſerv'd, that theſe two Theories of *Vegetable Generation* bear a ſtrict Analogy to thoſe two of *Animal Generation*, viz. either that the young Animal is in the *Semen Maſculinum*, and only ſtands in need of the Juice of the Matrix to cheriſh and bring it forth; or that the Female *Ovum* contains the Animal, and requires only the Male Seed to excite a Fermentation.

Mr. *Geoffroy* rather takes the proper Seed to be in the *Farina*; inaſmuch as the beſt Microſcopes don't diſcover the leaſt Appearance of any Bud in the little Embryo's of the Grains, when they are examin'd, before the Apices have ſhed their Duſt.

In leguminous Plants, if the *Petala* and *Stamina* be remov'd, and the Piſtil, or that Part which becomes the Pod, be view'd with the Microſcope before the Flower be open, thoſe little, green, tranſparent *Veſiculæ*, which are to become Grains, will appear in their natural Order, yet ſtill ſhewing nothing elſe but the mere Coat or Skin of the Grain.

If you continue to obſerve the Flowers as they advance for ſeveral Days ſucceſſively, you'll find them to ſwell, and by Degrees to become replete with a limpid Liquor; in which, when the *Farina* comes to be ſhed, and the Leaves of the Flower to fall, there may be obſerv'd a little greeniſh Speck or Globule floating about at large.

There is not at firſt any Appearance of an Organization in this little Body; but in time, as it grows, you may begin to diſtinguiſh two little Leaves like two ſmall Horns: As the little Body grows, the Liquor diminiſhes inſenſibly, till at length the Grain becomes quite opake; and upon opening it, the Cavity will be found fill'd with a young Plant in Miniature, conſiſting of a little *Germ* or *Plantula*, a little Root, and the Lobes of the Bean or Pea.

The Manner wherein this Germ of the *Apex* enters the *Veſicula* of the Grain, is not very difficult to determine: For beſides that the Cavity of the Piſtil reaches from the Top to the Embryo's of the Grains, thoſe Grains or *Veſiculæ* have a little Aperture correſponding to the Extremity of the Cavity of the Piſtil, ſo that the ſmall Duſt or *Farina* may eaſily fall, or find an eaſy Paſſage in the Aperture in the Mouth of the Veſſels, which is the Embryo of the Grain.

This Aperture or *Cicatricula* is much the ſame in both Grains, and it is eaſily obſerv'd in Peas, Beans, *&c.* without a Microſcope.

The Root of the little Germ is juſt againſt this Aperture, and it is through this it paſſes out when the little Grain comes to germinate.

Dr. *Patrick Blair*, treating of the *Generation of Plants*, ſays, That a Vegetative Life is common to them, as well as *Animals*; and that the Propagation or Production of the Species is the Effect of the *Vegetative*, not the *Senſitive* Life in Animals, as well as in Plants; and that if there be a Neceſſity of the Concurrence of two different Sexes in *Animals*, at the Begetting or Generating of the Species, the ſame Neceſſity muſt be in *Plants* too: For as a *Cow*, a *Mare*, a *Hen*, a *She-Reptile*, an *Inſect*, &c. cannot produce an Animal without the Male; no more can it be ſuppos'd that a Plant can produce fertile Seed without the Concurrence of the Male Plant, or the Male Parts of the Plant.

Mr. *Ray* ſays, That he will not deny that both Trees and Herbs may produce Fruit, and even come to Maturity, without the Male Seed being ſprinkled upon them. For tho' moſt Birds do not lay Eggs without Congreſs of the Male, yet the Hen often does it without copulating with the Cock; but then theſe Eggs are barren and Wind-Eggs. Juſt ſo, tho' a Female Plant may produce Seed of itſelf, yet that Seed is never fertile. For,

1ſt, As the Work of *Generation* in *Animals* does not proceed from their Animal or Senſitive Life, but from their Vegetative, which being the ſame as in Plants, that Operation muſt be perform'd after the ſame Manner in both: Therefore, as there is a Neceſſity of two different Sexes in Animals, it muſt be ſo too in Plants.

2dly, As paſſive Seminal Matter in Female *Animals* cannot be productive or fertile of itſelf, without being impregnated, animated, or its Particles ſet in Motion and dilated by the active Principles of the Male Seminal Matter; neither can the Female Seed in Plants be render'd fertile, until it be impregnated by the *Farina Fœcundans* from the Male Parts of the Plants.

As to the Flowers of Plants, if they were not aſſiſting to, or if there were not ſome extraordinary Uſe from them in the Perfection of the Seed, they would not be ſo often obſerv'd upon Plants as they are. But ſince there is no Fruit or Seed without a previous Flower; and ſince where the one is obvious, the other is conſpicuous; and ſince one is ſcarce to be obſerved with the naked Eye, neither is the other; this implies a Relation between them, that the one of them is not to be expected without the other.

It is true, there may be Flowers upon a Plant, where the Fruit is ſeldom ſeen, eſpecially in theſe Northern Climates, ſuch as the *Pervinca*, the *Nymphœa alba minima*, and ſeveral others, where the Plant exhauſts the nutritious Juice, in puſhing forth Tendrils, or upon a running Root, which is ſo weakened as not to be able to bring the Fruit to Perfection: But there is no Fruit or Seed to be ſeen, unleſs a Flower has been ſent as a Meſſenger before it, to give Notice of its Approach; tho' it is not always upon the ſame Plant, yet it is ſtill upon ſome other Plant of the ſame Species: for the Flowers are to be ſeen upon diſtinct Plants, different Branches, or different Parts of the Branch from the Fruit, in the *Abies*, *Corylus*, *Nux Juglans*, &c. the *Mercurialis*, *Spinachia*, &c.

But the Fruit never appears, or never begins to increaſe upon theſe Plants, 'till the Flower is ſpent and gone; therefore they muſt ſerve for another Uſe, than to be merely ornamental: for if that were their principal Uſe, they would be always conſpicuous, which they are not, for the moſt part, in apetalous Flowers; and they ſhould always be to be ſeen, and never be hid; which is not ſo in the *Aſarum*, *Hydrocotyle*, &c. where, tho' the Flower is large enough in Proportion to the Fruit, yet it is not to be ſeen unleſs the Leaf be turn'd up, and both Flower and Fruit be narrowly ſearch'd for.

The *Frumenta* and *Gramina* have their ſtaminous Flowers; yet in ſome of them the Flower is ſeldom to be ſeen, unleſs the Spike be ſhaken, and then the *Apices* will appear.

The *Polypodium* and other capillary Plants have regular Flowers, which precede the minute *Capſulæ* or Seed-Veſſels; but neither of them are conſpicuous without a Microſcope.

From theſe Inſtances it appears, that Flowers are not conſtantly a Guard to preſerve the tender Embryo's from the Injuries of the Air; for then the Flowers muſt always have been upon the ſame Pedicle with the Fruit.

Therefore, ſince the Appearance of the Flower is the firſt Step towards the Production of the Seed, whether both be upon the ſame Pedicle or not, it neceſſarily follows, that the one muſt contribute towards the bringing of the other to Perfection.

The Ancients taking Notice, that ſeveral Plants did produce Flowers, and had no Seeds, and that other Plants of the ſame Species, and ſown from the ſame *Seed*, did produce the *Seed* without a previous Flower, they were ready to call the one *Male*, and the other *Female*, without any Notion that the one was aſſiſting to the other; for they look'd upon ſuch Flowers to be only barren; and therefore they call'd thoſe which had Flowers *Female*, and thoſe that produc'd the Fruits *Male* Plants. Thus *Mercurialis* is called *Spicata Fœmina*, and *Teſticulata Mas*. That which produces the Fruit muſt needs be the *Female*, as the Female Animal brings forth the *Fœtus*; and ſo the *Teſticulata* muſt needs be the *Male*, and the *Spicata* the *Female*.

Where-ever the Plants are Annual, theſe, with the Flowers, are ſuch as have the Seed, are always near to each other; but where the Root is Perrennial, and where the Plant is more frequently propagated by the Root than the Seed, the Caſe alters: for there being no need of the Seed to propagate the Plant, there is the leſs need of the Flower to be nearer to the Plant which produces the Seed.

So the *Bryonia* and the *Lupulus* are frequently ſeen to grow, the one to produce the Berry, and the other the *ſquamoſe Fruit*, when the Plants which produce the Male Flowers of the one or the other are at a great Diſtance. And this is ſo far from being an Objection againſt the Neceſſity of two Sexes in Plants, as well as in Animals, that it is an Argument to confirm it; for it ſhews the wonderful Contrivances, in order to preſerve the Species, when the ordinary Means of propagating it by the Seed cannot be ſo conveniently attained.

Theſe, and more that might be produced, being evident Proofs of two Sexes in Plants, as well as in Animals, we ſhall, in the next Place, give ſome Experiments to confirm this in a Negative Way, as has been already done in a Poſitive.

When Plants have been depriv'd of their Male Flowers, or Male Parts in the Flower, they either produc'd no Seed at all, or, if they did, they became abortive, dry'd up, or dwindled away; or, though the Seeds did come to Perfection, they were barren, or did not produce.

Experiment 1ſt: Mr. *Geoffroy* having cut off all the ſtaminous Tufts of Male Flowers from the Top of the Stalk in the *Mayze* or *Turkey Wheat*, as ſoon as they appear'd, and before the Spike loaded with the *Embryo's of the Semen* had put forth from the *Alæ* of the Leaves, ſeveral of theſe *Embryo's* decay'd and dry'd up after they were pretty big; but ſome Grains upon their Pedicles all along the Spike ſwell'd conſiderably, and ſeem'd to be full of the Bud, and were conſequently fertile, while all the others miſcarry'd, and there was not one Spike where the whole Seeds did ripen to the full.

This *Experiment* is a ſufficient Proof of the Uſe of the Male *Flowers* in this Plant; for whatſoever that is which flows from the *Racemi* of theſe *Flowers*, it ſeems it muſt be conducive not only for the Impregnation of the *Seed*, but alſo for the Growth and Impregnation of the *Fruit*.

At preſent we ſhall ſhew, that what Nouriſhment is uſually furniſh'd by the Pedicle to the Embryo's, does not appear to be capable to dilate or expand itſelf, or contribute to the continual Supply of nutritious Particles, unleſs the Embryo's were animated or enliven'd by the Spirit, which ſhould have flow'd from the Male *Flowers*; ſo that they were ſo debilitated and weaken'd, in aſcending from the Body of the Plant towards the Embryo's, before they could arrive at them, that they which otherwiſe might have ſerv'd for the Augmentation and Increaſe of all the Embryo's upon the Spike, could not now do any thing more than contribute to the ripening of a few. And altho' Mr. *Geoffroy* might have imagin'd that theſe few Seeds which came to Perfection were fertile alſo, becauſe they were full of Germs; yet he could not be ſure of that, unleſs he had ſown the ſame Seeds next Seaſon, and try'd whether they would chit or not.

Gardeners who buy *Onion* and *Leek Seed* brought from *Straſburgh*, commonly try the following Experiment: They put a few of the Seeds into a Pot of Water mix'd with Earth, and if they find they begin to ſpring or ſend forth the Seminal Leaf or Fibre of the Root, after a few Days they judge of the Product of it: And notwithſtanding all the Seeds, without this Trial, may ſeem to be productive, being equally firm, hard and ſolid, perhaps not more than one third of them will prove fertile.

And this Barrenneſs may proceed, either becauſe they had never been impregnated by the Male Parts of the Flower, or that they had been too much expos'd to the Air, being ſome time or other too much moiſten'd, and not afterwards been carefully dry'd, or have been kept too long, by which Neglect they loſe their Spirit or Life.

Now, If the Fulneſs, Solidity, and Firmneſs of a Seed is not a ſure Sign of its Fertility, then Mr. *Geoffroy* might have been miſtaken in his Opinion of the Fertility of theſe Seeds in the *Mayze*; ſince he did not make any Trial of it, by committing it to the Ground.

In like manner, as to his ſecond *Experiment* of the *Mercurialis Dioſcoridis*, where he rais'd ſome Plants which had the Fruit, and others which had the ſtamineous Flowers, and remov'd the floriferous Plants before the Flowers were blown, every one of the Seeds upon the fructiferous Plants, except five or ſix, miſcarried; which Seeds were ſo full, that he was perſuaded they were capable of producing new Plants: And the like was found by *Camerarius* in the *Cannabis*. Yet inaſmuch as neither of them try'd the Experiment, by ſowing the ſame Seed the ſecond Year, they could not be ſure but that they might have fail'd in their Expectation.

Mr. *Bobart*, Overſeer of the *Phyſick-Garden* at *Oxford*, many Years ſince, which was before the Doctrine of the different Sexes of Plants was well underſtood, being a Herborizing, found a Plant of the *Lychnis Sylveſtris Simplex*, whoſe Flowers, tho' they had *Stamina*, had no *Apices*: and taking Notice that this was not only in one, but in all the Flowers upon the ſame Plant, he imagin'd it might be a new Species, and therefore mark'd the Plant, and took Care to have it preſerv'd till the Seeds were ripe; and then they being full, hard, and firm, and, to outward Appearance, full of Germ, he ſow'd them in a proper Place in the Garden the next Seaſon; but not a Plant ſprung up from them.

Theſe, and other Inſtances, ſet the Opinion of the different Sexes of Plants upon another Footing than has been received by moſt of our modern Authors: For it imports, that it is not the Nouriſhment of the groſs Subſtance of the Seed itſelf which is hereby meant, nor the Increaſe of the Seed-Veſſel, which is thereby deſign'd; for (as is already obſerv'd) a Hen can lay an Egg, without having before had Congreſs with a Cock; and this, when newly laid, ſhall be of the ſame Bigneſs, Colour, Taſte, and Smell with another Egg which has been cock'd (as they call it) *i. e.* which has been fecundated by the Maſculine Seminal *Materies*: But the Difference will appear, when both are put under the Hen, in order to be hatch'd; for the one ſhall pullulate or chit, and the other ſhall become fœtid and rot.

The Caſe is juſt the ſame with the Seed of a Plant; it may be augmented and increaſed in its Bulk; it may become firm, hard, and ſolid, and have all the Tokens of a perfect Ripeneſs, the Seed-Veſſels may be enlarg'd, and the Pulp or *Parenchyma* of the Fruit may be augmented; and yet the Particles of the Seed may remain crude, indigeſted, and incapable to be explicated and dilated, or ſet in a ſuitable Motion, whereby to protrude the Fibrilla of the Root at one End, and the Seminal Leaves at the other; except it has before received ſome Extraneous Matter or ſome Active Particles from the Male Parts of the Flower, or from the Male Flower itſelf.

In order to confirm the Neceſſity of two Sexes of Plants, as well as in Animals, this familiar Conſideration may be added; That the Fertility or Barrenneſs of any Tree, in the more or leſs fruitful Seaſons, may be known, to ignorant or leſs-curious Perſons, by the Quantity of the Flowers which appear in the Spring-time, and that not only in Trees alone, where the Flower and Fruit are upon one and the ſame Foot-ſtalk, but alſo in ſuch Trees, where the Flowers are upon diſtinct Trees, or ſeparate Places upon the ſame Tree: For it is eaſy to determine, by the *Katkins* or *Juli* upon the *Walnut*, *Filbert*, or *Haſel-trees*, whether ſuch or ſuch Trees will be fertile or barren for the enſuing Seaſon, before any of the Embryo's begin to break, be puſh'd forth, or appear.

Having already treated of the *Male* and *Female Parts* of Flowers, we ſhall next conſider their *Uſe*.

Flowers, in this reſpect, may aptly be divided into that of *Male Flowers*, which (as has been before obſerved) were formerly reputed barren; and the Plants which produced them were alſo called *Female Plants*: Becauſe thoſe Perſons not having any Notion of different Sexes in Plants, they were call'd *Female*, upon Account of their Weakneſs; or if they had any Thought of Sexes in them, it was only alluſive.

The Antients were ignorant of thoſe which are now-a-days call'd *Hermaphrodite Flowers*; and they not having a true Notion of *Sexes* of Plants, could not imagine that the Parts of both Sexes ſhould be in one Flower, upon one and the ſame Foot-ſtalk.

And altho' *Hermaphrodite Animals* bear the leaſt Proportion in the Animal Kingdom, yet *Hermaphrodites* have the greateſt Share in the *Vegetable*; tho' they are not ſo numerous as they have been ſuppos'd to be: For, upon a ſtrict Examination, it will be found, that a great many more Plants have diſtinct Male and Female Flowers, than was formerly believed.

The Neceſſity of different Sexes in Plants having been demonſtrated, and that the Female Seed, tho' it ſhould ripen to the full, cannot be fertile, except it be impregnated by what it receives from the Male Parts of Flowers; we ſhall next explain the Organs of *Generation* in both Sexes.

In the *Animal* Œconomy, there are, beſides thoſe Veſſels that are deſtinated for Nutrition, and the Secretion of the ſeveral Juices in the Body, Spermatick Veſſels, which conſiſt of *Præparantia*, *Differentia*, and *Continentia Semen*. The *Præparantia* in Males are the Blood-veſſels, and the *Teſtes*: The one conveys the Blood; and the other ſeparates the *Semen* from the Blood, and elaborates it.

So likewiſe in *Plants* there are Veſſels that receive the nutritious Particles from the Earth, and convey it to the Extremity of the Plant; ſome of which tend directly to the Leaf, and others to the Flowers.

Thoſe which go to the Foot-ſtalk of the Flower may not improperly be call'd *Spermatick Veſſels*; for 'tis from them that the Seminal Particles in *Male*, *Female*, and *Hermaphrodite Flowers* are ſeparated: Therefore the Foot-ſtalks of the *Hermaphrodite Flowers* are proportionably larger than thoſe either of the *Male* or *Female*; they have a double Office, and contribute ſucceſſively to both.

In thoſe where the *Calyx* becomes the Fruit, the greateſt Supply is furniſh'd to it firſt, and diſtributed in its cortical Parts; as is viſible in the *Roſe*, in which the Foot-ſtalk is ſo far inlarged at firſt, as to be of an equal Bigneſs with the Bud.

After the *Calyx* is thus form'd, the next Diſtribution is to the Inner or Centrical Part of the Flower, which Dr. *Drew* calls *Attire*, and where the *Piſtillum* becomes the Fruit; the *Piſtillum* and *Stylus* are form'd at the ſame time with the *Stamina* and the *Apices*.

The *Stylus* at the very firſt acquires both its due Length and Bigneſs; for the nutritious Particles aſcending in the Center, never ſtop till the *Stylus* is ſtretched out to its full Length; and in ſuch as are furniſh'd with a peculiar *Apex*, that is form'd firſt: The Neck of the *Stylus*, or that Part next to it, is the biggeſt; from thence it gradually decreaſes in its Groſſneſs, till it comes to the *Piſtillum*. This is eaſily perceiv'd by thoſe who will take the Pains to open the Bud of a *Lily*, *Tulip*, &c. before they are half blown.

The *Stamen* is furniſhed next with an extraordinary Supply of the nutritious Particles before the Flower is blown: Theſe, whether fewer or more, are at firſt brought to their proportional Largeneſs, being round and juicy.

The *Apex* is the third which receives this extraordinary Supply of the Nouriſhment; for after that the *Stylus* is form'd, that it may lean to it after the Veſſels of the *Stamen* are extended to their full Length, and ſo form'd that they can convey ſuch an extraordinary Quantity of Particles as may fill up the Capacity of the *Apex*, it is then more inlarg'd than ever after; for if the Flower of a *Lily* be opened before it be blown, the *Apex* will be found to be full as long as the *Stamen*: For as the one half of the *Apex* covers the *Stamen*, fixed to its Center, ſo the other half of it is ſo far extended above the *Stamen*, as the *Stamen* remained uncovered below it, towards the Pedicle or Foot-ſtalk.

The fourth Part of a Flower is the *Petala*, which receives this extraordinary Supply of Nouriſhment before the Blowing: Theſe, upon the Reverſe, are firſt inlarged towards the Pedicle, and are afterwards extended and ſtretch'd forth in Proportion to the Inlargement of the *Attire*: At firſt they are all groſſer and more ſucculent towards the Origin, and gradually become thinner and broader. The *Stamina* of Monopetalous Flowers do, for the moſt part, ariſe partly from the *Petalon* itſelf, and partly from the *Calyx*, eſpecially if the *Stamina* correſpond in Number to the *Petala*, as in the *Hexapetalæ*, or *Polypetalæ Liliaceæ* of *Tournefort*, where every *Stamen* ariſes oppoſite to the Middle of the *Petalon*.

This Obſervation (how and when this more than ordinary Supply of Nouriſhment is carried to the Flowers) eaſily demonſtrates wherein the Analogy of the Organs of *Generation* in *Plants* and *Animals* conſiſts.

In *Animals*, the Seminal Matter is received by proper Veſſels from the ſame Blood from whence the other Secretions fit for the Preſervation of the Animal Œconomy, proceed: So that the Blood in *Animals* being the ſame with the Sap in *Plants*, and both being conveyed after the ſame Manner throughout the ſeveral Bodies; it neceſſarily follows, that the one as well as the other, muſt have proper Veſſels for Secretion of the Seminal Matter.

Let it then be conſider'd, That the Sap or nutritious Juice aſcends in common to the Pedicle of the Flower, as the Blood flows by the *Aorta deſcendens*, and that at the *Calyx* or Bottom of the Flower, ſome Share goes to one Part of it, and ſome to another; as the *Aorta* ſends one Branch to the Spermatick Veſſels, and the Remainder of it goes to perform the other Functions: and as a Part of the Sap is ſeparated by the Pedicle of the Flower, when the Remainder is diſtributed throughout the remaining Parts of the Plant; ſo the *Arteria præparans* goes directly to the *Teſtes* in the Male, and *Ovarium* in the Female: And in Flowers, ſome Veſſels tend directly to the *Calyx* (if it becomes the Fruit) or to the *Perianthium* (if there be any) ſome to the *Petala*, ſome to the *Stamina*, ſome to the *Piſtillum* or *Uterus*, as it is called by *Malpighius*.

Theſe Things being ſeriouſly reflected on, we muſt of Neceſſity conclude,

1. That the ſame due Care is taken to elaborate and prepare the moſt ſubtil and impenetrable Particles of the nutritious Juice in Plants, as of the Blood in Animals.

2. This Subſtance ſo prepared, as it muſt be deſigned for ſome extraordinary Uſe, ſo this Uſe can be no other than that of being the Means of fecundating the Female Seed in Plants, as the other is of the Feminine *Ova* in Animals.

If any one ſhall take a Flower full blown, and pull one of the *Stamina* from the Pedicle, he will find a rough, viſcid Liquor, like to the *Sperma*, which remains here till its moſt ſubtile Parts have either aſcended the *Stamen*; or perhaps, the more groſs Particles might have remain'd there, after the moſt ſubtile had aſcended, before the Flower was blown: This is as plain and demonſtrable as can be in the *Lilies*; and in the *Orange Lily*, and moſt of the *Martagon Lilies*, there is a Contrivance more obvious.

This viſcid Liquor aſcending by parallel Ducts to the *Apex*, there this ſubtile Matter is retain'd till it is farther elaborated by the Evaporations of the more humid and aqueous Particles, by the Heat of the Sun, and then it becomes a moſt ſubtile, fine, impalpable Duſt, which is then ſaid to be ripe, and is call'd the *Farina*.

Dr. *Blair*, after having given the Sentiments of ſeven different Authors upon the Subject, proceeds to give his own, without ſubſcribing to the Sentiment of either the one or the other; and endeavours, by a ſtrict Examination of the Flowers themſelves, to find out which of theſe two Opinions, ſo diametrically oppoſite to each other, are moſt agreeable to Fact.

But before he begins, he lays down this general Maxim, which he takes for granted, That *Nature is uniform in all her Operations, and never recedes from thoſe Rules laid down by the wiſe Diſpoſer of all Things at the Creation, by performing the ſame Thing after two different and contrary Methods*; and thence concludes, That if the *Farina* be a Congeries of Seminal Plants in one Species, it muſt be ſo in all.

If there be an open and direct Paſſage; or tho' it be not ſo direct; yet, if by any indirect Paſſage, by which it can be demonſtrated, that one ſingle Grain of the *Farina* can enter every individual Seed in one Plant, it muſt be ſo in all: But if neither of theſe hold good, and if it can be proved by ocular Inſpection, without the Aſſiſtance of a Microſcope, in thoſe very Plants exemplified by Mr. *Morland*, Mr. *Geoffroy*, and Mr. *Bradley*, that the *Farina* in Subſtance cannot enter the Seminal Veſſel; or if it does, that there is no direct Paſſage for it to enter each particular Seed, after it has ſo got into the *Capſula* or *Siliqua*; then, he hopes, both their Queries, Suppoſitions, and Aſſertions muſt fall.

As for the *Corona Imperialis*, the firſt Example given by Mr. *Morland*, the Flower of which hangs downwards; tho' he does not deny but its *Stylus* may be hollow all the Way, and that it may open at the Extremity; yet, by its Situation, and ſeveral other Circumſtances, it does not ſeem to him to favour this Opinion.

For, 1. As there is a continual Conflux of Particles thro' the Skin in Animal Bodies, it is alſo ſo in Vegetables: This appears by the immediate fading of Flowers, or any other Part of a Plant, after it has been pluck'd off; which proceeds from the Evaporation of the Particles in the little Tubes, without any more ſucceeding in their Place.

He thinks it as reaſonable to ſuppoſe, that theſe Particles flow out by the hollow *Stylus*, as by any other Part, and alſo more ſenſibly there than elſewhere, becauſe of their being concentrated within ſuch narrow Bounds; and that if theſe Particles deſcend by the *Stylus* hanging downwards, the Particles, or rather Grains of the *Farina*, can never aſcend that ſame Way.

2. That if it ſhould be granted, that theſe Grains did aſcend by the *Stylus*; how do they get into the Seminal Veſſel? that being cloſely ſhut up; as will appear to any one who ſhall obſerve it.

3. Whereas Mr. *Morland* ſuppoſes, *That the Rain either waſhes it, or the Wind ſhakes it down the Tube, 'till it reaches the Seminal Veſſel*; Dr. *Blair* obſerves, That the Extremity, which is the upper Part of the *Stylus* in an erect Flower, muſt be the lower in a dependent one; ſo that if either the Rain or Wind have Acceſs to it, it muſt neceſſarily either waſh or drive it away from the Seminal Veſſel, which is now the *Stylus*.

But here the Doctor takes notice of another Contrivance for anſwering that Purpoſe, *i. e.* a Sort of a *Pelvis*, or *Ciſtern*, ſituated at the Origin or Root of each *Petalon*, filled with a viſcous Liquor, which continues there, and never exceeds its Bounds, ſo long as the *Petalon* is in Health: *For ſince the* Apices *are here ſo artfully fix'd, that they turn every Way with the leaſt Wind*, as Mr. *Morland* rightly obſerves, when they burſt, and the *Farina* is driven to and fro, tho' it cannot ſo eaſily enter the Tube, yet it may conveniently be blown up towards the Orifice of the *Petala* ſurrounding the *Stylus*, where it is ſtopped or ſtaid by this Viſcoſity 'till it has perform'd its Office.

To confirm this, he inſtances Mr. *Fairchild*, who, he ſays, being perſuaded that this viſcous Liquor did ſome Way or other contribute towards the fructifying of this Plant; but not underſtanding how it did ſo, he tried the Experiment, by wiping this Liquor off as ſoon as it was depoſited in the *Pelvis*, and the Flower which he ſo ſerved did not bear any Fruit.

And the Way the Doctor accounts for this, is, that the Humidity being removed, the *Farina* is no ſooner blown upwards, than it immediately falls down, without producing any Effect: And that which he takes to be a Confirmation of this, is, that both *Tulips* and *Fritillaria's* have this *Pelvis* or Baſon, yet it is, for the moſt part, dry and empty; becauſe their Flowers being erect, eſpecially the former, they have no ſuch Need of this Liquor to retain the Duſt; for that the Rain having immediate Acceſs to them, may waſh the Duſt towards the Origin of the *Petala*, where it can remain 'till it has perform'd its Office; whereas the Rain having no Acceſs to the inner Surface of the Flower of the *Corona Imperialis*, it is naturally indowed with this Humidity depoſited there by ſeveral excretory Ducts, in order to render it fit for the Purpoſe: And *Malpighius* himſelf takes notice of this Singularity in this Flower, tho' he aſcribes no Uſe to it.

The next Example propoſed by Mr. *Morland*, is the *Yellow Lily*, which, according to his Figure, is repreſented as having *Apices* equally high with the Top of the *Stylus* and the *Petala* over-topping each other; whereas he ſays, that, by the narroweſt Inſpection he ever could make, the Top of the *Apices* (they being then perpendicularly ſituated) reaches no higher than the Neck of the Button upon the Top of the *Stylus*, and that this is before the *Apices* begin to burſt, and ſhed the Duſt; but as ſoon as the Flower begins to open, they depart from the *Stylus*, and force the *Petala* outwards, by a certain Elaſticity, and expand themſelves: This being done, they immediately change their Poſture from a perpendicular to an oblique or horizontal one; nor do they ever pour out their Duſt or *Farina*, 'till they can conveniently drop it upon the Bottom of the Flower, and towards the Root of the *Piſtillum*.

But taking it for granted that it were ſo, the Top of the *Stylus*, (which the Doctor calls the *Button*, in oppoſition to the *Apices Staminum*) he ſays, is ſo compact, and of ſo firm a Subſtance, that it is next to impoſſible that the *Farina* in Subſtance, or in integral Parts, can paſs thro' it.

If the integral Parts, the compleat Grain, the minute *Globuli*, in which the whole Seminal Plant is contained, cannot then enter, the whole Compound muſt be diſſolved, and the minute Seminal Particles in this ſmall Grain of Duſt muſt be diſunited: And if ſo, How ſhall theſe again come to cement, ſo as to make up one continued Body? Or how ſhall this little Body ſo united, penetrate a ſecond Time the Partition-wall betwixt the *Stylus* and *Piſtillum*? And again, How ſhall it find out its Way to its Neſt, in the proper *Embryo* of the Seed?

The Doctor takes notice of the *White Lily*, the *Orange Lily*, the *Martagon Lily*, &c. as Objections to the Opinions of Mr. *Morland*, *Bradley*, &c. and alſo mentions the *Iris*, as a moſt pregnant Inſtance, that the *Farina* cannot ſo much as come at the *Piſtillum*; for having ſix *Petala*, the three *Stamina* with long *Apices* lie hid between the three *Petala* which hang downwards, and three large Expanſions of the *Bifid Stylus*, and the upper Part of the down-hanging *Petalon*: The *Farina* can never reach the Center of the *Stylus*, tho' it were hollow, which it is not, but muſt deſcend along its Outſide, to the Top and Outſide of the Rudiment of the Fruit, there to emit its *Effluvia*.

Theſe and other Inſtances, he concludes, are ſufficient Proof, that the *Farina* cannot enter the *Stylus*, penetrate into the *Piſtillum* or inner Part of the Seminal Veſſel, nor have the leaſt Acceſs to the *Embryo* of the Seed.

As to the Objection, That there is not Paſſage ſufficient to admit the Male Seed into the *Uterus*, or even into the *Ovaries*, it is thus anſwer'd:

If it be conſidered how every Flower, when it is prepared for the Act of receiving the Male Seed, is ſo much under the Influence of the Sun, that the *Petals* open at its Approach, and ſhut up again at its Departure, it very well explains how the *Piſtillum* or Female Parts of *Generation* are relaxed at one Time more than another, *i. e.* that the Female Parts are more relaxed at the opening of the Flower, than when the Flower is ſhut up: For the Flower-Leaves adhering to the Bottom of the *Piſtillum*, muſt conſequently, when they bend back, put every Part of the *Piſtillum* into a different Poſture to that in which it was when the *Petals* were ſhut.

And it is certain, that it is the Preſence of the Sun that ripens the Male Duſt in the *Apices*, and opens the little Caſes in which it is contained, giving them a Springineſs that flings forth that Duſt as ſoon as it is ripe, ſo as to ſcatter it to a conſiderable Diſtance. The Female Parts are at this Time dilated by the opening of the Flower-Leaves, and the *Apices* or *Chives*, concurring at the ſame Time in flinging forth their Male Duſt, anſwer the ſame End in the *Generation of Plants*, that the Act of *Copulation* does among Animals.

Having thus given ſeveral Reaſonings and Arguments uſed by various Authors, who have made it their Study to inveſtigate the Mode of *Generation* of Vegetables, whether the Impregnation of them proceeds from the *Farina Fœcundans*, or Male Duſt, entering the *Uterus* of Plants in Subſtance, or by *Effluvia's*, I ſhall not take upon me to determine the Diſpute; eſpecially ſince Mr. *Boyle* has proved that all *Effluvia's* are ſubtile Particles of Matter; ſo that it matters not how ſmall or minute theſe Particles are, ſince a Body in its firſt State may be ſo minute as to be ſcarcely perceptible.

I ſhall therefore conclude with mentioning a few Experiments of my own, which I communicated to Dr. *Patrick Blair*, which he improv'd as a Proof of his Opinion of *Effluvia*; and Mr. *Bradley* alſo, as a Proof of the *Farina* entering the *Uterus* in Subſtance, and leave the curious Enquirer to determine on that Side of the Queſtion, which Reaſon and Experiment ſhall influence him.

I ſeparated the Male Plants of a Bed of *Spinage* from the Female, and the Conſequence was, that the Seed did ſwell to the uſual Bigneſs; but when ſow'd, it did not grow afterwards: and ſearching into the Seed, I found it wanted the *Punctum Vitæ*.

I ſet twelve *Tulips* by themſelves, about ſix or ſeven Yards from any other; and as ſoon as they blew, I took out the *Stamina* ſo very carefully, that I ſcatter'd none of the Male Duſt; and about two Days afterwards I ſaw Bees working on a Bed of *Tulips*, where I did not take out the *Stamina*; and when they came out, they were loaded with Duſt on their Bodies and Legs, and I ſaw them fly into the *Tulips*, where I had taken out the *Stamina*; and when they came out, I found they had left behind them ſufficient to impregnate theſe Flowers, for they bore good ripe Seeds.

In a Parcel of *Savoys*, which were planted for Seed near white and red *Cabbages*, the Seeds when ſown, produc'd half red, and ſome white *Cabbages*, and ſome *Savoys* with red Ribs, and ſome neither one Sort nor the other, but a Mixture of all Sorts together in one Plant, which I ſuppoſe might happen by the *Effluvia* impregnating the *Uterus* of each other.

In a Letter communicated by *Paul Dudley*, Eſq; to the *Royal Society*, wrote from *New England*, he mentions the interchanging of the Colours of the *Indian Wheat*, if the various Colours are planted in Rows near each other; but if they are planted ſeparately, they conſtantly keep to their own Colour: And this interchanging of Colours has been obſerv'd, when the Diſtance between the Rows of Corn, has been ſeveral Yards; tho' he ſays, if there happens to be a high Board Fence between the different colour'd Corns, the Alteration of Colours is entirely prevented.

Cucumbers and *Melons* do always produce Male and Female Flowers upon different Parts of the ſame Plant: The Male Flower (which appears upon a ſlender Footſtalk, and has a large Style in the Middle, cover'd with an Orange-colour'd *Farina*) is by the Gardeners commonly call'd *Falſe Bloſſoms*, and are ſometimes by unſkilful Perſons pull'd off ſoon after they appear, ſuppoſing that they weaken the Plants if ſuffer'd to remain, which is a very great Miſtake: For in order to try this Experiment, I planted four Holes of Melons in a Place pretty far diſtant from any other; and when the Flowers began to appear, I conſtantly pull'd off all the Male Flowers from Time to Time before they open'd: The Conſequence was, that all the young Fruit dropt off ſoon after they appear'd, and not one ſingle Fruit remain'd to grow to any Size, tho' the Vines were equally ſtrong with thoſe which I had planted in another Place, where I ſuffer'd all the Flowers to remain upon them, from which I had a great Quantity of Fruit.

From theſe, and many other Experiments, it is very plain, that there is a Neceſſity that the *Embryo* of the Female Flower ſhould be impregnated by the *Farina* or Male Duſt, in order to render the Fruit perfect; but how, or in what Manner it is perform'd, is what we can only gueſs at, ſince in the *Generation of Animals*, our greateſt Naturaliſts differ very much in their Opinions, nor can any of them aſcertain any particular Method how it is perform'd: I ſhall therefore conclude with quoting the Words of the Reverend Dr. *Hales*, which are a moſt ingenious Summary of the whole Doctrine of the *Generation of Plants*.

" If I (ſays he) may be allow'd to indulge Conjecture in a Caſe in which the moſt diligent Enquirers are, as yet, after all their laudable Reſearches, advanc'd but little farther than mere Conjecture, I would propoſe it to their Conſideration, whether from the manifeſt Proof we have, that Sulphur ſtrongly attracts Air, a Hint may not be taken, to conſider whether this may not be the primary Uſe of the *Farina Fæcundans*, to attract or unite with itſelf elaſtick or other refin'd active Particles: That this *Farina* abounds with Sulphur, and that a very refin'd Sort, is probable from the ſubtile Oil which Chymiſts obtain from the Chives of *Saffron*: And if this be the Uſe of it, was it poſſible that it could be more aptly plac'd for the Purpoſe on very moveable *Apices* fix'd on the ſlender Points of the *Stamina*, whereby it might eaſily, with the leaſt Breath of Wind, be diſpers'd in the Air, thereby ſurrounding the Plant, as it were, with an Atmoſphere of ſublimed ſulphureous Pounce; for many Trees and Plants abound with it, which uniting with the Air Particles, they may, perhaps, be inſpir'd at ſeveral Parts of the Plant, and eſpecially at the *Piſtillum*, and be thence convey'd to the *Capſula Seminalis*, eſpecially towards Evening and in the Night, when the beautiful *Petala* of the Flowers are clos'd up, and they, with all the other Parts of the Vegetable, are in a ſtrongly imbibing State: And if to theſe united, ſulphureous, and aerial Particles, we ſuppoſe ſome Particles of Light to be join'd, for Sir *Iſaac Newton* has found, that Sulphur attracts Light ſtrongly; then the Reſult of theſe three by far the moſt active Principles in Nature, will be a *Punctum Saliens* to invigorate the Seminal Plant: And thus we are at laſt conducted by the regular Analyſis of Vegetable Nature, to the firſt enlivening Principle of their minuteſt Origin.

Some Perſons have objected to the Theory of the Generation, as here laid down, becauſe they have obſerved ſome female Plants produce Fruit, without having been impregnated by the Male.

It is certain, that the female Plants may produce Fruit, without the Impregnation of the Male; but it is not certain, that this Fruit or Seed will, if ſown, produce another Plant. What has been ſo often related by Travellers and Hiſtorians, of the Neceſſity of the male Palm-Tree being near the female, in order to render it fruitful, hath been fully refuted by Father *Labat*, in his Account of *Africa*, where he has treated of the ſeveral Sorts of *Palms*: He ſays, That he obſerved in *Martinica*, a large Palm-Tree, which grew by the Side of a Convent, which produced Fruit in Plenty, tho' there was no other Palm-Tree growing within two Leagues of this; but he alſo obſerved, that none of theſe Fruit would grow, tho' they had made many Trials of them; ſo that they were obliged to procure ſome Fruit from *Barbary*, in order to propagate theſe Trees. He likewiſe adds, That the Fruit which grew on this female Tree, never ripened ſo perfectly, nor was ſo well taſted, as thoſe which came from Trees which had ſtood near ſome of the Male. Therefore we may conclude, that the Fruit or Seed may be produced by the female Plants of moſt Kinds, without the Aſſiſtance of the male Sperm, which may appear to Sight perfect, and fit to produce other Plants; but if we examine the Seeds, we ſhall find that moſt of them have not the *Germ*, or little Plant incloſed, nor will grow, if they are ſown.

From a repeated Number of Experiments, in ſeparating the male from the female Plants, I have always obſerved, that where it has been done in Time, and with proper Care, ſo as that there could have been none of the *Farina fœcundans* of the male Plant ſcattered on the female; that tho' the female Plants have produced ſometimes fair Seeds to Appearance, yet, when they have been carefully ſown, there has not been one Plant produced from them, except in one Experiment, which I repeated two Years on a female *Briony* Plant, which grew ſingly, having no other Plant of the Kind near it, yet did perfect Seeds, which grew very well the following Seaſon. This Experiment requires a farther Repetition, before any Thing can be aſcertained in relation to the Theory of Generation, there having been ſo many Experiments made on a great Variety of Plants, which have proved the Neceſſity of the *Farina fœcundans* impregnating the female Plants to render them fruitful.

GENISTA JUNCEA; is ſo call'd, of *Genu*, a *Knee*, becauſe it is a very flexible Plant.] *Spaniſh* Broom.

The *Characters* are;

It hath very pliant Branches: The Leaves are plac'd alternately, or in Whorles: The Flowers are of the Pea-bloom Kind, which are ſucceeded by ſmooth Pods, containing ſeveral Kidney-ſhap'd Seeds in each.

The *Species* are;

1. Genista Juncea. *J. B.* The yellow *Spaniſh* Broom.
2. Genista *hortenſis major Luſitanica. Vir. Luſit.* The greater *Portugal* Broom.
3. Genista *Hiſpanica pumila odoratiſſima. Tourn.* Moſt ſweet-ſcented low *Spaniſh* Broom.
4. Genista *Luſitanica, parvo flore luteo. Tourn. Portugal* Broom, with a ſmall yellow Flower.
5. Genista *tinctoria Germanica. C. B. P.* Green-wood, or Dyers-weed, or Wood-waxen.
6. Genista *tinctoria Auſtriaca maxima. Boerh.* Greater *Auſtrian* Dyers-weed, or Wood-waxen.
7. Genista *tinctoria Germanica, foliis anguſtioribus. C. B. P. German* Dyers-weed, or Wood-waxen, with narrow Leaves.
8. Genista *tinctoria fruteſcens, foliis incanis. C. B. P.* Shrubby Dyers-weed, with hoary Leaves.
9. Genista *tinctoria Luſitanica maxima*, Piurna Lusitanorum. *Tourn.* Great *Portugal* Dyers-weed, called *Piurna* by the *Portugueze*.
10. Genista *tinctoria latifolia Lucenſis. Tourn.* Broad-leav'd Dyers-weed of *Luca*.
11. Genista *humilior Pannonica. Tourn.* Lower Broom of *Pannonia*.
12. Genista *ramoſa, foliis hyperici. C. B. P.* Branching Broom, with St. Johnwort-Leaves.
13. Genista *Africana fruteſcens, ruſci nervoſis foliis. Oldenl.* Shrubby *African* Broom, with ribbed Butchers-Broom Leaves.
14. Genista *Africana fruteſcens, ruſci anguſtis foliis. Oldenl.* Shrubby *African* Broom, with narrow Butchers-Broom Leaves.
15. Genista *Africana arboreſcens, argenteâ languine pubeſcens. Oldenl.* Tree-like *African* Broom, covered with a ſilvery Down.
16. Genista *Africana fruteſcens ſpicata purpurea, foliis anguſtiſſimis. Oldenl.* Purple-ſpiked ſhrubby *African* Broom, with very narrow Leaves.
17. Genista *Africana fruteſcens ſpicata, laricis foliis. Oldenl.* Spiked ſhrubby *African* Broom, with larch-tree Leaves.
18. Genista *Africana fruteſcens capitata, laricis foliis. Oldenl.* Headed *African* ſhrubby Broom, with larch tree Leaves.
19. Genista *Africana fruteſcens, capitulis lanuginoſis, laricis breviſſimo folio. Oldenl.* Shrubby *African* Broom, with woolly Heads, and a very ſhort larch-tree Leaf.
20. Genista *Africana fruteſcens, laricis incanis foliis. Oldenl.* Shrubby *African* Broom, with hoary Larch-Tree Leaves.

The firſt of theſe Plants is very common in the Nurſeries near *London*, and is generally ſold by the Gardeners amongſt other flowering Shrubs for Wilderneſs Quarters; where, by its long Continuance in Flower, together with its Sweetneſs, it affords an equal Pleaſure with moſt other flowering Shrubs.

This Plant is eaſily propagated by ſowing the Seeds (which are annually produc'd in great Quantities upon the old Plants) in the Spring of the Year, upon a warm dry Soil, and in an open Expoſure, obſerving not to cover the Seeds too thick with Earth, (a Quarter of an Inch will be ſufficient); nor ſhould you water the Ground until the Plants come up, which will be in about ſix Weeks after ſowing, for too much Moiſture rots the Seeds: During the Summer-Time you muſt diligently clear the young Plants from Weeds, which, if ſuffer'd to remain, would in a ſhort Time over-run and deſtroy the Plants. In this Place the Plants ſhould remain until the *March* following; at which Time you ſhould prepare a freſh Spot of Ground, in proportion to the Quantity of Plants you have to tranſplant: The Ground being well dug and levell'd, you ſhould mark out the Rows ſtrait by a Line at three Feet Diſtance from each other: Then take up your Plants, being careful not to break their Roots, which would be very injurious to them, and ſet them a Foot aſunder in the Rows, cloſing the Earth to them with your Feet; and if the Weather ſhould be very dry, you may give them a little Water, laying on a little Mulch firſt upon the Surface of the Ground near their Stems: This watering may be repeated once a Week, if the Seaſon ſhould prove dry, until they have taken freſh Root, which will be by the Beginning of *May*, after which Time they will be in no Danger of miſcarrying: You muſt obſerve alſo to keep the Ground clear from Weeds; and in *February* or *March*, you ſhould dig up the Ground between the Rows to looſen the Earth, that the Roots of the Plants may the eaſier inſinuate themſelves and ſpread on each Side, otherwiſe they will be ſubject to have downright Tap-roots, which will render them very difficult to tranſplant. In this Nurſery the Plants may remain two Years, by which Time they will be full large enough to be removed to the Places where they are deſign'd to remain for Flowering: Nor ſhould they be ſuffer'd to continue above three Years at moſt in the Nurſery, for after that Time it will be very dangerous to remove them, they being ſome of the worſt Kind of Shrubs to tranſplant, when grown large, that I know amongſt all the Variety of flowering Trees. The beſt Time for tranſplanting them is, as I ſaid before, towards the latter End of *March*, obſerving to do it in a perfect mild Seaſon, and when the Wind is South, or Weſterly; for if the Wind blows from the North or Eaſt at this Seaſon, it either brings froſty Nights or cold drying Winds, both of which are equally hurtful to theſe Plants when firſt remov'd. You ſhould obſerve to lay ſome Mulch round their Stems, to prevent the Sun and Wind from penetrating the Earth and drying their Fibres; as alſo to water them in dry Weather, as was before directed, until they have taken Root, after which Time they will be in no Danger.

This, altho' a Native of *Spain*, and the warm Parts of *Europe*, yet is become ſo hardy as to reſiſt the Cold of our Climate in the open Air, and will grow to the Height of twelve or fourteen Feet, and produce annually large Quantities of ſweet yellow Flowers, and perfect its Seeds; which if ſuffer'd to fall to the Ground, will remain, and come up the ſucceeding Spring, whereby you may be eaſily furniſh'd with young Plants without much Trouble, provided the Ground be not dug, nor the Seeds bury'd too deep to grow.

The *Portugal* Sort is at preſent very rare in *England*, and only to be found in ſome curious Collections of Plants: This is not ſo hardy as the former, and requires to be ſhelter'd during the Winter, tho' I am apt to believe it will ſtand abroad when grown woody, if planted in a light dry Soil and a warm Situation. This Plant flowers with us, but hath not as yet produc'd any Fruit in *England* that I have heard.

The third Sort is not very common in the *Engliſh* Gardens; this is of much lower Growth than the common *Spaniſh* Broom, and the Flowers have a more agreeable Scent; but being equally hardy with the common Sort, may be eaſily propagated in *England*, and will be a very ornamental Shrub, to plant in Front of the *Spaniſh* Broom; will fill up the Bottom, and hide the naked Stems of thoſe Plants; ſo are very proper to form Clumps of theſe Trees, which will have an agreeable Effect, when properly placed in Gardens.

The fourth Sort is alſo uncommon at preſent in *England*, but the Seeds may be eaſily procured from *Portugal*. This Sort hath ſmall Flowers, which have little Scent, ſo is not ſo valuable as the former Sort, nor is it quite ſo hardy. This will live in the open Air in moderate Winters, but in very hard Froſt they will be in danger of being deſtroyed, where they are not ſheltered; ſo that ſome of theſe Plants ſhould be kept in Pots, that they may be removed into the Green-houſe in Winter, to preſerve the Kind.

The fifth Sort grows wild in uncultivated Places in moſt Parts of *England*, and is gathered for the Uſe of the Dyers; this, as alſo the common Broom, are extremely bitter; ſo that, whenever they are eaten by the Cows, it gives a very bitter Taſte to the Cheeſe and Butter which is made of their Milk.

The ſixth Sort grows wild in *Auſtria*, from whence the learned Dr. *Boerhaave* procured the Seeds, who has ſince diſtributed it to ſeveral curious Perſons in *England*.

The ſeventh Sort grows wild in *Germany*, as alſo in *France* and *Flanders*, but is not very common in *England*. Theſe three Sorts are of humble Growth, ſeldom riſing above two Feet high; but as they make a fine Appearance when they are in Flower, ſo they merit a Place in every good Garden; where, if they are diſpoſed in Clumps, in the Middle whereof the common *Spaniſh* Broom muſt be planted, and round that the firſt Sort here mentioned, with theſe three Sorts round the Outſide, the whole Clump will appear like one great Buſh of yellow Flowers; for as they all produce their Flowers at the ſame Seaſon, which continue a conſiderable Time, ſo they make an agreeable Variety in large Gardens, and require very little Care, excepting to clear them from large over-bearing Weeds, after they have taken Root.

The eighth and ninth Sorts riſe to a greater Height than either of the former, but are ſomewhat tenderer, being Natives of warmer Countries; ſo ſome of theſe ſhould be kept in Pots, that they may be removed into Shelter in Winter; for tho' they will endure the Cold of our ordinary Winters in the open Air, if planted in a warm Situation, yet they are often deſtroyed in very hard Froſts; ſo that where ſome of them are not protected, the Sorts may be loſt.

The tenth and eleventh Sorts ſeldom riſe above two Feet high, ſo are proper to mix with the fifth ſixth and ſeventh Sorts, to form Clumps, *&c.* Theſe are ſomewhat tender while young, ſo ſhould be kept in Pots and ſheltered for a Year or two while young; but afterward they will live in the open Air very well, provided they are planted in a warm Situation.

The twelfth Sort is a low ſpreading Plant, ſeldom riſing to the Height of two Feet, but ſpreads its Branches pretty far on every Side. The Flowers of this Kind are ſmall, and being produced thinly at the Extremity of the Branches, does not make ſo good an Appearance, as either of the former Sorts. This is very hardy, ſo will endure the Cold of our Climate extremely well.

All theſe Sorts are propagated by Seeds, which ſhould be ſown on a Bed of light Earth, in an open Situation, toward the End of *March*; for if they are ſown too early, and the Spring ſhould prove cold or wet, the Seeds generally periſh in the Ground. When the Plants begin to appear, they ſhould be carefully weeded, and in very dry Weather they ſhould be gently refreſhed with Water, which will very much promote their Growth: during the Summer Seaſon, they muſt be conſtantly kept clear from Weeds, which is the only Culture they will require. In this Bed the Plants may remain until the following Spring, when they ſhould be tranſplanted juſt before they begin to ſhoot; ſo that you ſhould prepare a Spot of freſh Ground, which ſhould be carefully dug and cleanſed from the Roots of bad Weeds; then you muſt take up the Plants with great Care, for they generally ſhoot long Roots pretty deep in the Ground; which, if they are too much torn, will endanger the Plants. Theſe muſt not lie long out of the Ground, for at this Seaſon their Roots will dry very ſoon; therefore they ſhould be immediately planted, and the Surface of the Ground muſt be covered with Mulch, to prevent the Sun and Wind from entering the Ground, and drying the Roots of the Plants; then they ſhould be well watered, and if the Spring ſhould prove dry, it will be proper to repeat the Waterings two or three times in a Week, until the Plants are well rooted. The Diſtance which ſhould be allowed to theſe Plants, for thoſe of the larger Growth, is three Feet Row from Row, and eighteen Inches aſunder in the Rows; but for thoſe of ſmall Growth, two Feet Diſtance Row from Row, and one Foot aſunder in the Rows, will be ſufficient. In this Nurſery the Plants may remain two Years; during which Time they ſhould be conſtantly kept clear from Weeds, and the Ground between them muſt be carefully dug every Spring, to prevent their Roots from running out too far; for as they ſend forth long ſlender Tap-roots, ſo, if theſe are not cut to force out Fibres near the Stem of the Plants, they will be in Danger of ſuffering when they are tranſplanted; for which Reaſon they ſhould not remain in the Nurſery longer than two Years, becauſe theſe Plants cannot be removed, when they are older, with any Safety. The beſt Seaſon to tranſplant theſe Plants, is toward the End of *March*, or the Beginning of *April*, juſt before they begin to ſhoot; when they muſt be carefully taken up, as was before directed, and planted again immediately, covering the Surface of the Ground with Mulch, and obſerving to water them in dry Weather, until they have taken Root again; after which Time they will require no farther Care, but to keep them clear from great over-bearing Weeds, which, if permitted to grow amongſt them, would greatly weaken, if not abſolutely deſtroy them. Theſe Plants moſt of them flower in *June*, *July*, and *Auguſt*, and their Seeds ripen in *September*.

The thirteenth, fourteenth, fifteenth, ſixteenth, ſeventeenth, eighteenth, nineteenth, and twentieth Sorts, are Natives of the Country about the *Cape* of *Good Hope*, ſo are tenderer than either of the former Sorts; theſe are preſerved in Pots, and removed into the Green-houſe in Winter; for they cannot endure the Cold of our Winters in the open Air: but they ſhould have a great Share of freſh Air in mild Weather; ſo, if they are placed in an airy Glaſs-caſe, amongſt *Ficoides*, and other hardy exotic Plants, which require a large Share of Air in Winter, as alſo as much Sun as poſſible; they will thrive bettter than when they are placed amongſt Orange-trees in a common Green-houſe, and will flower much better. In Summer theſe Plants muſt be placed abroad in a warm Situation, where they may be defended from ſtrong Winds; and in dry Weather they muſt be frequently watered, which will encourage them to flower freely, and cauſe them to produce good Seeds; for want of which Care the Flowers often fall off, and are not ſucceeded by Pods.

Theſe Plants are propagated by Seeds, which ſhould be ſown early in the Spring, in Pots filled with light freſh Earth, and plunged into a moderate Hot-bed of Tanners-bark; and when the Plants begin to appear, they muſt be kept clear from Weeds, and frequently refreſhed with Water: the Glaſſes of the Hot-bed muſt alſo be raiſed every Day, to admit freſh Air to the Plants, otherwiſe they will draw up very weak; for as theſe Plants are not very tender, ſo they muſt be inured to bear the open Air as ſoon as the Seaſon proves favourable; toward the latter End of *May*, the Pots ſhould be removed out of the Hot-bed, and placed for a little time in a Glaſs-caſe, where they may have a greater Share of Air; and the Middle of *June*, they ſhould be placed in the open Air in a ſheltered Situation, where they may remain till *October*; when they muſt be removed into the Glaſs-caſe again, where they ſhould be placed on Shelves, to enjoy the Advantage of Air and Sun; and during the Winter they muſt be frequently refreſhed with Water, but it ſhould be given in ſmall Quantities at this Seaſon, eſpecially while the Plants are young. The following Spring, theſe Plants ſhould be ſhaken out of the Pots, and carefully parted, planting each of them into a ſeparate ſmall Pot, filled with light freſh Earth, and plunged into a very moderate Hot-bed, which will facilitate their taking Root; but the Glaſſes of the Hot-bed ſhould be covered with Mats every Day, to ſcreen the Plants from the Sun, until they are rooted; after which time they ſhould have a large Share of freſh Air, and muſt be frequently watered. In *May* they muſt be inured to bear the open Air by Degrees, into which they ſhould be removed the Beginning of *June*, and placed in a warm Situation. With this Management theſe Plants will thrive very well, and in two Years after will begin to produce their Flowers, when they will make an agreeable Diverſity amongſt other exotic Plants.

GENISTA SPINOSA; the Furz, Whins, or Gorſe.

The *Characters* are;

The whole Plant is very thorny: The Flowers (which are of the Pea-bloom Kind) are diſpos'd in ſhort thick Spikes, which are ſucceeded by ſhort compreſs'd Pods, in each of which are contain'd three or four Kidney-ſhap'd Seeds.

The *Species* are;

1. GENISTA SPINOSA *vulgaris. Ger. Emac.* The Common Furz, Whins, or Gorſe.
2. GENISTA SPINOSA *minor. Park. Theat.* The leſſer Furz.
3. GENISTA *minor Aſphalathoides, vel Geniſta Spinoſa Anglica. C. B. P.* Needle-Furz, or Petty-Whin.

Theſe three Plants do all of them grow wild on the Heaths and up-land Commons in divers Parts of *England*, and are ſeldom planted in Gardens: but if they are rightly diſpos'd in Clumps or Wilderneſs Quarters, and train'd up to regular Heads, they will make a very agreeable Diverſity amongſt other flowering Shrubs; and for their long continuance in Flower, do merit a Place in every ſuch Plantation.

This firſt of theſe Plants is ſometimes us'd to make Hedges, for which Purpoſe it will do very well for a few Years, provided it be kept cloſe at firſt, and the Ground underneath always kept clear from Weeds: And it ſhould always be obſerv'd, never to cut theſe Hedges in very dry Weather, nor too early in the Spring, or too late in Autumn; for if it ſhould prove cold froſty Weather, or drying eaſterly Winds happen ſoon after it be cut, they will render the Hedge very unſightly for a long time, and often deſtroy many of the Plants, whereby the Form and Beauty of the Hedge will be entirely loſt; and if you cut it too cloſe into the old Wood, it rarely ever breaks out again: So that if the Hedge ſhould have grown beyond the Bounds you intended it, the better way will be, to cut it quite down to the Ground, and let it riſe again from the Roots. See more of this under the Article of *Hedges*.

The ſecond Sort never riſes ſo high as the firſt, and is therefore proper to intermix with Shrubs of ſhorter growth; but will do for all the Purpoſes of the firſt, and is equally as common in moſt Parts of *England*.

The third Sort ſeldom riſes above three Feet high; nor will it ſupport itſelf while young, and therefore ſhould be faſten'd to a Stake, training the Stem upright, and forming it into a regular Head; and after two or three Years being thus manag'd, it will ſupport itſelf, and make a very handſome Appearance. This Plant produces its Flowers in *April*, and continues them through *May*, during which Seaſon it affords a very agreeable Proſpect. The Seeds ripen in *Auguſt*; and, if ſuffer'd to ſcatter, they will come up the ſucceeding Spring.

Theſe Plants may be all propagated by ſowing their Seeds in *March*; which, if intended for a Hedge, ſhould be ſown in the Place where they are to remain; but if for Standards to plant in Wilderneſſes, they ſhould be ſown thin upon a Bed of light Earth, in an open Situation; and when the Plants come up, you ſhould carefully clear them from Weeds; and where they are too cloſe to each other, they ſhould be pull'd out, leaving 'em at leaſt ſix Inches diſtant from each other: In theſe Beds they ſhould remain until the *Spring* following, at which time they ſhould be remov'd either into the Places where they are to continue, or elſe into a Nurſery, as was directed for the *Spaniſh Broom*, obſerving the ſame Method and Seaſon for this Work as was there directed, to which this Plant exactly agrees in Culture, and is equally as difficult to tranſplant when grown old; therefore, to avoid Repetition, I ſhall refer the Reader to that Article for farther Inſtructions.

GENTIANA [takes its Name from *Gentius* a King of *Illyria*, who firſt diſcover'd the Virtues of this Plant] Gentian, or Fell-wort.

The *Characters* are;

The Leaves grow by Pairs oppoſite to each other: The Cup of the Flower conſiſts of one membranous Leaf: The Flower conſiſts of one Leaf, and is ſhap'd like a Cup, being cut into four, five, or more Segments: It is ſucceeded by a membranous Oval-ſhap'd Fruit, ending in a ſharp Point, opening lengthwiſe into two Parts, and containing many flat, roundiſh Seeds, which are border'd with a leafy Rim.

The *Species* are;

1. Gentiana *major lutea.* *C. B. P.* The great *Gentian*, with yellow Flowers.
2. Gentiana *aſclepiadis folio.* *C. B. P.* *Gentian*, with a Swallow-wort Leaf.
3. Gentiana *Alpina, flore magno.* *J. B.* Large flower'd *Gentian* of the Alps, *commonly call'd* Gentianella.
4. Gentiana *cruciata.* *C. B. P.* Croſs-wort *Gentian.*
5. Gentiana *anguſtifolia autumnalis major.* *C. B. P.* Great Autumnal *Gentian*, *or* Calathian Violet.

There are ſeveral other Sorts of *Gentian*, ſome of which are Natives of *England*, and others are Inhabitants of the *Alps*, and other cold mountainous Parts of *Europe*: But as they are Plants which are rarely tam'd, ſo as to thrive well in Gardens, eſpecially near *London*, I ſhall paſs them over in this Place, and proceed to the Culture of thoſe here inſerted, all of which are worthy of a Place in every good Garden.

The firſt Sort, which is the true *Gentian*, whoſe Root is uſed in Medicine, is an Inhabitant of the Mountains near *Geneva*, and the Paſtures of the *Alps* and *Pyrenees*: This Plant is propagated by Seeds, which ſhould be ſown ſoon after they are ripe; for if it be kept long out of the Ground, it rarely grows. The beſt Method is, to ſow the Seeds in a large Pot fill'd with light undung'd Earth, covering them about a quarter of an Inch thick with the ſame light Earth; then place the Pots in the Shade, where they may remain until *November*, at which time you may remove them into a Place where they may have the Morning Sun; in this Situation they may remain 'till *March* following, by which Time the young Plants will appear above-ground: You muſt then remove the Pots again into a ſhady Place, where they ſhould remain all the Summer Seaſon, obſerving to clear them from Weeds, as alſo to water them in dry Weather, which will greatly promote their Growth. The Spring following they will be fit to tranſplant; at which time you ſhould prepare a ſhady moiſt Border, that ſhould be well dug and looſen'd; then ſhake the Earth out of the Pots, by which means you will the more readily take them out without hurting their Roots. The Diſtance they ſhould be allow'd, if deſign'd to remain for good, muſt be fourteen Inches ſquare: But if they are intended to be removed again, four or ſix Inches will be ſufficient. In planting them, you muſt obſerve to make deep Holes, ſo that the Roots, which generally grow long, may be placed full as deep as they are in Length, that no Part may appear above-ground; nor ſhould they be bent at the Bottom, which would check their downright Growth, and greatly injure them. The beſt Seaſon to tranſplant them is in the Beginning of *March*, juſt as they begin to ſhoot.

In about five or ſix Years time, if the Plants thrive well, and are not diſturb'd, they will begin to flower, and will produce good Seeds; ſo that it will not be difficult to have them in great Plenty: But as it is hardly worth cultivating for Medicinal Uſe, it being generally imported hither at a very moderate Price; ſo the Beauty thereof is not ſuch as would recommend the having it in great Quantities; tho' a few of 'em will do very well to make a Variety.

The ſecond and fourth Sorts are at preſent very uncommon in *England*, and only to be found in ſome curious Gardens; theſe are both of them very pretty Ornaments to a Garden: They are propagated by parting their Roots either in Spring or Autumn, and require a pretty ſtrong Soil, and a ſhady Situation.

The third Sort was formerly more common in the Gardens near *London* than it is at preſent, but in ſome old Country Gardens it is ſtill frequently to be met with: This is a very beautiful Plant, and well worth propagating: It is increaſed by parting the Roots early in the Spring; for if it be left undone 'till *March*, the Flower-buds will begin to appear; after which time, if you remove them, it will greatly weaken their flowering. Theſe Plants require a ſtrong, moiſt, cool Soil, and ſhould be planted where they may have only the Morning Sun; for if they are too much expos'd to Heat, they are very ſubject to decay; nor do they care to be often tranſplanted, which will alſo make them poor and weak: And I am apt to believe that this has occaſioned their preſent Scarcity near *London*, where People are too apt to part and divide Plants often, in order to increaſe them, and thereby frequently deſtroy their whole Stock.

The fifth Sort grows wild in divers Parts of the North, as in *Yorkſhire*, *Cumberland*, and *Northumberland*, and is equal to any of the above-mentioned Kinds for Beauty, but is rarely to be found near *London*. The Roots of this Plant may be brought from the Places of its natural Growth, and planted in a cool, moiſt, undung'd Soil, where it will grow, provided it be not under the Drip of Trees, which this Plant by no means cares for; nor ſhould it be often removed, but ſuffer'd to remain, (as was ſaid above) by which means it will thrive, and produce beautiful Flowers.

GENTIANELLA. *Vide* Gentiana.

GERANIUM [takes its Name from Γέρανος, Gr. a *Crane* or *Stork*, becauſe its Fruit reſembles the Bill of a Crane] Crane's-bill.

The *Characters* are;

The Leaves are for the moſt part conjugate: The Cup of the Flower conſiſts of one Leaf, which is divided into five Parts, and expanded in form of a Star: The Flowers of the European *Kinds conſiſt of five Leaves; and thoſe of the* African *Sorts (for the moſt part) of four, ſomewhat reſembling a creſted or lipp'd Flower, with ten* Stamina *ſurrounding the Ovary: The Fruit is of a pentagonal Figure, with a long Beak, containing at the Baſe five*

five Seed-veſſels, in each of which is contained one tail'd Seed, which, when ripe, is caſt forth by the twiſting of the Beak.

The *Species* are;

1. GERANIUM *batrachioides, Gratia Dei Germanorum. C. B. P.* Crane's-bill, with a Crowfoot Leaf, and large blue Flowers.

2. GERANIUM *batrachioides, Gratia Dei Germanorum, flore albo. Boerh. Ind.* Crowfoot-leaf'd Crane's-bill, with a white Flower.

3. GERANIUM *batrachioides, Gratia Dei Germanorum, flore variegato. C. B. P.* Crowfoot-leaf'd Crane's-bill, with a ſtriped Flower.

4. GERANIUM *batrachioides, longius radicatum, odoratum. J. B.* Long-rooted ſweet-ſmelling Crane's-bill, with a Crowfoot Leaf.

5. GERANIUM *ſanguineum, maximo flore. H. Ox.* Bloody Crane's-bill, with a large Flower.

6. GERANIUM *ſanguineum, cauliculis erectis, folio obſcure virenti, floribus minoribus. H. L.* Bloody Crane's-bill, with upright Stalks, dark-green Leaves, and ſmall Flowers.

7. GERANIUM *hæmatodes, foliis majoribus, pallidioribus, altius inciſis. Raii Syn.* Bloody Crane's-bill, with larger, paler, and more deeply-divided Leaves.

8. GERANIUM *hæmatodes Lancaſtrenſe, flore eleganter ſtriato. Raii Hiſt.* Bloody Crane's-bill, with a variegated Flower.

9. GERANIUM 5. *nodoſum Plateau. Cluſ. Hiſt.* Knotty Crane's-bill.

10. GERANIUM *phæum ſive fuſcum, petalis reflexis, folio non maculoſo. H. L.* Brown Crane's-bill, with reflex'd Petals, and Leaves not ſpotted.

11. GERANIUM *phæum ſive fuſcum, petalis rectis ſeu planis, folio maculato. H. L.* Brown Crane's-bill, with plain Petals, and ſpotted Leaves.

12. GERANIUM *Romanum, verſicolor ſive ſtriatum. Park. Par.* Roman Crane's-bill, with ſtriped Flowers.

13. GERANIUM *Alpinum, coriandri folio, longius radicatum, flore purpureo majore. Michel.* Long-rooted Crane's-bill of the Alps, with a Coriander-leaf, and a large purple Flower.

14. GERANIUM *batrachioides montanum noſtras. Ger.* Mountain Crane's-bill, with a Crowfoot Leaf.

15. GERANIUM *Orientale columbinum, flore maximo, Aſphodeli radice. T. Cor.* Oriental Dove's-foot Crane's-bill, with an Aſphodel Root, and a large Flower.

16. GERANIUM *cicutæ folio, Moſchatum. C. B. P.* Muſked Crane's-bill of Muſcovy.

17. GERANIUM *latifolium annuum, ceruleo flore, acu longiſſima. H. Ox.* Broad-leaf'd annual Crane's-bill, with a blue Flower, and a very long Beak.

18. GERANIUM *myrrhinum tenuifolium, flore amplo purpureo. Bar. Obſ.* Fine cut-leaf'd Crane's-bill; with an ample purple Flower.

19. GERANIUM *Africanum arboreſcens, ibiſci folio rotundo, carlinæ odore. H. L.* African-tree Crane's-bill, with a round Marſhmallow Leaf, and a Smell of the *Carline Thiſtle*.

20. GERANIUM *Africanum arboreſcens, ibiſci folio anguloſo, floribus amplis purpureis. Phil. Tranſ.* 388. African-Tree Crane's-bill, with an angular Marſhmallow Leaf, and large purple Flowers.

21. GERANIUM *Africanum arboreſcens, alchimillæ hirſuto folio, floribus rubicundis. Com. Præl.* African-Tree Crane's-bill, with a hairy Lady's-mantle Leaf, and red Flowers.

22. GERANIUM *Africanum arboreſcens, malvæ folio plano lucido, flore elegantiſſime kermeſino. Di van Leur. Boerh. Ind.* African-Tree Crane's-bill, with a plain, ſhining Mallow Leaf, and an elegant ſcarlet Flower.

23. GERANIUM *Africanum muteſcens, malvæ folio odorato laciniato. H. L.* African ſhrubby Crane's-bill, with a jagged, ſweet-ſmelling Mallow Leaf.

24. GERANIUM *Africanum fruteſcens, malvæ folio laciniato, odorato inſtar meliſſæ, flore purpuraſcente. Boerh. Ind.* African ſhrubby Crane's-bill, with a jagged Mallow Leaf ſmelling like Balm, and a purpliſh-colour'd Flower.

25. GERANIUM *Africanum arboreſcens, malvæ folio mucronato, petalis florum inferioribus vix conſpicuis. Phil. Tranſ.* African-Tree Crane's-bill, with a pointed Mallow Leaf, and the under Petals of the Flower ſcarce diſcernable.

26. GERANIUM *Africanum fruteſcens, folio craſſo & glauco, Acetoſæ ſapore. Com. Præl.* African ſhrubby Crane's-bill, with a thick glaucous Leaf, and an acid Taſte like *Sorrel*.

27. GERANIUM *Africanum fruteſcens, chelidonii folio, petalis florum anguſtis albidis, carnoſo caudiſæ. Phil. Tranſ. Geranium Africanum, folio alceæ, flore albo. Boerh. Ind. alt.* African ſhrubby Crane's-bill, with a Celandine Leaf, the Petals of the Flower white and narrow, and a fleſhy Stalk.

28. GERANIUM *Africanum noctu olens, tuberoſum & nodoſum, aquilegiæ foliis. H. L.* African Crane's-bill, ſmelling ſweet in the Night, with knotty, tuberoſe Stalks and Leaves like *Columbine*.

29. GERANIUM *Africanum, folio alceæ, flore coccineo fulgidiſſimo. Boerh. Ind. alt. Geranium Surianenſe, chelidonii folio, flore coccineo, petalis inæqualibus. Hort. Piſſ.* African Crane's-bill, with a vervain Mallow Leaf, and a deep-ſcarlet Flower.

30. GERANIUM *Africanum arboreſcens, alchimillæ folio hirſuto, elegantiſſime variegato, floribus rubicundis. Boerh. Ind. alt.* African-tree Crane's-bill, with a hairy Ladies-mantle Leaf elegantly ſtriped, and red Flowers, *commonly call'd the* Striped Geranium.

31. GERANIUM *Africanum, foliis inferioribus aſari, ſuperioribus ſtaphidiſagriæ, maculatis, ſplendentibus, & acetoſæ ſapore. Com. Præl.* African Crane's-bill, with the under Leaves like Aſarabacca, and the upper Leaves like Staveſacre, ſhining, ſpotted, and taſting like *Sorrel*.

32. GERANIUM *Africanum, alchimillæ hirſuto folio, floribus albidis. H. L.* African Crane's-bill, with a hairy Ladies-mantle Leaf, and whitiſh Flowers.

33. GERANIUM *Africanum, folio malvæ craſſo molli odoratiſſimo, floſculo pentapetalo albo. Boerh. Ind. alt.* African Crane's-bill, with a thick, ſoft, ſweet-ſmelling Mallow Leaf, and a ſmall white Flower conſiſting of five Leaves.

34. GERANIUM *Americananum, noctu olens, radice tuberoſa, triſte. Corn. H. Ox.* American tuberoſe-rooted Crane's-bill, ſmelling ſweet in the Night.

35. GERANIUM *Africanum tuberoſum, anemones folio, incarnato flore. Par. Bat.* Tuberoſe-rooted African Crane's-bill, with an Anemony Leaf, and a pale Fleſh-coloured Flower.

36. GERANIUM *Æthiopicum, noctu olens, radice tuberoſa, foliis myrrhidis anguſtioribus. Breyn Cent.* Night ſweet-ſmelling Ethiopian Crane's-bill, with a tuberoſe Root, and narrow Cicely Leaves.

37. GERANIUM *Africanum, noctu olens, folio vitis hirſuto, tuberoſum. H. A.* Night ſweet-ſmelling African Crane's-bill, with a hairy Vine Leaf, and a tuberoſe Root.

38. GERANIUM *Africanum, folio coriandri, floribus incarnatis, minus. H. L.* African Crane's-bill, with a Coriander Leaf, and a leſſer Fleſh-coloured Flower.

39. GERANIUM *Africanum, uvæ criſpæ folio, floribus exiguis rubellis. H. L.* African Crane's-bill, with a Gooſeberry Leaf, and ſmall reddiſh Flowers.

40. GERANIUM *Africanum, betonicæ folio, procumbens, floribus parvis eleganter variegatis. Pluk. Alm.* African trailing Crane's-bill, with a Betony Leaf, and ſmall, beautiful, ſtriped Flowers.

The fifteen firſt mentioned Sorts are abiding Plants; the Leaves of ſome of them do decay in Winter; but their Roots remaining, ſhoot again early in the Spring: Some of theſe Sorts are common in ſeveral Parts of *England*, yet they deſerve a Place in every good Garden, where, if they are rightly diſpos'd, they will have a good Effect, by adding to the Variety; and as they are very hardy Plants, and require but little Care in their Culture, growing in almoſt any Soil or Situation, ſo they are very proper for large Gardens, to be planted in wide Borders, or by the Sides of Wilderneſſes, and other ſhady Walks, where few other Plants will thrive; and theſe continuing in Flower moſt Part of the Summer, do greatly add to the Beauty of ſuch Places.

Theſe are all increaſed by parting their Roots; the beſt Seaſon for which is in *October*, that they may take Root before the hard Froſts begin; or elſe in *February*, that they may get Strength before the great Heat and Drought comes on, which would occaſion their Flowers to be ſmall, and but few in Number. Theſe Roots may remain two or three Years unremoved, according as you find them increaſe and ſpread; for ſome Sorts will not ſpread ſo far in three Years, as others will do in one: ſo that if the ſpreading Kinds are ſuffered to grow undiſturb'd for two or three Years, they will ſpread the whole Width of the Border where they are planted; ſo that if they are not tranſplanted often, their Roots ſhould be cut round every Year, to keep them within Compaſs.

Theſe Sorts may alſo be propagated by Seeds, which they afford every Year in great Plenty: But as they are increaſed very faſt in the former Way, ſo it is hardly worth while to ſow their Seeds.

The 16th, 17th, and 18th Sorts are annual Plants, and ſhould either be ſown every Year, or their Seeds permitted to ſcatter themſelves; the latter of which is the ſureſt Method; for the Plants will come up in Autumn ſoon after the Seeds fall, and will abide the Winter, and flower early the ſucceeding Spring, whereby you will always be ſure to have their Seeds perfected, which does not conſtantly happen to thoſe ſown in the Spring. The 16th Sort is preſerved in many Gardens, for the ſweet Scent its Leaves afford when rubbed between the Fingers, which occaſion'd its being call'd *Muſk*, or *Muſcovy*. There is but little Beauty in the Flowers of this Plant; however, it may be admitted to have a Place in ſome odd Corner, or ſhady Border in a Garden, for Variety, it being very hardy, and will thrive in almoſt any Soil or Situation.

The 17th and 18th Sorts do produce very handſome Flowers; and as they are Plants which take up but little Room, and require very little Trouble to cultivate them, ſo it is worth while to allow them a Place, for Variety, in ſome Corner of the Garden, theſe being both as hardy as the former Sort.

The 19th, 20th, 21ſt, 22d, 23d, 24th, 26th, 27th, 28th, 29th, 30th, and 31ſt Sorts are Natives of a warmer Climate than ours, and require to be ſheltered in Winter: Theſe being all ſhrubby Plants, may be propagated by planting their Cuttings, any Time in Summer, in a Bed of light freſh Earth; obſerving to water and ſhade them until they have taken Root, which will be in about a Month's Time after planting; being careful to take off the Mats or other Covering every Night, that the Cuttings may have the Benefit of the Dews; as alſo, whenever there may happen to be any Showers in the Daytime, never to cover them but when the Sun ſhines very hot upon the Bed.

In this Place they may remain two Months from their firſt planting, by which Time they will be rooted ſufficient for tranſplanting; you muſt therefore prepare ſome Pots, which ſhould be about ſeven Inches over at the Top, theſe ſhould be filled with freſh light Earth, and having taken the Plants up, with as much Earth as poſſible to their Roots, you ſhould plant them into theſe Pots, each Plant into a ſeparate one, removing them into a ſhady Situation, until they have taken freſh Root, obſerving to water them frequently, as they may have occaſion: And when they are rooted, you ſhould remove them to a more expoſed Situation to harden them; in which Place they ſhould remain until the Middle of *October*, when the Mornings begin to be froſty, at which Time they ought to be removed into the Green-houſe, where they ſhould be placed as near the Windows as poſſible, obſerving to let the Windows be open, that they may have as much free Air as poſſible, until the Weather begins to be very cold.

Theſe Plants, during the Winter-ſeaſon, will require to be often refreſhed with Water; but they ſhould never have too much given them at once: They ſhould alſo be frequently pick'd, to take off all dead or decay'd Leaves, which, if ſuffer'd to remain upon them, will not only render the Plants unſightly, but alſo infect the Air of the Green-houſe, eſpecially when the Windows are kept ſhut cloſe, and thereby become injurious to all the Plants placed therein.

You muſt alſo obſerve to ſet them where they may be clear from the Heads of other Plants; for they will by no means bear to be ſtifled, which would cauſe them to caſt their Leaves: Nor do they require to be kept very warm in Winter; for if they are but ſcreen'd from the Froſt, it will be ſufficient; and all artificial Warmths are prejudicial to theſe Plants.

The 29th Sort is very ſubject to caſt its Leaves in the Autumn, and thereby appears to unſkilful Perſons as dead; but if it be ſuffer'd to remain in the Pot undiſturb'd, and very little Water given to it during this Seaſon, it will come out again in Winter as freſh and lively as before: But much Moiſture, during this State of Inactivity, very often deſtroys this Plant. This, for the Richneſs of the Colour of its Flowers, vaſtly exceeds all the other Sorts, tho' the 22d Sort is a very beautiful Flower, and continuing moſt part of the Summer and Autumn in flower, renders it very valuable; as is the 30th Sort, for the Beauty of its variegated Leaves.

The 32d and 33d Sorts are of humbler Growth than the former, tho' they are Natives of the ſame Country, and do therefore require the ſame Defence in Winter: Theſe may alſo be propagated by Heads cut off from the old Plants, and treated as was directed for the Cuttings of the ſhrubby Kinds. The 32d Sort is very ſubject to ramble, and affords Supply enough of Cuttings; but the 33d Sort increaſes much ſlower: This Plant is of an uncommon ſtrong ſweet Scent; the Leaves, when touch'd, ſmelling ſomewhat like *Anil-ſeed*: but the Flowers of neither of theſe two Sorts are very beautiful; however, they ſhould have a Place in all Collections of Plants for Variety's ſake.

Theſe Plants may alſo be propagated by ſowing of their Seeds in the Spring of the Year upon a moderate Hot-bed; and when they are come up two Inches high, they ſhould be planted into another Bed, with a little warm Dung under it to promote their Rooting: In this Bed they may be planted about ſix Inches ſquare; and when they are rooted, you ſhould harden them by Degrees; ſo that as the Weather becomes warmer, they may the better indure the open Air: In *July* you ſhould tranſplant them into Pots, (as was directed before for the Cuttings) and manage them in the ſame Manner. During the Summer-ſeaſon theſe Plants ſhould be ſet abroad with *Myrtles*, *Oleanders*, and other Green-houſe Plants, where, being artfully intermix'd therewith, they add greatly to the Variety, and continue flowering moſt part of the Year.

The 34th, 35th, 36th, and 37th Sorts have all knobby Roots, and increaſe but ſlowly thereby: Therefore, in order to have a Stock of theſe Plants, you ſhould carefully gather their Seeds, (which they ſeldom fail to produce every Year) and ſow them, as was directed for the other *African* Sorts, upon a moderate Hot-bed, managing them alſo accordingly, with this Difference only, *viz.* that they ſhould have leſs Water; and the Pots in which they are planted ſhould be ſmaller, eſpecially at firſt; for as they are Plants which make but ſmall Roots, ſo the putting them into large Pots is very prejudicial to them. Theſe are all eſteem'd for the Beauty of their Flowers, and their agreeable Sweetneſs in the Evening after the Sun has left them; for before that you cannnot perceive any Scent in them, tho' afterwards it becomes ſo ſtrong as to perfume the Air to ſome Diſtance from the Place where they ſtand. This, I ſuppoſe, may be accounted for from the Warmth of the Sun rarefying thoſe *Effluvia*, ſo as to be too minute to ſtrike our Organs of Smelling with any Force while the Heat is continued; but when the Cool of the Evening approaches, theſe *Effluvia* are of larger Bulk, and become perceptible to us in Proportion thereto.

During the Summer-ſeaſon theſe Plants may be expoſed, amongſt other Exoticks, in the open Air, being very careful not to give them too much Water, which often occaſions their rotting, eſpecially towards Autumn, when their green Leaves begin to decay, at which Time they ſhould have it very ſparingly; and if the Seaſon ſhould prove very wet, you ſhould move the Pots on one Side, or remove them under Shelter, to protect them from it: And about the Beginning of *October* you ſhould remove them into the Green-houſe, placing them as near as poſſible to the Windows, that they may have a good Quantity of free Air when the Windows are opened; for if they are defended from Froſt, and much Wet, it will be ſufficient, they not being extreme tender; nor will they ever require any artificial Warmths in Winter, but, on the contrary, as much Air as poſſible in mild Weather.

Theſe Plants require a very light ſandy Soil, but ſhould not have too much Dung. The Mixture of Earth in which I find them grow beſt, is as follows: 1ſt, Take a Quantity of freſh Earth from a Paſture-Ground that is inclining to a Sand, (and if you have Time for the Turf to rot before you have Occaſion for it, add that to the Earth) then mix about a third or fourth Part as much Sea-ſand, in Proportion to the Lightneſs of your Soil; add to this about a fourth Part as much rotten Tanners-bark; mix all well together, and let it lie in a Heap two or three Months before you have Occaſion for it, obſerving to turn it over two or three Times, that the Mixtures may be the better united; and if, before it be us'd, you paſs it thro' a rough Screen to take out all large Stones, Roots, &c. it will be the better: but by no means ſift the Earth fine, as is the Practice of many People; for I am ſure it is doing a great deal of Damage, (as was ſhewn under the Article *Abies*): When theſe Plants are potted, you ſhould carefully lay ſome Stones or Shreds in the Bottom of the Pots, that the Water may the better paſs off: Nor ſhould you plant them in Pots too large; which is equally injurious to them, (as was before mentioned).

The 38th and 39th Sorts are Plants of ſhorter Duration than thoſe above-mentioned, rarely continuing above two Years; ſo that, in order to preſerve theſe, you ſhould ſave the Seeds every Year, which ſhould be ſown upon a moderate Hot-bed in the Spring, and managed as was directed for the laſt mentioned Sorts: Theſe do often produce Flowers and Seeds the ſame Summer; but the ſecond Year, provided they are defended from the Froſt in Winter, they will flower early, and perfect their Seeds before Autumn.

The 40th Sort is annual: This muſt be ſown on a moderate Hot-bed, and the Plants brought forward in the Spring; but when they begin to flower, muſt be ſet in the open Air, otherwiſe the Flowers will fall away without producing any Seeds. This, tho' a Plant of no great Beauty, yet is worthy of a Place in every Collection of curious Plants.

There are a great Number of *Geraniums* which I have not here mentioned, many of which are Natives of *England*, and others were brought from divers other Parts of *Europe*; but as theſe, for the moſt part, are annual Plants of no Beauty or Uſe, ſo I thought it needleſs to trouble myſelf or the Reader therewith.

GERMANDER. *Vide* Chamædrys.

GESNERA.

This Plant was ſo named by Father *Plumier*, who diſcovered it in *America*, in Honour to *Conrad Geſner*, a very learned Botaniſt, and natural Hiſtorian.

The *Characters* are;

It hath an anomalous perſonated Flower, conſiſting of one Leaf, from whoſe Cup ariſes the Pointal, fixed like a Nail in the hinder Part of the Flower; which afterward becomes a membranaceous Fruit, divided into two Cells, which are filled with ſmall Seeds.

The *Species* are;

1. **Gesnera** *humilis, flore flaveſcente. Plum. Nov. Gen.* Low Geſnera, with a yellowiſh Flower.
2. **Gesnera** *amplo digitalis folio tomentoſo. Plum. Nov. Gen.* Geſnera with a large woolly fox-glove Leaf.
3. **Gesnera** *arboreſcens, amplo flore fimbriato & maculoſo. Plum. Nov. Gen.* Tree-like Geſnera, with a large furbelowed and ſpotted Flower.

The firſt and ſecond Sorts were found by the late Dr. *William Houſtoun* in *Jamaica*, from whence he ſent their Seeds to *England*; but by their being a long Time out of the Ground, there was not any of them which grew. The third Sort was diſcovered by Father *Plumier* at *Martinico*; this Sort riſes to the Height of eight or ten Feet, and has a woody Stem; but the other two Sorts ſeldom riſe above three Feet high.

Theſe Plants are propagated by Seeds, which ſhould be ſown as ſoon as poſſible after they are ripe; for being very ſmall and light, if they are kept long out of the Ground, they will not grow: Therefore the ſureſt Method to obtain theſe Plants, is to procure them in Tubs of Earth from *America*. The Seeds ſhould be ſown in the Tubs filled with freſh Earth, and placed in a ſhady Situation; and when the Plants come up, they muſt be frequently watered, and kept clear from Weeds. Theſe Tubs ſhould remain in the Country, until the Plants are pretty ſtrong; for if they are ſent over too young, they will be in great Danger of periſhing before they arrive in *England*. When they are put on board the Ship, they ſhould be covered in the Heat of the Day with Tarpaulins, to ſcreen them from the violent Heat of the Sun, as alſo in bad Weather to prevent the Salt-Water from waſhing of them. During their Paſſage they ſhould be often refreſhed with Water, while they are in a warm Latitude; and ſhould have as much Air as poſſible, when the Weather will permit; but as they arrive in a cooler Latitude, ſo they muſt have a leſs Quantity of Water given to them, and ſhould be ſcreened from the Cold.

When theſe Plants arrive in *England*, they ſhould be carefully taken out of the Boxes, and each planted into a Pot, filled with rich light Earth, and then plunged into a Hot-bed of Tanners-bark, obſerving to water them, and ſcreen them from the Heat of the Sun until they have taken Root; after which Time they ſhould have freſh Air admitted to them in proportion to the Warmth of the Seaſon, and muſt be frequently watered. In this Bed the Plants may remain until *Michaelmas*, when they ſhould be removed into the Stove, and plunged into the Tan: During the Winter Seaſon they will require to be frequently watered, but it muſt not be given in large Quantities; but in Summer they muſt be plentifully watered in hot Weather. As theſe Plants are too tender to endure the Cold of our Air even in Summer, ſo they muſt conſtantly remain in the Stove, where in Winter they muſt be kept very warm; but in Summer they muſt have a large Share of freſh Air in warm Weather; and if their Leaves contract Filth, it muſt be carefully waſhed off; otherwiſe it will harbour Inſects, which will in Time deſtroy the Plants. With this Management the Plants will thrive, and produce Flowers, which will afford an agreeable Variety amongſt other tender exotick Plants in the Stove.

GEUM, [is ſo call'd of Γῆ, *the Earth*, q. d. *Earth-herb*, or, *growing near the Earth*; becauſe its Leaves touch the Ground] Hairy Kidneywort, *or* Sanicle.

The *Characters* are;

The Cup of the Flower is quinquifid: The Flower conſiſts of five Leaves, which expand in form of a Roſe, *having eight or ten* Stamina *or Threads ſurrounding the Ovary: The Fruit is roundiſh, and is ſplit into two Horns at the Top; this becomes a bicapſular Seed-veſſel containing many ſmall Seeds.*

The *Species* are;

1. **Geum** *paluſtre minus, foliis oblongis crenatis. Tourn.* Hairy Kidneywort, *or* Water Sanicle.
2. **Geum** *anguſtifolium autumnale, flore luteo guttato. Tourn.* Narrow-leaf'd autumnal Sanicle, with a yellow-ſpotted Flower.
3. **Geum** *rotundifolium majus. Tourn.* Great round-leaf'd ſpotted Sanicle.
4. **Geum** *folio ſubrotundo majori, piſtillo floris rubro. Tourn.* *London* Pride, *or* None ſo Pretty.
5. **Geum** *rotundifolium minus. Tourn.* Leſſer round-leav'd Sanicle.
6. **Geum** *folio circinato, piſtillo floris pallido. Tourn.* Round-leav'd Sanicle, with a pale Pointal.
7. **Geum** *folio ſubrotundo minori, piſtillo floris rubro. Tourn.* Sanicle with a leſſer roundiſh Leaf, and a red Pointal.
8. **Geum** *folio circinato, acutè crenato, piſtillo floris rubro. Tourn.* Sanicle with a round ſharp jagged Leaf, and a red Pointal.
9. **Geum** *folio ſubrotundo minimo. Tourn.* Sanicle with a very ſmall roundiſh Leaf.
10. **Geum** *Creticum, folio circinato villoſo, flore magno albo. Tourn. Cor.* *Candy* Sanicle, with a round hairy Leaf, and a large white Flower.
11. **Geum** *orientale rotundifolium ſupinum, flore aureo. Tourn. Cor.* Low round-leav'd Eaſtern Sanicle, with a golden Flower.
12. **Geum** *orientale, cymbalariæ folio molli & glabro, flore magno albo. Tourn. Cor.* Eaſtern Sanicle, with a ſoft ſmooth ivy-wort Leaf, and a large white Flower.

The firſt of theſe Plants is found wild upon the Mountains of *Wales* and *Weſtmorland*, but will grow, if tranſplanted into a cool moiſt Place in a Garden: But the ſureſt Method is to plant them in Pots fill'd with ſtrong poor Earth; and place them in a ſhady Situation, where, if they are conſtantly watered in dry Weather, they will thrive, and produce Flowers.

The ſecond is found in ſome Parts of *Cheſhire*: This alſo delights in a ſtrong moiſt Soil, and a ſhady Situation; nor ſhould theſe Plants be often tranſplanted, for they delight beſt in a poor Soil, and want very little Culture, therefore the beſt Method is to furniſh yourſelf with Roots from their natural Places of Growth; for their Seeds ſeldom ſucceed if ſown: Theſe ſhould be taken up with as much Earth about their Roots as poſſible) then plant them in ſome cold ſhady Part of the Garden, (but not under the Drip of Trees) where, when they are once well fix'd, they will continue without any farther Care for ſeveral Years, and will annually produce large Quantities of beautiful Flowers: And with theſe Plants may ſuch Parts of a Garden, where few other Things will thrive, be ſupply'd to great Advantage: So that did we but conſider well what Plants delight in moiſt and ſtrong Soils, and a ſhady Situation, and what require a dry light Soil, and a ſunny Expoſure, we need never be at a Loſs for Plants to imbelliſh a Garden, be the Soil or Situation what it will: And 'tis for want of rightly conſidering how to adapt the proper Plants to each Soil and Situation, that we often ſee Natives of a low Valley planted upon a dry barren Soil, and thoſe of dry ſandy Hills on a ſtrong rich Soil; in both which Caſes they ſtarve, and come to nothing.

The third Sort is ſeldom planted in Gardens, except where the Owners are curious in Collections of Plants; but yet it well deſerves a Place amongſt the former in a cool ſhady Border, where it will thrive very well.

The fourth Sort is the moſt common in the Gardens, and was formerly in greater Requeſt than at preſent, it having been in great Uſe for bordering of Flower-beds; but as it increaſes very faſt ſo it is apt to ſpread too far, and ſometimes decays in Patches, which renders it very unſightly: Beſides, it muſt be tranſplanted at leaſt once a Year, otherwiſe it cannot be kept in any tolerable Order; however, a few Plants of this Kind may be preſerved as proper Furniture for ſhady Borders; but it will grow upon a drier Soil than any of the former Sorts.

The fifth, ſixth, ſeventh, eighth, and ninth Sorts grow on the *Alps* and *Appennines* in Plenty, from whence they have been tranſplanted into ſome curious Gardens by Lovers of Variety: They are all extreme hardy Plants, ſo ſhould be planted in ſhady moiſt Places, and a poor Soil, where they will thrive much better than in an open Situation. They are propagated by Off-ſets, which they ſend forth in great Plenty; the beſt Seaſon for this Work is in *October*, that the Plants may be well rooted before Spring, otherwiſe they will not flower ſo ſtrong the following Summer. Some of theſe Plants were formerly planted for Edgings on the Sides of Borders in the Flower-Garden, but they are by no means fit for this Purpoſe; becauſe they ramble too far, and are very ſubject to decay in Patches, which breaks the Edging, and renders it unſightly; ſo that they appear more beautiful, when planted in Patches on ſhady moiſt Borders, where few other Plants will thrive; in ſuch Places theſe Plants will make a pretty Variety. They flower in *May*, and ſome of them will produce good Seeds in Autumn: but as they increaſe ſo faſt by Off-ſets, ſo few Perſons regard their Seeds.

The laſt three Sorts were diſcovered by Dr. *Tournefort* in the *Levant*, who ſent them to the *Royal Garden* at *Paris*. Theſe are not quite ſo hardy as the former Sorts, but will endure the Cold of our ordinary Winters very well in the full Ground, being never deſtroyed but by extreme hard Froſt. Theſe may be propagated by Off-ſets, in the ſame Manner as the former Sorts, and ſhould have a ſhady Situation.

GILLIFLOWER, *or* JULY-FLOWER. *Vide* Caryophyllus.

GILLIFLOWER, *or* STOCK-GILLIFLOWER. *Vide* Leucoium.

GILLIFLOWER, the Queen's *or* Dame's-Violet. *Vide* Heſperis.

GINGER. *Vide* Zinziber.

GINGIDIUM. *Vide* Viſnaga.

GLADE, is an open and light Paſſage made thro' a Wood, by lopping off the Branches of Trees along that Way.

GLADIOLUS, [takes its Name of *Gladius*, Lat. *a Sword*, q. d. *little Sword*; becauſe the Leaves of this Plant reſemble a Sword] Corn-flag.

The *Characters* are;

It hath a fleſhy, double, tuberoſe Root: The Leaves are like thoſe of the Fleur-de-Lis: *The Flower conſiſts of one Leaf, and is ſhaped like a* Lily, *ſpreading open at the Top into two Lips; the upper one being imbricated, and the under one divided into five Segments: The Ovary becomes an oblong Fruit divided into three Cells, which are fill'd with roundiſh Seeds wrapt up in a Cover.*

The *Species* are;

1. GLADIOLUS *utrinque floribus. C. B. P.* Corn-flag, with Flowers on both Sides the Stalks.
2. GLADIOLUS *carnei coloris. Swert. Flor.* Fleſh-colour'd Corn-flag.
3. GLADIOLUS *floribus uno verſu diſpoſitis, major, floris colore purpureo-rubente. C. B. P.* Great Corn-flag, with reddiſh-purple Flowers rang'd on one Side the Stalk.
4. GLADIOLUS *major Byzantinus. C. B. P.* Great Corn-flag of *Conſtantinople*.
5. GLADIOLUS *utrinque floribus, floribus albis. H. R. Monſp.* Corn-flag, with white Flowers rang'd on each Side the Stalk.
6. GLADIOLUS *maximus Indicus. C. B. P.* The largeſt *Indian* Corn-flag.
7. GLADIOLUS *floribus uno verſu diſpoſitis, major & procerior, flore candicante. C. B. P.* Greater and taller Corn-flag, with whitiſh Flowers ranged all on one Side.
8. GLADIOLUS *floribus uno verſu diſpoſitis, minor & humilior. C. B. P.* Smaller and lower Corn-flag, with Flowers ranged on one Side.
9. GLADIOLUS *minor, floribus uno verſu diſpoſitis incarnatis. H. L.* Smaller Corn-flag, with fleſh-coloured Flowers ranged on one Side.
10. GLADIOLUS *utrinque floribus, flore rubro. C. B. P.* Corn-flag, with red Flowers on both Sides.
11. GLADIOLUS *floribus uno verſu diſpoſitis, minor. C. B. P.* Smaller Corn-flag, with Flowers ranged on one Side.

Theſe are all propagated by their tuberoſe Roots, which the firſt, ſecond, and fifth Sorts produce in great Plenty; ſo that in a few Years, if they are ſuffer'd to remain unremov'd, they will ſpread very far, and are hardly to be intirely rooted out when they have once gotten Poſſeſſion of the Ground. Theſe Roots are in Shape very like thoſe of the large yellow Spring *Crocus*, but are ſomewhat bigger, yellower within, and have a rougher outer Coat or Covering. The ſmall Off-ſets of theſe Roots will produce Flowers the ſecond Year; therefore when the old Roots are tranſplanted, the Off-ſets ſhould be taken off from them, and planted into a Nurſery-bed for one Year, by which time they will be fit to tranſplant into the Borders of the Pleaſure-Garden. Theſe Roots may be taken up in *July*, when their Leaves decay, and may be kept out of the Ground until *October*; at which time they ſhould be planted into the Borders of the Pleaſure-Garden, intermixing them amongſt other bulbous-rooted Plants: But if you plant them in large Borders in Wilderneſs-work, (where they will thrive and flower very well) they need not be tranſplanted oftener than every other Year, or once in three Years; whereas in Borders of a Pleaſure-Garden, if they were ſuffer'd to remain ſo long, they would over-run the Ground, and be very troubleſome.

The third and fourth Sorts are the moſt valuable, producing taller Stalks, and fairer Flowers: Nor are theſe ſo apt to increaſe, which renders them fitter for the Borders of a Flower-Garden; ſo that ſince theſe have been introduced and become common, the other Sorts have been rejected, unleſs in ſome old Gardens, or for large Wilderneſs Quarters, where they will grow better than the two laſt mentioned.

Theſe Plants may alſo be propagated by Seeds, which ſhould be ſown in Pots or Tubs of light freſh Earth ſoon after they are ripe: Theſe Tubs ſhould be placed where they may enjoy the Morning Sun until eleven o' Clock, in which Poſition they ſhould remain until *October*; at which time they muſt be removed where they may have the full Sun during the Winter-Seaſon, and the *March* following the young Plants will begin to appear, when the Boxes or Pots ſhould have a little fine Earth ſifted over the Surface of the Ground, and be removed again where they may have only the Morning Sun; obſerving, during the time of their Growth, to refreſh them with Water in dry Weather, as alſo to keep them clear from Weeds.

The *Michaelmas* following, if the Plants are very thick in the Pots or Boxes, you ſhould prepare a Bed or two of light freſh Earth, in Proportion to the Quantity of your young Plants; and after levelling the Surface very even, you ſhould ſpread the Earth of the Pots in which the Roots are contain'd as equal as poſſible upon the Beds, (for the Roots at this time will be too ſmall to be eaſily taken up) covering the Bed about half an Inch thick with light ſifted Earrh; and the Spring following, when the Plants begin to come up, you muſt ſtir the Ground upon the Surface to looſen it, and carefully clear the Bed from Weeds: In theſe Beds they may remain (obſerving in the Autumn to ſift ſome freſh Earth over the Surface) until the fourth Year, by which time they will begin to ſhew their Flowers; therefore you may now obſerve to mark out all the beſt Kinds as they blow, which may the ſecond Year be tranſplanted into the Pleaſure-Garden, but the poorer Kinds ſhould be thrown out as not worth preſerving: for the good Sorts will ſoon multiply and furniſh you with a ſufficient Stock from Off-ſets.

The *Indian Corn-flag* is tender, and muſt be preſerv'd in a warm Green-houſe, or a moderate Stove, during the Winter-Seaſon. Theſe Roots ſhould be planted in Pots fill'd with a light ſandy Soil. The beſt time to tranſplant them is any time from *May*, at which time their green Leaves decay till *September*, that they begin to ſhoot again; and in *October* the Pots ſhould be removed into the Green-houſe: And during their Seaſon of Growth, which is chiefly in Winter, they muſt be frequently water'd; but you muſt not give it them in large Quantities; but during the Summer-ſeaſon, if they are ſuffered to remain in the Pots, they ſhould have little Moiſture, but only be remov'd to a ſhady Place; for much Wet at the time their Roots are inactive is apt to rot them.

This Plant but rarely flowers with us; but when it doth, it makes a beautiful Appearance in the Green-houſe, eſpecially coming in *January*, when few other Flowers appear, which renders it worthy of a Place in every curious Garden.

GLANDIFEROUS Trees, are ſuch Trees as bear Maſt; as *Acorns*, &c.

GLANDULOUS Roots, are ſuch Roots as grows Kernel-wiſe.

GLANS, is that Sort of Fruit which is contain'd within a ſmooth, but hard Bark, having but one Seed; its hinder Parts cover'd with a kind of Cup, the fore Part being bare, as *Acorns*: but it is properly the Fruit without the Cup.

GLASTENBURY-THORN. *Vide* Meſpilus.

GLAUCIUM, [is ſo called of γλαυκὸς, Gr. becauſe the Leaves of this Plant are of Sea-green Colour: It is call'd the *Horned Poppy*, becauſe it is a Species of *Poppy*, having Huſks reſembling Horns.] The Horned Poppy.

The *Characters* are;

The Cup of the Flower conſiſts of two Leaves: The Flower hath five Leaves, which are placed orbicularly, and expand in form of a Roſe or a Poppy, but ſoon fall away: The Ovary ariſes from the Bottom of the little Placenta, and is divided into two Parts at the Extremity; this becomes a long taper Pod, which is bivalve, having an intermediate Partition, to which are faſten'd many roundiſh Seeds.

The *Species* are;

1. Glaucium *flore luteo. Tourn.* Yellow Horned Poppy.
2. Glaucium *flore violaceo. Tourn.* Blue flower'd Horned Poppy.
3. Glaucium *hirſutum, flore Phœnicio. Tourn.* Hairy Horned Poppy, with a deep-ſcarlet Flower.
4. Glaucium *glabrum, flore Phœnicio. Tourn.* Smooth Horned Poppy, with a deep-ſcarlet Flower.
5. Glaucium *orientale, flore magno rubro. Tourn. Cor. Eaſtern* Horned Poppy, with a large red Flower.

The firſt Sort is found upon the Sea Coaſts in ſome Parts of *England*; but if ſown in a Garden, will grow very well: This is a perennial Plant, the Roots abiding, if in a poor dry Soil, two or three Years: but when planted in a moiſt, or very rich Soil, it ſeldom continues above one Year, eſpecially if it flowers the firſt Summer.

The ſecond Sort Mr. *Ray* found growing amongſt Corn, betwixt *Swafham* and *Burwel* in *Cambridgeſhire*.

The third and fourth Sorts were brought from Abroad: Theſe three are annual Plants, and either ſhould be ſown every Spring, or their Seeds ſuffered to ſcatter themſelves; for the Plants will ariſe in Autumn from the Seeds which fall; and if the Winter does not prove too ſharp, they will abide without any Care, and flower early the ſucceeding Spring. Theſe Plants, tho' there is not much Beauty in them, yet may be permitted to have a Place in large Gardens, for Variety, eſpecially as they require very little Culture. They delight moſt in a warm light Soil; but will grow in almoſt any Soil, if it be not over-dunged.

The fifth Sort was found by Dr. *Tournefort* in the *Levant*, who ſent the Seeds to *Paris*. It is a biennnial Plant, which may be propagated by Seeds, as the other Sorts; but ſhould have light poor Soil, in which it will endure the Cold of the Winter, much better than if ſown on a rich Ground.

GLAUX, Sea Milk-wort.

The *Characters* are;

It hath a bell-ſhaped Flower, conſiſting of one Leaf, whoſe Brims are expanded and cut into ſeveral Segments; from the Center ariſes the Pointal, which afterwards becomes a round Fruit or Huſk, opening from the Top downwards, and filled with ſmall Seeds.

The *Species* are;

1. Glaux *maritima. C. B. P.* Sea Milk-wort, or black Salt-wort.
2. Glaux *maritima, flore albo. Tourn.* Sea Milk-wort, with a white Flower.
3. Glaux *paluſtris, flore ſtriato clauſo, foliis portulacæ. Tourn.* Marſhy Milk-wort, with a ſtriped Flower, and purſlane Leaves.

Theſe Plants grow wild in *England*, and are rarely preſerved in Gardens, unleſs for the ſake of Variety. They may be taken up in the Places of their Growth, and planted in Pots, filled in poor gravelly Earth, and in Summer muſt be frequently watered: with this Management they may be preſerved, and they will produce Flowers every Year.

GLOBULARIA.

The *Characters* are;

It hath a floſculous Flower, conſiſting of many Florets, which are divided into ſeveral Segments, and have one Lip; theſe are contained in a proper Empalement, out of the Bottom of which ariſes the Pointal, fixed like a Nail to the lower Part of the Floret, and becoming a Seed, hidden in the Capſule, which before was the Empalement of the Floret. On that Capſule ſit the Placenta's, which occupy the middle Part of the common Empalement.

The *Species* are;

1. Globularia *vulgaris. Tourn.* Common Globularia.
2. Globularia *Pyrenaica, folio oblongo, caule nudo. Tourn. Pyrenean* Globularia, with an oblong Leaf, and naked Stalk.
3. Globularia *montana humillima repens. Tourn.* The loweſt creeping Mountain Globularia.
4. Globularia *fruticoſa, myrti folio tridentato. Tourn.* Shrubby Globularia, with a trifid myrtle Leaf.
5. Globularia *Africana fruteſcens, thymeleæ folio lanuginoſo. Tourn.* Shrubby *African* Globularia, with a woolly ſpurge-laurel Leaf.
6. Globularia *ſpinoſa. Tourn.* Prickly Globularia.
7. Globularia *Alpina minima, origani folio. Tourn.* The ſmalleſt *Alpine* Globularia, with a wild-marjoram Leaf.
8. Globularia *orientalis, floribus per caulem ſparſis. Tourn. Cor. Eaſtern* Globularia, with Flowers ſcattered along the Stalks.
9. Globularia *orientalis, flore ampliſſimo. Tourn. Cor. Eaſtern* Globularia, with a very large Flower.

The firſt of theſe Plants grows plentifully about *Montpelier*, as alſo at the Foot of the Mountains *Jura* and *Saleva*, and in many other Parts of *Italy*, and in *Germany*. This Plant hath Leaves very like thoſe of the *Daizy*, but are thicker and ſmoother; the Flowers grow on Foot-ſtalks, which are about ſix Inches high, and are of a globular Form.

The ſecond Sort grows plentifully in the Woods, and on the *Pyrenean* Mountains; this is much larger than the former, and the Foot-ſtalk is quite naked; the Leaves are narrower and much longer.

The third Sort is a very low Plant, whoſe Branches trail on the Ground, and ſtrike Roots out from their Joints, whereby it propagates itſelf very faſt. The Flowers grow on ſhort Foot-ſtalks, and are of a blue Colour.

The firſt and ſecond Sorts may be propagated by parting of their Roots, after the manner of *Daizies*; but the third Sort is eaſily propagated from the trailing Branches, which take Root. The beſt Seaſon for parting and tranſplanting of theſe Plants, is in *September*, that they may take new Root before the froſty Weather comes on: they ſhould be planted in Pots, filled with freſh Earth, and placed in a ſhady Situation until they have taken Root; after which time they may be expoſed to the open Air until the Beginning of *November*, when it will be proper to place them under a Garden-frame, where they may be protected from ſevere Froſt, which ſometimes deſtroys them in this Climate; but they ſhould have as much free Air as poſſible in mild Weather. In the Summer Seaſon they ſhould be placed where they may have the Morning Sun, and in dry Weather ſhould be frequently refreſhed with Water. With this Management they will increaſe, and produce their Flowers every Year, but they rarely perfect their Seeds in this Country.

The fourth Sort grows about *Montpelier* in *France*, and in *Valentia*, and ſeveral other Parts of *Spain*. This has a hard woody Stem, and riſes to about two Feet high, having many woody Branches, beſet with Leaves like thoſe of the *Myrtle-tree*; on the Top of the Branches the Flowers are produced, which are of a blue Colour, and globe-ſhaped. This Plant may be propagated by Cuttings, which ſhould be cut off in *April*, juſt before they begin to make new Shoots; theſe Cuttings ſhould be planted into Pots, filled with light freſh Earth, and then placed into a very moderate Hot-bed, obſerving to water and ſhade them until they have taken Root; when they may be taken out of the Bed, and inured to bear the open Air by Degrees. In Summer theſe Plants may be expoſed with other hardy exotic Plants; and in Winter they ſhould be placed under a Hot-bed Frame, where they may enjoy the free Air in mild Weather, but ſhould be ſcreened from hard Froſt, which will deſtroy them, if they are expoſed thereto. This Plant never produces good Seeds in this Country.

The fifth Sort grows in the Country about the *Cape of Good Hope*; this is a Shrub which riſes to the Height of ſeven or eight Feet, and divides into many Branches, which are cloſely beſet with thick ſtiff Leaves, much like thoſe of the *Cneorum Matthioli*; at the Diviſion of the Branches, the Flowers are produced, which are round, woolly, and of a ſilver Colour, and at firſt have the Appearance of the Katkin of the *Mountain Oſier*. This Shrub may be propagated by Cuttings, which ſhould be planted in *April*, juſt as the Plant begins to ſhoot, in Pots filled with freſh light Earth, and plunged into a very moderate Hot-bed of Tanners-bark, obſerving to water and ſhade them until they have taken Root; after which time you muſt inure them by Degrees to bear the open Air; then they muſt be taken out of the Hot-bed, and may be placed amongſt other Exotics in a well ſheltered Situation, obſerving to water them in dry Weather; in this Place they may remain till *October*, when they ſhould be removed into the Green-houſe, and placed where they may have as much free Air as poſſible in mild Weather; for this Plant only requires to be ſcreened from Froſt, being tolerably hardy: with this Management the Plants will thrive exceedingly, and in a few Years will produce Flowers.

The ſixth Sort was found in the Mountains of *Granada*, by D. *Albinus*. This Plant is of low Growth, and may be propagated as the firſt Sort, as may alſo the ſeventh Sort, which is the leaſt of all the Sorts, and the moſt hardy; ſo that it ſhould have a ſhady Situation in Summer, but in Winter it will be proper to ſhelter them from ſevere Froſt.

The eighth and ninth Sorts were found by Dr. *Tournefort*, in the *Levant*; theſe are ſomewhat tender, and ſhould be ſheltered from the Froſt in Winter, but in Summer they may be expoſed with other hardy exotic Plants, and require to be frequently watered in dry Weather. Theſe may be propagated by Seeds, or by parting of their Roots, as was directed for the former Sorts.

GLYCYRRHIZA, [is ſo call'd of γλυκὺς, *ſweet*, and ῥίζα, Gr. a *Root*, q. d. *Sweet Root*: The Antients call'd it *Scythian Root*, becauſe the *Scythians* firſt brought it into Uſe.] Liquorice.

The *Characters* are;

It hath a papilionaceous Flower: The Pointal which ariſes from the Empalement becomes a ſhort Pod, containing ſeveral Kidney-ſhap'd Seeds: The Leaves are plac'd by Pairs joined to the Mid-rib, and are terminated by an odd Lobe.

The *Species* are;

1. GLYCYRRHIZA *ſiliquoſa, vel Germanica. C. B. P.* Common Liquorice.
2. GLYCYRRHIZA *capite echinato. C. B. P.* Rough-podded Liquorice.
3. GLYCYRRHIZA *orientalis, ſiliquis hirſutiſſimis. Tourn. Cor.* *Eaſtern* Liquorice, with hairy Pods.

The firſt of theſe Plants is what the People cultivate for Uſe.

This Plant delights in a rich, light, ſandy Soil, which ſhould be three Feet deep at leaſt; for the greateſt Advantage conſiſts in the Length of the Roots: The greateſt Quantity of Liquorice which is propagated in *England* is about *Pontefract* in *Yorkſhire*, and *Godliman* in *Surry*; tho' of late Years there hath been a great deal cultivated in the Gardens near *London*: The Ground in which you intend to plant *Liquorice* ſhould be well dug and dunged the Year before you plant it, that the Dung may be perfectly rotted and mixed with the Earth, otherwiſe it will be apt to ſtop the Roots from running down; and before you plant it the Ground ſhould be dug three Spades deep, and laid very light: When your Ground is thus well prepared, you ſhould furniſh yourſelf with freſh Plants taken from the Sides or Heads of the old Roots; obſerving that they have a good Bud or Eye, otherwiſe they are ſubject to miſcarry: Theſe Plants ſhould be about ten Inches long, and perfectly ſound.

The beſt Seaſon for planting them is towards the End of *February*, or the Beginning of *March*, which muſt be done in the following Manner; *viz.* Firſt ſtrain a Line croſs the Ground in which you ſhould plant them; then with a long Dibble made on purpoſe, put in the Shoot, ſo that the whole Plant may be ſet ſtrait into the Ground, with the Head about an Inch under the Surface in a ſtrait Line, about a Foot aſunder, or more, in Rows, and two Feet Diſtance Row from Row; and after having finiſh'd the whole Spot of Ground, you may ſow a thin Crop of Onions, which being Plants that don't root deep into the Ground, nor ſpread much above Ground, will do the *Liquorice* no Damage the firſt Year; for the *Liquorice* will not ſhoot very high the firſt Seaſon, and the houghing of the Onions will alſo keep the Ground clear from Weeds: but in doing of this, you muſt be careful not to cut off the top Shoots of the *Liquorice* Plants, as they appear above Ground, which would greatly injure them, and alſo obſerve to cut up all the Onions which grow near the Heads of the *Liquorice*; and after your Onions are pulled up, you ſhould carefully hough and clear the Ground from Weeds: And in *October*, when the Shoots of the *Liquorice* are decayed, you ſhould ſpread a little very rotten Dung upon the Surface of the Ground, which will prevent the Weeds from growing during the Winter; and the Rain will waſh the Virtue of the Dung into the Ground, which will greatly improve the Plants.

In the Beginning of *March* following you ſhould ſlightly dig the Ground between the Rows of *Liquorice*, burying the remaining Part of the Dung: But in doing of this, you ſhould be very careful not to cut the Roots. This ſtirring of the Ground will not only preſerve it clean from Weeds a long time, but alſo greatly ſtrengthen the Plants.

The Diſtance which I have allowed for planting theſe Plants, will, I doubt not, by ſome, be thought too great: But in anſwer to that, I would only obſerve, that as the Largeneſs of the Roots are the chief Advantage to the Planter, ſo the only Method to obtain this, is by giving them Room: And beſides, this will give a greater Liberty to ſtir and dreſs the Ground, which is of great Service to *Liquorice*; and if the Plantation deſign'd were to be of an extraordinary Bigneſs, I would adviſe the Rows to be made at leaſt three Feet diſtant, whereby it will be eaſy to ſtir the Ground with a Breaſt-plough, which will greatly leſſen the Expence of Labour.

Theſe Plants ſhould remain three Years from the time of planting, when they will be fit to take up for Uſe, which ſhould not be done until the Stems are perfectly decay'd; for when it is taken up too ſoon, it is ſubject to ſhrink greatly, and loſe of its Weight.

The Ground near *London* being rich, increaſes the Bulk of the Root very faſt; but when it is taken up, it appears of a very dark Colour, and not near ſo ſightly as that which grows upon a ſandy Soil in an open Country.

The firſt Sort is that which is commonly cultivated in *England* for Medicine; the other two Kinds are preſerved in curious Botanick Gardens for Variety; but their Roots are not ſo full of Juice as the firſt, nor is the Juice ſo ſweet: tho' the ſecond Sort ſeems to be that which *Dioſcoridis* has deſcribed and recommended; but I ſuppoſe the Goodneſs of the firſt has occaſioned its being ſo generally cultivated in *Europe*.

Theſe two Sorts laſt-mentioned perfect their Seeds in *England*, by which they may be propagated, whereas the common Sorts ſeldom produce any in this Country. They may alſo be propagated by Roots, as the common Sort.

GNAPHALIUM, [takes its Name of γναφάλιον, Gr. *Flocks*, or *clipt Locks of Wool*: or of γνάπτω, Gr. *to comb*; becauſe its external Down looks like Combings.] Cud-weed.

The *Characters* are;

It hath downy Leaves: The Cup of the Flower is ſcaly, neither ſhining nor ſpecious: The Flowers are divided or cut in form of a Star.

The *Species* are;

1. GNAPHALIUM *Anglicum. Ger.* Long-leaf'd, upright Cud-weed.
2. GNAPHALIUM *minus, ſeu herba impia. Park.* Common Cud-weed.
3. GNAPHALIUM *maritimum. C. B. P.* Sea Cud-weed, or Cotton-weed.

Theſe two firſt Sorts are found wild in divers Parts of *England*, upon moiſt, ſtony Heaths, eſpecially in ſuch Places where the Water ſtood during the Winter. The ſecond Sort is placed in the Catalogue of Simples annexed to the *College Diſpenſatory*, but is not often uſed in Medicine: Theſe Plants are ſeldom propagated in Gardens, except for the ſake of Variety; for they have no great Beauty, nor are of much Uſe. There are alſo many more of this Kind, ſome of which grow wild in *England*; but as they are never cultivated, I ſhall paſs them over without naming, and proceed to the third Sort, which is often preſerved in curious Gardens for the Variety of its fine Silver-colour'd Leaves: This Plant is found upon the Sea-coaſts of *Cornwal*, and ſome other Parts of *England*; but yet will rarely abide the Cold of our Winters near *London*, if planted in the open Air; but if it be preſerv'd in a common Frame from the Severity of Froſt, it will thrive very well: This is propagated by planting its Cuttings in any of the Summer Months, obſerving to water and ſhade them from the Violence of the Sun in the Middle of the Day; and in about two Days they will be rooted enough to tranſplant; at which time you ſhould provide a Parcel of ſmall Pots, which ſhould be fill'd with light ſandy Earth, planting your young Plants therein, ſhading them again until they have taken new Roots; after which they may be expoſed until the End of *October*, when you ſhould remove the Pots into Shelter for the Winter Seaſon. But altho' I have adviſed the planting theſe Plants into Pots, yet, if you have a Stock of them, you may plant ſome of them under a warm Wall, where they will ſtand very well in mild Winters; but in very ſharp Froſts they are generally deſtroyed. They muſt be frequently water'd in dry Weather, otherwiſe they will not flower.

GNAPHALODES.

The *Characters* are;

It is a Plant with a floſculous Flower, conſiſting of ſeveral barren Florets; the Embryos which conſtituted the Empalement of the Flower, become a creſted Fruit, pregnant with a Seed for the moſt part oblong.

We have but one *Species* of this Plant at preſent in *England*, which is;

GNAPHALODES *Luſitanica. Tourn.* Portugal Gnaphalodes.

This is a low annual Plant, which ſeldom riſes above four Inches high, but divides into ſeveral trailing Branches, which are beſet with ſmall ſilver-coloured Leaves, which have a great Reſemblance to thoſe of Cudweed; but the Flowers are ſo ſmall as not to be conſpicuous, unleſs they are magnified by a Glaſs. This Plant is ſeldom preſerved in Gardens, unleſs it be for the ſake of Variety, for there is little Beauty in it. The Seeds of this Plant may be ſown the Beginning of *April*, on a Bed of light Earth, in an open Situation; and when the Plants are come up, they ſhould be kept clean from Weeds, and in very dry Weather they ſhould be ſometimes refreſhed with Water: with this Management the Plants will flower in *July*, and in *Auguſt* the Seeds will ripen, when the Plants will ſoon after decay.

GOOSEBERRY. *Vide* Groſſularia.

GORZ. *Vide* Geniſta Spinoſa.

GOSSYPIUM. *Vide* Xylon.

GRAFTING: In order to *Grafting*, you ſhould be provided with theſe Tools following:

1. A neat ſmall Hand-ſaw, to cut off the Heads of large Stocks.
2. A good ſtrong Knife with a thick Back, to make Clefts in the Stocks.
3. A ſharp Penknife, to cut the *Grafts*.
4. A *Grafting* Chiſſel, and a ſmall Mallet.
5. Baſs Strings, or woollen Yarn, to tie the *Grafts* with; and ſuch other Inſtruments and Materials as you ſhall find neceſſary, according to the Manner of *Grafting* you are to perform.
6. A Quantity of Clay, which ſhould be prepared a Month before it is uſed, and kept turn'd and mixed, like Morter, every other Day; which is to be made after the following Manner:

Get a Quantity of ſtrong fat Loam (in proportion to the Quantity of Trees intended to be grafted); then take ſome new Stone-horſe Dung, and break it in amongſt the Loam, and if you cut a little Straw or Hay very ſmall, and mix amongſt it, the Loam will hold together the better; and if there be a Quantity of Salt added, it will prevent the Clay from dividing in dry Weather; theſe muſt be well ſtirred together, putting Water to them after the Manner of making Morter: It ſhould be hollow'd like a Diſh, and fill'd with Water, and kept every other Day ſtirr'd: But it ought to be remember'd, that it ſhould not be expoſed to the Froſt, or drying Winds; and that the oftener it is ſtirred and wrought, the better.

There are ſeveral Ways of *Grafting*, the principal of which are Four.

1. *Grafting in the Rind*, call'd alſo *Shoulder Grafting*, which is only proper for large Trees: This is call'd *Crown Grafting*, becauſe the *Grafts* are ſet in form of a Circle or Crown, and is generally perform'd about the latter End of *March*, or the Beginning of *April*.
2. *Cleft-grafting*, which is alſo call'd *Stock* or *Slit Grafting*: This is proper for Trees or Stocks of a leſſer Size, from an Inch to two Inches or more Diameter: This *Grafting* is to be perform'd in the Months of *February* and *March*, and ſupplies the Failure of the Eſcutcheon-way, which is practiſed in *June*, *July*, and *Auguſt*.
3. *Whip-grafting*, which is alſo call'd *Tongue-grafting*: This is proper for ſmall Stocks of an Inch, half an Inch, or leſs, Diameter; this is the moſt effectual Way of any, and that which is moſt in Uſe.
4. *Grafting by Approach*, or *Ablactation*: This is to be perform'd when the Stock you would *graft* on, and the Tree from which you take your *Graft*, ſtand ſo near together, that they may be join'd: This is to be perform'd in the Month of *April*, and is alſo call'd *Inarching*, and is chiefly uſed for *Jaſmines*, *Oranges*, and other tender exotick Trees.

The Manner of performing theſe ſeveral Sorts of *grafting* being ſo generally known, and they having been ſo often deſcribed in the various Books of *Husbandry* and *Gardening*, it will be needleſs to repeat any Thing more on that Head in this Place: I ſhall only take notice in general of the ſeveral Sorts of Trees which will grow when grafted upon each other.

All ſuch Trees as are of the ſame Tribe, *i. e.* which agree in their Flower and Fruit, will take upon each other: For Inſtance; all the *Nut-bearing* Trees may be ſafely *grafted* on each other; as may all the *Plum-bearing* Trees, under which Head I reckon not only the ſeveral Sorts of *Plums*, but alſo the *Almond*, *Peach*, *Nectarine*, *Apricot*, &c. which agree exactly in their general Characters, by which they are diſtinguiſhed from all other Trees: But as theſe are very ſubject to emit large Quantities of Gum from ſuch Parts of the Trees as are deeply cut and wounded; which, in the tender Trees of this Kind, as it is more common and hurtful, ſo it is found to be the ſureſt Method to *bud* or *inoculate* theſe Sorts of Fruits, Vide *Inoculation*.

Then all ſuch Trees as bear Cones will do well upon each other, tho' they may differ in one being ever green, and the other ſhedding its Leaves in Winter; as is obſervable in the *Cedar of Libanus*, and the *Larch-tree*, which are found to ſucceed upon each other very well: But theſe muſt be grafted by Approach; for they abound with a great Quantity of Reſin, which is apt to evaporate from the *Graft*, if ſeparated from the Tree before it be join'd with the Stock, whereby they are often deſtroy'd; as alſo the Laurel on the Cherry, or the Cherry on the Laurel. All the Maſt-bearing Trees will alſo take upon each other; and thoſe which have a tender ſoft Wood will do well if grafted in the common Way; but thoſe that are of a more firm Contexture, and are ſlow Growers, ſhould be grafted by Approach.

By ſtrictly obſerving this Rule, we ſhall ſeldom miſcarry, provided the Operation be rightly perform'd, and at a proper Seaſon, unleſs the Weather ſhould prove very bad, as it ſometimes happens, whereby whole Quarters of Fruit Trees miſcarry; and it is by this Method that many Kinds of Exotick Trees are not only propagated, but alſo render'd hardy enough to endure the Cold of our Climate in the open Air; for being grafted upon Stocks of the ſame Sort which are hardy, the *Grafts* are render'd more capable to endure the Cold; as hath been experienced in moſt of our valuable Fruits now in *England*, which were formerly tranſplanted hither from more Southerly Climates, and were at firſt too impatient of our Cold to ſucceed well abroad, but have been, by Budding or Grafting upon more hardy Trees, render'd capable of reſiſting our ſevereſt Cold.

And theſe different *Graftings* ſeem to have been greatly in Uſe among the Ancients; tho' they were certainly miſtaken in the ſeveral Sorts of Fruits which they mention to have ſucceeded upon each other, as the *Fig* upon the *Mulberry*, the *Plum* upon the *Cheſnut*, with many others of the like Kind; ſome of which I have already try'd, and find them all Miſtakes, or at leaſt they did not mean the ſame Plants which at preſent are call'd by thoſe Names: Tho' I can't help thinking we are apt to pay too much Deference to the Writings of the Ancients, in ſuppoſing them ſeldom to be miſtaken, or to aſſert a Falſhood: Whereas, if their Works are carefully examin'd, it will be found that they often copy'd from each other's Writings, without making Experiments to prove the Truth of their Aſſertions: And it is well known, that the Ranging of Plants before *Cæſalpinus*'s Time (which is but about 150 Years ſince) was, by their outward Appearance, or from the ſuppoſed Virtues of them: Which Method is now juſtly exploded; and it hath been obſerv'd, from many repeated Trials, that however Plants may reſemble each other in the Shape and Make of their Leaves, Manner of Shooting, *&c.* unleſs they agree in their Manner of Fruiting, and their other diſtinctive Characters, they will not grow upon each other, tho' grafted with ever ſo much Art.

Of late Years ſome Perſons have made uſe of another Compoſition for Grafting, which they have found to anſwer the Intention of keeping out the Air, better than the Clay preſcribed above. This is compoſed of Turpentine, Bees-wax and Roſin melted together; this, when of a proper Conſiſtence, may be put on the Stock round the Graft, in the ſame Manner as the Clay is uſually applied; and tho' it be not above a quarter of an Inch thick, yet will keep out the Air more effectually than the Clay; and as Cold will harden this, ſo there is no Danger of its being hurt by Froſt, which is very apt to cauſe the Clay to cleave, and ſometimes fall off; and when the Heat of Summer comes on, this Mixture will melt and fall off without any Trouble. In uſing of this, there ſhould be a Tin or Copper-pot, with Conveniency under it to keep a very gentle Fire with Small-coal, otherwiſe the Cold will ſoon condenſe the Mixture; but you muſt be careful not to apply it too hot, leſt you injure the Graft. A Perſon who is a little accuſtomed to this Compoſition, will apply it very faſt, and it is much eaſier for him than Clay, eſpecially if the Seaſon is cold.

GRAMEN. Graſs.

The *Species* are;

1. Gramen *loliaceum, anguſtiore folio & ſpica. C. B. P.* Red Darnel Graſs, or Rey Graſs.
2. Gramen *pratenſe minus ſeu vulgatiſſimum. Raii Syn.* The moſt common Meadow Graſs.
3. Gramen *pratenſe paniculatum medium. Raii Syn.* The middle Sort of Meadow Graſs.
4. Gramen *pratenſe paniculatum majus, latiore folio. C. B. P.* The greateſt Meadow Graſs.
5. Gramen *ſecalinum. Ger. Emac.* Tall Meadow Rie Graſs.
6. Gramen *ſecalinum & ſecale ſylveſtre. Ger. Emac.* Wild Rie, or Rie Graſs.
7. Gramen *ſecalinum majus ſylvaticum. Hiſt. Oxon.* Greatwood Rie Graſs.
8. Gramen *paniceum, ſpica ſimplici lævi. Raii Syn.* Panic Graſs, with a ſingle ſmooth Ear.
9. Gramen *paniceum, ſpica diviſa. C. B. P.* Panic Graſs, with a divided Spike.
10. Gramen *paniceum, ſpica aſpera. C. B. P.* Rough-eared Panic Graſs.
11. Gramen *loliaceum, ſpica longiore. C. B. P.* Darnel.
12. Gramen *avenaceum dumetorum ſpicatum. Raii Syn.* Spiked-hedge Oat Graſs.
13. Gramen *avenaceum pratenſe. Park.* Meadow Oaten Graſs.
14. Gramen *avenaceum ſupinum arvenſe. Park.* Low Meadow Oaten Graſs.
15. Garmen *miliaceum vulgare. Park.* Common Millet Graſs.
16. Gramen *ſpicatum, ſemine miliaceo albo. Tourn.* Common Canary Graſs.
17. Gramen *ſpicatum, ſemine miliaceo nigro. Tourn.* Black Canary Graſs.
18. Gramen *ſpicatum, ſemine miliaceo minore nigro. Tourn.* Leſſer black Canary Seed.
19. Gramen *ſpicatum, ſemine miliaceo griſeo. Tourn.* Grey Canary Seed.
20. Gramen *paniculatum, locuſtis maximis candicantibus tremulis. Tourn.* The greateſt Quaking Graſs, with white Panicles.
21. Gramen *paniculatum, locuſtis maximis phœniceis tremulis. Tourn.* The greateſt Quaking Graſs, with ſcarlet Panicles.
22. Gramen *tremulum medium. Park.* The middle Quaking Graſs.
23. Gramen *tremulum minus, panicula parva. Park.* Smaller Quaking Graſs, with a ſmall Panicle.
24. Gramen *murorum ſpica longiſſima. Ger. Emac.* Capons-tail Graſs.
25. Gramen *dactylon, latiore folio. C. B. P.* Broad-leav'd Cocks-foot Graſs.
26. Gramen *dactyloides, radice repente. Ger. Emac.* Creeping Cocks-foot Graſs.
27. Gramen *typhinum majus ſeu primum. Ger. Emac.* Greateſt Cats-tail Graſs.
28. Gramen *typhinum minus. Ger.* Leſſer Cats-tail Graſs.
29. Gramen *criſtatum. J. B.* Smooth-creſted Graſs.
30. Gramen *ſpica triticea, repens vulgare, caninum dictum. Raii Syn.* Common Dogs Graſs, or Quick Graſs, or Couch Graſs.
31. Gramen *alopecuroides majus. Ger. Emac.* Common Fox-tail Graſs.
32. Gramen *alopecuroides minus. Park.* Smaller Fox-tail Graſs.
33. Gramen *ſpicatum, durioribus & craſſioribus locuſtis, ſpica brevi. Tourn.* French Haver Graſs.
34. Gramen *ſpicatum, durioribus & craſſioribus locuſtis, ſpica longiſſima. Tourn.* French Haver Graſs, with a long Spike.
35. Gramen *paniculatum, ſpicis craſſioribus & brevioribus variegatum. Tourn.* Striped Graſs.

The fourteen firſt-mentioned Sorts grow pretty common in the Paſtures in moſt Parts of *England*, and are often intermixed in the ſame Paſture; ſo that it is very rare to meet with a Paſture, which hath not ten or twelve Sorts of Graſs in it; but the Sort which is generally ſown about *London*, is the *Rey Graſs*, which is very hardy, and will grow on cold ſour Land better than moſt other Sorts; but as it ſeldom happens that the Seed is ſaved intire, without a Mixture of other Graſs Seeds, ſo it is very rare to meet with a Paſture, which has not many Sorts in it.

The beſt Seaſon for ſowing of Graſs Seed, is, the latter End of *Auguſt*, and the Beginning of *September*, that the Graſs may be well rooted before the Froſt ſets in, which is apt to turn the Plants out of the Ground, when they are not well rooted. This Seed ſhould be ſown in moiſt Weather, or when there is a Proſpect of Showers, which will ſoon bring the Graſs up; for the Earth being at that Seaſon warm, the Moiſture will cauſe the Seeds to vegetate in a few Days.

The Land on which Graſs-ſeed is intended to be ſown, ſhould be well ploughed and cleared from the Roots of noxious Weeds, ſuch as *Couch Graſs*, *Fern*, *Ruſhes*, *Heath*, *Gorſe*, *Broom*, *Reſt-Harrow*, &c. which if left in the Ground, will ſoon get the better of the Graſs, and over-run the Land. Therefore in ſuch Places where either of theſe Weeds abound, it will be a good Method to plough up the Surface in *April*, and let it lie ſome time to dry, then lay it in ſmall Heaps, and burn it; the Aſhes ſo produced, when ſpread on the Land, will be a good Manure for it: the Method of burning the Land, is particularly directed under the Article *Land*, which ſee; eſpecially if it is a cold ſtiff Soil. But where *Couch Graſs*, *Fern* or *Reſt Harrow* is in Plenty, whoſe Roots run far under Ground, the Land muſt be ploughed two or three times pretty deep in dry Weather, and the Roots carefully harrowed off after each ploughing; which is the moſt ſure Method to deſtroy them. Where the Land is very low, and of a ſtiff clayey Nature, which holds Water in Winter, it will be of ſingular Service to make ſome under-ground Drains, to carry off the Wet; which if detained too long on the Ground, will render the Graſs ſour. The Method of making theſe Drains are preſcribed under the Article *Land*; which ſee.

Before the Seed is ſown, the Surface of the Ground ſhould be made level and fine, otherwiſe the Seed will be buried unequal. The Quantity of Graſs-ſeed for an Acre of Land, is uſually three Buſhels; when the Seed is ſown, it muſt be gently harrowed in, and the Ground rolled with a wooden Roller; which will make the Surface even, and prevent the Seeds being blown in Patches. When the Graſs comes up, if there ſhould be any bare Spots, where the Seed has not grown, they may be ſown again, and the Ground rolled, which will fix the Seeds; and the firſt kindly Showers will bring up the Graſs, and make it very thick.

Some People mix *Clover* and *Rey Graſs* Seeds together, allowing ten Pounds of *Clover*, and one Buſhel of *Rey Graſs* to an Acre: but this is only to be done where the Land is deſigned to remain but three or four Years in Paſture, becauſe neither of theſe Kinds are of long Duration; ſo that where the Land is deſigned to be laid down for many Years, it will be proper to ſow the Graſs-ſeeds by themſelves, and not to mix either *Trefoil* or *Clover* amongſt them.

The following Spring, if there ſhould be any *Thiſtles*, *Ragwort*, or ſuch other troubleſome Weeds, come up among the Graſs, they ſhould be carefully cut up with a Spaddle before they grow large; and this ſhould be repeated two or three times in the Summer, which will effectually deſtroy them; for if theſe Plants are ſuffered to ripen their Seeds, they will be blown all over the Ground, their Seeds having Down adhering to them, which aſſiſts their Tranſportation; ſo that they are often carried by the Wind to a great Diſtance, and thereby become very troubleſome Weeds to the Graſs. For want of this Care, how many Paſtures may be ſeen almoſt over-run with theſe Weeds, (eſpecially the *Ragwort*,) when a ſmall Expence, if applied in time, would have intirely extirpated them! For a Man may go over ſeveral Acres of Land in one Day with a Spaddle, and cut up the Weeds juſt below the Surface of the Ground, turning their Roots upward; which if done in dry Weather, they will ſoon decay; but this muſt always be performed before the Plants come to have their Seeds formed, becauſe after that, many Sorts will live long enough to nouriſh their Seeds after they are cut, ſo as to ripen them; when there will be a Supply of Weeds for ſome Years after, which cannot be extirpated without a much greater Expence.

The *Panic* Graſſes are harſher than the common Meadow Graſſes, ſo are rarely cultivated in *England*; for the Cattle do not care to feed on them, where they have any other Fodder; and as they are annual, ſo, if they were equally good, they would not be worth cultivating; for theſe Plants which require an annual Culture, are too expenſive to be worth the Farmer's Care.

The *Canary* Graſſes, are ſown in ſome Parts of *England*, for their Seeds, which are uſed to feed Birds; the white Sort is generally preferred to the other, but the grey Sort is frequently intermixed with it. Theſe Seeds ſhould be ſown the Beginning of *March*, on a moderate light Soil; for they do not thrive well on ſtrong cold Land. The Surface of the Ground ſhould be well ſtirred, and made even, before the Seeds are ſown, that they may be equally buried. Three Buſhels of this Seed are ſufficient for an Acre of Land; when the Seed is ſown, which ſhould be done in dry Weather, the Ground muſt be gently harrowed to bury the Seeds, and then the Whole ſhould be rolled with a wooden Roller; which will ſmooth the Surface of the Ground, and prevent the Seeds from being removed by ſtrong Winds. When the Graſs is come up, if there ſhould be any rank Weeds amongſt it, they muſt be cut up with a Spaddle, as was before directed; for if they are permitted to grow, they will do great Damage to the Graſs. The latter End of *July*, or the Beginning of *Auguſt*, the Seeds will ripen, when it ſhould be cut, and as ſoon as it is dry, ſhould be threſhed out, or ſtacked; for if it remains abroad, the Birds will devour it: if the Crop ſucceeds, there will be upward of four Quarters on an Acre of Land.

The four Sorts of *Quaking Graſs*, are rather eſteemed as Curioſities, than for any real Uſe, ſo are ſometimes allowed a Place in Gardens; theſe produce light ſcaly Heads on ſlender Foot-ſtalks, which are moved by every Wind, after the Manner of the Leaves of the *Aſpen-tree*; from whence it had the Name of *Quaking Graſs*, or in ſome Places *Cow-quakes*, or in other Places *Ladies-hair*. Theſe Sorts are commonly in Head in *May*, which occaſioned this old *Engliſh* Proverb; May, *come ſhe early, come ſhe late, makes the Cow quake*. The middle Sort of Quaking Graſs grows very common in ſeveral Parts of *England*. The ſmaller Sort grows wild in the Iſland of *Jerſey*; but the greateſt Sort is not a Native of *England*, ſo is only to be found in ſome curious Gardens, where it is preſerved for the ſake of Variety.

The *Capons-tail Graſs* is found growing by the Path-ſides, and on Mud-walls, in ſeveral Parts of *England*, but is never cultivated for Uſe; this produces very long Spikes, which bend downward with the Weight of the Seed when it is near ripe; it is ſometimes preſerved in Gardens for Variety.

The two Sorts of *Cocksfoot Graſs*, are found upon ſandy Lands near the Sea in *Norfolk*, and the *Weſt* of *England*, but are ſeldom cultivated, being coarſe Sorts of Graſs, and never riſe above ſix or eight Inches high, ſo are unfit for making Hay. The only Uſe of either of theſe Graſſes is, for ſowing on looſe ſandy Lands, which will not produce any other Sort of Graſs; in which Places theſe will often thrive to Advantage; for as theſe ſpread cloſe to the Surface of the Ground, ſo they preſerve a Moiſture in the Earth, by the cloſe Growth of their Branches; and theſe Sorts will endure much more Drought, than moſt other Sorts of Graſs. Of this kind of Graſs, there are a great Number of Species in *America*, which are of great Uſe to the Inhabitants of the *Caribee Iſlands*; for ſome of them will thrive in the greateſt Drought, and afford uſeful Food for their Cattle, when moſt other Vegetables are burnt up. Some of theſe Sorts ſend forth Roots at every Joint, whereby they ſpread and propagate themſelves to a great Diſtance.

The two Sorts of *Cats-tail Graſs* are found plentifully by the Side of Paths, and in Corn-fields, in many Parts of *England*, as alſo in ſome Paſtures; but they are not profitable Graſſes to cultivate.

The *Couch Graſs* is one of the moſt troubleſome Weeds in Corn-lands and Gardens, and is with great Difficulty extirpated; for the Roots of this Kind run very far under Ground, and every ſmall Part of the Root will grow; ſo that if the Roots are torn into ſmall Pieces, every one of them will propagate where-ever they are left in the Ground. Where the Land is ſtocked with this Graſs, it ſhould be ploughed two or three Times in dry Weather, during the Heat of Summer; and after each Ploughing, the Ground ſhould be carefully harrowed, to draw the Roots out, which ſhould be drawn into Heaps, and then carted off the Ground; for if the Roots are left, they will ſtrike into the Ground after the firſt Shower of Rain, and ſoon become troubleſome: ſuch foul Land is very unfit to ſow with Grain; therefore it will be proper to ſow with *Turnips*, and *Beans* or *Peaſe*, which require hoeing two or three Times, which if done in very dry Weather, will be of great Uſe to deſtroy the Couch Graſs. Where this Method is not obſerved, it is common to ſee large Tracts of Land, which are ſown with Grain, ſo much over-run with Graſs, that many Times the Crop doth not produce ſo much Grain as was ſown on the Ground.

In Gardens this Graſs is much eaſier deſtroyed than in large Fields, becauſe the Ground being frequently dug, Care may be taken to pick out the Roots in digging; and if there be any left, and appear afterward, the Roots may be eaſily forked out; ſo that in one Year it may be deſtroyed, if proper Care be taken. But where the Ground is very full of the Roots of *Couch Graſs*, and the Land will admit of being trenched three Spits deep, that will be the moſt effectual Way of deſtroying it, and will be cheaper than picking out the Roots by Hand; for by trenching of the Ground ſo deep, the *Couch* will be buried near two Feet, which will rot it; and turning of the Ground ſo deep, will be moreover of great Service to it.

This Sort of Graſs, is what the *College of Phyſicians* have ordered to be uſed in Medicine; ſo that whenever Graſs is preſcribed, this is what is meant.

The *Fox-tail Graſſes* are frequently found in Paſtures intermixed with other Kinds, but are never ſown ſeparately. Theſe do very well for Fodder or Hay, and are uſeful Kinds of Graſs.

The *Bearded wild Oats*, or *Haver*, are frequently found amongſt Corn in ſeveral Parts of *England*, where ſometimes they become troubleſome Weeds; for if they are not drawn out of the Corn before it is ripe, it will be difficult to be ſeparated from the Corn in the Barn: But as they are annual Plants, ſo they may be eaſily deſtroyed with a little Care.

The *ſtriped Graſs* is preſerved in many Gardens for the Beauty of its variegated Leaves, which continue freſh the greateſt Part of the Year. This Sort is eaſily propagated by parting the Roots either in Spring or Autumn; for every Offſet will increaſe to be a large Root in one Year's Time. It will grow on any Soil, or in any Situation, ſo may be planted in any abject Part of the Garden where it will thrive, and afford an agreeable Variety. This Sort is by many Perſons called *Ribbon Graſs*, from the Stripes of White and Green, which run the whole Length of the Blade, like the Stripes in ſome Ribbons.

For the farther Management of Graſs, ſee *Paſture*, and *Meadow*.

Clover Graſs. *See* Trifolium.
Saint Foyn. *See* Onobrychis.
La Lucerne. *See* Medica.
Noneſuch. *See* Melilotus.
Trefoil. *See* Trifolium.
Spurrey. *See* Spergula.
See Graſs.

GRANADILLA [is a Diminutive of *Granada*, or rather *Granata*, having many *Grains* or *Kernels*; becauſe the Fruit of this Plant is full of Seeds. It is alſo call'd the *Paſſion-Flower*; becauſe, if Allowance be given to Imagination, it exhibits all the Inſtruments of our Saviour's Paſſion] Paſſion-Flower.

The *Characters* are;

It hath a double Calyx, the firſt conſiſting of three Leaves, the other of five Leaves, which expand in Form of a Star: The Flowers conſiſt of five Leaves each, and are of a roſaceous Form: In the Center of the Flower ariſes the Pointal, with a Crown fringed at the Bottom, but furniſh'd with a tender Embryo at the Top, on which ſtand three Clubs, under which are the Stamina with rough, obtuſe Apices, which always incline downwards: The Embry turns to an oval or globular Fruit, fleſhy, and conſiſting of one Cell, which is full of Seeds adhering to the Sides, and cover'd with a Sort of Hood or Veil.

The *Species* are;

1. GRANADILLA *pentaphyllos, latioribus foliis, flore cæruleo magno. Boerh. Ind.* Common or broad-leav'd Paſſion-Flower.

2. GRANADILLA *pentaphyllos, anguſtioribus foliis, flore cæruleo magno.* Narrow-leav'd Paſſion-Flower.

3. GRANADILLA *pentaphyllos, anguſtioribus foliis, flore minore pallido cæruleo ſerotino.* Late narrow-leav'd Paſſion-Flower, with a leſſer and paler Flower.

4. GRANADILLA *Hiſpanis, Flos Paſſionis Italis. Col. in Recch.* Three-leav'd Paſſion-Flower.

5. GRANADILLA *folio tricuſpide, flore parvo flaveſcente. Tourn.* Paſſion-Flower with a three-pointed Leaf, and a ſmall yellowiſh Flower.

6. GRANADILLA *flore albo, fructu reticulato. Boerh. Ind.* White Paſſion-Flower, with a netted Fruit.

7. GRANADILLA *fœtida, folio tricuſpide villoſo, flore purpureo variegato. Tourn.* Stinking Paſſion-Flower, with a three-pointed hairy Leaf, and a purple variegated Flower, *call'd by the Inhabitants of* Barbados, Love in a Miſt.

8. GRANADILLA *fructu citriformi, foliis oblongis. Tourn.* Paſſion-Flower, with a Fruit ſhap'd like a Citron, and an oblong Leaf, *call'd by the Inhabitants of* Barbados, Water-Lemon.

9. Granadilla *latifolia, fructu maliformi.* Broad-leav'd Paſſion-Flower, with an Apple-ſhap'd Fruit.

10. Granadilla *flore ſuave-rubente, folio bicorni. Tourn.* Paſſion-Flower, with a Leaf divided into two Horns, and a ſoft red Flower.

11. Granadilla *folio amplo tricuſpidi, fructu Olivæ forma. Tourn.* Paſſion-Flower, with a three-pointed Leaf, and an Olive-ſhap'd Fruit.

12. Granadilla *folio anguſto tricuſpidi, fructu Olivæ forma. Tourn.* Paſſion-Flower, with a narrow three-pointed Leaf, and an Olive-ſhap'd Fruit.

13. Granadilla *Androſæmi folio, fructu Jujubino. Tourn.* Paſſion-Flower, with a Tutſan Leaf, and a Fruit like the Jujube.

14. Granadilla *folio haſtato, flore cæruleo majore. Houſt.* Paſſion-Flower with a ſpear-pointed Leaf, and a large blue Flower.

15. Granadilla *folio oblongo ſerrato, flore purpureo. Houſt.* Paſſion-Flower with an oblong ſerrated Leaf, and a purple Flower.

16. Granadilla *folio glabro, tricuſpidi, & anguſto, flore vireſcenti minimo. Tourn.* Paſſion-Flower, with a narrow ſmooth three-pointed Leaf, and a ſmall greeniſh Flower.

17. Granadilla, *quæ* Coanenepilli, *ſeu* Contrayerva *Hernand. Houſt.* Paſſion-Flower, or Contrayerva of *Hernandez.*

The firſt Sort here mentioned is the moſt common in all the *Engliſh* Gardens, and (notwithſtanding what Mr. *Bradley* has affirm'd) is very different from the ſecond and third Sorts. Nor did I ever ſee any Fruit upon this Kind, tho' planted in many different Soils and Situations; whereas the ſecond Sort rarely fails to produce Fruit every Year; and in order to obſerve the Truth of this, I planted one of each Kind in the ſame Soil and Situation, where the ſecond Sort has produc'd Fruit every Year ſince, but the firſt has not as yet ſhewn any Appearance thereof. The ſecond Sort does alſo differ in the Colour of the Flower, which is ſomewhat paler than the firſt, and the Petals are not quite ſo blunt at their Extremities.

The third Sort has very narrow Leaves, and the young Branches are of a purpliſh Colour; it is a very great Shooter, but does not flower until the latter End of Summer: The Flowers of this Kind are ſmaller, and of a paler Colour than either of the former. There is alſo a Variety in this Plant with yellow blotch'd Leaves, which ſome People preſerve as a great Curioſity; but as this Variegation is but ſmall, and hardly to be ſeen in vigorous Shoots, ſo it is ſcarce worth mentioning.

Theſe three Sorts are extreme hardy, and will endure our ſevereſt Cold in the open Air; tho' in very hard Winters their Shoots are ſubject to be kill'd, and ſometimes their whole Stems quite to the Surface: Yet it rarely happens that it deſtroys the whole Plant; for if the Roots are permitted to continue undiſturb'd, they ſeldom fail to ſhoot up again in the ſucceeding Summer.

Theſe are propagated by laying down their Branches, which in one Year's Time will take good Roots, and may then be remov'd to the Places where they are deſign'd to remain: The beſt Seaſon for tranſplanting theſe Plants, is towards the latter End of *March*, or the Beginning of *April*, juſt before they begin to ſhoot; for if they are remov'd earlier, and it ſhould prove dry froſty Weather, with cold North Eaſt Winds, (as it often happens in *March*) theſe Plants will ſcarcely endure it, which is the Occaſion of the Death of ſo many of them, as is often obſerv'd upon Tranſplantation.

The Plants ſhould be planted againſt a Wall or other Building, which ſhould face the South-Eaſt or South-Weſt; or elſe intermix'd amongſt flowering Shrubs in Quarters; where, if they are regularly train'd up to Poles, they will flower extremely well, and have a very good Effect in diverſifying ſuch Plantations. The beſt Seaſon for pruning of theſe Plants is in the Spring, after the cold Weather is paſt; for if they are prun'd very early, and it ſhould happen to be froſty Weather afterwards, it would endanger moſt of the young Branches; therefore it is much the better Way to let the whole Plant remain untouch'd (ſuffering the rude Part to hang down before the Stem and Branches) during the Winter Seaſon, which will be of Service in protecting them from the Severity of the Cold; and if at *Michaelmas* you lay a little Dung or other Mulch about a Foot thick upon the Surface of the Ground near the Stems, it will effectually guard their Roots from Froſt; which Method ſhould be conſtantly practis'd with ſuch as are planted in open Quarters. The Manner of Pruning is nothing more than to cut off all the ſmall weak Shoots, and ſhorten the ſtrong ones to about three Feet in Length: Or, if the Building is high againſt which they are planted, they may be left much longer, tho' you ſhould be careful not to have them too long; for as they are vigorous growing Plants, ſo they will ſoon get above the Building, and become troubleſome. Thoſe that are planted in Quarters, and train'd to Stakes, muſt be cut ſhorter, in order to have the Flowers nearer the Ground: Theſe, when their Seaſon for flowering is paſt, ſhould have a little Mulch laid about their Roots, and then their Stakes may be taken away, ſuffering their Banches to lie upon the Ground, which will alſo be of Service to protect the Plants from the Injuries of the Winter; and in the Beginning of *April* they may be trimmed and ſtaked up again: And when the Plants begin to ſhoot, they ſhould conſtantly be kept train'd up to the Stakes, whereby they will not only appear handſome, but the Place will be clearer to work in, as alſo to paſs thro'.

The Fruit bearing Kind may alſo be propagated by ſowing of the Seeds in the Spring of the Year, in Pots fill'd with light rich Earth, which ſhould be plung'd into a moderate Hot-bed, to facilitate the Growth of the Seeds; and when the Plants are come up, you muſt harden them by Degrees to bear the open Air: In theſe Pots they ſhould remain until the ſucceeding Spring, obſerving to ſhelter them in Winter under a Frame, or elſe place the Pots into the Earth under a warm Wall, to prevent their Roots from freezing thro' the Pots; and the Beginning of *April* you may ſhake them out of the Pots, and divide the Plants from each other, planting them in the Places where they are deſign'd to remain; or, if you have not the Ground ready, they may be put each into a ſeparate Pot, ſo that they may, at any Time, be turn'd out into the Ground, without diſturbing their Roots; for they are difficult Plants to remove when old.

Theſe Plants may alſo be planted to cover Arbors of Seats in warm ſituated Places, where they will flower extremely well, and anſwer the purpoſes of thoſe Arbors, as well as any other Plants which are at preſent made uſe of.

The fourth Sort is ſomewhat tenderer than any of the former: This dies to the Surface every Winter, and riſes again the ſucceeding Spring, and, if the Summer be warm, will produce large Quantities of Flowers, which are near as large as the common Sort, but the Petals of the Flower are narrower, and ſtriped with Purple. This is the firſt Sort of *Paſſion-Flower* which we find deſcrib'd in old botanick Authors, and is what *Parkinſon* has figur'd and deſcrib'd in his *Flower-Garden*; but ſince the other Sorts have been brought into *Europe*, they have ſo much prevail'd, that this laſt mention'd is rarely to be found, except in ſome few curious Gardens. This may be increas'd by parting of the Roots, which ſhould be done the Beginning of *April*, and muſt be either planted into Pots fill'd with light rich Earth, or in a good warm Border under a South Wall, for it is ſubject to be deſtroy'd in very hard Weather. The Pots, wherein theſe Plants are ſet, may be plung'd into a gentle Hot-bed, in order to promote their taking Root, it being ſomewhat difficult in rooting after it is remov'd; and this will promote its flowering, provided you do not draw it too much: And by this Means alſo you may propagate the Plant; for, when it has made pretty ſtrong Shoots, if you lay them down, and apply a gentle Warmth to the Pots, they will puſh out Roots in two or three Months Time fit for tranſplanting, which, if done before the cold Weather comes on in Autumn, they will be ſettled ſo as to endure the Winter.

The Seeds of this Plant are many Times brought over from *America*, (where the Plant grows in great Plenty) which, when obtain'd, may be ſown in a moderate Hot-bed in the Spring, and treated as was before directed for the common Sort, with this Difference, *viz.* that this being more tender, ſhould not be expos'd to the open Air ſo ſoon; and, in Winter, the Pots ſhould be plung'd into an old Bed of Tanners-bark, which has loſt moſt of its Heat, and it ſhould be covered with Glaſſes and Mats in very bad Weather, but, when it is mild, they ſhould have as much open Air as poſſible; you muſt alſo obſerve not to give them much Water in Winter.

The fifth Sort dies to the Ground every Year, as the laſt, and riſes again the ſucceeding Spring: This is very hardy, enduring our ſevereſt Cold in the open Ground, and increaſes very faſt by its ſpreading Roots; but this ſeldom produces Flowers with us, and when it doth, they are ſo ſmall and ill colour'd, that it ſcarce deſerves a Place in a Garden, except for adding to the Variety.

The ſixth Sort is an annual Plant with us, and requires to be rais'd upon a Hot-bed: The Seeds of this ſhould be ſow'd in *February* with *Amaranthus's*, &c. And when the Plants are come up, they ſhould be tranſplanted ſingly into ſmall Pots fill'd with light Earth, and plung'd into a freſh Hot-bed, to bring them forward; and, in a Month's Time after, (when the Bed will begin to loſe its Heat) you ſhould prepare a freſh Hot-bed; then ſhake the Plants out of the ſmall Pots, and put them into larger, obſerving to take off the Roots of the Plant which are matted round the Outſide of the Ball of Earth, being careful not to break too much of the Earth from the Roots: And after having plac'd the Plant exactly in the Middle of the larger Pot, you muſt fill the Pot with the like freſh light Earth, plunging the Pots into the new Bed, in which Place they may remain a Month longer, obſerving to water them as they ſhall require, as alſo to give them Air in proportion to the Heat of the Weather: And when their Roots have fill'd theſe Pots, they ſhould be taken out, and tranſplanted into larger, giving them a little Warmth to cauſe them to take freſh Root the ſooner; and after they are well rooted, you may remove them into the Stove, where they may be protected from the Cold of the Nights and great Rains; in which Situation they will produce great Numbers of Flowers, and ripen their Seed perfectly well. In Autumn they commonly decay, tho' I doubt not but they would continue longer, if they were plac'd in a good Stove, and preſerv'd with Care.

The ſeventh Sort is ſomewhat like the ſixth, but differs therefrom in the Shape of its Leaves, which, in the ſixth Sort, are large and narrow, but, in the ſeventh, broad and angular, approaching to the Shape of the white Briony, and are rougher, and of a ſtronger Scent: The Flowers alſo of this are ſtrip'd in the Middle with purple, whereas the others are all white; nor doth this Plant often produce its Flowers the firſt Year with us, but muſt be preſerv'd in a warm Stove thro' the Winter, and the following Summer it will produce Flowers and perfect its Seeds.

This Plant muſt be ſown on a Hot-bed in the Spring, and managed as was directed for the laſt, with this Difference only, *viz.* That as this ſeldom flowers the firſt Summer, ſo thoſe Plants which you intend to preſerve thro' the Winter, ſhould be train'd up to indure the open Air in the Summer, whereby they will be better able to live in Winter,

This is found in great Plenty in many Places in the *Weſt-Indies*, where the Inhabitants call it *Love in a Miſt.* The Seeds are frequently brought into *England* by that Name. *Pere Plumier* ſays, That he found it in great Plenty in the Hedges in the Iſland of *Martinico*, where he obſerv'd the Flowers conſtantly open'd before the riſing of the Sun, after which it ſeldom continued an Hour. He alſo ſays, That it continues flowering almoſt throughout the whole Year; but that the Birds, Lizards, and Ants are ſo fond of this Fruit, that it is very difficult to find them intire when ripe.

The eighth Sort is a durable Plant, growing woody, and is more arboreſcent than any other Species of this Plant which I have yet ſeen. The Seeds of this are often brought over from *Barbados*, where it is cultivated in the Gardens for the Goodneſs of its Fruit, altho' the Flowers (which are finer than thoſe of the common Sort) renders it worthy of a Place in a good Garden, had the Plant no other good Qualities to recommend it.

This Plant may be rais'd by ſowing the Seeds upon a Hot-bed, as was directed for the two other Sorts, and muſt be afterwards tranſplanted into Pots, and managed in the ſame manner; but this never produces its Flowers until the ſecond or third Year after ſowing, ſo it muſt be carefully preſerv'd in Winter in a warm Stove with other tender Plants which come from the ſame Country: but, in the Summer, it ſhould have a good Share of free Air, eſpecially in warm Weather, tho' it will not bear to be wholly expoſed to the open Air.

It may alſo be propagated by laying down ſome of its Branches in the Spring, which, in two Months Time, will ſtrike Root, and may then be tranſplanted into Pots, and managed as the old Plants. During the Summer-ſeaſon theſe Plants will require to be plentifully water'd, (eſpecially if they are kept warm) but in Winter they ſhould not have too much Wet; therefore you ſhould often refreſh them, but do not give them much at each Time. The Heat, in which they thrive beſt in Winter, is that mark'd *Piemento*, upon Mr. *Fowler*'s *Botanical Thermometers*; but in Summer they will require a much greater Share of Warmth.

I don't find any Authors, who have written on this Plant, mention its growing wild in any Parts of the *Weſt-Indies*. *Pere Plumier* ſays, It is cultivated in Gardens, to cover Arbours and Seats, for the Goodneſs of its Fruit, which ripens in *April* and *May*, and is of a wonderful refreſhing Nature, and is commonly uſed in Fevers as a Cordial Syrup, in the ſtead of *Rob of Gooſberries*. The *French* call the Fruit of this Plant *Pommes de Liane*; and the *Engliſh*, *Water Lemon*, as chiefly delighting to grow in a moiſt Soil. The Flowers of this Plant have a very agreeable Scent, and are extremely beautiful.

The ninth Sort alſo is an abiding Plant, but never becomes ſo woody as the former: The Stalks are commonly of a green herbaceous Colour: The Leaves are broader and ſhorter, but not ſo thick as thoſe of the former, and of a livelier green Colour: The Flowers of this Kind are very large, and of a fine red Colour, inclining to purple, and very ſweet: The Fruit is about the Size of a middling Apple, and of an agreeable Flavour.

This may alſo be propagated by Seeds or Layers, as the former Sort, and muſt be managed exactly in the ſame Manner; ſo that I ſhall not repeat here, but only obſerve, that this will alſo grow from Cuttings, if planted in a Hot-bed during any of the Summer Months.

Pere Plumier obſerv'd this Plant in the Iſle of St. *Domingo*: It flowers there in *April.*

The tenth Sort is very common in moſt Parts of the *Caribbee* Iſlands. I have alſo received Seeds of it from the *Babama* Iſlands, from which I have rais'd Plants of this Kind that have produced Flowers and Fruits in the *Phyſick-Garden* at *Chelſea*. It requires much the ſame Management as the two former Sorts, tho' I could never propagate this either by Cuttings or Layers. It requires a great Share of Water, eſpecially in the Summer-ſeaſon, without which it will rarely flower; but in Winter it muſt have it more ſparingly, tho' it will often require to be refreſh'd. This delights in the ſame Degree of Heat with the former.

The Flowers of this Plant are very ſmall, and of ſhort Duration; nor is there any great Beauty in the Plant, or any Thing valuable in its Fruit to recommend it: However, it may have a Place in great Collections of Plants, to add to the Variety.

The eleventh and twelfth Sorts I have had come up in the Earth, which came from the *Weſt-Indies*; but I have not as yet ſeen their Flowers: Theſe may be preſerv'd in the ſame Manner as the former, but delight to grow in a moiſt Soil, therefore muſt be often refreſh'd with Water. Neither of theſe do promiſe to be of long Continuance, tho' I am apt to believe they may be propagated by Layers.

The thirteenth Sort is alſo a perennial Plant, which is very common in divers Parts of the *Weſt-Indies*: The Flowers of this Kind are very ſmall, and of a greeniſh Colour, without Smell, and the Fruit is of a fine purple Colour, when ripe. It requires the ſame Management as the former, and may be propagated by laying down the Branches early in the Spring.

The Seeds of the four laſt Sorts of Paſſion-flowers were ſent from *La Vera Cruz*, by the late Dr. *William Houſtoun*; the fourteenth and fifteenth Sorts are new, and have not been mentioned by any Botanick Writer, before they were diſcovered by the Doctor. Since which time the fifteenth Sort has been figured and deſcribed by Mr. *John Martyn*, Profeſſor of Botany at *Cambridge*, in his fourth Decade of rare Plants. Theſe two Sorts produce very beautiful Flowers; and the fifteenth continues flowering near three Months, which renders it more valuable. The other two Sorts have little Beauty in their Flowers; ſo are only preſerved by thoſe who are curious in the Study of Botany. Theſe Plants are tender, and require to be placed in a Bark-ſtove: where they will climb to a great Height, and produce great Plenty of Flowers. There is now an Eſpalier in a very large Stove in the Phyſick-Garden, which is ſixteen Feet high, and covered over with theſe Kinds of Paſſion-flowers, which has a fine Effect. But as the Plants will ſoon root through theſe Pots into the Bark-bed, ſo, if they are diſturbed, it will greatly check their Growth; therefore they ſhould be permitted to remain in the Bark: Or if, in the firſt making of the Stove, a Border be taken out of the Pit (on the Back-ſide next the Flues) about two Feet wide, which may be boarded up with ſtrong Ship-plank, and this Border filled with Earth, into which theſe Plants may be planted; they may remain ſeveral Years undiſturbed in theſe Borders, and will make a fine Appearance. The Reaſon of my adviſing this Border to be divided from the Bark-pit with Boards, rather than by a Brick-wall, is, that the Heat of the Bark may more eaſily warm the Borders, which will be of great Service to the Plants.

Theſe four Sorts may be propagated from Seeds, which ſhould be ſown on a Bed in the Spring, and managed as hath been directed for the eighth, ninth, and tenth Sorts; to which the Reader is referred to avoid Repetition. They may be alſo propagated by laying down of the Branches, which will take Root in three or four Months; when they may be taken from the old Plants, and planted into Plants filled with rich Earth, and treated in the ſame Manner as the ſeeding Plants. Theſe Plants flower in *June*, *July*, and *Auguſt*, and ſometimes produce ripe Fruit in *England*.

As to what Mr. *Bradley* relates of his having ſeen above 30 different Kinds of this Plant in the *Phyſick-Garden* at *Amſterdam*, I cannot intirely rely upon it; for when I was there, at *Midſummer* 1727, I did not ſee a fourth-part of that

Number, when, if they had been there, they would, at that Seaſon, have appear'd; nor did I find their Stoves ſo contriv'd, as to be capable of maintaining ſome of the very tender Kinds; ſo that I am apt to think that Gentleman was miſtaken in his Account.

What hath been commonly related of this Flower's repreſenting the Crucifixion of our Saviour, is now too much exploded to need any Thing more to be ſaid in Confutation of it; ſince every one who has been at the Pains to examine the Flower, and the Stories related about it, has found it was a Fiction of the *Jeſuits*, who added many Things to the Figure they gave of it, and alter'd many that were really there, ſo as to make as lively a Repreſentation as poſſible of their own fictitious Account of it: But why ſuch Characters ſhould be ſtamp'd upon the Flowers of a Parcel of Plants, which were not known to grow in any other Part of the World but *America*, (which was not diſcover'd 'till many hundred Years after the Paſſion of our Saviour) they have not yet attempted to explain; tho', I think, it would be a Curioſity worth their Examination; ſince the Repreſentation of a Tranſaction, to a People who never heard any Thing of it, nor could have any Conception of the Matter, would be of very little Uſe to them: But this is beſide my Buſineſs, and therefore I ſhall leave this Matter to thoſe ſuperſtitious Perſons who can make a Miracle of every Thing that ſubſiſts in their Imaginations.

GRAPES. *Vide* Vitis.

GRASS: The *Engliſh Graſs* is of ſo good a Quality for *Walks* or *Graſs-plots*, that if they be kept in good Order, they have that exquiſite Beauty that they cannot come up to in *France*, and ſeveral other Countries.

But Green Walks and Green Plots are, for the moſt part, not made by ſowing the *Graſs* Seed, but by laying Turfs: And, indeed, the Turfs from a fine Common are much preferable to ſown *Graſs*.

In ſowing a fine Green Plot, there is a Difficulty in getting good Seed: It ought not to be ſuch as is taken out of a Hayloft without Diſtinction; for that Seed ſhooting too high, and making large Stalks, the lower part will be naked and bare; and altho' it be mow'd ever ſo often, it will never make handſome *Graſs*, but, on the contrary will come to nothing but Tufts of Weeds and *Quick-Graſs*, very little better than that of the common Fields.

If Walks or Plots be made by Sowing, the beſt way is to procure the Seed from thoſe Paſtures where the *Graſs* is naturally fine and clear, or elſe the Trouble of keeping of it from ſpiry and benty *Graſs* will be very great, and it will ſcarce ever look handſome.

In order to ſow *Graſs-ſeed*, the Ground muſt be firſt dug or broken up with a Spade; and when it has been dreſs'd and laid even, it muſt be very finely rak'd over, and all the Clods and Stones taken off, and cover'd over an Inch thick with good Mould to facilitate the Growth of the Seed: This being done, the Seed is to be ſown pretty thick, that it may come up cloſe, and ſhort; and it muſt be rak'd over again to bury and cover the Seed, that if the Weather ſhould happen to be windy, it may not be blown away,

As to the Seaſon of ſowing *Graſs*, the latter End of *Auguſt* is a good time; becauſe the Seed naturally requires nothing but Moiſture to make it grow: If it be not ſown till the latter End of *February*, or the Beginning of *March*, if the Weather proves dry, it will not ſo ſoon make the Walks or Quarters green. It is alſo beſt to ſow it in a mild Day, and inclining to Rain, for that, by ſinking down the Seed in the Earth, will cauſe it to ſhoot the ſooner.

After the Seed is well come up, and the *Graſs* is very thick, and of a beautiful Green, it will require a conſtant Care to keep it in Order: This conſiſts in mowing the *Graſs* often; for the oftener it is mowed, the thicker and handſomer it grows: It muſt alſo be roll'd with a Cylinder or Roller of Wood, to level it as much as poſſible.

If *Graſs* be neglected, it will run into *Quick-Graſs* and *Weeds*; and if it does ſo, there is no way to recover it, but either by ſowing it, or laying it over again, and that once in every two Years: But if the Ground be well clear'd from the Roots of ſtrong Weeds, and the Turf be taken from a fine level Common, it will continue handſome for ſeveral Years, provided it be well kept.

In order to keep *Graſs-plots* or *Walks* handſome and in good Order, in Autumn you may ſow ſome freſh Seed over any Places that are not well fill'd, or where the *Graſs* is dead, to renew and furniſh them again: But there is nothing which improves *Graſs* ſo much as conſtant rolling and polling of it, to deſtroy Worm-caſts, and thereby the Turf is rendred fine.

GRAVEL and *Graſs* are naturally Ornaments to a Country-Seat, and are the Glory of the *Engliſh* Gardens, and Things by which we excel all other Nations, as *France*, *Holland*, *Flanders*, &c.

There are different Sorts of *Gravel*; but, for thoſe who can conveniently have it, I approve of that *Gravel* on *Black Heath*, as preferable to moſt that we have in *England*, it conſiſting of ſmooth, even Pebbles, which, when mix'd with a due Quantity of Loam, will bind exceeding cloſe, and look very beautiful, and continue handſome longer than any other Sort of *Gravel* which I have yet ſeen.

Some recommend a Sort of Iron-mould *Gravel*, or *Gravel* with a little binding Lime amongſt it, than which nothing, they ſay, binds better when it is dry: But in wet Weather it is apt to ſtick to the Heels of one's Shoes, and will never appear handſome.

Sometimes Loam is mix'd with *Gravel* that is over-ſandy or ſharp, which muſt be very well blended together, and let lie in Heaps; after which it will bind like a Rock.

There are many Kinds of *Gravel* which do not bind, and thereby cauſe a continual Trouble of rolling, to little or no Purpoſe: As for ſuch,

If the *Gravel* be looſe or ſandy, you ſhould take one Load of ſtrong *Loam*, and two of *Gravel*, and ſo caſt them well together.

If it be an old Walk, that only wants coating over, it will be ſufficient to lay it two or three Inches thick: But where there is plenty of this ſtrong reddiſh Loam, then you may lay it the full Depth.

Some ſkreen the *Gravel* too fine; but this is an Error: If it be caſt into a round Heap, and the great Stones only raked off, it will be the better.

Some are apt to lay *Gravel-Walks* too round; but this is likewiſe an Error, becauſe they are not ſo good to walk upon, and beſides, it makes them look narrow; an Inch is enough in a Crown of five Feet; and it will be ſufficient, if a Walk be ten Feet wide, that it lies two Inches higher in the Middle than it does on each Side; if fifteen Feet, three Inches; if twenty Feet, four; and ſo in proportion.

For the Depth of *Gravel-Walks*, ſix or eight Inches may do well enough; but a Foot Thickneſs will be ſufficient for any.

The Month of *March* is the propereſt time for laying *Gravel*; it is not prudent to do it ſooner, or to lay Walks in any of the Winter Months before that time.

Some, indeed, turn up *Gravel-Walks* in Ridges in *December*, in order to kill the Weeds: But this is very wrong; for beſides that it deprives them of the Benefit of them all the Winter, it does not anſwer the End for which it is done, but rather the contrary; for tho' it does kill the Weeds for the preſent, yet it adds a Fertility to them as to the great future Increaſe of both them and Graſs.

If conſtant rolling them after the Rains and Froſt will not effectually kill the Weeds and Moſs, you ſhould turn the Walks in *April*, and lay them down at the ſame time.

In order to deſtroy Worms that ſpoil the Beauty of *Gravel* or Graſſy-Walks, ſome recommend the watering them well with Water in which Walnut-tree Leaves have been ſteep'd and made very bitter, eſpecially thoſe Places moſt annoy'd with them; and this, they ſay, as ſoon as it reaches them, will make them come out haſtily, ſo that they may be gather'd: But if, in the firſt laying of the Walks, there is a good Bed of Lime rubbiſh laid in the Bottom, it is the moſt effectual Method to keep out the Worms; for they don't care to harbour near Lime.

Grounds that are gravelly and ſandy eaſily admit both Heat and Moiſture: but they are not much the better for it; becauſe they let it paſs too ſoon, and ſo contract no Ligature; or elſe, if they have a clayey Bottom, they retain it too long, and by that means either parch or chill too much, and produce nothing but Moſs, or cancerous Infirmities: But if the Bottom be a *Gravel*, and there are two Feet of good Earth upon the Surface, it is preferable to moſt other Soils for almoſt any Sort of Fruit; for tho' this Soil will not produce the Fruits planted thereon ſo large as a loamy Soil, yet they will be much better-taſted, and earlier ripe.

GRAVITY, is by ſome call'd *Vis Centripeta*; and is that Quality by which all heavy Bodies tend towards the Center of the Earth, accelerating the Motion the nearer they move towards it.

Gravity is alſo defin'd more generally, the natural Tendency of one Body towards another; and by others, more generally ſtill, the mutual Tendency of each Body, and each Particle of a Body, towards all others; and in this Senſe it coincides with what is more uſually call'd *Attraction*.

The Terms *Gravity*, *Centripetal Force*, *Weight*, and *Attraction*, do, in effect, all denote the ſame Thing, only in different Views and Relations.

In Propriety, *Gravity*, *Force of Gravity*, or *Gravitating Force*, is, when we conſider a Body as tending towards the Earth.

Centripetal Force, is the ſame Force as the former, when we conſider it as immediately tending to the Centre of the Earth.

Attraction, or *Attractive Force*, is the ſame as the former, when we conſider the Earth or Body towards which it tends.

Weight, is the Name we give to it, when we conſider it in reſpect to an Obſtacle or Body, in the way of its Tendency upon which it acts.

It is a Law of Nature long obſerved, that all Bodies near the Earth have a *Gravity* or Tendency towards the Center of the Earth; which Law the Moderns, and the immortal Sir *Iſaac Newton*, have found, from certain Obſervations, to be much more extenſive, and to hold univerſally, with reſpect to all the known Bodies in Nature.

It is now therefore a Principle, or Law of Nature, that all Bodies, *and all the Particles of all Bodies*, gravitate *towards each other mutually*. From which ſingle Principle Sir *Iſaac Newton* has happily deduced all the great *Phænomena* of Nature.

There is a two-fold *Gravity* of all Bodies, conſidered within the Confines of any Fluid; viz. *True*, *abſolute* and *Apparent*, *Vulgar* or *Comparative*.

Abſolute Gravity, is the whole Force by which any Body tends downwards.

Vulgar, or *Relative Gravity*, is the Exceſs of *Gravity* in one Body above the *Specifick Gravity* of the Fluid, by which it tends downwards more than the ambient Fluid does.

As to *Abſolute Gravity*, the Parts of all Fluids, and all Bodies, do really *gravitate* in their proper Places, and, by their joint Weight, make the Weight of the Whole; for every heavy Whole is a heavy Body; and the Weight of any Whole is equal to the Weight of all its Parts, becauſe compounded of them.

The *Vulgar* or *Relative Gravity* is ſuch, that, in reference to it, Bodies do not *gravitate* in their Places; or rather, do not *pregravitate*, when compared with one another; but, by hindring one another in their mutual Endeavour to deſcend, do remain in their proper Places, as if they were not at all heavy.

People in common ſuppoſe, that thoſe Things which do not *pregravitate* in the Air, Water, *&c.* have no *Gravity* at all, and only conclude thoſe to be heavy Bodies, which they ſee *pregravitate* or deſcend, becauſe they cannot be borne up by the ordinary *Gravitation* of the Fluid, or by its Preſſure all manner of ways: So that, among the common People, the Notion of Weight is only the Exceſs of the Weight of any Body above that of Air; and thoſe Things are accounted light, which, becauſe they are leſs heavy than Air, are borne or buoy'd up by it: whereas thoſe Bodies comparatively light, are not really ſo; ſince it has been found by Experiment *in Vacuo*, that they deſcend as faſt as other Bodies do in Air.

The Properties of *Gravity* are as follow:

1ſt; That all Bodies do deſcend towards a Point, which is either the Centre of Magnitude of the Earth and Sea, about which the Sea Forms itſelf into a ſpherical Surface, or is very near it.

2dly; This Point or Centre is fixed within the Earth.

3dly; The Force of *Gravity* is nearly equal in all Places equidiſtant from the Centre of the Earth: But, indeed, all Places of the Surface of the Earth are not at equal Diſtance from the Centre; becauſe the Equatorial Parts are ſomething higher than the Polar Parts.

4thly; *Gravity* affects all Bodies equally, without regard either to their Bulk, Figure, or Matter; ſo that, abſtracting from the Reſiſtance of the Medium, the moſt compact and looſe, the greateſt and ſmalleſt Bodies would deſcend equal Spaces in equal Times, as appears from the Quickneſs of the Deſcent of very light Bodies in an exhauſted River.

Whence we may obſerve a very great Difference between *Gravity* and *Magnetiſm*; *Gravity* affecting all Bodies alike, and *Magnetiſm* affecting only Iron, and that towards its Poles.

And hence we may alſo conclude, that there is no poſitive *Levity*; for that thoſe Things which do ſeem to be light, are only ſo comparatively; and whereas ſeveral Things ſwim and riſe in Fluids, the Cauſe is only, becauſe they are not ſo heavy as thoſe Fluids, Bulk for Bulk.

There is no reaſon that Cork ſhould be ſaid to be light, becauſe it floats upon Water, more than Iron, by reaſon that will float on Mercury.

5thly; This Power increaſes in deſcending Bodies towards the Centre of the Earth, in proportion to the Squares of the Diſtances therefrom reciprocally; and alſo decreaſes in aſcending, in the ſame proportion, ſo as, at a double Diſtance, to have but a quarter of the Force, *&c.*

This appears very agreeable to Reaſon; becauſe the *gravitating* or attracting Power muſt of Neceſſity be excited more feebly in a greater Sphere, and more vigorouſly in a ſmall Sphere, in proportion as it is expanded or contracted.

So that the Surfaces of Spheres being to one another as the Squares of the *Radii*, the Power of them, at ſeveral Diſtances, will be reciprocally as the Squares of thoſe Diſtances; and then the whole of its Action upon each ſpherical Surface, whether it be great or ſmall, will be always equal.

6thly; As all Bodies gravitate towards the Earth, ſo does the Earth equally *gravitate* towards all Bodies; *i. e.* the Action of *Gravity* is mutual on each Side, and equal.

Hence alſo the attractive Powers of Bodies, at equal Diſtances from the Centre, as are the Quantities of Matter in the Bodies.

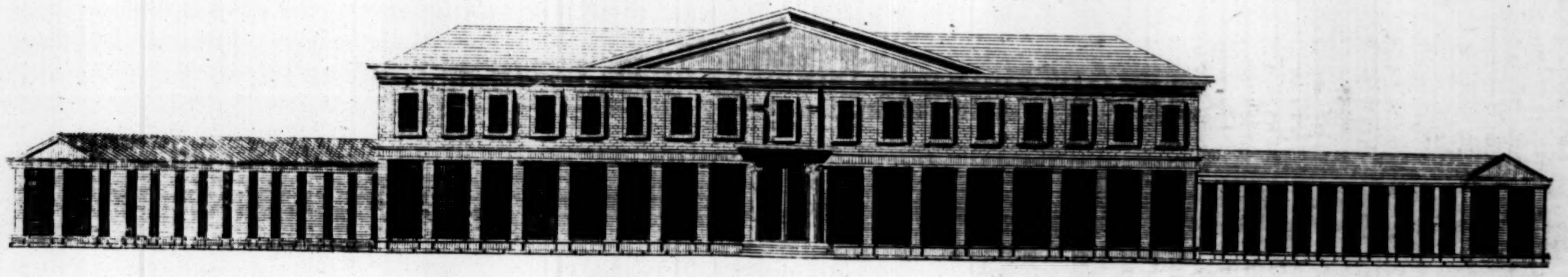
Hence alſo the attractive Force of intire Bodies conſiſts of the attractive Force of the Parts; for by the adding or taking away any Part of the Matter of a Body, its *Gravity* is increaſed or diminiſhed in proportion to the Quantity of ſuch Particles to the intire Maſs.

To this Property of *Gravity*, perhaps, is owing the alternate Motion of the Sap in Vegetables, which may be accounted for from the Alternacies of the Day and Night, Warm and Cold, Moiſt and Dry: For it is very probable that the Sap in Plants does, in ſome meaſure, recede from the Tops of their Branches, as the Sun leaves them; becauſe its rarefying Power then ceaſing, the greatly rarefied Sap, and Air mix'd with it, will condenſe and take up leſs Room than they did; and the Dew and Rain will then be ſtrongly imbibed by the Leaves, which mixing with the included Sap, will render it too heavy to be ſuſtained by the Preſſure of the Air upon the Surface of the Plant, or by any conſtricting Quality of the containing Veſſels, ſo that it recedes downwards until it meets with an equal Reſiſtance, whereby it is ſuſpended until the Return of Warmth, which rarefies the Sap, and renders it ſpecifically lighter than before, and ſo mounts again to the Extremity of the Branches; and part of it, by being rendered extremely light, paſſes off thro' the Pores of the Plant, and is evaporated.

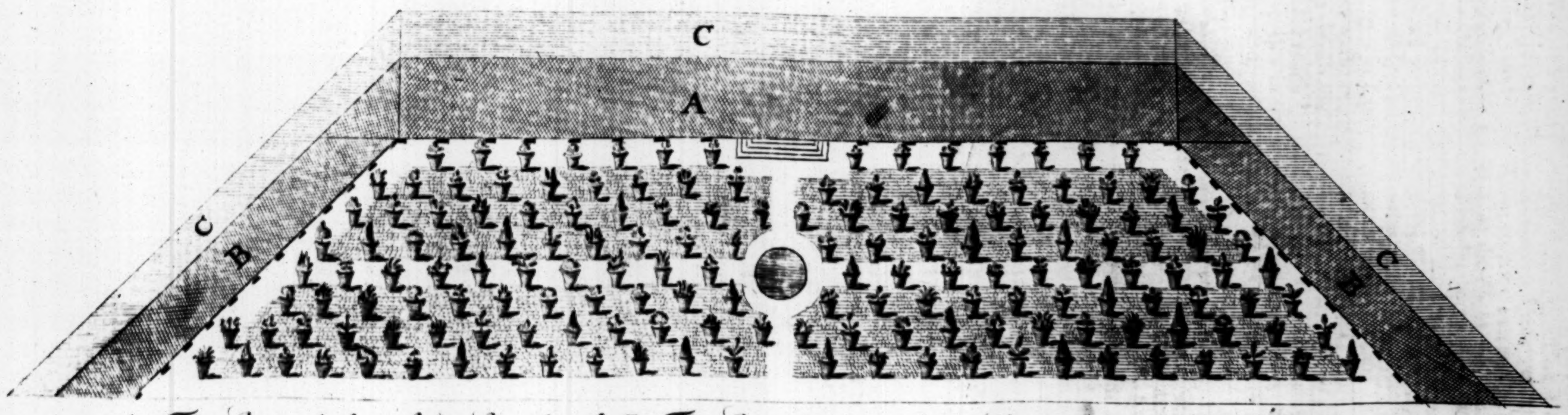
GREEN-HOUSE, *or* Conſervatory.

As of late Years there have been great Quantities of curious exotick Plants introduced into the *Engliſh* Gardens, ſo the Number of *Green-houſes* or *Conſervatories* has increaſed, and not only a greater Skill in the Management and Ordering of theſe Plants has increaſed therewith, but alſo a greater Knowledge of the Structure and Contrivance of theſe Places, ſo as to render them both uſeful and ornamental, hath been acquired: And ſince there are many Particulars to be obſerved in the Conſtruction of theſe *Houſes*, whereby they will be greatly improv'd, ſo I thought it neceſſary not only to give the beſt Inſtructions for this I was capable of, but alſo to give a Deſign of one in the Manner I would chuſe to erect it, upon the annexed Copper-Plate.

As to the Length of theſe Houſes, that muſt be proportion'd to the Number of Plants they are to contain, or the Fancy of the Owner; but their Depth ſhould never be greater than eighteen or twenty Feet in the Clear: And the Length of the Windows ſhould be at leaſt equal to the Depth of the Houſe; and if they are ſomewhat longer, it will be ſtill the better: Theſe Windows ſhould be carried up quite to the Ceiling, that there may be no Room for dead Air in the Upper Part of the Houſe; and they ſhould come down within about ten Inches, or a Foot of the Floor: Their Breadth ſhould be proportion'd to the Length of the Houſe, which, in a ſmall *Green-houſe*, may be four Feet broad; but in a large one, they ſhould be ſix Feet. The Piers between theſe Windows ſhould be as narrow as poſſible to ſupport the Building; for which Reaſon, I ſhould chuſe to have them of Stone, or of hard well-burn'd Bricks; for if they are built with fine rubb'd Bricks, thoſe are generally ſo ſoft, that the Piers will require to be made thicker, otherwiſe the Building will be in Danger of falling in a ſhort time, eſpecially if you have any Rooms over the *Green-houſe*; which is what I would always adviſe, as being of great Uſe to keep the Froſt out in very hard Winters. If theſe Piers are made of Stone, I would have them about twenty Inches broad in Front, and ſlop'd off backward to about ten Inches broad, whereby the Rays of the Sun will not be taken off or obſtructed by the Corners of the Piers, which it would be if they were ſquare: But if they are built with Bricks, it will be proper to make them two Feet in Front, otherwiſe they will be too weak to ſupport the Building; and theſe I would alſo adviſe to be ſlop'd off in the Manner directed for the Stone.



The Upright of the Greenhouſe and Stoves



A *The Ground plot of the Greenhouſe* B *The Ground plot of the Stoves* C *The Sheds behind the Stoves and Greenhouſe*

place this Cut at the Word Greenhouſe

At the Back of the *Green-houſe* there may be erected a Houſe for Tools, and many other Purpoſes, which will be extreme uſeful, and alſo prevent the Froſt from entering the Houſe that Way; ſo that the Wall between theſe need not be more than two Bricks in Thickneſs; whereas, if it were quite expos'd behind, it ſhould be two Bricks and an half, or three Bricks in thickneſs: And by this Contrivance, if you are willing to make a handſome Building, and to have a noble Room over the *Green-houſe*, you may make the Room to come over the Tool-houſe, and carry up the Stair-caſe in the Back, ſo as not to be ſeen in the *Green-houſe*; and hereby you may have a Room twenty or twenty-five Feet in Width, and of a proportionable Length: And under this Stair-caſe there ſhould be a private Door into the *Green-houſe*, at which the Gardener may enter in hard-froſty Weather, when it will not be ſafe to open any of the Glaſſes in the Front. The Floor of the *Green-houſe*, which ſhould be laid either with Marble, Stone, or Broad Tiles, according to the Fancy of the Owner, muſt be rais'd two Feet above the Level of the Ground whereon the Houſe is placed, which, in dry Ground, will be ſufficient: but if the Situation be moiſt and ſpringy, and thereby ſubject to Damps, it ſhould be rais'd at leaſt three Feet above the Surface: And under the Floor, about two Feet from the Front, I would adviſe a Flue of about ten Inches in width, and two Feet deep, to be carried the whole Length of the Houſe, which may be return'd along the Back-part, and be carry'd up in proper Funnels adjoining to the Tool-houſe, by which the Smoke may paſs off. The Fire-place may be contriv'd at one End of the Houſe; and the Door at which the Fuel is put in, as alſo the Aſh-grate may be contriv'd to open into the Tool-houſe, ſo that it may be quite hid from the Sight, and be in the dry; and the Fuel may be laid in the ſame Place, whereby it will be always ready for Uſe.

I ſuppoſe many People will be ſurprized to ſee me direct the making of Flues under a *Green-houſe*, which has been diſuſed ſo long, and by moſt People thought of ill Conſequence; as indeed they have often prov'd, when under the Direction of unſkilful Managers, who have thought it neceſſary, whenever the Weather was cold, to make Fires therein. But however injurious Flues have been under ſuch Miſmanagement, yet when ſkilfully managed, they are of very great Service: for though perhaps it may happen that there will be no Neceſſity to make any Fires in 'em for two or three Years together, as when the Winters prove mild there will not, yet in very hard Winters they will be extremely uſeful to keep out the Froſt; which cannot be effected any other way, but with great Trouble and Difficulty.

Within-ſide of the Windows, in Front of the *Green-houſe*, you ſhould have good ſtrong Shutters, which ſhould be made with Hinges, to fold back, ſo that they may fall back quite cloſe to the Piers, that the Rays of the Sun may not be obſtructed thereby: Theſe Shutters need not be above an Inch thick, or little more, which, if made to join cloſe, will be ſufficient to keep out our common Froſt; and when the Weather is ſo cold as to endanger the freezing in the Houſe, it is but making a Fire in your Flue, which will effectually prevent it: and without this Conveniency it will be very troubleſome, as I have often ſeen, where Perſons have been obliged to nail Mats before their Windows, or to ſtuff the hollow Space between the Shutters and the Glaſs with Straw; which, when done, is commonly ſuffer'd to remain 'till the Froſt goes away; which, if it ſhould continue very long, the keeping the *Green-houſe* ſo cloſely ſhut up, will prove very injurious to the Plants: And as it frequently happens that we have an Hour or two of the Sun-ſhine in the middle of the Day, in continued Froſts, which are of great Service to Plants, when they can enjoy the Rays thereof through the Glaſſes; ſo when there is nothing more to do than to open the Shutters, which may be perform'd in a very ſhort time, and as ſoon ſhut again when the Sun is clouded, the Plants may have the Benefit thereof whenever it appears: whereas where there is ſo much Trouble to uncover, and as much to cover again, it would take up the whole Time in uncovering and ſhutting them up, and thereby the Advantage of the Sun's Influence would be loſt. Beſides, where there is ſo much Trouble requir'd to keep out the Froſt, it will be a great Chance if it be not neglected by the Gardener; for if he be not as fond of preſerving his Plants, and as much in love with 'em as his Maſter, this Labour will be thought too great by him; and if he does take the Pains to cover the Glaſſes up with Mats, *&c.* he will not care to take them away again until the Weather alters; ſo that the Plants will be ſhut up cloſe during the whole Continuance of the Froſt.

There are ſome People who commonly make uſe of Pots fill'd with Charcoal to ſet in their *Green-houſe* in very ſevere Froſts, but this is very dangerous to the Perſons who attend theſe Fires; and I have often known they have been almoſt ſuffocated therewith; and at the ſame time they are very injurious to the Plants: Nor is the Trouble of tending upon theſe ſmall; and the many Hazards to which the Uſe of theſe Fires are liable, have juſtly brought them into Diſuſe with all ſkilful Perſons: And as the Contrivance of Flues, and the Charge of the Fires, are but ſmall, ſo they are much to be preferr'd to any other Method for warming the Air of the Houſe.

The Back-part of the Houſe ſhould be plaiſter'd with Mortar, and white-waſh'd; or, if lined with Wainſcot, ſhould be painted white, as ſhould the Ceiling, and every Part within-ſide of the Houſe; for this reflects the Rays of Light in a much greater Quantity than any other Colour, and is of ſignal Service to Plants, eſpecially in the Winter, when the Houſe is pretty much cloſ'd, ſo that but a ſmall Share of light is admitted through the Windows; and at ſuch time I have obſerved, that in ſome *Green-houſes* which have been painted black, or of a dark Colour, the Plants have caſt moſt of their Leaves.

In this *Green-houſe* you ſhould have Truſſels, which may be mov'd out and into the Houſe, upon which you ſhould place Rows of Planks, ſo as to fix the Pots or Tubs of Plants in regular Rows one above another, whereby the Heads of the Plants may be ſo ſituated as not to interfere with each other: The loweſt Row of Plants, which ſhould be the forwardeſt towards the Windows, ſhould be plac'd about four Feet therefrom, ſo that there may be a convenient Breadth left next the Glaſſes to walk in Front; and the Rows of Plants ſhould riſe gradually from the firſt, in ſuch a manner, that the Heads of the ſecond Row ſhould be intirely advanced above the firſt, the Stems only being hid thereby: And at the Back-ſide of the Houſe there ſhould alſo be allow'd a Space of at leaſt five Feet, for the Conveniency of watering the Plants, as alſo to admit of a Current of Air round them, that the Damps, occaſion'd by the Perſpiration of the Plants, may be the better diſſipated; which, by being pent in too cloſely, often occaſions a Mouldineſs upon the tender Shoots and Leaves; and when the Houſe is cloſe ſhut up, this ſtagnating, rancid Vapour is often very deſtructive to the Plants: For which Reaſon alſo you ſhould never croud them too cloſe to each other: Nor ſhould you ever place *Sedums*, *Euphorbiums*, *Torch-thiſtles*, and other tender ſucculent Plants, amongſt *Oranges*, *Myrtles*, and other Ever-green Trees; for, by an Experiment which I made *Anno* 1729, I found that a *Sedum* placed in a *Green-houſe* among ſuch Trees, almoſt daily increas'd its Weight, although there was no Water given to it the whole time: Which Increaſe of Weight was owing to the Moiſture imbib'd from the Air, which being replete with the rancid Vapours perſpir'd from the other Plants, occaſion'd the Leaves to grow pale, and in a ſhort time they decay'd, and dropp'd off: which I have often obſerv'd has been the Caſe with many other ſucculent Plants, when plac'd in thoſe Houſes which were fill'd with many Sorts of Ever-green Trees, that requir'd to be frequently water'd.

Therefore, to avoid the Inconvenience which attends the placing of Plants of very different Natures in the ſame Houſe, it will be very proper to have two Wings added to the main *Green-houſe*; which, if placed in the Manner expreſſed in the annexed Plan, will greatly add to the Beauty of the Building, and alſo collect a greater Share of Heat. In this Plan the *Green-houſe* is placed exactly fronting the South; and one of the Wings faces the South-Eaſt, and the other the South-Weſt: ſo that from the time of the Sun's firſt Appearance upon any Part of the Building, until it goes off at Night, it is conſtantly reflected from one Part to the other; and the cold Winds are alſo kept off from the Front of the main *Green-houſe* hereby: and in the Area of this Place you may contrive to place many of the moſt tender exotick Plants, which will bear to be expoſed in the Summer-ſeaſon: And in the Spring, before the Weather will permit you to ſet out the Plants, the Beds and Borders of this Area may be full of *Anemonies*, *Ranunculus's*, early *Tulips*, &c. which will be paſt flowering, and the Roots fit to take out of the Ground by the time you carry out the Plants; which will render this Place very agreeable during the Spring-ſeaſon that the Flowers are blown; and here you may walk and divert yourſelf in a fine Day, when, perhaps, the Air in moſt Parts of the Garden will be too cold for Perſons not much us'd thereto, to take Pleaſure in being out of the Houſe.

In the Center of this Area may be contriv'd a ſmall Baſon for Water, which will be very convenient for watering Plants, and very much add to the Beauty of the Place: Beſides, the Water being thus ſituated, will be ſoftened by the Heat which will be reflected from the Glaſſes upon it, whereby it will be render'd much better than raw cold Water for theſe tender Plants.

The two Wings of the Building ſhould be contriv'd ſo as to maintain Plants of different Degrees of Hardineſs; which muſt be effected by the Situation and Extent of the Fire-place, and the Manner of conducting the Flues; a particular Account of which will be exhibited under the Article of *Stove*. But I would here obſerve, that the Wing facing the South-Eaſt ſhould always be preferr'd for the warmeſt Stove; its Situation being ſuch, as that the Sun, upon its firſt Appearance in the Morning, ſhines directly upon the Glaſſes; which is of great Service in warming the Air of the Houſe, and adding Life to the Plants, after having been ſhut up during the long Nights in the Winter-ſeaſon. Theſe Wings being, in the Draught annex'd, allow'd ſixty Feet in Length, may be divided in the Middle by Partitions of Glaſs, with Glaſs-doors to paſs from one to the other; and the Fire-place may be order'd ſo as to warm both Diviſions, by placing a Regulator of Iron in the Flue, ſo that the Smoke may paſs thro' the Flues of which Part ſoever you pleaſe; and, by this Contrivance, you may keep ſuch Plants as require the ſame Degree of Heat in one Part of the Houſe, and thoſe which will thrive in a much leſs Warmth in the other Part: But this will be more fully explain'd under the Article of *Stoves*.

The other Wing of the Houſe, facing the South-Weſt, may alſo be divided in the ſame Manner, and Flues carried thro' both Parts, which may be us'd according to the Seaſons, or the particular Sorts of Plants which are plac'd therein: So that here will be four Diviſions in the Wings, each of which may be kept up to a different Degree of Warmth; which, together with the Green-houſe, will be ſufficient to maintain Plants from all the ſeveral Countries of the World: And without having theſe ſeveral Degrees of Warmth, it will be impoſſible to maintain Plants from all the ſeveral Countries of the World: And without having theſe ſeveral Degrees of Warmth, it will be impoſſible to preſerve the various Kinds of Plants from the ſeveral Parts of *Africa* and *America*, which are annually introduced into the *Engliſh* Gardens; for when Plants from very different Countries are placed in the ſame Houſe, ſome are deſtroy'd for want of Heat, while others are forc'd and ſpoil'd by too much of it; and this is often the Caſe in many Places, where there are large Collections of Plants.

But beſides the Conſervatories here mention'd, it will be proper to have a deep Hot-bed Frame, (ſuch as is commonly uſed to raiſe large Annuals in the Spring) into which may be ſet Pots of ſuch Plants as come from *Carolina*, *Virginia*, &c. while the Plants are too ſmall to plant in the open Air; as alſo many other Sorts from *Spain*, &c. which require only to be ſkreen'd from the Violence of Froſts; and ſhould have as much free Air as poſſible in mild Weather, which can be no better effected than in one of theſe Frames, where the Glaſſes may be taken off every Day when the Weather will permit, and put on every Night; and in hard Froſts the Glaſſes may be covered with Mats, Straw, Peaſe-haulm, or the like, ſo as to prevent the Froſt from entering the Pots to freeze the Roots of the Plants, which is what will, many Times, utterly deſtroy them; tho' a ſlight Froſt pinching the Leaves or Shoots very ſeldom does them much Harm: As to the Structure of theſe Frames, it will be fully explained under the Article of *Hotbeds*.

GROSSULARIA, [ſo called from the groſs or thick Skin of the Fruit; becauſe the Skin of this Shrub is carnoſe and fleſhy: It is alſo called *Uva*, becauſe the Fruit reſembles a *Grape*; and *Criſpa*, becauſe it is villoſe and hairy: It is ſaid to be *acino ſimplici*, becauſe its Berries are diſtinct one from another, and do not grow in Cluſters] The Gooſeberry Tree.

The *Characters* are;

The Leaves are laciniated, or jagged: The whole Plant is ſet with Prickles: The Fruit grows ſparſedly upon the Tree, having, for the moſt part, but one Fruit upon a Foot-ſtalk, which is of an oval or globular figure, containing many ſmall Seeds, ſurrounded by a pulpy Subſtance.

The *Species* are;

1. Grossularia *ſimplici acino, vel ſpinoſa ſylveſtris. C. B. P.* The common Gooſeberry.
2. Grossularia *ſpinoſa ſativa. C. B. P.* The large manured Gooſeberry.
3. Grossularia *fructu obſcure purpuraſcente. Cluſ.* The red hairy Gooſeberry.
4. Grossularia, *ſive Uva criſpa alba, maxima rotunda. Hort. Ed.* The large white *Dutch* Gooſeberry.
5. Grossularia *maxima ſubflava oblonga. Hort. Ed.* The large Amber Gooſeberry.
6. Grossularia *fructu rotundo maximo viraſcente.* The large green Gooſeberry.
7. Grossularia *fructu rubro majore. Boerh. Ind.* The large red Gooſeberry.
8. Grossularia *ſpinoſa ſativa, foliis flaveſcentibus.* The yellow-leaf'd Gooſeberry.
9. Grossularia *ſpinoſa ſativa, foliis ex luteo variegatis.* The ſtrip'd-leaf'd Gooſeberry.

There are ſeveral other Varieties of this Fruit which have been obtain'd from Seeds in different Parts of *England*, which differ either in the Shape or Colour of the Berries: But as theſe are only ſeminal Variations, ſo it is needleſs, in this Place, to enumerate them, eſpecially ſince the Number of theſe will be increas'd continually from Seeds.

Theſe are propagated either by Suckers taken from the old Plants, or by Cuttings; the latter of which I prefer to the former: becauſe thoſe Plants which are produced from Suckers are always more diſpoſed to ſhoot out a greater Number of Suckers from their Roots, than ſuch as are raiſed from Cuttings, which do generally form much better Roots.

The beſt Seaſon for planting theſe Cuttings is in *February*, juſt before their Buds begin to open; obſerving always to take the handſomeſt Shoots, and from ſuch Branches as generally produce the greateſt Quantity of Fruit; ſo if you take thoſe which are produced from the Stem of the old Plants, (which are commonly very luxuriant) they will not be near ſo fruitful as thoſe taken from bearing Branches: Theſe Cuttings ſhould be about ſix or eight Inches long, and muſt be planted in a Border of light Earth expoſed to the Morning Sun, about three Inches deep, obſerving to water them gently, when the Weather proves dry, to facilitate their taking Root; and in the Summer, when they have put out, you ſhould rub off all the under Shoots, leaving only the uppermoſt or ſtrongeſt, which ſhould be train'd upright to form a regular Stem. In *October* following theſe Plants will be fit to remove; at which Time you ſhould prepare an open Spot of freſh Earth, which ſhould be well dug, and cleans'd from all noxious Weeds, Roots, *&c.* and being levell'd, you ſhould proceed to take up your Plants, trimming their Roots, and cutting off all lateral Side-branches; then plant them at three Feet Diſtance Row from Row, and one Foot aſunder in the Rows, obſerving to place ſome ſhort Sticks to the Plants, in order to train their Stems upright and regular. In this Place they may remain two Years, being careful to keep them clear from Weeds, as alſo dig up the Ground between the Rows once a Year, which ſhould be in the Spring; as alſo to trim off all lateral Shoots which are produced below the Head of the Plant, ſo that the Stem may be clear about a Foot in Height above the Surface of the Earth, which will be full enough: And as the Branches are produced commonly very irregular in the Head, ſo you muſt cut out ſuch of them as croſs each other, or thin them where they are too cloſe, whereby the Head of the Plant will be open, and capable of admitting the Air freely into the Middle, which is of great Uſe to all Kinds of Fruits.

After theſe Plants have remain'd in this Nurſery two Years, they will be fit to tranſplant to the Places where they are deſign'd to remain; for it is not ſo well to let them grow in the Nurſeries too large, which will occaſion their Roots to be woody, whereby the removing of them will not only hazard the Growth of the Plants, but ſuch of them as may take very well, will remain ſtunted for two or three Years before they will be able to recover their Check. The Soil in which theſe Plants thrive to the greateſt Advantage, is a rich, light, ſandy Loam; tho' they will do very well upon moſt Soils and Situations: But where this Fruit is cultivated, in order to procure it in the greateſt Perfection, they ſhould never be planted in the Shade of other Trees, but muſt have a free open Expoſure: The Diſtance they ought to be planted is eight Feet Row from Row, and ſix Feet aſunder in the Rows: The beſt Seaſon for tranſplanting them is in *October*, when their Leaves begin to decay; obſerving, as was before directed, to prune their Roots, and trim off all lateral Shoots, or ſuch as croſs each other, ſhortning all long Branches, ſo as to make the Head regular.

In the pruning of theſe Shrubs, moſt People make uſe of Garden-ſheers, obſerving only to cut the Head round, as is practiſed for Ever-greens, *&c.* whereby the Branches become ſo much crouded, that what Fruit is produced, never grows to half the Size as it would do, were the Branches thin'd and prun'd according to Art; which ſhould always be done with a pruning Knife, ſhortning the ſtrong Shoots to about ten Inches, and cutting out all thoſe which grow irregular, and thinning the Fruit-bearing Branches where they are too thick; obſerving always to cut behind a Leaf-bud: With this Management your Fruit will be near twice as large as thoſe which are produced upon ſuch Buſhes as are not thus pruned, and the Shrubs will continue in Vigour much longer: But you muſt obſerve to keep the Ground clear from Weeds, and dig it at leaſt once a Year; and every other Year you ſhould beſtow a little rotten Dung upon it, which will greatly improve the Fruit.

It is a common Practice with the Gardeners near *London*, who have great Quantities of theſe Buſhes, in order to ſupply the Markets, to prune them ſoon after *Michaelmas*, and then to dig up the Ground between the Rows, and plant it with Coleworts for Spring Uſe, whereby their Ground is employed all the Winter without prejudicing the *Gooſeberries*; and in hard Winters theſe Coleworts often eſcape, when thoſe which are planted in an open Expoſure, are all deſtroy'd; and theſe are generally pull'd up for Uſe in *February* or *March*, ſo that the Ground is clear before the *Gooſeberries* come out in the Spring; which is a Piece of Huſbandry well worth practiſing where Ground is dear, or where Perſons are confined for Room.

GUAIABARA, Sea-ſide Grape, *vulgo*.

The *Characters* are;

It hath a Flower conſiſting of ſix Leaves, which expand in Form of a Roſe; in the Center ariſes the Pointal, which afterward becomes a pulpy Fruit, incloſing one roundiſh Stone terminating in a Point.

The *Species* are;

1. GUAIABARA *alia racemoſa, foliis oblongis. Plum. Manuſ.* Sea-ſide Grape with oblong Leaves.
2. GUAIABARA *alia racemoſa, foliis latiſſimis. Houſt.* Sea-ſide Grape with very broad Leaves.
3. GUAIABARA *foliis minoribus & longioribus, fructu racemoſo minimo atro-purpureo. Houſt.* Sea-ſide Grape with ſmaller and longer Leaves, and the leaſt dark purple Fruit growing in Bunches.

The ſecond Sort is very common in *Jamaica*, and all the *Caribee Iſlands*; where it grows on the ſandy Shores, from whence it had the Name of *Sea-ſide Grapes*, the Fruit growing in a long ſlender Bunch. This Fruit is commonly ſold in the Markets in *Barbadoes*, where it is much eſteemed.

The firſt Sort is common at *Carthagena* in *New Spain*, from whence I received the Seeds; which were collected by the late Dr. *William Houſtoun*.

The third Sort was alſo diſcovered by the ſame Gentleman at *la Vera Cruz*; who ſent the Seeds into *England*, from which ſeveral Plants were raiſed. Theſe two Sorts alſo grow on the ſandy Shores near the Sea.

Theſe Shrubs do uſually grow about ten or twelve Feet high, and have ſeveral Trunks ariſing from the ſame Root, ſo that they appear like large Buſhes. The Fruit comes out from the Wings of the Leaves in long ſlender Bunches, which are about the Size of an ordinary Raiſin in the ſecond Sort; but the firſt and third Sorts produce very ſmall Fruit, which are ſeldom gathered. The ſecond Sort is figured in *Lobel*'s *Hiſtory of Plants* under the Title of *Populus Novi Orbis*.

All theſe Sorts are propagated by Seeds, which ſhould be ſown in ſmall Pots filled with light rich Earth, and plunged into a Hot-bed of Tanners-bark: In about a Month after, the Plants will appear above Ground, when they muſt be frequently watered and cleared from Weeds: If the Weather proves warm, the Glaſſes of the Hot-bed ſhould be raiſed every Day, to admit freſh Air to the Plants; but if the Nights are cold, the Glaſſes muſt be covered with Mats every Night, to preſerve a gentle Warmth in the Bed. When the Plants are about two Inches high, they muſt be ſhaken out of the Pots, and ſeparated carefully, planting each into a ſmall Pot filled with light rich Earth, and then plunged into the Hot-bed again, obſerving to ſcreen them from the Sun every Day, until they have taken Root; after which Time they ſhould have Air admitted to them every Day, in Proportion to the Warmth of the Seaſon, and the Heat of the Bed in which they are placed; they muſt alſo be frequently watered in hot Weather. When the Plants have filled the Pots with their Roots, they muſt be tranſplanted into larger Pots, and plunged again into the Hot-bed, where they may remain till *Michaelmas*; at which Time they ſhould be removed into the Stove, and plunged into the Tan. During the Winter Seaſon, they muſt be kept very warm, and frequently refreſhed with Water, but it muſt not be given to them in large Quantities; but in Summer, they ſhould have freſh Air admitted to them in warm Weather, and watered more plentifully, but they muſt conſtantly remain in the Stove; for they are too tender to live in the open Air in this Country in the warmeſt Seaſon. Theſe Plants having thick, ſtrong, green Leaves, make an agreeable Appearance in the Stoves; and it may be expected to ſee the Fruit brought to Perfection in ſome of the Stoves which have been lately erected.

GUAJACANA; *Indian* Date Plum, *or* Baſtard Lote-Tree.

The *Characters* are;

The Leaves are produced alternately upon the Branches, which fall off in Winter: The Cup of the Flower is divided into three Parts: The Flower conſiſts of one Leaf of a Bell-ſhape, the under Part being tubuloſe, and the upper Part is cut into five or more Segments, and is expanded: In the Center of the Cup ariſes the Ovary, which becomes a ſoft, roundiſh Fruit, having many depreſs'd Cells, in which are contained many hard Seeds diſpoſed in a circular Order.

The *Species* are;

1. GUAJACANA. *J. B.* The *Indian* Date Plum-Tree.
2. GUAJACANA *anguſtiore folio. Tourn.* Narrow-leaf'd *Indian* Date Plum-Tree.
3. GUAJACANA *Piſhamin Virginianum. Park. Theat. Boerh. Ind. Virginian* Date Plum, *or* Piſhamin.

The firſt and ſecond Sorts are at preſent very rare in *England*, and only to be found in ſome curious Gardens; but the third Sort is more common; they are all ſuppoſed to be Natives of the *Weſt Indies*: The laſt Sort hath been raiſed in great Plenty, of late Years, in the Gardens near *London*, from Seeds which have been brought from *Virginia* and *Carolina*, in both which Countries this Tree greatly abounds.

Theſe Plants may be propagated by ſowing the Seeds (which are often brought into *England*) upon a moderate Hot-bed, in the Spring of the Year; and when the Plants come up, they ſhould be tranſplanted each into a ſeparate Half-penny Pot, which ſhould be filled with freſh, light, ſandy Earth, and plunged into another moderate Hot-bed, to facilitate their taking Root; and as the Summer advances, ſo you ſhould inure them to the open Air by Degrees; and in *June* they may be removed into ſome Place that is pretty well ſhelter'd from Winds, where they may remain until *October*, at which Time they ſhould be removed under the Shelter of a Hot-bed Frame, or into the Green-houſe, during the firſt Winter: But in *April* following they may be ſhaken out of the Pots, and tranſplanted into the open Air, where they will thrive very faſt, and reſiſt the Cold of our Winters very well, provided they are planted in a dry Soil, and not too much expoſed to ſevere Winds.

They may alſo be propagated by laying down the young Shoots in the Spring, which, if kept ſupplied with Water in very dry Weather, will take Root by the ſucceeding Spring, when they may be tranſplanted where they are to remain: The beſt Seaſon for tranſplanting theſe Trees is at the latter End of *March*, juſt before they begin to ſhoot; at which Time, if Care be taken not to hurt their Roots, there will be little Danger of their not ſucceeding, if the Plants are young: But they are very difficult to remove when they are grown large; therefore if your Ground be not ready to tranſplant theſe Trees into while young, you ſhould keep them in Pots or Tubs until it be ſo, that they may be turned out with a Ball of Earth to their Roots, which will be much the ſureſt Method.

The *Piſhamin* is very ſubject to ſend forth great Number of Suckers from the Root, ſo that there will never want a Supply of Shoots for Laying; which is by far the beſt Method of managing them; tho' ſometimes they may be taken from the old Plants with Roots to them: Yet theſe Roots are ſeldom very good, and will always be ſubject to puſh out a greater Quantity of Suckers than ſuch as are produced by Layers; which is what no one would covet in any Sort of Trees, unleſs for the ſake of increaſing the Number; for they ſeldom make ſuch fair Trees as the other. This makes a very large, beautiful Tree in *Virginia*, and ſeems diſpoſed to grow to the ſame Stature with us. There was formerly a large Tree of this Kind in the Gardens of the Biſhop of *London* at *Fulham*, which flower'd; but this hath been cut down many Years, to make Room for Kitchen Stuff, ſo that at preſent there are very few: Some of them have flower'd and produced Fruits, but they have not ripen'd, our Autumns not proving ſo favourable as could be wiſhed.

GUAIACUM; Lignum Vitæ.

The *Characters* are;

It hath pinnated Leaves: The Flower conſiſts of ſeveral Petals, which are placed orbicularly, and expand in form of a Roſe: The Pointal of the Flower, which ariſes from the Center of the Calyx, becomes a fleſhy, roundiſh, ſtony Fruit, or the ſtony Seeds are ſurrounded with a thin Pulp.

The *Species* are;

1. GUAIACUM, *flore cæruleo, fructu ſubrotundo. Plum.*

Lignum Vitæ, or Wood of Life, with a blue Flower, and roundiſh Fruit.

2. Guaiacum, *flore cœruleo, fimbriato, fructu tetragono. Plum.* Lignum Vitæ, with a blue fringed Flower, and a four-corner'd Fruit.

Theſe two Plants are Natives of the hotteſt Parts of the *Weſt-Indies*, and are with great Difficulty tranſplanted into *England*; for their Seeds ſeldom riſe with us, unleſs they are brought very freſh, and are ſown ſoon after they arrive: I have ſome young Plants in the *Phyſick-Garden*, that were rais'd from Seeds, *Anno* 1726, which have come on very well, tho' they are naturally Plants of a very ſlow Growth.

Theſe Plants may be brought over from *America* in any of the Summer Months, which is the ſureſt Method to obtain them, their Seeds being very difficult to grow: but great Care ſhould be taken to tranſplant them into a Tub or Box of Earth at leaſt a Month before they are put on Board the Ship, that they may be ſettled in the Earth, and Charge given to the Sailors not to over-water them in their Paſſage; which is what hath deſtroy'd more Plants ſent from abroad, than either the Cold, or any other Accident or Management whatever.

When the Plants arrive, they ſhould be immediately taken out of the Tubs, preſerving ſome Earth about their Roots, and planted into Pots fill'd with good freſh rich Earth, and plung'd into a Hot-bed of Tanners-bark, to facilitate their making freſh Roots, that they may be enabled to live during the Winter; for if they are not well rooted in the Earth before the cold Weather comes on, it will be difficult to preſerve them.

In *October* they ſhould be removed into a warm Stove, where the Thermometer ſhould be kept up to twenty Degrees above Temperate, (as mark'd on Mr. *Fowler*'s Thermometers); and during the Winter-ſeaſon they ſhould be often refreſh'd with Water: but it ſhould be given them very cautiouſly; for too much Moiſture is very hurtful to theſe Plants. You ſhould alſo carefully waſh their Leaves, from time to time, to cleanſe them from Filth, which is very ſubject to lodge upon the Surfaces thereof: And in Summer they ſhould have a good Share of freſh Air, by opening the Glaſſes of the Stove: but they ſhould never be wholly expoſed to the open Air, even in the hotteſt Seaſon, unleſs for a ſhort time, in a gentle warm Shower of Rain, which will waſh the Leaves, and greatly refreſh them.

The Wood of theſe Trees is ſo hard as to break the Tools in felling them; ſo that it is ſeldom cut down for Firewood, being very difficult to burn.

GUAJAVA; The Guava.

The *Characters* are;

The Flowers, for the moſt part, conſiſt of five Leaves, which are produced in a circular Order, and expand in form of a Roſe, having many Stamina, *or Threads, ſurrounding the Ovary: The Ovary is of a long tubulous Figure, which becomes a fleſhy Fruit, crown'd on the Top, and containing many ſmall hard Seeds.*

The *Species* are;

1. Guajava *alba dulcis. H. L.* The white Guava.
2. Guajava *rubra, acida, fructu rotundiori. H. L.* The red Guava.

Theſe Trees grow to the Height of twenty Feet, or more, in the *Weſt-Indies*, and have Trunks as thick as a Man's Thigh: but with us in *England* they are preſerved in warm Stoves, and are rarely ſeen above ſix or ſeven Feet high; tho' there are ſeveral Trees which have produced Fruit in *England*.

Theſe Plants are propagated by ſowing their Seeds in a Hot-bed in the Spring; and when they are come up, they ſhould each of them be tranſplanted into a ſingle Half-penny Pot, filled with light rich Earth, and plunged into a freſh Hot-bed, in order to bring 'em forward; obſerving to give 'em Air, in proportion to the Warmth of the Weather, by raiſing the Glaſſes with Stones, *&c.* and in the great Heat of the Day you ſhould ſhade the Glaſſes with Mats, to prevent their being ſcorched: and in Summer-time they will require to be frequently watered. As they increaſe in Bulk, ſo you muſt ſhift them into larger Pots: but you muſt be careful not to put them into Pots that are too large; for that will very much retard their Growth, as indeed it doth moſt other Plants; and towards the Beginning of *July* you muſt let them have a plentiful Share of Air, in order to harden them before Winter; for if you continue forcing them quite thro' the Summer, you will get them to be very large in one Seaſon: but then they'll be ſo tender, that 'twill be difficult to preſerve them in Winter.

At the Latter-end of *Auguſt*, or Beginning of *September*, you ſhould remove the Pots into the Stove, where they ſhould be placed in a moderate Situation, *i. e.* not too near the Fire, nor at too great a Diſtance therefrom; the Temperate Heat, as mark'd on Mr. *Fowler*'s Thermometers, agreeing better with them than a Great Degree. During the Winter-ſeaſon they muſt be often refreſhed with Water, eſpecially if they are placed upon Shelves in the Stove: but if they are plunged into Tanners-bark, they will not require it ſo often; nor muſt they have too much given at a time; and the Water wherewith they are water'd ſhould be placed in the Stove at leaſt twenty-four Hours before it be uſed, that it may be nearly of an equal Proportion of Warmth with the Air of the Houſe. You ſhould alſo frequently waſh their Leaves with a Cloth in Winter, in order to cleanſe them from Duſt and other Filth which may have been collected upon the Surfaces of the Leaves during their being in the Houſe; as alſo from Vermin, which are very ſubject to infeſt theſe Plants. In the Summer you may expoſe them to the Air, by removing or opening the Glaſſes in the Front of the Stove: but they ſhould never be ſuffered to ſtand abroad, unleſs it be for a few Hours, in a warm Rain, to waſh them; for when they are treated too hardily, they will never produce either Fruit or Flowers; whereas, when they are rightly managed, they will flower the third Seaſon after their being ſown.

Theſe Trees are planted every-where in the *Caribbee* Iſlands for their Uſefulneſs; tho' the uſual Manner of their Cultivation is by being eaten: The Seeds paſſing intire thro' the Body, are voided in the Excrements; ſo that where-ever the *Negroes* dung, there will never want a Supply of theſe Trees, which is often ſo great, as to become troubleſome to their Plantations and Savanna's.

“ The Fruit (ſays Sir *Hans Sloane*) is accounted extreme-
“ ly pleaſant, delicious, and wholſome, and may very deſer-
“ vedly take the firſt Place among the *Weſt-Indian* Fruits, if
“ eaten when thoroughly ripe. They have (continues he)
“ only this Inconvenience, that being very aſtringent, they
“ ſtop up the Belly, if eaten in great Quantities; and the
“ Seeds ſometimes ſticking to the hard Excrement, in coming
“ through the Inteſtines, eſpecially the *Rectum*, by their irre-
“ gular ſharp Angles, will occaſion very great Pain there, and
“ very often bring a Flux of Blood.”

GUANABANUS.

This is the *American* Name by which theſe Fruits are called, and by Father *Plumier* is made the generical Name; but as many of theſe Sorts are enumerated under the Title *Anona*; ſo I ſhall only take Leave to add a few Sorts, which have been lately introduced into the *Engliſh* Gardens.

1. Guanabanus *folio ampliſſimo, flore roſeo, fructu purpureo ſquamato.* Cherimonias with a roſe-coloured Flower, and a purple ſcaly Fruit.
2. Guanabanus, *latifolia, flore albo, fructu aureo ſquamato.* Cherimonias with a broad Leaf, a white Flower, and a golden ſcaley Fruit.
3. Guanabanus *perſeæ folio, flore intus albo, exterius vireſcente, fructu nigricante ſquamato, vulgo Cherimolia. Feuill. Obſ.* Guanabanus with an avocado-pear Leaf, and Flowers which are white within, and greeniſh on the Outſide, and a ſcaly blackiſh Fruit, commonly called *Cherimolia* or *Cherimonias*, in the *Spaniſh Weſt-Indies.*

Theſe three Sorts grow in ſeveral Parts of the *Spaniſh Weſt-Indies*, where they are cultivated for their Fruits, which are greatly eſteemed by the Inhabitants.

They are very tender Plants, ſo muſt be preſerved in the warmeſt Bark-ſtove, otherwiſe they will not live in this Country. They are propagated by Seeds, which ſhould be ſown in Pots filled with rich light Earth, and plunged into a Hot-bed of Tanners Bark; when the Plants are come up two Inches high, they ſhould be tranſplanted into ſeparate ſmall Pots filled with light rich Earth, and plunged into the Hot-bed again, obſerving to water and ſhade them until they have taken Root; after which Time they muſt be treated, as hath been directed for the *Anona's*.

The third Sort is much cultivated in the Gardens in *Peru*, and ſeveral other Places in the *Spaniſh Weſt-Indies*, where the Fruit is greatly eſteemed, being by many Perſons preferred to the Pine-apple. This Tree ſeldom grows above twelve or fourteen Feet high in the *Weſt-Indies* : ſo that we may hope to ſee the Fruit in Perfection in this Country in a few Years ; becauſe, as the Tree is of humble Growth, it may be contained in the warmeſt Stoves.

The Seeds of this Kind were brought into *England* in the Year 1734, from the *Spaniſh Weſt-Indies*, by a very curious Gentleman ; from which many Plants have been raiſed, which have flouriſhed greatly, where proper Care was taken ; ſo that there are many Plants already [*Mar.* 1738.] eight or nine Feet high, which may be expected to produce Fruit in a Year or two at fartheſt. This is propagated by Seeds, which muſt be ſown and managed as is directed for the former Sorts, and muſt be conſtantly preſerved in the Bark-ſtove.

GUAZUMA, Baſtard Cedar Tree, *vulgò*.

The *Characters* are ;

It hath a regular Flower conſiſting of five Leaves, which are hollowed like a Spoon at their Baſe, but at their Tops are divided into two Parts, like a Fork. The Flower-cup conſiſts of three Leaves, from whence ariſes the Pointal, which afterward becomes a roundiſh warted Fruit, which has five Cells incloſing many Seeds.

The *Species* are ;

1. GUAZUMA *arbor ulmi-folia, fructu ex purpura nigro. Plum. Nov. Gen.* The Baſtard Cedar Tree, *vulgò*.
2. GUAZUMA *frutex chamædryfolia, fructu lanuginoſo, major. Plum. Nov. Gen.* Shrubby *Guazuma* with a groundpine Leaf, and a larger woolly Fruit.
3. GUAZUMA *frutex, Chamædryfolia, fructu lanuginoſo, minor. Plum. Nov. Gen.* Shrubby *Guazuma* with a groundpine Leaf and a leſſer woolly Fruit.

The firſt Sort grows plentifully in the low Lands in *Jamaica*, where it riſes to the Height of forty or fifty Feet, and has a large Trunk. The Timber of this Tree is cut into Staves, for Caſks of all ſorts, and uſed for many other Purpoſes. The Fruit is eat by Cattle as it falls from the Trees, and is eſteemed very good to fatten them : ſo that the Planters often leave theſe Trees ſtanding in their Savannas, when they clear them from all other Wood ; becauſe, when there is a Scarcity of Graſs and other Food, theſe Fruit are a great Support to their large Cattle.

The other two Sorts are pretty common in ſeveral Parts of the *Weſt-Indies*, where they grow about ten or twelve Feet high ; but are of little Uſe to the Inhabitants.

Theſe Plants may be propagated by Seed, which ſhould be ſown early in the Spring, in ſmall Pots filled with freſh light Earth, and plunged into a Hot-bed of Tanners-bark : theſe Pots of Earth muſt be frequently watered to promote the Vegetation of the Seed ; and if the Nights prove cold, the Glaſſes of the Hot-bed muſt be covered with Mats, to preſerve a moderate Warmth in the Bed ; but in the Day-time, when the Sun ſhines warm, the Glaſſes ſhould be raiſed, to let the Steam which ariſes from the Bed, paſs off. When the Plants appear above Ground, they muſt be carefully cleared from Weeds, and often refreſhed with Water ; and the Glaſſes muſt be raiſed to admit freſh Air to them, otherwiſe they will draw up too weak : and when they are about two Inches high, they muſt be ſhaken out of the Pots, and parted carefully, planting each into a ſeparate ſmall Pot filled with light freſh Earth, and then plunged into the Hot-bed again, being careful to ſcreen them from the Heat of the Sun, until they have taken new Root ; after which Time they muſt have freſh Air admitted to them every Day, in proportion to the Warmth of the Seaſon, and the Heat of the Bed in which they are placed ; they muſt alſo be frequently refreſhed with Water in hot Weather, which will greatly promote their Growth. In this Bed the Plants may remain all the Summer, being careful to keep them clear from the Weeds ; and when the Plants have filled the ſmall Pots with their Roots, they ſhould be ſhaken out, and their Roots trimmed, and then put into Pots a Size larger. About *Michaelmas* the Plants muſt be removed into the Stove, and plunged into the Tan in a warm part of the Stove. During the Winter Seaſon they will not require ſo much Water as in Summer ; but they muſt be frequently refreſhed with a little Water, eſpecially if the Stove is kept warm. If their Leaves ſhould contract filth, it muſt be carefully waſhed off with a Spunge ; for if it is ſuffered to remain on them, it will greatly injure the Plants. Theſe Plants being very tender, they muſt conſtantly remain in the Stoves, giving them a good Share of freſh Air in Summer ; but in Winter they muſt be kept very warm, otherwiſe they will not live in this Country ; but if they are carefully managed, they will thrive very well, and afford an agreeable Variety in the Stove, amongſt other tender exotic Plants of the ſame Countries.

GUIDONIA.

The *Characters* are ;

The Cup of the Flower conſiſts of five Leaves, which are ſtiff, and of a thick ſucculent make, expanding in form of a Star ; theſe are of an Aſh-colour on the Out-ſide, and of a fine Purple on the Inſide : In the Centre of the Cup ariſes the Flower, which conſiſts of ſeveral Leaves, and expands in form of a Star : From the Bottom of the Flower ariſes the Pointal, which becomes a roundiſh Fruit, divided into three or four Cells, in which are contained many oblong Seeds.

The *Species* are ;

1. GUIDONIA *ulmi foliis, flore roſeo. Plum. Guidonia* with Elm Leaves, and a Roſe-colour'd Flower.
2. GUIDONIA *ulmi foliis, flore niveo. Plum. Nov. Gen.* Guidonia with Elm Leaves, and a white Flower.
3. GUIDONIA *aurantii foliis, aculeata. Plum. Nov. Gen.* Prickly Guidonia, with Orange Leaves.
4. GUIDONIA *nucis juglandis foliis, major. Plum. Nov. Gen.* Greater Guidonia, with Walnut-tree Leaves.
5. GUIDONIA *nucis juglandis foliis, minor. Plum. Nov. Gen.* Leſſer Guidonia, with Walnut-tree Leaves.

The *Characters* the firſt Sort do not very well agree with thoſe which *Pere Plumier* hath given to this Genus of Plants. However, as the modern Botaniſts have agreed, that this Plant here named is the ſame which is figured by *Commelin*, in the *Hortus Amſtelodamenſis*, with the Title of *Arbuſcula Ulmi facie Æthiopica, ramulis alatis, floribus purpuraſcentibus* ; ſo I have continued *Plumier*'s Name to it : Tho' I am in doubt whether our Plant is really the ſame with *Plumier*'s ; but it is undoubtedly that which *Commelin* has figured and deſcribed.

This Plant may be propagated by laying down the Branches in the Spring, which, by the ſucceeding *Spring*, will be rooted ſufficiently to tranſplant ; and they ſhould be taken up at the latter End of *March*, before the Plant ſhoots, and put into Pots fill'd with good rich Earth ; and if you ſet the Pots upon a moderate Hot-bed to forward their rooting, it will be a ſure Method : Tho' they ſhould not be too much forced ; nor ſhould they continue longer than to the End of *April* under Shelter, when they may be ſet abroad in ſome Place which is pretty well defended from ſtrong Winds, where they may remain until *October*, at which time they ſhould be remov'd into the Green-houſe, with *Oranges*, *Myrtles*, *Oleanders*, &c. placing them in the cooleſt Part of the Houſe ; for they are pretty hardy, requiring nothing more than to be protected from ſevere Froſt : And during the Winter-ſeaſon they ſhould have but little Water ; for they caſt their Leaves in Autumn ; and ſo being deſtitute of them until *April*, they are incapable of diſcharging much Moiſture : but in Summer they will require frequently to be water'd, without which they ſeldom produce Flowers.

Theſe may, with Care, be train'd up to the Height of eight or ten Feet, with regular Stems ; and their Heads may alſo be reduced into a handſome Shape : but they ſhould not be clip'd with Shears, for that will cauſe 'em to appear unſightly, as alſo prevent their flowering ; but rather ſhorten all ſtrong irregular Shoots with your Knife, obſerving to cut behind a Leaf-bud, otherwiſe the Stump left beyond the Eye will appear to Sight. The beſt Seaſon for this Operation is at the latter End of *March*, at which time you ſhould cut out all decay'd Branches, and ſhift the Plants into freſh Earth.

They may alſo be propagated by planting ſome ſtrong Cuttings into Pots of freſh Earth in *March*, and plunge them into a moderate Hot-bed, obſerving to water them, and ſhade the Glaſſes in the Heat of the Day, as alſo to give them a good Quantity of Air when the Weather is warm ; and in about a Month or ſix Weeks time they will have taken Root, when you muſt harden them by Degrees to the open Air, to which they muſt be expos'd in Summer, and manag'd as was directed for the Layers.

The other four Sorts are tenderer than the firſt, ſo muſt be placed in the Bark-ſtove, eſpecially while they are young, which will greatly forward their Growth : they may be all propagated by Seeds, which ſhould be ſown in Pots filled with light freſh Earth early in the Spring, and plunged into a Hot-bed of Tanners-bark. When the Plants come up, they muſt be duly watered, and clear'd from Weeds, in the Day-time. When the Weather is warm, the Glaſſes of the Hot-bed muſt be tilted with Stones, to admit freſh Air to the Plants ; but if the Nights prove cold, the Glaſſes muſt be covered with Mats, to keep the Bed warm. When the Plants are about three Inches high, they ſhould be carefully taken up, and each tranſplanted into a ſeparate Pot, and plunged into the

Hot-bed again, obſerving to ſhade them from the Sun until they have taken Root; after which Time they muſt be treated as hath been directed for the *Guazuma*. The two firſt Winters, theſe Plants may be placed in the Bark-ſtove; but when they have acquired Strength, they may be inured to bear the open Air in the warmeſt Part of the Summer; and in Winter they may be placed on Stands in the dry Stove, where, if they are kept in a moderate Temperature of Warmth, they will thrive very well, and produce their Flowers every Year in *July* and *Auguſt*; but they rarely perfect Seeds in this Country.

They may be alſo propagated by laying their Branches down into the Earth: this ſhould be done in *April*; and if they are duly watered, they will be rooted enough to tranſplant by the following Year; when they ſhould be taken off and tranſplanted into Pots, and managed as is directed for the ſeedling Plants. But when it is propoſed to increaſe theſe Plants after this Manner, it will be proper to encourage ſome Shoots near the Bottom of the Stems of the old Plants (from whence they are very apt to ſend forth Shoots); becauſe theſe will be much more convenient to make Layers, than thoſe which are placed higher from the Earth.

Some of theſe Plants will grow from Cuttings, when they are rightly managed. Theſe Cuttings ſhould be planted in the Beginning of *April* (juſt before the Plants begin to ſhoot) in Pots filled with light rich Earth, and plunged into a moderate Hot-bed of Tanners-bark, obſerving to water and ſhade them until they have taken Root, which will be in about two Months, if they ſucceed; when they may be inured to bear the open Air by degrees, and in *Auguſt* they may be tranſplanted into ſeparate Pots, and afterward muſt be managed as is before directed for the ſeedling Plants and Layers. The Plants thus raiſed, will produce Flowers much ſooner than thoſe raiſed from Seed; but they ſeldom grow to make ſo large Plants as thoſe do.

GUNDELIA.

This Plant was ſo named by Dr. TOURNEFORT, in Honour to Dr. GUNDELSCHEIMER, who found it in his Travels in Company with Dr. TOURNEFORT, in the *Levant*.

The *Characters* are;

It is a Plant with a ſloſculous Flower, gathered into a kind of Head, conſiſting of many Florets, coming out of a common Empalement, and ſitting on the Embryos of the Seed, which are hid in the Cells of the Empalement, and afterward become roundiſh Seeds ending in a Point.

The *Varieties* of this Plant are;

1. GUNDELIA *orientalis, acanthi aculeati foliis, floribus intenſe purpureis, capite aranæoſa lanugine obſito. Tourn. Cor.* Eaſtern Gundelia, with a prickly Bears-breech Leaf, deep purple Flowers, and an Head woven, as it were, with a Cobweb.
2. GUNDELIA *orientalis, acanthi aculeati folio, capite glabro. Tourn. Cor.* Eaſtern Gundelia, with a prickly Bears-breech Leaf, and a ſmooth Head.

The ſecond Sort is figured and deſcribed in the ſecond Volume of Dr. *Tournefort*'s Travels in the *Levant*. It was diſcovered, as I ſaid, by Dr. *Gundelſcheimer* near *Baibout*, in their Journey to *Armenia*, growing in dry ſtony Places.

The firſt ſort ſeems to be a Variety of the ſecond, and was found intermixed with it in the ſame Places.

Theſe Plants are propagated by Seed, which ſhould be ſown the Beginning of *March*, in a warm dry Border of freſh but lean Earth; for they will not live long in a moiſt rich Soil. When the Plants come up, they muſt be carefully cleared from Weeds; as they grow large, ſo they ſhould be thinned and tranſplanted out in warm Borders, leaving the Plants which are deſigned to remain about two Feet aſunder, that they may have Room to ſpread. After this there is no other Culture required, but to keep them clear from Weeds; and in two Years they will produce their Flowers, when they will make a fine Appearance amongſt other hardy Flowers in the Pleaſure-garden; but theſe Plants rarely perfect Seeds in this Country, which is the Caſe of ſeveral other of the headed Plants; for if the Seaſon ſhould prove moiſt at the Time when the Plants are in Flower, the Wet ſoaks into the Empalement where the Embryos of the Seed are lodged, which prevents their ripening, ſo that the Seeds muſt be procured from Abroad.

H A

HÆMANTHUS, [Ἁιμάνθος, of Ἅιμα *Blood*, and Ἄνθος, *Flower*], *i. e.* Blood-flower.

The *Characters* are;

It has two Leaves ſpringing from the Bulb on each Side, and bowing backwards: The Stem is ſingle, fungous, thick, and ſpeckled, bearing a ſingle Flower on the Top, as it is thought: The Flower appears naked, hexapetalous, (i. e. *conſiſting of ſix Petals*) *or heptapetalous,* (i. e. *conſiſting of ſeven Petals*): *but, upon a cloſe Examination, the Flower appears to be floſculous, having a Calyx conſiſting of ſix Leaves, after the manner of a* Tulip, *of a red Colour, among (or within) which are monopetalous Flowers that are hexapetaloides, conſiſting of ſix long, fine, deeply-cut Segments, tubulous at the Bottom, having ſix* Stamina, *proceeding from a triangular Ovary; and tricapſular,* i. e. *conſiſting of three* Capſulæ *or Partitions, in which are contain'd oblong Seeds to the Number of thirty in one Calyx: The Bulb is ſquamoſe, and often, as it were, bifoliated.*

The *Species* are;

1. HÆMANTHUS *Africanus. H. L.* Blood-flower, or African Tulip.
2. HÆMANTHUS *colchici foliis, perianthio herbaceo. Hort. Elth.* Blood-flower with meadow-ſaffron Leaves, and an herbaceous Empalement.

The firſt Sort was originally brought from the *Cape of Good-hope*, and hath been many Years preſerv'd in the curious Gardens in *Holland*, where they now have more Sorts than one; but in *England* it is ſtill very rare, and in but few Gardens. The Seaſon for tranſplanting the Bulbs is in *May* or *June*, when the Leaves are decayed, at which time they may be kept out of the Earth two or three Months without Damage; though the ſooner they are tranſplanted, the ſtronger the Roots will be, and more likely to flower. The Soil in which they muſt be planted ſhould be one half freſh Earth from a Paſture, and a fourth Part rotten Dung, and the other Part Sea Sand; theſe ſhould be well mixed two or three Months before uſed, that their Parts may be better incorporated: Then you ſhould put a few Stones in the Bottom of each Pot, that the Water may be the eaſier drain'd off; and afterwards put the Earth into the Pots, planting the Bulbs therein, only ſo deep as that their upper Parts may be juſt covered: Then place the Pots in a ſhady Situation, giving them now and then a little Water in very dry Weather; but you muſt obſerve, never to let them have too much Moiſture, eſpecially at the time when they are deſtitute of Leaves: In this Situation they may continue until the Beginning of *Auguſt*, when they muſt be removed to a warmer Place; for about that Seaſon they will begin to puſh out new Roots: but they may remain abroad until the Middle or latter End of *September*, at which time they ſhould be removed into a moderate Stove, where they muſt be carefully preſerved, obſerving frequently to refreſh them with Water; for now their Leaves will appear, and will in a ſhort time grow to a large Size, if the Roots are ſtrong: but you muſt not give them too much Water at once, which will endanger their rotting. The Stove in which theſe Plants are placed ſhould be kept to near the Temperate Heat as is marked on Mr. *Fowler*'s *Thermometers*, in which they will thrive very well, and, if the Bulbs are ſtrong, will produce their beautiful Flowers in Winter, which renders them very valuable, it being a time when few other Plants appear. Theſe Roots ſhould not be tranſplanted oftener than every other Year: but the Earth in the upper Part of the Pots ſhould be taken out twice a Year, and ſome freſh Earth put in, which will greatly ſtrengthen the Roots.

The ſecond Sort is a Native of *Africa*, from whence it was brought to the curious Garden of Mr. *Beaumont* in *Holland*, where it was propagated, and has been ſince diſtributed to many curious Perſons in ſeveral Parts of *Europe*. It is propagated by Off-ſets, which ſhould be taken off in *May*, at which Time theſe Plants begin to loſe their Leaves; for they are ready to put out new Leaves in *July*, and continue growing all the Autumn and Winter; but toward the End of *May* the Leaves begin to decay; at which Time the Plants ſhould be new potted, and if they have any Off-ſets which are ſufficiently rooted, they muſt be taken off, and planted in Pots filled with light rich Earth. In tranſplanting of theſe Plants, there muſt be particular Care to lay ſome Stones and Rubbiſh in the Bottom of the Pots to let the Moiſture paſs off; for if the Wet is detained in the Pots, it will ſoon cauſe the Roots to periſh.

During the Seaſon of their Inactivity, which is commonly from the Beginning of *May* to the Beginning of *July*, they muſt not have too much Water, leſt it rot their Roots; but when they are in Vigour, they will require a little more Wet.

Theſe Plants muſt be conſtantly kept in the dry Stoves; for they do not thrive well, if they are ſet Abroad, even in the warmeſt Part of the Summer; ſo that it is much the better Method to let them remain in the Stove, with *Euphorbiums*, and other tender ſucculent Plants, which require a large Share of free Air in warm Weather; in which Situation they will thrive exceeding well, and will annually produce their beautiful Flowers, which make a fine Appearance among other rare Plants. During the Winter-ſeaſon they muſt be kept in a moderate Temperature of Heat, and ſhould be frequently refreſhed with Water; but it muſt not be given to them in large Quantities, leſt it rot them. This Plant is not conſtant in the Time of its flowering, but the moſt uſual Seaſon is in *July* or *Auguſt*; but when it flowers in the Spring, it will ſometimes perfect Seeds in this Country; which, if ſown ſoon after they are ripe, and preſerved in the Stove till Spring, and then placed in a Hot-bed of Tanners-bark, will grow very well; and by this Method a much greater Increaſe of the Plants may be obtained in a Year or two, than could be by Off-ſets in many Years.

HALICACABUM. *Vide* Alkekengi.

HALICACABUS PEREGRINA. *Vide* Corindum.

HALIMUS. *Vide* Atriplex.

HARMALA; Wild Syrian Rue.

The *Characters* are;

The Leaves are produced alternately on the Branches: The Flower conſiſts of five Leaves, which expand in form of a Roſe: *The Ovary ariſes from the Bottom of the Calyx, and becomes a roundiſh Fruit, divided into three Cells.*

There is but one *Species* of this Plant at preſent known, which is,

HARMALA. *Dod.* Harmel, *or* Wild Rue.

This Plant is propagated by ſowing the Seeds in the Spring, either upon a moderate Hot-bed, or on a Border of light Earth; and when the Plants come up, they ſhould be tranſplanted into a Border of good light Earth, at the Diſtance of ſix Inches from each other, where they may remain until the ſucceeding Spring, when they may be removed to the Places where they are to continue. The ſecond Summer after ſowing they generally produce Flowers, and, if the Autumn proves favourable, will perfect their Seeds.

This Plant is mention'd in the Catalogue of *Simples* annexed to the *College Diſpenſatory*, as a Medicinal Plant; but it is rarely uſed in *England*: Nor is it a Plant of any great Beauty; ſo that it is rarely preſerved in Gardens, but for the ſake of Variety.

HAWTHORN. *Vide* Meſpilus.

HAZEL. *Vide* Corylus.

HEDERA; The Ivy-Tree.

The *Characters* are;

It is a paraſitick Plant, ſending forth Roots or Fibres from its Branches, by which it is faſtened to either Trees, Walls, or Pales which are near it, and from thence receives a great Share of its Nouriſhment: The Leaves are angular: The Flowers (for the moſt part) conſiſt of ſix Leaves, and are ſucceeded by round black Berries, which grow in round Bunches, each of which, for the moſt part, contains four Seeds.

The *Species* are;

1. HEDERA *arborea. C. B.* Common Ivy.
2. HEDERA *arborea, foliis cymis flaveſcentibus.* Common Ivy, with the Leaves upon the upper Part of the Shoots of a pale-yellow Colour.
3. HEDERA, *communis minor, foliis ex albo, & viridi variis. Boerh. Ind. alt.* The Silver-ſtriped Ivy.
4. HEDERA *communis minor, foliis ex luteo variegatis.* The yellow variegated Ivy.

The firſt of theſe Plants is very common in moſt Parts of *England*, growing ſometimes very large, and forming a Sort of Tree, and at other Times faſtening itſelf to whatever Tree, Wall, or Pale it ſtands near, where it appears like a trailing Plant, which has occaſioned moſt Botanick Writers to mention them as two diſtinct Plants, whereas in reality they are the ſame, their Difference being occaſioned by their different Situations; as may be often obſerved, when the upper Branches of theſe trailing Plants get above the Trees or Walls to which they are faſtened, then they grow more woody, and form large Heads producing Fruit; whereas that Part which is below never makes any Effort to produce either Flowers or Fruit.

Theſe Plants are eaſily propagated by their trailing Branches, which ſend forth Roots at every Joint; which Branches being cut off, and planted, will grow in almoſt any Soil or Situation, and may be trained up to Stems or ſuffered to remain Climbers, to cover Walls, Pales, &c.

They may alſo be propagated by Seeds, which ſhould be ſown ſoon after they are ripe: But they very often remain two Years in the Ground before they appear; which being a tedious Method, moſt People make uſe of the former, which is very expeditious and certain.

The ſecond Sort is a Variety of the firſt, from which it differs in having the Leaves upon the upper Part of the Branches, of a pale-yellow Colour: This is propagated in the ſame manner as the former, and may be preſerved for the ſake of Variety.

The third and fourth Sorts are very beautiful Plants, and are often planted againſt Walls or Buildings, where they adhere to the Brick, and grow ſo cloſe as to hide them from the Sight: Theſe alſo may be train'd up to regular Stems and Heads, and are increaſed as the former Sorts.

HEDERA TERRESTRIS. *Vide* Chamæciſſus.

HEDGES. Tho' Hedges are moſt commonly made of *Quick*, yet it will be proper, before planting, to conſider the Nature of the Land, and what Sort of Plants will thrive beſt in that Soil, whether it be Clay, Gravel, Sand, &c. and likewiſe what the Soil is from whence the Plants are to be taken; for if the Land they are taken from is better than that in which they are to be planted, it will be more difficult to get them to grow. As for the Size, the Sets ought to be about the Bigneſs of one's Thumb, and cut within about four or five Inches of the Ground; they ought to be freſh gathered, ſtrait, ſmooth, and well-rooted.

2dly: If the *Hedge* has a Ditch, it ſhould be made three Feet wide at Top, and one at Bottom, and two Feet deep, that each may have a Slope: But if the Ditch be four Feet wide, it ought to be two Feet and an half deep; and if it be five Feet wide, it ſhould be three Feet; and ſo in Proportion.

3dly: If the Bank be without a Ditch, the Sets ſhould be ſet in two Rows, almoſt perpendicular, at the Diſtance of a Foot from each other.

4thly: The Turf is to be laid with the Graſs-ſide downwards, on that Side of the Ditch the Bank is deſigned to be made; and ſome of the beſt Mould ſhould be laid upon it, to bed the Quick: Then the Quick is to be laid upon it, a Foot aſunder, ſo that the End of it may be inclining upwards; and at equal Diſtances of thirty Feet plant a young *Oak*, *Aſh*, *Crab*, or *Elm*, to grow with the *Quick*.

5thly: When the firſt Row of *Quick* is laid, it muſt be covered with Mould, and the Turf laid upon it, as before, and ſome Mould upon that; ſo that when the Bank is a Foot high, you may lay another Row of Sets againſt the Spaces of the lower *Quick*, and cover them as the former was done; and the Bank is to be topp'd with the Bottom of the Ditch, and a dry or dead *Hedge* laid to ſhade and defend the under Plantation.

6thly: Then there ſhould be Stakes driven into the looſe Earth, at about two Feet and an half Diſtance, ſo low as to reach the firm Ground.

Oak Stakes are accounted the beſt, and *Black-thorn* and *Sallow* the next: Let the ſmall Buſhes be laid below, but not too thick, only a little to cover the *Quick* from being bit by Cattle, when it ſprings; and alſo lay long Buſhes at the Top to bind the Stakes in with, by interweaving them.

And in order to render the *Hedge* yet ſtronger, you may *edder* it, (as it is call'd); *i. e.* bind the Top of the Stakes in with ſome ſmall long Poles or Sticks on each Side; and when the Eddering is finiſhed, drive the Stakes anew; becauſe the waving of the *Hedge*, and Eddering, are apt to looſen the Stakes.

The *Quick* muſt be kept conſtantly weeded, and ſecur'd from being cropp'd by Cattle; and in *February* it will be proper to cut it within an Inch of the Ground; which will cauſe it to ſtrike Root afreſh, and help it much in the Growth.

When an *Hedge* is of about eight or nine Years Growth, it will be proper to plaſh it: The beſt Time for this Work is either in *February*, or *October*.

When an *Hedge* is grown old, *i. e.* of about twenty or thirty Years Growth, and there are in it old Stubs, as well as new Shoots, the old Stubs ſhould be cut ſloping off within two or three Inches of the Ground; and the beſt and longeſt of the middle Size ſhould be left to lay down; and ſome of the ſtrongeſt, at the Height of five or ſix Feet, according as you deſign the Height of the *Hedge* to be, may be left to ſerve inſtead of Stakes; and freſh Stakes ſhould be put in thoſe Places where they are wanting: The *Hedge* ſhould be thinn'd, ſo as to leave on the Stubs only ſuch Shoots as are deſigned to be of Uſe, that there may be Room left to put a Spade in between them: The Ditch alſo ſhould be cleanſed, and each Side of the Slope kept as in a new Ditch: And where the Earth is waſh'd from the Roots of the Quick, or is hollow, face it anew with ſo much of the firſt Spit of Earth that is dug out of the Ditch, as there is Occaſion for; and lay what is dug out at the ſecond Spit, on the Top of the Bank; for if it be laid on the Side or Face of the Bank, it will ſlip into the Ditch again when Wet comes, and alſo take a great deal of the Bank along with it.

In planting *Quicks*, there are two Extremes to be avoided: The Firſt is, Laying it too low, and too thick; becauſe it makes the Sap run all into the Shoots, and leaves the Plaſhes without Nouriſhment; which, with the Thickneſs of the *Hedge*, kills them.

Secondly: It muſt not be laid too high; becauſe this draws all the Sap into the Plaſhes, and ſo cauſes but ſmall Shoots at the Bottom, and makes the *Hedge* ſo thin, that it will neither hinder the Cattle from going through, nor from cropping of it.

When the Shoot that is deſigned to be plaſhed is bent, give it a ſmall Cut with a Bill, half thro', ſloping a little downwards; and then weave it about the Stakes, and trim off the ſmall ſuperfluous Branches that ſtraggle too far out on both Sides of the *Hedges*.

If the Stubs are very old, cut them quite down, and ſecure them with good dead *Hedges* on both Sides, 'till the young Shoots are got up tall enough to plaſh, and plant new Sets in the void Spaces.

In making a *Hedge*, if it be ſet with *Crab* or *Apple Stocks*, it will be proper to leave one ſtanding uncut up at every ten, twelve, or twenty Feet, on both Sides the *Hedge*, if the Ground be your own: Which being done, they may be ſo ordered by pruning or ſtaking, that one may lean into one Ground, and the other into another, *&c.*

Theſe Stocks ſhould be prun'd up every Year, 'till they are brought out of the Reach of the Cattle; and then they may be grafted with the *Red-ſtreak*, *Gennet-moil*, or what other Fruit you pleaſe.

If the Stocks be of *Apple-kernels* they may ſtand ungrafted, and they will yield very good Cyder Fruit: But then ſuch Stocks as are not grafted, will be longer before they bear; and alſo, when you do graft, you may be certain of your Kind: But if you find a very natural Stock, which by Leaf, Shoot, and Bud appears likely, you may try it, and ſo you may have a new fine Fruit; and if you do not like it, you may graft it when you pleaſe.

As for the reſt of the *Hedge*, when it has ſhot three or four Years, you may lay it to make a Fence with; for the doing of which, take the following Directions:

1ſt: At every Laying to lay down ſome old Plaſhes; or, if the *Hedge* be thin, young ones: But they muſt be ſo laid, as to point with their Ends to the Ditch Side of the Bank, the Ends being kept low on the Bank: By being ſo ordered, they will the better thicken the Bottom of the *Hedge*, and keep up the Earth of the Bank.

2dly: To heighten the Bank every Time you lay Earth on it, ſo as to cover the Layers, all but the Ends; this Earth will very much help the *Quick*: And by heightning the Banks, and deepning the Ditch, you will render the Fence the better.

3dly: Not to cut the Plaſhes too much, but juſt ſo as they may bend down well; not to lay them too upright, as ſome do, but to lay them near to a Level: and by ſo doing, the Sap will the better break out at ſeveral Places, and not run ſo much to the Ends, as it will when they lie much upon the Slope.

If you have much Wood to ſpare, you may cut up great Part of thoſe that grow near the Ditch; but then you ought to hang the Bank with Buſhes, to prevent Cattle from cropping them the firſt Year: Theſe will ſhoot ſtrong, and ſecure the *Hedge*, keep up the Bank, and thicken the Bottom of the *Hedge*.

4thly: Take care to lay the *Hedge* pretty thick, and turn the Beard on the Ditch Side: But you muſt not let the Beard hang uncut, (though it makes a good Shew at the firſt making) but you muſt cut off all the ſtraggling Boughs within half a Foot of the *Hedge* on both Sides, and this will cauſe it to ſhoot ſtronger at theſe Places, and make the *Hedge* much the thicker.

5thly: If the Bank be high, make the *Hedge* ſo low, that it may but juſt ſerve for a Fence the firſt Year, for it will ſoon grow higher; and the lower the *Hedge* is made, the better the *Quick* will grow, and alſo the thicker at the Bottom: But Care muſt be taken to preſerve it from Cattle on the Field Side for the firſt Year that it is made.

6thly: If you would have a good *Hedge* or Fence, you ſhould fell it often; and at every Felling root out *Elder*, *Travellers-joy*, (which ſome call *Bull-bine*) *Briony*, &c. and do not leave too many high Standards or Pollards in it, tho' the *Elm* is one of the beſt; alſo too much dead Wood is not to be left in the Bottom of the *Hedges*, for that will choak the *Quick*; but if there be a Gap, the dead *Hedge* ſhould be made at a Diſtance.

HEDYPNOIS, [of Ἡδύπνοις, of ἡδὺς, *Sweet*, and πνοὴ, *Breath*, &c.] Trailing crooked-ſeeded Hawkweed.

The *Characters* are;

The Cup of the Flower is like a ſtriated Column, or a Melon: *The little Leaves of the Flower-cup, when the Flower is fallen off, embrace each of them one ſingle umbilicated Seed; but in the Middle of the little Head are other naked Seeds, which form an Head.*

The *Species* are;

1. HEDYPNOIS *annua. Tourn.* Trailing crooked-ſeeded Hawkweed, *or* common Hedypnois.
2. HEDYPNOIS *minor Cretica annua. J. Cor.* Annual Hedypnois from *Crete*.
3. HEDYPNOIS *annua, capite maximo. Boerh. Ind.* Annual Hedypnois, with a large Head.

Theſe Plants are ſeldom propagated, except in botanick Gardens, for the ſake of Variety, as being Plants of no great Beauty or Uſe. The firſt and third Species are found wild in the Southern Parts of *France*, in *Spain*, and *Italy*; but the ſecond Sort was brought from *Crete* by Monſ. *Tournefort*. Theſe may all be propagated by ſowing their Seeds towards the latter End of *March*, or the Beginning of *April*, in an open Situation, and a dry Soil, where they may remain to flower and ſeed, for they don't care to be tranſplanted: The Diſtance which theſe Plants ſhould be allowed muſt not be leſs than a Foot; and if the Soil be good, a Foot and an half aſunder will be full little enough; for they are very apt to ſpread to a great Diſtance; and their Branches trailing upon the Ground, would occaſion their rotting, were they to ſtand too cloſe to each other. Theſe Plants produce their Flowers in *June* and *July*; and their Seeds are perfected in *Auguſt*, when they ſhould be gathered, and preſerved for the ſucceeding Year.

HEDYSARUM, [of ἡδὺς, *ſweet*, and Ἄρον, Gr. the Herb *Arum*] *French* Honey-ſuckle.

The *Characters* are;

It hath papilionaceous Flowers, which are collected into an Head or Spike: The Pointal of the Flower, which riſes out of the Empalement, becomes a jointed undulated Pod; in each of which Joints is lodg'd a Kidney-ſhap'd Seed.

The *Species* are;

1. HEDYSARUM *clypeatum, flore ſuaviter rubente. H. Eyſt.* *French* Honey-ſuckle, with a delicate red Flower.
2. HEDYSARUM *clypeatum, flore albido. Tourn.* *French* Honey-ſuckle, with a whitiſh Flower.
3. HEDYSARUM *clypeatum minus, flore purpureo. Raii Hiſt.* Smaller *French* Honey-ſuckle, with a purple Flower.
4. HEDYSARUM *tryphyllum Canadenſe. Cornut.* Three-leaf'd *Canada French* Honey-ſuckle.
5. HEDYSARUM *annuum, ſiliqua aſpera undulata intorta. Tourn.* Annual *French* Honey-ſuckle, with a rough waved and wreathed Pod.
6. HEDYSARUM *Alpinum, ſiliqua lævi, flore purpuro-cæruleo. Tourn.* *Alpine French* Honey-ſuckle, with a ſmooth Pod and a blue purple Flower.
7. HEDYSARUM *Alpinum, ſiliqua lævi, flore albido. Tourn.* *Alpine French* Honey-ſuckle, with a ſmooth Pod, and a white Flower.
8. HEDYSARUM *minus diphyllum, flore luteo. Sloan. Cat.* Smaller two-leav'd *French* Honey-ſuckle, with a yellow Flower.

9. **Hedysarum** *triphyllum fruticoſum, flore purpureo, ſiliqua varie diſtorta. Sloan. Cat.* Three-leav'd ſhrubby *French* Honeyſuckle, with a purple Flower, and a variouſly diſtorted Pod.

10. **Hedysarum** *triphyllum fruticoſum minus. Sloan. Cat.* Smaller three-leav'd ſhrubby *French* Honey-ſuckle.

11. **Hedysarum** *triphyllum fruticoſum ſupinum, flore purpureo. Sloan. Cat.* Three-leav'd ſhrubby dwarf *French* Honeyſuckles with a purple Flower.

12. **Hedysarum** *annuum majus Zeylanicum, mimoſæ foliis. Tourn.* The greater annual *French* Honeyſuckle of *Zeylon*, with Leaves like the ſenſitive Plant.

13. **Hedysarum** *annuum minus Zeylanicum, mimoſæ foliis. Tourn.* The leſſer annual *French* Honey-ſuckle of *Zeylon*, with Leaves like the ſenſitive Plant.

14. **Hedysarum** *arboreſcens, foliis mimoſæ. Plum. Cat.* Shrubby *French* Honeyſuckle, with Leaves like the ſenſitive Plant.

15. **Hedysarum** *caule hirſuto, mimoſæ foliis alatis, pinnis acutis minimis gramineis. Sloan. Can. French* Honeyſuckle with a hairy Stalk, winged Leaves like the ſenſitive Plant, and ſmalleſt pointed graſs-like Wings.

16. **Hedysarum** *minimum procumbens, foliis pinnatis ſubrotundis, flore luteo. Houſt.* Smaller trailing *French* Honeyſuckle, with roundiſh winged Leaves, and a yellow Flower.

17. **Hedysarum** *triphyllum fruteſcens, foliis ſubrotundis & ſubtus ſericeis, flore purpureo. Houſt.* Three-leav'd ſhrubby *French* Honey-ſuckle, with roundiſh Leaves, which are ſilky underneath, and a purple Flower.

18. **Hedysarum** *triphyllum humile, flore conglomerato, calyce villoſo. Houſt.* Dwarf three-leav'd *French* Honey-ſuckle, with Flowers growing in Cluſters, and a hairy Cup.

19. **Hedysarum** *triphyllum procumbens, foliis rotundioribus & minoribus, ſiliquis tenuibus & intortis. Houſt.* Trailing three-leav'd *French* Honey-ſuckle, with ſmaller and rounder Leaves, and narrow intorted Pods.

20. **Hedysarum** *triphyllum, caule triangulari, foliis mucronatis, ſiliquis tenuibus intortis. Houſt.* Three-leav'd *French* Honey-ſuckle, with a triangular Stalk, pointed Leaves, and a narrow intorted Pod.

21. **Hedysarum** *triphyllum annuum erectum, ſiliquis intortis & ad extremitatem amplioribus. Houſt.* Three-leav'd annual upright *French* Honey-ſuckle, with intorted Pods, which are broad at their Extremity.

22. **Hedysarum** *triphyllum Americanum ſcandens, flore purpureo.* Three-leav'd climbing *American French* Honey-ſuckle, with a purple Flower.

The two firſt Species are very common in *England*, being propagated by the Gardeners near *London*, who ſupply the Markets with Plants and Flowers in the Spring of the Year.

The firſt four Sorts are propagated by ſowing their Seeds in *April*, in a Bed of light freſh Earth; and when the Plants come up, they ſhould be tranſplanted into other Beds of the like Earth, and in an open Situation, to about ſix or eight Inches Diſtance from each other, leaving a Path between every four Rows, to go between them to hough, and clear them from Weeds: In theſe Beds they may remain until *Michaelmas*; at which Time they may be tranſplanted into the large Borders of a Parterre or Pleaſure-Gardens, allowing them at leaſt two Feet Diſtance from other Plants, amongſt which they ſhould be interſpers'd, to continue the Succeſſion of Flowers, where they will make a very fine Appearance when blown, eſpecially the red Sort, which produces very handſome Flowers.

Theſe are tolerably hardy, and are ſeldom hurt but by extreme Cold, or great Rains. Moiſture, eſpecially in the Winter-ſeaſon, is very apt to rot their Roots, therefore they ſhould be planted in a dry Soil, and in a warm Situation; and in the Spring they may be remov'd to the Borders; where if they are much expoſed, or the Soil moiſt, they ſhould not be tranſplanted 'till *March*, juſt before they begin to ſhoot out their Flower-ſtems: But then they will not produce their Flowers ſo ſtrong as thoſe which are planted in Autumn.

In order to have a Succeſſion of theſe Plants, their Seeds ſhould be ſown every Spring; for the old Roots ſeldom continue long after they have flowered; and when they do remain, their Flowers are ſeldom ſo ſtrong as from young Roots. Their Seaſon of flowering is in *June* and *July*, and their Seeds are perfected in *Auguſt*.

The third Sort is preſerved in ſome Gardens for Variety; but the Flowers are not near ſo fair as thoſe of the two former: This requires the ſame Management as is directed for them.

The fourth Sort hath a perennial Root, which will abide many Years, if planted in a dry Soil. This is propagated by ſowing the Seeds in the Manner directed for the former: But when the Plants are come up two Inches high they ſhould be tranſplanted where they are to remain for good; for if they are not too thick in the Seed-bed, they may be ſuffered to remain there until the *March* following; at which Time they ſhould be carefully taken up, and tranſplanted into the Borders where they are deſigned to ſtand; for their Roots generally run down very deep, ſo that 'tis not ſafe to remove them often. This Plant produces its Flowers about the ſame Time of the Year as the former, and perfects its Seeds in Autumn; and the Roots will abide in the open Air very well, reſiſting the ſevereſt Cold, provided they are planted in a dry Soil.

The fifth, ſixth, and ſeventh Sorts are very hardy Plants, ſo will live in the open Air in this Country. Theſe are propagated by Seeds, which muſt be ſown in *March*, in a Bed or Border of light Earth, in the Place where they are deſigned to remain; becauſe, as they ſhoot their Roots deep into the Earth, ſo they do not bear tranſplanting well. When the Plants appear above Ground, they muſt be carefully cleared from Weeds, which, if ſuffered to grow, would ſoon overbear the young Plants, and deſtroy them. As the Plants advance in their Growth, they ſhould be thinned where they are too cloſe, leaving thoſe which are deſigned to flower, about a Foot or eighteen Inches apart. In dry Weather they will require ſome Water; and to keep them clear from Weeds, is all the Culture they want. In *July* they will flower, and, if the Autumn proves favourable, they will perfect their Seeds in *September*.

The eighth, ninth, tenth, eleventh, and fifteenth Sorts, were diſcovered by Sir *Hans Sloane*, Bart. in *Jamaica*, from whence the Seeds have been ſent into *England*, and have ſucceeded in ſeveral curious Gardens. Theſe are all of them annual Plants, notwithſtanding ſome of them grow ſhrubby, and will riſe to the Height of eight or nine Feet; for they periſh as ſoon as they have ripened their Seeds in the Country of their natural Growth.

The twelfth and thirteenth Sorts were brought from *Ceylon* by the learned Botaniſt, Dr. *Herman*, to the *Phyſick-Garden* at *Leyden*; but they are not peculiar to that Country, for I have received Seeds of both theſe Sorts from ſeveral Parts of *America*, which have flouriſhed in the *Phyſick-Garden* at *Chelſea*.

The fourteenth Sort was diſcovered by Father *Plumier*, in ſome of the *French* Settlements in *America*. The Seeds of this Sort were ſent me from *Campechy*, by the late Dr. *William Houſtoun*.

The ſixteenth, ſeventeenth, eighteenth, nineteenth, twentieth and twenty-firſt Sorts were diſcovered by the late Dr. *William Houſtoun* at *La Vera Cruz*, *Jamaica*, *Campechy*, and *Carthagena*, from which Places he ſent the Seeds and Specimens into *England*. The twenty-ſecond Sort I received from *South-Carolina*, which grew in the *Phyſick-Garden* at *Chelſea*.

Theſe are moſt of them annual Plants, and as they are Natives of warm Countries, ſo they require to be tenderly managed, to make them thrive in this Country. The Seeds of theſe Plants ſhould be ſown on a Hot-bed the Beginning of *March*; and when the Plants are about two Inches high, they muſt be carefully tranſplanted each into a ſeparate ſmall Pot filled with light rich Earth, and then plunged into a Hot-bed of Tanners-bark, being careful to ſhade them from the Sun until they have taken Root; after which Time they muſt have freſh Air admitted to them every Day by tilting the Glaſſes, in proportion to the Heat of the Weather: They muſt alſo be frequently refreſhed with Water, which will greatly promote their Growth. When the Plants have filled theſe Pots with their Roots, they ſhould be planted into larger; and as thoſe Sorts which grow upright, riſe to touch the Glaſſes of the Hot-bed, ſo they ſhould be removed into the Bark-bed in the Stove, or into a Glaſs-caſe, where they may have Room to grow. If theſe Plants are brought forward early in the Spring, they will begin to flower by the Beginning of *July*, and then they will have Time to ripen their Seeds before Winter; for if they are backward in flowering, they ſeldom perfect their Seeds in this Country.

The twelfth Sort rarely perfects Seed in *England*; for it generally grows to be five or ſix Feet high, and is always late before it flowers; but the thirteenth Sort will produce good Seeds every Year, if it is rightly managed.

The ſeventeenth and twenty-ſecond Sorts will abide two Years, provided they are placed in a warm Stove in Winter; and theſe Plants, when they are kept thro' the Winter, will flower early the following Summer, ſo that good Seeds may be obtained from them.

All theſe Plants afford an agreeable Variety in the Stove amongſt other exotic Plants in Autumn, when they are in Flower; ſo that they are preſerved by thoſe who are curious in Botany.

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Theſe Stocks ſhould be prun'd up every Year, 'till they are brought out of the Reach of the Cattle; and then they may be grafted with the *Red-ſtreak*, *Gennet-moil*, or what other Fruit you pleaſe.

If the Stocks be of *Apple-kernels* they may ſtand ungrafted, and they will yield very good Cyder Fruit: But then ſuch Stocks as are not grafted, will be longer before they bear; and alſo, when you do graft, you may be certain of your Kind: But if you find a very natural Stock, which by Leaf, Shoot, and Bud appears likely, you may try it, and ſo you may have a new fine Fruit; and if you do not like it, you may graft it when you pleaſe.

As for the reſt of the *Hedge*, when it has ſhot three or four Years, you may lay it to make a Fence with; for the doing of which, take the following Directions:

1ſt: At every Laying to lay down ſome old Plaſhes; or, if the *Hedge* be thin, young ones: But they muſt be ſo laid, as to point with their Ends to the Ditch Side of the Bank, the Ends being kept low on the Bank: By being ſo ordered, they will the better thicken the Bottom of the *Hedge*, and keep up the Earth of the Bank.

2dly: To heighten the Bank every Time you lay Earth on it, ſo as to cover the Layers, all but the Ends; this Earth will very much help the *Quick*: And by heightning the Banks, and deepning the Ditch, you will render the Fence the better.

3dly: Not to cut the Plaſhes too much, but juſt ſo as they may bend down well; not to lay them too upright, as ſome do, but to lay them near to a Level: and by ſo doing, the Sap will the better break out at ſeveral Places, and not run ſo much to the Ends, as it will when they lie much upon the Slope.

If you have much Wood to ſpare, you may cut up great Part of thoſe that grow near the Ditch; but then you ought to hang the Bank with Buſhes, to prevent Cattle from cropping them the firſt Year: Theſe will ſhoot ſtrong, and ſecure the *Hedge*, keep up the Bank, and thicken the Bottom of the *Hedge*.

4thly: Take care to lay the *Hedge* pretty thick, and turn the Beard on the Ditch Side: But you muſt not let the Beard hang uncut, (though it makes a good Shew at the firſt making) but you muſt cut off all the ſtraggling Boughs within half a Foot of the *Hedge* on both Sides, and this will cauſe it to ſhoot ſtronger at theſe Places, and make the *Hedge* much the thicker.

5thly: If the Bank be high, make the *Hedge* ſo low, that it may but juſt ſerve for a Fence the firſt Year, for it will ſoon grow higher; and the lower the *Hedge* is made, the better the *Quick* will grow, and alſo the thicker at the Bottom: But Care muſt be taken to preſerve it from Cattle on the Field Side for the firſt Year that it is made.

6thly: If you would have a good *Hedge* or Fence, you ſhould fell it often; and at every Felling root out *Elder*, *Travellers-joy*, (which ſome call *Bull-bine*) *Briony*, &c. and do not leave too many high Standards or Pollards in it, tho' the *Elm* is one of the beſt; alſo too much dead Wood is not to be left in the Bottom of the *Hedges*, for that will choak the *Quick*; but if there be a Gap, the dead *Hedge* ſhould be made at a Diſtance.

HEDYPNOIS, [of Ἡδύπνοις, of ἡδὺς, *Sweet*, and πνοὴ, *Breath*, &c.] Trailing crooked-ſeeded Hawkweed.

The *Characters* are;

The Cup of the Flower is like a ſtriated Column, or a Melon: *The little Leaves of the Flower-cup, when the Flower is fallen off, embrace each of them one ſingle umbilicated Seed; but in the Middle of the little Head are other naked Seeds, which form an Head.*

The *Species* are;

1. **Hedypnois** *annua. Tourn.* Trailing crooked-ſeeded Hawkweed, *or* common Hedypnois.
2. **Hedypnois** *minor Cretica annua. J. Cor.* Annual Hedypnois from *Crete*.
3. **Hedypnois** *annua, capite maximo. Boerh. Ind.* Annual Hedypnois, with a large Head.

Theſe Plants are ſeldom propagated, except in botanick Gardens, for the ſake of Variety, as being Plants of no great Beauty or Uſe. The firſt and third Species are found wild in the Southern Parts of *France*, in *Spain*, and *Italy*; but the ſecond Sort was brought from *Crete* by Monſ. *Tournefort*. Theſe may all be propagated by ſowing their Seeds towards the latter End of *March*, or the Beginning of *April*, in an open Situation, and a dry Soil, where they may remain to flower and ſeed, for they don't care to be tranſplanted: The Diſtance which theſe Plants ſhould be allowed muſt not be leſs than a Foot; and if the Soil be good, a Foot and an half aſunder will be full little enough; for they are very apt to ſpread to a great Diſtance; and their Branches trailing upon the Ground, would occaſion their rotting, were they to ſtand too cloſe to each other. Theſe Plants produce their Flowers in *June* and *July*; and their Seeds are perfected in *Auguſt*, when they ſhould be gathered, and preſerved for the ſucceeding Year.

HEDYSARUM, [of ἡδὺς, *ſweet*, and Ἄρον, Gr. the Herb *Arum*] *French* Honey-ſuckle.

The *Characters* are;

It hath papilionaceous Flowers, which are collected into an Head or Spike: The Pointal of the Flower, which riſes out of the Empalement, becomes a jointed undulated Pod; in each of which Joints is lodg'd a Kidney-ſhap'd Seed.

The *Species* are;

1. **Hedysarum** *clypeatum, flore ſuaviter rubente. H. Eyſt.* *French* Honey-ſuckle, with a delicate red Flower.
2. **Hedysarum** *clypeatum, flore albido. Tourn.* *French* Honey-ſuckle, with a whitiſh Flower.
3. **Hedysarum** *clypeatum minus, flore purpureo. Raii Hiſt.* Smaller *French* Honey-ſuckle, with a purple Flower.
4. **Hedysarum** *tryphyllum Canadenſe. Cornut.* Three-leaf'd *Canada French* Honey-ſuckle.
5. **Hedysarum** *annuum, ſiliqua aſpera undulata intorta. Tourn.* Annual *French* Honey-ſuckle, with a rough waved and wreathed Pod.
6. **Hedysarum** *Alpinum, ſiliqua lævi, flore purpuro-cæruleo. Tourn.* *Alpine French* Honey-ſuckle, with a ſmooth Pod and a blue purple Flower.
7. **Hedysarum** *Alpinum, ſiliqua lævi, flore albido. Tourn.* *Alpine French* Honey-ſuckle, with a ſmooth Pod, and a white Flower.
8. **Hedysarum** *minus diphyllum, flore luteo. Sloan. Cat.* Smaller two-leav'd *French* Honey-ſuckle, with a yellow Flower.

9. Hedysarum *triphyllum fruticoſum, flore purpureo, ſiliqua varie diſtorta. Sloan. Cat.* Three-leav'd ſhrubby *French* Honeyſuckle, with a purple Flower, and a variouſly diſtorted Pod.

10. Hedysarum *triphyllum fruticoſum minus. Sloan. Cat.* Smaller three-leav'd ſhrubby *French* Honey-ſuckle.

11. Hedysarum *triphyllum fruticoſum ſupinum, flore purpureo. Sloan. Cat.* Three-leav'd ſhrubby dwarf *French* Honey-ſuckles with a purple Flower.

12. Hedysarum *annuum majus Zeylanicum, mimoſæ foliis. Tourn.* The greater annual *French* Honeyſuckle of *Zeylon*, with Leaves like the ſenſitive Plant.

13. Hedysarum *annuum minus Zeylanicum, mimoſæ foliis. Tourn.* The leſſer annual *French* Honey-ſuckle of *Zeylon*, with Leaves like the ſenſitive Plant.

14. Hedysarum *arboreſcens, foliis mimoſæ. Plum. Cat.* Shrubby *French* Honeyſuckle, with Leaves like the ſenſitive Plant.

15. Hedysarum *caule hirſuto, mimoſæ foliis alatis, pinnis acutis minimis gramineis. Sloan. Can.* *French* Honeyſuckle with a hairy Stalk, winged Leaves like the ſenſitive Plant, and ſmalleſt pointed graſs-like Wings.

16. Hedysarum *minimum procumbens, foliis pinnatis ſubrotundis, flore luteo. Houſt.* Smaller trailing *French* Honey-ſuckle, with roundiſh winged Leaves, and a yellow Flower.

17. Hedysarum *triphyllum fruteſcens, foliis ſubrotundis & ſubtus ſericeis, flore purpureo. Houſt.* Three-leav'd ſhrubby *French* Honey-ſuckle, with roundiſh Leaves, which are ſilky underneath, and a purple Flower.

18. Hedysarum *triphyllum humile, flore conglomerato, calyce villoſo. Houſt.* Dwarf three-leav'd *French* Honey-ſuckle, with Flowers growing in Cluſters, and a hairy Cup.

19. Hedysarum *triphyllum procumbens, foliis rotundioribus & minoribus, ſiliquis tenuibus & intortis. Houſt.* Trailing three-leav'd *French* Honey-ſuckle, with ſmaller and rounder Leaves, and narrow intorted Pods.

20. Hedysarum *triphyllum, caule triangulari, foliis mucronatis, ſiliquis tenuibus intortis. Houſt.* Three-leav'd *French* Honey-ſuckle, with a triangular Stalk, pointed Leaves, and a narrow intorted Pod.

21. Hedysarum *triphyllum annuum erectum, ſiliquis intortis & ad extremitatem amplioribus. Houſt.* Three-leav'd annual upright *French* Honey-ſuckle, with intorted Pods, which are broad at their Extremity.

22. Hedysarum *triphyllum Americanum ſcandens, flore purpureo.* Three-leav'd climbing *American French* Honey-ſuckle, with a purple Flower.

The two firſt Species are very common in *England*, being propagated by the Gardeners near *London*, who ſupply the Markets with Plants and Flowers in the Spring of the Year.

The firſt four Sorts are propagated by ſowing their Seeds in *April*, in a Bed of light freſh Earth; and when the Plants come up, they ſhould be tranſplanted into other Beds of the like Earth, and in an open Situation, to about ſix or eight Inches Diſtance from each other, leaving a Path between every four Rows, to go between them to hough, and clear them from Weeds: In theſe Beds they may remain until *Michaelmas*; at which Time they may be tranſplanted into the large Borders of a Parterre or Pleaſure-Gardens, allowing them at leaſt two Feet Diſtance from other Plants, amongſt which they ſhould be interſpers'd, to continue the Succeſſion of Flowers, where they will make a very fine Appearance when blown, eſpecially the red Sort, which produces very handſome Flowers.

Theſe are tolerably hardy, and are ſeldom hurt but by extreme Cold, or great Rains. Moiſture, eſpecially in the Winter-ſeaſon, is very apt to rot their Roots, therefore they ſhould be planted in a dry Soil, and in a warm Situation; and in the Spring they may be remov'd to the Borders; where if they are much expoſed, or the Soil moiſt, they ſhould not be tranſplanted 'till *March*, juſt before they begin to ſhoot out their Flower-ſtems: But then they will not produce their Flowers ſo ſtrong as thoſe which are planted in Autumn.

In order to have a Succeſſion of theſe Plants, their Seeds ſhould be ſown every Spring; for the old Roots ſeldom continue long after they have flowered; and when they do remain, their Flowers are ſeldom ſo ſtrong as from young Roots. Their Seaſon of flowering is in *June* and *July*, and their Seeds are perfected in *Auguſt*.

The third Sort is preſerved in ſome Gardens for Variety; but the Flowers are not near ſo fair as thoſe of the two former: This requires the ſame Management as is directed for them.

The fourth Sort hath a perennial Root, which will abide many Years, if planted in a dry Soil. This is propagated by ſowing the Seeds in the Manner directed for the former: But when the Plants are come up two Inches high they ſhould be tranſplanted where they are to remain for good; for if they are not too thick in the Seed-bed, they may be ſuffered to remain there until the *March* following; at which Time they ſhould be carefully taken up, and tranſplanted into the Borders where they are deſigned to ſtand; for their Roots generally run down very deep, ſo that 'tis not ſafe to remove them often. This Plant produces its Flowers about the ſame Time of the Year as the former, and perfects its Seeds in Autumn; and the Roots will abide in the open Air very well, reſiſting the ſevereſt Cold, provided they are planted in a dry Soil.

The fifth, ſixth, and ſeventh Sorts are very hardy Plants, ſo will live in the open Air in this Country. Theſe are propagated by Seeds, which muſt be ſown in *March*, in a Bed or Border of light Earth, in the Place where they are deſigned to remain; becauſe, as they ſhoot their Roots deep into the Earth, ſo they do not bear tranſplanting well. When the Plants appear above Ground, they muſt be carefully cleared from Weeds, which, if ſuffered to grow, would ſoon overbear the young Plants, and deſtroy them. As the Plants advance in their Growth, they ſhould be thinned where they are too cloſe, leaving thoſe which are deſigned to flower, about a Foot or eighteen Inches apart. In dry Weather they will require ſome Water; and to keep them clear from Weeds, is all the Culture they want. In *July* they will flower, and, if the Autumn proves favourable, they will perfect their Seeds in *September*.

The eighth, ninth, tenth, eleventh, and fifteenth Sorts, were diſcovered by Sir *Hans Sloane*, Bart. in *Jamaica*, from whence the Seeds have been ſent into *England*, and have ſucceeded in ſeveral curious Gardens. Theſe are all of them annual Plants, notwithſtanding ſome of them grow ſhrubby, and will riſe to the Height of eight or nine Feet; for they periſh as ſoon as they have ripened their Seeds in the Country of their natural Growth.

The twelfth and thirteenth Sorts were brought from *Ceylon* by the learned Botaniſt, Dr. *Herman*, to the *Phyſick-Garden* at *Leyden*; but they are not peculiar to that Country, for I have received Seeds of both theſe Sorts from ſeveral Parts of *America*, which have flouriſhed in the *Phyſick-Garden* at *Chelſea*.

The fourteenth Sort was diſcovered by Father *Plumier*, in ſome of the *French* Settlements in *America*. The Seeds of this Sort were ſent me from *Campechy*, by the late Dr. *William Houſtoun*.

The ſixteenth, ſeventeenth, eighteenth, nineteenth, twentieth and twenty-firſt Sorts were diſcovered by the late Dr. *William Houſtoun* at *La Vera Cruz*, *Jamaica*, *Campechy*, and *Carthagena*, from which Places he ſent the Seeds and Specimens into *England*. The twenty-ſecond Sort I received from *South-Carolina*, which grew in the *Phyſick-Garden* at *Chelſea*.

Theſe are moſt of them annual Plants, and as they are Natives of warm Countries, ſo they require to be tenderly managed, to make them thrive in this Country. The Seeds of theſe Plants ſhould be ſown on a Hot-bed the Beginning of *March*; and when the Plants are about two Inches high, they muſt be carefully tranſplanted each into a ſeparate ſmall Pot filled with light rich Earth, and then plunged into a Hot-bed of Tanners-bark, being careful to ſhade them from the Sun until they have taken Root; after which Time they muſt have freſh Air admitted to them every Day by tilting the Glaſſes, in proportion to the Heat of the Weather: They muſt alſo be frequently refreſhed with Water, which will greatly promote their Growth. When the Plants have filled theſe Pots with their Roots, they ſhould be planted into larger; and as thoſe Sorts which grow upright, riſe to touch the Glaſſes of the Hot-bed, ſo they ſhould be removed into the Bark-bed in the Stove, or into a Glaſs-caſe, where they may have Room to grow. If theſe Plants are brought forward early in the Spring, they will begin to flower by the Beginning of *July*, and then they will have Time to ripen their Seeds before Winter; for if they are backward in flowering, they ſeldom perfect their Seeds in this Country.

The twelfth Sort rarely perfects Seed in *England*; for it generally grows to be five or ſix Feet high, and is always late before it flowers; but the thirteenth Sort will produce good Seeds every Year, if it is rightly managed.

The ſeventeenth and twenty-ſecond Sorts will abide two Years, provided they are placed in a warm Stove in Winter; and theſe Plants, when they are kept thro' the Winter, will flower early the following Summer, ſo that good Seeds may be obtained from them.

All theſe Plants afford an agreeable Variety in the Stove amongſt other exotic Plants in Autumn, when they are in Flower; ſo that they are preſerved by thoſe who are curious in Botany.

HELENIASTRUM, Baſtard Elecampane.

The *Characters* are;

It hath a compound radiated Flower, conſiſting of many Florets, which are hermaphrodite, and of Semiflorets, which are female: The Ovaries ſtand on a naked Placenta, each bearing an antient Crown. All theſe Parts are included in a ſimple Empalement, which expands, and is cut almoſt to the Bottom in ſeveral Parts.

The *Species* are;

1. HELENIASTRUM *folio longiore & anguſtiore. Vaill. Mem.* Baſtard Elecampane, with a longer and narrower Leaf.
2. HELENIASTRUM *folio breviore & latiore. Vaill. Mem.* Baſtard Elecampane, with a broader and ſhorter Leaf.

Theſe Plants are both of them Natives of *America*; the Seeds of both Sorts I have received from *Virginia* and *New England*, where they grow wild in great Plenty in the Woods and other ſhady Places, where the Ground is moiſt. They may be propagated by Seeds, or by parting of their Roots; but the latter is generally practiſed in this Country, becauſe they ſeldom perfect their Seeds here; but if Seeds are procured from Abroad, they ſhould be ſown the Beginning of *March* on a warm Border of light Earth: And if the Seeds ſhould not come up the firſt Year, the Ground ſhould not be diſturbed; becauſe they often remain a whole Year under Ground, before the Plants appear: in which Caſe there is nothing more to be done, but to keep the Ground clear from Weeds, and wait until the Plants come up: when they appear, if the Seaſon proves dry, they muſt be often watered, which will greatly forward their Growth; and where the Plants come up too cloſe to each other, they ſhould be thinned and tranſplanted out into Beds a Foot aſunder every way, being careful to ſhade them until they have taken Root, as alſo to water them in dry Weather. In the Autumn theſe Plants will produce their Flowers, which will continue till the Froſt prevents them; and their Roots will abide many Years, and afford many Offſets, by which they may be increaſed.

The beſt Seaſon to tranſplant the old Roots, and to part them for Increaſe, is the Beginning of *March*, juſt before they begin to ſhoot; but if the Spring ſhould prove dry, they muſt be duly watered, otherwiſe they will not produce many Flowers the ſame Year. Theſe Plants ſhould not be removed oftener than every other Year; for, as they do not ſpread their Roots very wide, ſo they will continue within due Compaſs two Years very well. They delight in a Soil rather moiſt than dry, provided it be not too ſtrong, or holds the Wet in Winter: but if they are planted in a dry Soil, they muſt be often and plentifully watered in dry Weather, to make them produce Plenty of Flowers.

Theſe Plants generally riſe about three Feet and a half, or four Feet high; ſo ſhould be planted in the Middle of large Borders, intermixed with Flowers of the ſame Growth, where they will make a pretty Variety, becauſe they continue a long time in Flower: and as they require very little Care to cultivate them, ſo they deſerve a Place in every large Garden. Their Flowers reſemble thoſe of the ſmaller Kinds of *Sunflower*, and have been by ſome Botaniſts ranged in that *Genus*. The Time of their flowering is from *June*, until the Froſt ſtops them.

HELENIUM, Elecampane.

The *Characters* are;

It hath a radiated Flower, whoſe Florets are hermaphrodite, but the Semiflorets are female; both theſe are yellow; the Ovaries, which reſt on a naked Placenta, are crowned with Down: all theſe Parts are included in a ſcaly Cup. To theſe Notes may be added, the Leaves growing alternately on the Stalks, and the Flowers grow on the Top of the Branches.

The *Species* are;

1. HELENIUM *vulgare. C. B. P.* Common Elecampane.
2. HELENIUM *virgæ paſtoris folio, ſubtus incano & tomentoſo. Vaill. Mem.* Yellow Starwort, with a wild Teaſel-leaf, which is hoary and woolly underneath.
3. HELENIUM *villoſum, conyzæ folio, magno flore. Vaill. Mem.* Yellow hairy Starwort, with a fleabane Leaf, and a large Flower.
4. HELENIUM *conyzæ folio, prægrandi flore, calyce piloſiſſimo. Vaill. Mem.* Yellow Starwort, with a fleabane Leaf, and a larger Flower, and a very hairy Cup.
5. HELENIUM *Creticum, conyzæ folio, aſphodeli radice. Vaill. Mem.* Yellow Starwort of Crete, with a fleabane Leaf, and an aſphodel Root.
6. HELENIUM *paluſtre, folio longiori lanuginoſo. Vaill. Mem.* Marſh yellow Starwort, with a longer woolly Leaf.
7. HELENIUM *conyzæ folio lanuginoſo, radice odorâ. Vaill. Mem.* Yellow Starwort, with a woolly fleabane Leaf, and a ſweet-ſmelling Root.
8. HELENIUM *paluſtre villoſum odoratum, conyzæ folio. Vaill. Mem.* Hairy marſh ſweet-ſmelling Starwort, with a fleabane Leaf.
9. HELENIUM *montanum villoſum anguſtifolium, flore magno ſingulari. Vaill. Mem.* Hairy mountain yellow Starwort, with a narrow Leaf, and a large ſingle Flower.
10. HELENIUM *lanuginoſum anguſtifolium, ſummo caule ramoſo. Vaill. Mem.* Woolly yellow Starwort, with a narrow Leaf, and branching at the Top of the Stalks.
11. HELENIUM *pratenſe autumnale, conyzæ foliis caulem amplexantibus. Vaill.* Meadow yellow Starwort of the Autumn, with fleabane Leaves encompaſſing the Stalks, commonly called *Conyza media*.
12. HELENIUM *hirſutum, ſalicis folio. Vaill. Mem.* Hairy yellow Starwort, with a willow Leaf.
13. HELENIUM *montanum, ſalicis folio ſubtus incano. Vaill. Mem.* Mountain yellow Starwort, with a willow Leaf, which is hoary underneath.
14. HELENIUM *ſalicis folio glabro. Vaill. Mem.* Yellow Starwort, with a ſmooth willow Leaf.
15. HELENIUM *ſpirææ folio. Vaill. Mem.* Yellow Starwort, with a ciſtus Leaf, with a ſpirea Leaf.
16. HELENIUM *glabrum, myrti lato, ſerrato, cuſpidatoque folio. Vaill. Mem.* Smooth yellow Starwort, with a broad, ſawed, and pointed myrtle Leaf.
16. HELENIUM *ciſti folio non crenato, magno flore. Vaill. Mem.* Yellow Starwort, with a ciſtus Leaf, and a large Flower.
18. HELENIUM *lanuginoſum, piloſellæ foliis. Vaill. Mem.* Woolly yellow Starwort, with mouſe-ear Leaves.
19. HELENIUM *paluſtre ſubhirſutum, foliis calthæ. Vaill. Mem.* Marſh roughiſh yellow Starwort, with marygold Leaves.
20. HELENIUM *ſalicis folio, floribus parvis, fere umbellatis. Vaill. Mem.* Yellow Starwort, with a willow Leaf, and ſmall Flowers growing almoſt in an Umbel.
21. HELENIUM *paluſtre annuum, foliis criſpis. Vaill.* Annual marſh yellow Starwort, with curled Leaves, commonly called *Marſh Fleabane*.
22. HELENIUM *paluſtre annuum, hyſſopi foliis criſpis. Vaill. Mem.* Marſh annual yellow Starwort, with curled hyſſop Leaves.
23. HELENIUM *ramoſum, cauliculis ſparſis, calthæ arvenſis folio. Vaill. Mem.* Branching yellow Starwort, with ſparſe Stalks, and a field-marygold Leaf.
24. HELENIUM *Ægyptiacum tomentoſum & incanum, bellidioides, foliis criſpis. D. Lippi.* Hoary woolly *Egyptian* yellow Starwort, with curled daizy Leaves.
25. HELENIUM *Ægyptiacum tomentoſum & incanum, polii folio. D. Lippi.* Hoary woolly *Egyptian* yellow Starwort, with a mountain-poley Leaf.
26. HELENIUM *bellidioides, foliis amplis, aſphodeli radice. Vaill. Mem.* Yellow Starwort, with large daizy Leaves, and an aſphodel Root.
27. HELENIUM *perenne glabrum hyſſopifolium. Vaill. Mem.* Smooth perennial yellow Starwort, with an hyſſop Leaf.
28. HELENIUM *perenne glabrum, folio craſſo in ſummo tricuſpidato. Vaill. Mem.* Smooth perennial yellow Starwort, with a thick three-pointed Leaf.
29. HELENIUM *roriſmarini craſſis, obtuſis, confertiſque foliis. Vaill. Mem.* Yellow Starwort with thick blunt Leaves growing in Cluſters, commonly called *Golden Samphire*.
30. HELENIUM *ſaxatile, hyſſopi folio villoſo & glutinoſo. Vaill. Mem.* Rock yellow Starwort, with a hairy clammy hyſſop Leaf.

The firſt Sort is the true Elecampane, which is uſed in Medicine: it grows wild in moiſt Fields and Meadows in ſeveral Parts of *England*, and is pretty much cultivated in Gardens near *London*, to furniſh the Shops with the Roots, which is the only Part of the Plant in Uſe.

This Sort may be propagated by Seeds, or from ſmall Offſets, which are furniſhed with Buds on their Tops. If you would propagate it by Seeds, they ſhould be ſown on a moiſt Bed of light Earth ſoon after they are ripe; for if they are kept long out of the Ground, they will not ſucceed: theſe

Seeds generally remain in the Ground until the following Spring, when the Plants will begin to appear; at which time they muſt be carefully weeded, and if the Seaſon ſhould prove dry, they muſt be frequently watered, which will greatly promote their Growth. In this Bed the Plants ſhould remain till *Michaelmas* following, being careful to keep them conſtantly clear from Weeds during the Summer-ſeaſon. Then you ſhould prepare a Spot of Ground in proportion to the Number of Plants you have to tranſplant; which ſhould be well digged and cleanſed from the Roots of all noxious Weeds; then you muſt carefully fork up the Roots of the ſeedling Plants, ſo as not to break them; and with a Dibble they ſhould be planted in Rows about a Foot aſunder, and nine Inches Diſtance in the Rows: in the planting of theſe Roots, you muſt obſerve to make the Holes deep enough to receive them without being bent or broken, ſo that the Crown of the Roots may be juſt under the Surface of the Ground; then cloſe the Earth gently about them with your Feet. When the Plantation is finiſhed, there will be no farther Care required until the Spring, when the Plants begin to ſhoot; at which time the Ground ſhould be carefully houghed to clear it from Weeds, which Work muſt be repeated three or four times in the Spring; but always in dry Weather, which will intirely deſtroy the Weeds, if it be carefully performed; and when the *Elecampane* Plants have acquired Strength, they will keep the Weeds under, becauſe their Leaves being large, will ſpread and cover the Ground. If the Ground is good in which the Plants are placed, the Roots will be large enough to take up the *Michaelmas* following; but if the Ground is very poor, or too dry, they ſhould remain two Years after planting, before they are taken up for Uſe. *Note*, Theſe Roots ſhould not be taken up till the Leaves are decayed.

If you intend to propagate this Plant by Off-ſets, you muſt take them carefully off from the old Roots at *Michaelmas*, (which is the Time they are taken up for Uſe); ſo as to preſerve a good Bud to each Off-ſet; then plant them in a well prepared Spot of Ground, in the ſame Manner as hath been directed for the ſeedling Plants; and the following Summer they muſt be treated in the ſame Manner as thoſe.

All theſe Plants are ranged under the *Genus* of *Aſter*, by Dr. *Tournefort*, as agreeing in the Manner of their Flower and Seed with that Tribe: but as the Title of *Helenium* has been applied to the firſt *Species* by the Writers in Botany before his Time, and the outward Face of the Plant being very different from the *Starworts*, as alſo the Flowers being yellow; ſo Monſieur *Vaillant*, Profeſſor of Botany at *Paris*, has conſtituted a *Genus* by the Name of *Helenium*, and ſeparated all the *Species* which have yellow Flowers, from the *Aſters*, and placed them under this *Genus*; for which Reaſon I have added the *Engliſh* Name of *yellow Starwort* to all the *Species*.

The eleventh Sort is very common by the Sides of Ditches and Ponds in moſt Parts of *England*, ſo is ſeldom planted in Gardens; becauſe it creeps very much by the Root, and will ſoon overſpread a large Spot of Ground, when it has once taken Root. This Sort is commonly known by the Name of *Middle Fleabane*, in *England*.

The twenty-firſt Sort is alſo very common in *England*; this is an annual Plant, which ſows itſelf on moiſt Grounds, where the Water uſually ſtands in Winter; it flowers in *July* and *Auguſt*. This Plant is placed in the Catalogue of Simples annexed to the College Diſpenſatory, under the Title of *Conyza minor, flore globoſo*; it is alſo called *Pulicaria*, becauſe they ſay, the Smell of this Herb will drive away Fleas.

The twenty-ninth Sort grows on the Rocks and gravelly Shores by the Sea-ſide, in divers Parts of *England*, and is frequently gathered and brought to the Markets for *Samphire*, and pickled as ſuch. This is often diſtinguiſhed from the true *Samphire*, by the Title of *Golden Samphire*, becauſe the Flowers are yellow.

The other Sorts are not Natives of this Country, but are all of them hardy enough to thrive in the open Air, and ſeveral of them will grow in ſhady Places, and under the Drip of Trees; ſo that they deſerve to be propagated in the *Engliſh* Gardens. They are commonly propagated by parting of their Roots, becauſe they ſeldom produce good Seeds in this Country. The beſt Time to part their Roots is in Autumn, when their Stalks begin to decay; in doing of this, you ſhould be careful not to divide them too ſmall, as alſo to preſerve ſome good Buds to each Off-ſet. Theſe ſhould be planted in large Borders in the Pleaſure-Garden, intermixed with other hardy perennial Plants; where they will require no other Culture, but to keep them clear from Weeds, and to tranſplant the Roots every other Year, when they may be parted to increaſe them. In the Summer-time, when the Stalks are grown pretty high, they ſhould have Sticks thruſt into the Ground by each Root, and their Branches faſtened thereto with Baſs, to ſupport them; otherwiſe they are often broken down by heavy Rains, or ſtrong Winds, when they are in Flower; which renders them very unſightly in a neat Garden. Some of theſe Sorts begin to flower in *July*, and others ſucceed them, until the Froſts in Autumn put an End to their Flowering.

If theſe Plants are propagated by Seeds, it ſhould be ſown ſoon after it is ripe, in an open Bed of freſh Earth; for if the Seeds are kept out of the Earth till Spring, they ſeldom grow.

HELIANTHEMUM, [Ἡλιάνθεμον, of Ἥλιος *the Sun*, and Ἄνθος, *a Flower*] Dwarf-Ciſtus, *or* Little Sun-Flower.

The *Characters* are;

The Flower-cup conſiſts of three Leaves: The Flower, for the moſt part, conſiſts of five Leaves, which are placed orbicularly, and expand in form of a Roſe*: The Pointal of the Flower becomes a globular Fruit, which divides into three Parts, having three Cells, which are fill'd with roundiſh Seeds fix'd to ſmall Capillaments.*

The *Species* are;

1. Helianthemum *vulgare, flore luteo. J. B.* Common Dwarf Ciſtus, with a yellow Flower.
2. Helianthemum *vulgare, flore dilutiore. Tourn.* Common Dwarf Ciſtus, with a fainter Flower.
3. Helianthemum *Alpinum, folio piloſellæ minoris Fuchſii. J. B.* Hoary Dwarf Mountain Ciſtus, with Cat's-foot Leaves.
4. Helianthemum *Montanum, polii folio. Pluk.* Mountain Dwarf Ciſtus, with Poley Mountain Leaves.
5. Helianthemum *foliis majoribus, flore albo. J. B.* Great-leaf'd Dwarf Ciſtus, with a white Flower.
6. Helianthemum *album Germanicum. Tab. Icon.* White German Dwarf Ciſtus.
7. Helianthemum *flore albo, folio anguſto hirſuto. J. B.* White-flower'd Dwarf Ciſtus, with narrow hairy Leaves.
8. Helianthemum *ſaxatile, foliis & caulibus incanis oblongis, floribus albis Appennini montis. Mentz.* Rock Dwarf Ciſtus of the Appennines, with hoary oblong Leaves and Stalks, and white Flowers.
9. Helianthemum, *ſive Ciſtus humilis, folio Sampſuchi, capitulis valde hirſutis. J. B.* Dwarf Ciſtus, with a Marjoram Leaf, and very hairy Heads.
10. Helianthemum *folio Thymi, floribus umbellatis. Tourn.* Dwarf Ciſtus, with a Thyme Leaf, with Flowers growing in an Umbel.
11. Helianthemum, *polii folio ampliore, Luſitanicum. Tourn.* Portugal Dwarf Ciſtus, with large Poley Mountain Leaves.
12. Helianthemum *Germanicum luteum, Ciſti folio. Boerh.* German Dwarf Ciſtus, with a yellow Flower, and Ciſtus Leaf.
13. Helianthemum *ſalicis folio. Tourn.* Dwarf Ciſtus, with a Willow Leaf.
14. Helianthemum *Ledi folio. Tourn.* Dwarf Ciſtus, with a Ledum Leaf.
15. Helianthemum *flore maculoſo. Col.* Dwarf Ciſtus, with ſpotted Flowers.
16. Helianthemum *vulgare, flore albo. Tourn.* Common ſmall Sunflower, with a white Flower.
17. Helianthemum *ſerpilli folio, flore minore aureo odorato. Tourn.* Small Sunflower, with a Mother of Thyme Leaf, and a ſmaller golden ſweet-ſmelling Flower.
18. Helianthemum *anguſtifolium luteum. Tourn.* Yellow narrow-leav'd ſmall Sunflower.
19. Helianthemum *foliis myrti minoris, ſubtus incanis. Tourn.* Small Sunflower with leſſer Myrtle-leaves, which are hoary underneath.
20. Helianthemum *tenuifolium glabrum erectum, luteo flore. Tourn.* Narrow-leav'd ſmooth upright ſmall Sunflower.
21. Helianthemum *tenuifolium glabrum, luteo flore, per humum ſparſum. J. B.* Narrow-leav'd ſmooth ſmall Sunflower, ſpreading on the Ground with a yellow Flower.
22. Helianthemum *folio thymi incano. J. B.* Small Sunflower, with a hoary Thyme-leaf.
23. Helianthemum *thymi folio glabro. Tourn.* Small Sunflower, with a ſmooth Thyme-leaf.
24. Helianthemum *ad nummulariam accedens. J. B.* Small Sunflower reſembling Money-wort.
25. Helianthemum *foliis roriſmarini ſplendentibus ſubtus incanis. Tourn.* Small Sunflower, with ſhining roſemary Leaves hoary underneath.

26. Helianthemum *Maſſilienſe, coridis folio. Tourn.* Small Sunflower of Marſeilles, with a fair low heath-pine Leaf.

27. Helianthemum *polii folio ampliore, Luſitanicum. Tourn.* Portugueze Small Sunflower, with a larger Mountain Poley-leaf.

28. Helianthemum *polii folio anguſtiore, Luſitanicum. Tourn.* Portugueze Small Sunflower, with a narrow Poley Mountain-leaf.

29. Helianthemum *humilius Luſitanicum, halimi folio nigriore, magno flore luteo. Tourn.* Low Portugueze ſmall Sunflower, with a black ſea-purſlane Leaf, and a large yellow Flower.

30. Helianthemum *Algarvienſe, halimi folio, flore luteo punicante maculâ inſignito. Tourn.* Small Sunflower of *Algarve*, with a ſea-purſlane Leaf, and a yellow Flower ſpotted with Scarlet.

31. Helianthemum *Hiſpanicum, halimi folio rotundiore. Tourn.* Spaniſh ſmall Sunflower, with a round ſea-purſlane Leaf.

32. Helianthemum *Hiſpanicum, halimi folio anguſtiore. Tourn.* Spaniſh ſmall Sunflower, with a narrow ſea-purſlane Leaf.

33. Helianthemum *Hiſpanicum, halimi folio minimo. Tourn.* Spaniſh ſmall Sunflower, with the leaſt ſea-purſlane Leaf.

34. Helianthemum *Luſitanicum, mari folio incano, flore luteo. Tourn.* Portugueze ſmall Sunflower, with a hoary marum Leaf, and a yellow Flower.

35. Helianthemum *Luſitanicum, mari folio incano, capitulis valde hirſutis. Tourn.* Portugueze ſmall Sunflower, with a hoary marum Leaf, and very hairy Seed-veſſels.

36. Helianthemum *Luſitanicum, majoranæ folio, flore luteo punicante maculâ inſignito. Tourn.* Portugueze ſmall Sunflower, with a marjoram Leaf, and a yellow Flower ſpotted with Scarlet.

37. Helianthemum *Hiſpanicum, halimi folio ampliſſimo, incano & nervoſo. Tourn.* Spaniſh ſmall Sunflower, with a very large hoary ribbed Leaf.

38. Helianthemum *Hiſpanicum, anguſto folio, flore carneo. Tourn.* Spaniſh ſmall Sunflower, with a narrow Leaf, and a carnation Flower.

39. Helianthemum *Alpinum, oleæ folio ſubtus incano. Tourn.* Small Sunflower of the Alps, with an olive Leaf hoary underneath.

40. Helianthemum *Luſitanicum, bupleuri folio, flore maculato. Tourn.* Portugueze ſmall Sunflower, with a hares-ear Leaf, and a ſpotted Flower.

41. Helianthemum *Luſitanicum, globulariæ folio. Tourn.* Portugueze ſmall Sunflower, with a daizy Leaf.

42. Helianthemum *Hiſpanicum, origani folio ſubtus incano. Tourn.* Spaniſh ſmall Sunflower, with an origany Leaf hoary underneath.

43. Helianthemum *plantaginis folio, perenne. Tourn.* Perennial ſmall Sunflower, with a plantain Leaf.

44. Helianthemum *Hiſpanicum, folio minimo rotundiore. Tourn.* Spaniſh ſmall Sunflower, with a very ſmall round Leaf.

45. Helianthemum *Hiſpanicum, ocymi folio ſubtus incano. Tourn.* Spaniſh ſmall Sunflower, with a baſil Leaf, hoary underneath.

46. Helianthemum *pumilum, portulacæ marinæ folio argenteo. Tourn.* Dwarf ſmall Sunflower, with a ſilvery ſea-purſlane Leaf.

47. Helianthemum *Creticum, linariæ folio, flore croceo. Tourn. Cor.* Candy ſmall Sunflower, with a toad-flax Leaf, and a ſaffron Flower.

48. Helianthemum *Creticum annuum, lato plantaginis folio, flore aureo. Tourn. Cor.* Annual Candy ſmall Sunflower, with a broad plantain Leaf, and a golden Flower.

49. Helianthemum *Luſitanicum annuum, plantaginis folio, flore tricolore. Tourn.* Annual Portugueze ſmall Sunflower, with a plantain Leaf, and a three-coloured Flower.

50. Helianthemum *fruteſcens, folio majoranæ incano. Tourn.* Shrubby ſmall Sunflower, with a hoary marjoram Leaf.

51. Helianthemum *halimi folio breviore obtuſo. Tourn.* Small Sunflower, with a ſhorter blunt ſea-purſlane Leaf.

52. Helianthemum *folio halimi latiore mucronato. Tourn.* Small Sunflower, with a broader ſharp-pointed Leaf.

53. Helianthemum *Americanum fruteſcens, portulacæ folio. Plum. Cat.* Shrubby American ſmall Sunflower, with a purſlane Leaf.

The four firſt Sorts are found wild in ſeveral Parts of *Great Britain*; but the firſt is the moſt common of them all, and is found upon the Sides of dry Banks, and chalky Hills, in divers Parts of *England*. The twelve firſt Species are perennial Plants, which grow woody, but of low Stature, ſeldom riſing above a Foot high; the Branches, for the moſt part, trailing upon the Ground. Theſe Plants are very ornamental to a Garden, eſpecially if planted in a warm Poſition, and a dry Soil, where they will thrive and flower exceedingly, and are very proper to plant in ſloping Borders, or little Declivities, where few other Plants will thrive to Advantage: And altho' the Flowers of theſe Plants are of no great Beauty, yet the vaſt Quantities which are produced all over the Plants, for two Months together, render them worthy of a Place in every good Garden.

Theſe are all propagated by Seeds, (which the Plants annually furniſh in great Plenty) and ſhould be ſown in a warm Border of light freſh Earth in *March*, or the Beginning of *April*; and when the Plants are come up, they may be tranſplanted into Beds of the like Earth about four Inches aſunder, or ſomewhat more; in which Placethey may remain until *September*, when they ſhould be removed to the Places where they are to continue for good, obſerving to take them up with a good Ball of Earth to their Roots, otherwiſe they are ſubject to miſcarry.

They may alſo be propagated by planting Cuttings of any of the Sorts in *May*, in a Bed of light freſh Earth, obſerving to water and ſhade them until they have taken Root: Theſe alſo may remain in the Beds until *September*, when they ſhould be planted out, as was directed for the ſeedling Plants: But as they generally produce great Quantities of Seeds every Year, ſo there will ſeldom be Occaſion for propagating them any other Way: becauſe the ſeedling Plants are generally better than thoſe obtained from Cuttings; and it being more Trouble to propagate them by Cuttings, few People practiſe that Method.

The thirteenth, fourteenth, and fifteenth Sorts are annual Plants, and muſt be ſown every Year, or the Seeds ſuffer'd to fall; which, if the Ground be clear from Weeds, will come up, and abide the Winter, and flower early in the ſucceeding Summer; which is the ſureſt Method to obtain large Plants, eſpecially of the fifteenth Sort, of which, if the Seeds are ſown in the Spring, the Plants are apt to be very ſmall, and produce but few Flowers, and many times the Seeds will not come up at all; ſo that if you ſow them, it ſhould be done ſoon after they are ripe: The Flowers of this Sort are very beautiful, each Petal or Leaf having a deep purple Spot at the Bottom; and ſince it is a Plant which requires but very little Care, it is well worth keeping in a Garden.

The ſixteenth Sort is ſometimes found wild in *England*, and is only a Variety of the common Sort, differing only in the Colour of the Flower.

The twenty-ſeven Sorts next following grow wild in *Portugal*, *Spain*, the *South* of *France*, and the *Alps*. Theſe are all of them abiding Plants, which may be propagated by Seeds, in the Manner above directed, and if they are planted on a warm Border, or on a ſloping Bank, which is expoſed to the South, they will live in the open Air in this Country very well. As theſe Plants require very little Trouble to cultivate them, ſo they merit a Place in every large Garden; where if they are properly diſpoſed, they will afford an agreeable Variety.

Theſe Plants ſhould not be planted in a rich Soil; for they naturally grow on chalky Hills, or ſtony and gravelly Places, where they flower much better, and the Plants will continue longer, than when they grow in a rich Earth. As all theſe Plants are of humble Growth, and ſpread their Branches near the Ground; ſo they ſhould not be placed among tall-growing Plants, which will over-bear them, nor ſhould large Weeds be permitted to remain amongſt them, becauſe they will greatly weaken the Plants, and prevent their flowering.

The forty-fourth, forty-fifth, forty-ſixth, and forty-ſeventh Sorts, are of humbler Growth than the former Sorts, and ſeldom abide long; ſo that their Seeds ſhould be carefully ſaved, and ſown to raiſe a Supply of young Plants to preſerve their Kinds.

The 48th and 49th Sorts are annual Plants, ſo that their Seeds muſt be ſown every Seaſon, as directed for the thirteenth, fourteenth, and fifteenth Sorts. Theſe Seeds muſt be ſown in the Places where they are deſigned to remain, for the Plants do not ſucceed well when they are tranſplanted; all the Culture they require, is to keep them conſtantly clear from Weeds; and where the Plants are too near together, to thin them: With this Management they will produce their Flowers, and perfect their Seeds; which, if permitted to ſcatter, will produce young Plants in Autumn; which in a warm Situation will live thro' the Winter, and come early to flower the following Spring.

The fiftieth, fifty-firſt, and fifty-ſecond Sorts, are ſhrubby Plants, which riſe to the Height of four or five Feet; theſe are preſerved in Pots, and removed into the Green-houſe in Winter, being too tender to live in the open Air in this Country throughout the Year. They are uſually propagated by Cuttings, becauſe they ſeldom perfect Seeds in *England*, the beſt Time to plant the Cuttings, is in the Middle, or latter End of *June*, after the Plants have been expoſed in the open Air a ſufficient time to harden the Shoots; for if they are taken off ſoon after the Plants are removed out of the Green-houſe, the Shoots are generally too weak to make Cuttings. They ſhould be planted in a ſhady Border of light Earth, and frequently refreſhed with Water; in about two Months the Cuttings will be ſufficiently rooted to tranſplant, when they ſhould be carefully taken up with Balls of Earth, to their Roots, and each planted in a ſeparate ſmall Pot, filled with light freſh Earth, and placed in a ſhady Situation, until they have taken new Root; after which time they may be placed amongſt other hardy exotic Plants in a ſheltered Situation; where they may remain until the Middle of *October*, when they muſt be removed into the Green-houſe: during the Winter Seaſon, theſe Plants ſhould have as much free Air as poſſible in mild Weather, and will require to be often watered; and in the Summer Seaſon they muſt be removed into the open Air, and placed with other hardy exotic Plants, ſuch as *Myrtles*, *Geraniums*, &c. where they may be defended from ſtrong Winds; and in hot dry Weather, they muſt be plentifully watered: With this Management the Plants will thrive, and in *June*, *July* and *Auguſt*, they will flower, at which time they will make a pretty Appearance amongſt other exotic Plants.

As theſe Plants ſometimes produce good Seeds in *England*, or if their Seeds are procured from abroad; ſo thoſe Perſons who are deſirous to propagate them from Seed, ſhould ſow them the Beginning of *March*, on a very moderate Hot-bed, obſerving frequently to water the Bed to keep the Earth moiſt, otherwiſe the Seeds will not vegetate; and when the Plants appear above Ground, they ſhould have a large Share of Air, otherwiſe they will draw up too weak: they muſt alſo be kept clear from Weeds, and frequently refreſhed with Water; when the Plants are about two Inches high, they ſhould be each tranſplanted carefully into a ſmall Pot, filled with light freſh Earth, and plunged into a very moderate Hot-bed again, being careful to ſhade them from the Sun until they have taken Root; after which time they muſt be inured to bear the open Air by degrees, and in *June* they ſhould be removed out of the Hot-bed, and placed in a ſheltered Situation, and managed as hath been directed for thoſe Plants which were raiſed from Cuttings.

The fifty third Sort is much more tender than either of the former, being an Inhabitant of the warmeſt Parts of *America*. This was diſcovered by Father *Plumier*, in the *French* Settlements; and in the Year 1731. I had the Seeds of this Plant ſent me by the late Dr. *William Houſtoun*, from *La Vera Cruz*. This Sort grows about two Feet and a half, or three Feet high, and divides into many ſucculent Branches, which are beſet with thick ſucculent Leaves, ſomewhat reſembling thoſe of *Purſlane*: on the Top of the Branches is ſent forth a ſlender Stalk about a Foot long, which is garniſhed with beautiful ſcarlet Flowers, growing in a Spike; theſe Flowers are ſucceeded by tricapſular Seed-veſſels, which are full of ſmall Seeds.

This Sort, which was firſt procured by Seeds from abroad, has been ſince propagated by Cuttings, and diſperſed into ſeveral Parts of *Europe*. The beſt Seaſon for planting of theſe Cuttings, is in *July*; but they ſhould be cut from the Plant, and laid to dry, four or five Days before they are planted, otherwiſe they are very ſubject to rot. Theſe Cuttings ſhould be planted in Pots, filled with light freſh ſandy Earth, and plunged into a moderate Hot-bed, being careful to ſhade them from the Sun in the Heat of the Day, as alſo to refreſh them now and then with a little Water; but they muſt not be kept too moiſt, leſt that ſhould rot them. The Glaſſes of the Hot-bed ſhould alſo be raiſed every Day, to admit freſh Air to the Plants, in proportion to the Warmth of the Seaſon. With this Management the Cuttings will take Root in about a Month, when they may be expoſed to the Sun, giving them a proportionable Quantity of Air; but they ſhould remain in the Bed till the latter End of *September*, when they ſhould be removed into the dry Stove, and placed in the warmeſt Part, where they may have Sun and Heat. During the Winter Seaſon they ſhould be ſparingly watered, but in Summer they ſhould have a greater Share, as alſo a large Quantity of freſh Air; but they muſt conſtantly remain in the Stove.

HELIOTROPIUM, [Ἡλιοτρόπιον, of Ἥλιος, *the Sun*, and τρέπω, *to turn*] Turnſole.

The *Characters* are;

The Flower conſiſts of one Leaf, and is ſhaped like a Funnel, having its Center wrinkled and folded, and its Brim cut into ten Segments, alternately unequal: Theſe Flowers are collected into a long reflexed Spike, reſembling a Scorpion's Tail; each Flower is ſucceeded by four naked gibboſe Seeds.

The *Species* are;

1. Heliotropium *majus Dioſcoridis. C. B.* The great Turnſole of *Dioſcorides*.
2. Heliotropium *Americanum cœruleum, foliis Hormini. Acad. Reg. Sc.* Blue *American* Turnſole, with Clary Leaves.
3. Heliotropium *Americanum cæruleum, foliis Hormini anguſtioribus. H. L.* Blue *American* Turnſole, with narrower Clary Leaves.
4. Heliotropium *arboreſcens, folio teucrii, flore albo in capitula denſa congeſto. Boerh. Ind.* Tree-like Turnſole, with a Germander Leaf, and white Flowers growing in thick, ſhort Heads.
5. Heliotropium *Canarienſe arboreſcens, folio ſcorodoniæ. Hort. Amſt.* *Canary* Tree-like Turnſole, with a Wood-ſage Leaf.

The firſt, ſecond, and third Kinds are annual Plants: The firſt is very hardy, and is better preſerv'd in a Garden, by ſuffering the Seeds to fall when ripe, which will come up in the ſucceeding Spring much better than when preſerv'd and ſown with Care; for it rarely happens that thoſe which are ſown in the Spring do grow; ſo that if it be intended to be had in a different Place from where the Plants grew the preceding Year, the Seeds ought to be ſown ſoon after they are ripe; which ſhould be in the Place where they are to remain; for theſe Plants ſeldom thrive well when tranſplanted, eſpecially if it be not perform'd while the Plants are young.

This Plant produces its Flowers in *June*, and the Seeds ripen in *Auguſt*.

The ſecond and third Sorts muſt be ſown upon a Hot-bed in the Spring, and managed as was directed for the *Cyanus Turcicus*, (to which the Reader is deſired to turn, to ſave Repetition); for if they are not brought forward in the Spring, they ſeldom perfect their Seeds: There is no great Beauty in theſe two Plants, nor are they often cultivated but in botanick Gardens for Variety-ſake.

The fourth and fifth Sorts grow to be large ſhrubby Plants: Theſe are propagated by planting Cuttings of them, in any of the Summer Months, in a Bed of light Earth, obſerving to ſhade and water them until they have taken Root; and in *Auguſt* they ſhould be tranſplanted into Pots fill'd with light freſh Earth, which ſhould be placed in a ſhady Situation until the Plants are rooted in the Pots, when they may be removed into the open Air amongſt *Myrtles*, *Jaſmines*, &c. where they may remain until *October*; at which Time they ſhould be removed into the Green-houſe, where they ſhould be placed ſo as to have as much free Air as poſſible, and will require frequent Waterings.

The fifth Sort produces Flowers every Summer: But I have never yet ſeen any on the fourth Sort, altho' it is by much the larger Plant.

HELLEBORE. *Vide* Helleborus.

HELLEBORINE; Baſtard Hellebore.

The *Characters* are;

It hath a fibroſe Root: The Leaves are broad and nervous, ſomewhat like thoſe of the White Hellebore*: The Flowers, which grow upon a ſhort Foot-ſtalk, are collected into a Spike, each conſiſting of ſix diſſimilar Leaves: The Ovary becomes a Fruit very like that of the* Orchis.

The *Species* are;

1. Helleborine *latifolia montana. C. B. P.* Common Baſtard Hellebore.
2. Helleborine *altera, atro-rubente flore. C. B. P.* Baſtard Hellebore, with a blackiſh Flower.
3. Helleborine *flore albo. Ger.* White-flower'd Baſtard Hellebore.
4. Helleborine *flore rotundo, ſive Calceolus. C. B. P.* Lady's Slipper.
5. Helleborine *Virginiana, flore rotundo luteo. Baniſter.* *Virginian* Lady's Slipper, with a yellow Flower.

6. **Helleborine** *Canadenſis, ſive Calceolus Mariæ. Icon. Robert.* Canada Lady's Slipper.

7. **Helleborine** *latifolia, flore albo clauſo. Raii Syn.* Broad-leav'd Baſtard Hellebore, with a white ſhut Flower.

8. **Helleborine** *foliis prælongis anguſtis acutis. Raii Syn.* Baſtard Hellebore, with longer narrow pointed Leaves.

9. **Helleborine** *paluſtris noſtras. Raii Syn.* Marſh Baſtard Hellebore.

10. **Helleborine** *montana anguſtifolia purpuraſcens. C. B. P.* Narrow-leav'd purple mountain Baſtard Hellebore.

11. **Helleborine** *Virginiana, ophioglſſi folio. D. Baniſt.* Baſtard Hellebore of *Virginia*, with an adders-tongue Leaf.

12. **Helleborine** *Mariana, bupleuri anguſtiſſimo folio, purpuraſcente flore, caule aphyllo. Pluk.* Baſtard Hellebore of *Maryland*, with a very narrow Leaf, like that of Hares-ear, a purpliſh Flower, and a Stalk without a Leaf.

13. **Helleborine** *Mariana, flore pallide purpureo, trianthophoros. Pluk. Mantiſſ.* Baſtard Hellebore of *Maryland*, with pale purple Flowers, growing three on a Stalk.

14. **Helleborine** *Mariana monanthos, flore longo purpuraſcente liliaceo. Pluk. Mantiſſ.* Baſtard Hellebore of *Maryland*, with one long purpliſh lily-ſhaped Flower.

15. **Helleborine** *Virginia, flore rotundo magno ex purpureo albicante. Baniſt. Cat.* Baſtard Hellebore of *Virginia*, with a large round Flower of a purpliſh white Colour.

16. **Helleborine** *foliis liliaceis, aſphodeli radice. Plum. Cat.* Baſtard Hellebore of *America*, with Leaves like the Lily, and an aſphodel Root.

17. **Helleborine** *purpurea, tuberoſâ radice. Plum. Cat.* Purple Baſtard Hellebore, with a tuberoſe Root.

18. **Helleborine** *Americana, foliis longiſſimis, tuberoſâ radice. American* Baſtard Hellebore, with very long Leaves, and a tuberoſe Root, commonly called, *the Flower of the Holy Ghoſt.*

19. **Helleborine** *graminea, foliis rigidis carinatis. Plum. Cat.* Graſs-like Baſtard Hellebore, with ſtiff Leaves.

The firſt ſix Sorts are Natives of Woods and ſhady Places: The four firſt mentioned are found in the Woods of *Yorkſhire, Lancaſhire*, and other Northern Countries in *England:* But the fifth and ſixth are Natives of *America*, from whence ſome of the Plants have been ſent into *England*, which thrive, and produce Flowers very well every Year. There is no other Method to obtain theſe Plants, but by ſearching them out in their natural Places of Growth, and taking up their Roots, with a large Ball of the natural Soil to 'em, and then to tranſplant them into a ſhady Place in the Garden, and in a ſtrong undung'd Soil: Theſe are very pretty Ornaments to ſmall Wilderneſſes; where, if the Ground between the Trees be planted with theſe, and other common Flowers which grow naturally in Woods, it will render ſuch Places very agreeable: And as theſe require little other Culture than to preſerve them from being over-run with Weeds; ſo the only Expence is in the firſt procuring them, which is eaſily effected in many Parts of *England.* The beſt Seaſon for tranſplanting them is in *May*, ſoon after they appear above-ground.

The ſeventh, eighth, and ninth Sorts, grow wild in many Parts of *England*; the tenth Sort has been found in *Ireland*, and is pretty common in other Parts of *Europe.* Theſe may be tranſplanted into Gardens, from the Places of their natural Growth; either in the Spring, ſoon after they appear above Ground, or in Autumn, when their Leaves begin to decay; but if they are tranſplanted in Spring, there ſhould be great Care had, to preſerve a large Ball of Earth to their Roots, otherwiſe they will not ſucceed. Theſe Plants ſhould be planted in ſhady moiſt Places, and in a ſtrong undunged Soil, where they will continue many Years, and produce their Flowers toward the latter Part of Summer.

The eleventh, twelfth, thirteenth, fourteenth and fifteenth Sorts, are Natives of *Virginia, Maryland*, and *New England*; from which Places ſome of their Roots have been brought into *England.* The beſt Method to obtain theſe Kinds, is to procure ſome of their Roots to be taken up with Balls of Earth, and planted into Tubs of the natural Soil in which they grew, as cloſe together as poſſible; theſe Tubs ſhould remain in the Country, until the Leaves of the Plants begin to decay, when they may be put on board the Ships, and ſent over; for as the Roots will then be in a State of Inaction, ſo they will be in leſs Danger of ſuffering in their Paſſage, than if they were in a vigorous growing State, and will require very little (if any) Water. Theſe Plants may be planted out of the Boxes into ſmall Wilderneſs Quarters, where they will abide the Cold of the Winter very well, and produce their Flowers in Summer.

The ſixteenth and ſeventeenth Sorts were diſcovered by Father *Plumier*, in the *French* Settlements in *America*; both theſe Sorts were ſent by the late Dr. *William Houſtoun* from *Jamaica*, where they grow in the Woods and ſhady Places in great Plenty. The ſeventeenth Sort was alſo ſent from the *Bahama Iſlands*, to Mr. *Peter Collinſon*, and hath been ſince diſtributed to many curious Perſons in *England.* This is a very curious Plant, and deſerves a Place in the Stove, becauſe it produces a moſt beautiful Spike of purple Flowers every Year. This and the former Sort are propagated by Off-ſets, which they ſend forth plentifully; the beſt Seaſon for tranſplanting the Roots, and taking off the Off-ſets, is in the Beginning of *February*, juſt before they begin to ſhoot. Theſe Roots ſhould be planted in Pots, filled with light rich Earth, and then plunged into the Tan in the Stove, obſerving to refreſh the Earth with Water now and then; but it muſt not be given to them in great Quantities, until they have ſent forth their Leaves; for too much Moiſture will rot theſe Roots, while they are in an unactive State. Theſe Plants ſhould conſtantly be kept in the Bark-bed in the Stove, otherwiſe they will not flower: During the Summer-ſeaſon, they will require a larger Share of Moiſture, and in hot Weather, they ſhould have a large Share of freſh Air; but in Winter they muſt be kept warm, otherwiſe the Roots will periſh. With this Management the Plants will thrive exceedingly, and produce their beautiful Flowers in *Auguſt.* The Roots of theſe Plants ſhould not be diſturbed in Winter; for altho' their Leaves decay in Autumn, and their Roots remain unactive, yet if they are taken up and kept out of the Ground, they are very apt to ſhrink, unleſs great Care be taken of them. The ſeventeenth Sort was by Accident procured in *England*, the Root being ſent over as a Specimen of the Plant, which was dried and ſent to Mr. *Collinſon*; he took off the Root, and had it planted in the Stove at Sir *Charles Wager*'s Garden; it grew and flowered; from which Root there has been a great Number produced. This Sort produces a Spike of Flowers near two Feet long, which being of a bright purple Colour, make a fine Appearance in the Stove.

The eighteenth Sort grows in great Plenty on the Sides of the Road between *Porto Bello* and *Panama*, in the *Spaniſh Weſt-Indies*, in ſhady Places, and on a ſtony Soil. The *Spaniards* ſay, it is only to be found in this Place, and that it cannot be tranſplanted to any other Part of the Country, ſo as to grow. The Flowers of this Plant reſemble a *Dove*, from whence the *Spaniards* gave it the Name of the *Holy Ghoſt.* Some of theſe Roots were ſent to *England* by Mr. *Robert Millar*, Surgeon, who was on the Spot where they grow; ſome of theſe Roots are yet alive in *England*, but have not as yet produced any Flowers. This and the nineteenth Sort, are both very tender Plants; ſo, if they are brought into *England*, they muſt be treated very tenderly, their Roots ſhould be planted in Pots, filled with a ſandy Soil mixed with Lime Rubbiſh; and then plunged into a Hot-bed of Tanners-bark, being careful not to give them too much Water, until they begin to ſhoot; after which Time they ſhould be frequently watered. During the Summer-ſeaſon theſe Plants muſt have freſh Air admitted to them; but in Winter they muſt have a very warm Situation. Theſe put forth their green Leaves in *May*, which continue till Autumn, when they decay; ſo that the Roots remain inactive above ſix Months.

There are many other Sorts of theſe Plants, which are Natives of *America*; but the greater Part of them growing on Trees, cannot be cultivated in Gardens; ſo it is needleſs to enumerate them in this Place.

HELLEBOROIDES HYEMALIS. *Vide* Aconitum Hyemale.

HELLEBORO-RANUNCULUS; Globe-Ranunculus, *vulgo.*

The *Characters* are;

It hath ſingle, round, circumſcribed Leaves like the Ranunculus: *The Cup of the Flower conſiſts of five ſmall Leaves of the ſame Colour with the Flower: The Flower conſiſts of many Leaves growing in form of a* Ranunculus, *having many Stamina in the Centre: The Fruit conſiſts of many ſmall Cells, which are collected into a Head, each containing many Seeds.*

We have but one *Species* of this Plant, which is;

Helleboro-Ranunculus *flore luteo globoſo. Boerh. Ind.* The Globe-Flower, *or* Lockergowlans.

This Plant is found wild in the North Parts of *England* and *Wales* in great Plenty: It is propagated by parting the Roots in Autumn, which ſhould be planted in a moiſt ſhady Situation, where they will thrive and flower exceedingly, and require very little Care, except to keep them clear from Weeds, and parting the Roots every other Year; for if they are permitted to continue too long unremov'd, the Flowers will not be ſo large, nor in ſo great Quantity.

HELLEBORUS, [Ἑλλέβορος] Black Hellebore, *or* Chriſtmas Flower.

The *Characters* are ;

It hath a digitated Leaf: The Flower conſiſts of ſeveral Leaves, which are placed orbicularly, and expand in form of a Roſe: In the Centre of the Flower riſes the Pointal, which is incompaſſed about the Baſe with ſeveral little Horns lying between the Chives and Petals, which afterwards turn to a Fruit, in which the membranaceous Husks are gathered, as it were, into a little Head, ending, for the moſt part, in a Horn, opening lengthwiſe, and, for the moſt part, full of roundiſh or oval Seeds.

The *Species* are ;

1. Helleborus *niger fœtidus. C. B. P.* Stinking Black Hellebore, Bear's foot, *or* Settlewort.
2. Helleborus *niger hortenſis, flore viridi. C. B. P.* Green-flower'd Black Hellebore, *or* Bear's-foot.
3. Helleborus *niger, flore albo, etiam interdum valde rubente. J. B.* True Black Hellebore, *or* Chriſtmas Roſe.
4. Helleborus *niger trifoliatus. Hort. Farn.* Trifoliated Black Hellebore.
5. Helleborus *niger, flore roſeo, minor Belgicus. H. R. Blæſ.* Small Belgick Black Hellebore.
6. Helleborus *niger hortenſis alter. C. B. P.* The other garden black Hellebore.
7. Helleborus *niger, amplioribus foliis. Tourn.* Black Hellebore, with larger Leaves.
8. Helleborus *niger autumnalis, flore maximo. H. R. Par.* Autumnal black Hellebore, with a very large Flower.
9. Helleborus *niger, ſanguineo folio. Bocc. Muſ.* Black Hellebore, with a bloody Leaf.
10. Helleborus *niger orientalis, ampliſſimo folio, caule prœalto, flore purpuraſcente. Tourn. Cor.* Eaſtern black Hellebore, with a very large Leaf, a tall Stalk, and a purpliſh Flower.

The two firſt Species are found wild in the Woods in divers Parts of *England* ; but the third, fourth, and fifth Sorts are brought from other Countries, which do thrive as well with us in the open Air, as thoſe that are Natives. The two firſt Sorts being Wood Plants, thrive much better when planted in ſhady moiſt Places, than when they are planted in a warmer Situation, and too much expoſed to the Sun: And as they produce their Flowers in the Middle of Winter, when few other Plants appear ; ſo they deſerve a Place in ſmall Wilderneſs Quarters, Avenues, and ſhady Borders, where they will flouriſh exceedingly, and, if ſuffer'd to ſhed their Seeds, will ſoon furniſh a Garden with Plants enough ; and this is the eaſieſt and beſt Method to propagate them.

The 3d, 4th, and 5th Sorts are propagated either from Seeds, or by planting of their Roots: the beſt Seaſon for this Work is in *February*, when you may divide the Roots into ſmall Heads, and plant them in a Situation where they may have the Morning Sun only 'till ten o' Clock ; for if they are too much expoſed to the great Heats of the Sun, they will not thrive: Theſe ſhould alſo have a moiſt light Soil ; but the Ground ſhould not have Dung in it, which is very ſubject to rot the Roots of theſe Plants.

If you propagate them by Seeds, they ſhould be ſown ſoon after they are ripe, which is commonly in *May*, in a Border expoſed to the Morning Sun, where the Plants will come up the Spring following, and ſhould be kept clear from Weeds ; which, if ſuffer'd to grow, would ſoon deſtroy the young Plants: In this Border they ſhould remain until the *February* following, at which Time they ſhould be tranſplanted into another Border to the Diſtance of ſix Inches ſquare, obſerving to keep them conſtantly clear from Weeds ; and in one Year after planting out, they will flower, and may then be removed to the Places where they are to remain for good.

There are great Doubts whether any of theſe Species be the true *Hellebore* of the Antients ; tho' Monſ. *Tournefort*, and ſome other Travellers affirm, that the third Species is it: But yet the *Germans* uſe the *Adonis, Hellebori radice, buphthalmi flore*, for the *Hellebore* ; and many other People believe it to be a Plant different from both theſe: But it is hoped that we ſhall ſhortly know who are in the right.

The laſt five Plants are not Natives of this Country, but are hardy enough to bear the Cold of our Winters very well in the open Air: They require a ſhady Situation, and thrive beſt in a ſtrong loamy Soil ; for if the Ground is hot and dry, in which they are planted, they will not thrive or produce any Flowers. They may be propagated by parting of their Roots, or from Seeds, as is directed for the former Species.

HELLEBORUS ALBUS. *Vide* Veratrum.

HELMET-FLOWER, *or* **MONK'S-HOOD.** *Vide* Aconitum.

HEMEROCALLIS. *Vide* Lilium.

HEMIONITIS [Ἡμιονῖτις, of Ἡμίονος, *a Mule*, q. d. *Mulewort*, becauſe this Plant was believ'd to be as barren as a Mule] Moon-Fern.

This is a Plant which is ſeldom propagated in Gardens ; therefore I ſhall not trouble the Reader with any Account of it more than this, that whoever hath a mind to cultivate it, may ſee full Directions for that Purpoſe under the Article *Lingua Cervina*, to which this Plant is nearly ally'd, and delights in the ſame Situation and Culture.

HEPATICA, [Ἡπατῖτις, of Ἧπαρ, *the Liver* ; ſo call'd, becauſe the Leaves of this Plant are divided into Lobes, like the Liver, (but it does not at all take its Name from its Uſe ; for it is of no Virtue againſt Diſeaſes of the Liver, as many have erroneouſly imagined) ; and *Trifolia*, from its Similitude thereto] Noble Liverwort.

The *Characters* are ;

The Root is fibroſe and perennial: The Leaf conſiſts of three Lobes growing on a Pedicle which ariſes from the Root: The Pedicle of the Flower is naked and ſingle, ariſing from the Root: The Cup of the Flower is, for the moſt part, compoſed of one Leaf, which is ſometimes cut into three or four deep Diviſions: The Flower conſiſts of many Leaves, which expand in form of a Roſe*: The Fruit is globular, conſiſting of one ſingle Cell, which is curvated, as in the* Leſſer Celandine.

The *Species* are ;

1. Hepatica *trifolia, cœruleo flore. Cluſ.* The ſingle blue Hepatica, *or* Noble Liverwort.
2. Hepatica *trifolia, flore cœruleo pleno. Cluſ.* The double blue Hepatica, *or* Noble Liverwort.
3. Hepatica *trifolia, flore albo ſimplici. Boerh. Ind.* The ſingle white Hepatica, *or* Noble Liverwort.
4. Hepatica *trifolia, rubro flore. Cluſ.* Single red Hepatica, *or* Noble Liverwort.
5. Hepatica *trifolia, flore rubro pleno. Boerh. Ind.* Double red, *or* Peach-colour'd Hepatica.

Theſe Plants are ſome of the greateſt Beauties of the Spring: Their Flowers are produced in *February* and *March* in great Plenty, before the green Leaves appear, and make a very beautiful Figure in the Borders of the Pleaſure-Garden, eſpecially the Double Sorts, which do commonly continue a Fortnight longer in Flower than the ſingle Kinds, and the Flowers are much fairer. I have ſeen the double white Kind often mention'd in Books, but could never ſee it growing ; tho' I don't know but ſuch a Flower might be obtain'd from Seeds of the ſingle white, or blue Kinds. I have ſometimes known the double blue Sort produce ſome Flowers in Autumn which were inclining to white ; and thereby ſome People have been deceiv'd, who have procur'd the Roots at that Seaſon, and planted them in their Gardens, but the Spring following their Flowers were blue, as before: And this is a common Thing when the Autumn is ſo mild as to cauſe them to flower. But whether the double white Sort, mention'd in the Books, was only this accidental Alteration in the Colour of the Flower, I can't ſay ; tho' it ſeems very probable it was, ſince I never could hear of any Perſon who ever ſaw the double white Sort flower in the Spring.

The ſingle Sorts produce Seeds every Year, whereby they are eaſily propagated, and alſo new Flowers may be that Way obtain'd. The beſt Seaſon for ſowing of the Seeds is in the Beginning of *Auguſt*, either in Pots or Boxes of light Earth, which ſhould be placed ſo as to have only the Morning Sun until *October*, when they ſhould be removed into the full Sun, to remain during the Winter-ſeaſon: But in *March*, when the young Plants will begin to appear, they muſt be removed again to a ſhady Situation, and in dry Weather ſhould be frequently watered ; and about the Beginning of *Auguſt* they will be fit to be tranſplanted ; at which Time you ſhould prepare a Border, facing the Eaſt, of good freſh loamy Earth, into which you ſhould remove the Plants, placing them at about ſix Inches Diſtance each Way, cloſing the Earth pretty faſt to their Roots, to prevent the Worms from drawing them out of the Ground, which they are very apt to do at that Seaſon, and in the Spring following they will begin to ſhew their Flowers: But it will be three Years before they flower ſtrong, and 'till then you cannot judge of their Goodneſs; when, if you find any double Flowers, or any of a different Colour from the common Sorts, they ſhould be taken up and tranſplanted into the Borders of the Flower-Garden, where they ſhould continue at leaſt two Years before they are taken up, or parted; for it is remarkable in this Plant, that where they are often remov'd and parted, they are very ſubject to die; whereas, when they are permitted to remain undiſturb'd for many Years, they will thrive exceedingly, and become very large Roots.

The double Flowers, which never produce Seeds, are propagated by parting their Roots, which ſhould be done in *March*, at the Time when they are in flower: But you ſhould be careful not to ſeparate them into very ſmall Heads; nor ſhould they be parted oftener than every third or fourth Year, if you intend to have them thrive, for the Reaſon before given. They delight in a ſtrong loamy Soil, and in an Eaſtern Poſition, where they may have only the Morning Sun; tho' they will grow in almoſt any Aſpect, and are never injured by Cold.

HEPATORIUM. *Vide* Eupatorium.

HEPTAPHYLLUM. *Vide* Pentaphyllum.

HERBA GERARDI. *Vide* Angelica ſylveſtris minor.

HERBALIST, HERBARIST, a Perſon who is ſkill'd in diſtinguiſhing the Kinds, Natures, or Virtues of *Herbs* or *Plants*.

HERBA PARIS; Herb-Paris, True-love, *or* One-berry.

The *Characters* are;

The Cup of the Flower conſiſts of four Leaves, which expand in form of a Croſs: The Flower alſo hath four Leaves, which expand in the ſame manner, and is generally furniſh'd with four Stamina: The Pointal of the Flower becomes a ſoft globular Fruit, which is divided into four Cells, and are fill'd with oblong Seeds.

We have but one *Species* of this Plant in *England*, which is,

HERBA PARIS. *J. B.* *Solanum quadrifolium, bacciferum. C. B.* Herb True-love, *or* One-berry.

This Plant is found wild in ſhady Woods in divers Parts of *England*, and is rarely cultivated in Gardens: Thoſe who have a mind to propagate it, ſhould ſearch it out in the natural Places of its Growth in *April*, when it firſt appears aboveground, and take up the Roots with a Clod of the natural Earth to them, and tranſplant them into a ſhady Part of the Garden, where, if they are not diſturb'd, they will live and flower; but they are not very apt to increaſe when cultivated. There is no great Beauty in this Plant; but thoſe who delight in Variety may give it Place in a Wilderneſs, where few other Things will thrive.

HERBIFEROUS, ſignifies bearing or bringing forth *Herbs*.

HERBIVOROUS, *i. e.* devouring or feeding on *Herbs* or *Graſs*.

To HERBORIZE; to go abroad in the Fields in queſt of different or new *Herbs* or *Plants*.

HERBOSE, *graſſy*, or full of *Graſs* or *Herbs*.

HERBOSITY, *Graſſineſs*, or Abundance of *Graſs* or *Herbs*.

HERBULENT, *graſſy*, full of *Graſs* or *Herbs*.

HERMANNIA. *Tournefort* gives the Name *Hermannia* to this Plant, in Honour of the immortal Memory of the celebrated *Hermannus*. It is called *Ketmia Africana* in the *Amſterdam* Garden: but *Ketmia* has a Calyx like that of the *Mallow*, and this a bladdery, ſquamoſe Calyx, by which it is eaſily diſtinguiſhed.

The *Characters* are;

The Cup of the Flower conſiſts of one Leaf, which reſembles a Bladder, and is cut into five Segments: The Flower conſiſts of five Leaves, the lowermoſt of which are narrow, but the upper ones are broad, and twiſted, having a pentangular Ovary in the Centre, which is ſurrounded by five Stamina, and is afterwards turn'd to a five-corner'd long Tube.

The *Species* are;

1. HERMANNIA *fruteſcens, folio oblongo ſerrato latiori. Boerh. Ind.* Shrubby Hermannia, with a broader, oblong, ſerrated Leaf.

2. HERMANNIA *fruteſcens, folio groſſulariæ parvo hirſuto. Boerh. Ind.* Shrubby Hermannia, with a ſmall, hairy, Gooſeberry Leaf.

3. HERMANNIA *fruteſcens, folio Ibiſci hirſuto molli, caule piloſo. Boerh. Ind.* Shrubby Hermannia, with a ſoft, hairy, Marſhmallow Leaf, and a woolly Stalk.

4. HERMANNIA *fruteſcens, folio oblongo ſerrato. Tourn.* Shrubby Hermannia, with an oblong, ſerrated Leaf.

5. HERMANNIA *fruteſcens, folio oblongo molli cordato hirſuto. Boerh. Ind.* Shrubby Hermannia, with a ſoft oblong hairy heart-ſhaped Leaf.

6. HERMANNIA *fruteſcens, folio multifido tenui, caule rubro. Boerh. Ind. alt.* Shrubby Hermania, with a narrow multifid Leaf, and a red Stalk.

7. HERMANNIA *fruteſcens, folio lavendulæ latiori & obtuſo, flore parvo aureo. Boerh. Ind. alt.* Shrubby Hermannia, with a broad blunt lavender Leaf, and a ſmall golden Flower.

The firſt four Plants are all propagated by planting Cuttings of them during any of the Summer Months, in a Bed of light freſh Earth, obſerving to water and ſhade them until they are well rooted, which will be in about ſix Weeks after planting; then you ſhould take them up, preſerving a Ball of Earth to their Roots, and plant them into Pots fill'd with light freſh Earth, placing them in a ſhady Situation until they have taken freſh Root; after which they may be expoſed to the open Air, with *Myrtles*, *Geraniums*, &c. until the Middle or latter End of *October*, when they muſt be removed into the Green-houſe; obſerving to place them in the cooleſt Part of the Houſe, and where they may have as much freſh Air as poſſible; for if they are too much drawn in the Houſe, they will appear very faint and ſickly, and ſeldom produce many Flowers; whereas, when they are only preſerv'd from the Froſt, and have a great Share of free Air, they will appear ſtrong and healthy, and produce large Quantities of Flowers in *April* and *May*, during which Seaſon they make a very handſome Shew in the Green-houſe: They muſt alſo be frequently watered, and will require to be new potted at leaſt twice every Year, *i. e.* in *May* and *September*, otherwiſe their Roots will be ſo matted, as to prevent their Growth.

Theſe Plants rarely produce good Seeds with us: but when they are obtain'd from Abroad, they muſt be ſown upon a moderate Hot-bed; and when the Plants come up, they muſt be tranſplanted into ſmall Pots, and plunged into another very moderate Hot-bed, in order to promote their rooting; after which they muſt be harden'd by degrees, to endure the open Air in Summer, and may then be treated as the old Plants.

The three laſt Sorts of Hermannia are Natives of the *Cape of Good Hope*, from whence they have been brought into the *European* Gardens. They may be propagated by Cuttings, which ſhould be planted in *June*, on a Bed of light Earth, being careful to ſhade them from the Sun until they have taken Root, as alſo to refreſh them with Water. When the Cuttings have taken Root, they may be expoſed to the open Air; but it will be proper to let them remain in the Bed until the Middle or latter End of *Auguſt*, when they ſhould be carefully taken up, and each planted in a ſeparate ſmall Pot, and placed in the Shade until they have taken new Root; after which time they may be expoſed with other hardy exotic Plants, in a ſheltered Situation, till *October*; when they muſt be removed into the Green-houſe, and placed where they may enjoy a large Share of Air in mild Weather; but muſt be protected from Froſt, and treated as hath been above directed.

HERMODACTYLUS, the Hermodactyl, commonly called *Snake's-head Iris*.

The *Characters* are;

It hath a lily-ſhaped Flower, conſiſting of one Leaf, and ſhaped exactly like an Iris; but has a tuberoſe Root, divided into two or three Dugs, like oblong Bulbs.

We have but one *Species* of this Plant, which is;

HERMODACTYLUS *folio quadrangulo. C. B. P.* Snake's-head Iris, *vulgo*. This is alſo called, *Iris tuberoſa Belgarum* *i. e.* The tuberoſe Iris of the *Dutch*.

This Plant is eaſily propagated by its Tubers, which ſhould be taken off ſoon after the green Leaves decay, which is the proper Seaſon for tranſplanting of the Roots; but they ſhould not be kept long out of the Ground, leſt they ſhrink; which will cauſe them to rot when they are planted. They ſhould have a loamy Soil, not too ſtrong, and muſt be planted to an *Eaſt* Aſpect, where they will flower very well. Theſe Roots ſhould not be removed oftener than once in three Years, if you deſign to increaſe them; but then they ſhould be planted at a farther Diſtance from each other than if they were to remain but one Year, and the Beds ſhould be kept clear from Weeds, and at *Michaelmas* there ſhould be ſome fine Earth laid over the Beds, which will greatly ſtrengthen their Roots. The Diſtance which theſe Plants ſhould be allowed is ſix Inches ſquare; and they ſhould be placed four Inches deep in the Ground. Theſe produce their Flowers in *May*, and their Seeds are ripe in *Auguſt*; but as they multiply pretty faſt by their Roots, ſo few People are at the Trouble to raiſe them from Seeds; but thoſe who have an Inclination ſo to do, muſt treat them in the Manner directed for the *bulbous Iris's*.

This Plant has by ſome Botanick Writers been ſuppoſed the true *Hermodactyl*; but what has been long uſed in *Europe* for that, is a true *Colchicum*. *Vide* Colchicum.

HERNANDIA, Jack in a Box, *vulgo*.

The *Characters* are;

It hath a ſhort, multifid, ſpreading bell-ſhaped Flower, or a roſaceous Flower, conſiſting of ſeveral Petals, which are placed in a circular Order; theſe are ſome of them barren, and others are fertile: The Cup of the Flower afterward becomes an almoſt ſpherical Fruit, which is ſwelled and perforated, containing a ſtriated, roundiſh Nut.

We have but one *Species* of this Plant, which is,

Hernandia *amplo hederæ folio umbilicato. Plum.* Hernandia, with a large umbilicated ivy Leaf, commonly called in the *Weſt-Indies*, *Jack in a Box*.

This Plant is very common in *Jamaica, Barbadoes, St. Chriſtophers*, and many other Places in the *Weſt-Indies*; where it is known by the Name of *Jack in a Box*. The Fruit of this Plant, when ripe, is perforated; and the Nut in the Inſide becoming hard, the Wind blowing through the Fruit makes a whiſtling Noiſe, which may be heard at a Diſtance; from whence, I ſuppoſe, the Inhabitants gave it this Name. It grows in the Gullies, where there are Rills of Water.

In *Europe* this Plant is preſerved in curious Gardens, with other tender exotic Plants. It is propagated by ſowing of the Seeds on a Hot-bed in the Spring; and when the Plants have ariſen two Inches high, they ſhould be tranſplanted each into a ſeparate Pot, filled with freſh rich Earth, and plunged into the Hot-bed again, obſerving to water and ſhade them until they have taken Root; after which Time they muſt have Air admitted to them (by raiſing of the Glaſſes) in proportion to the Warmth of the Air, or the Heat of the Bed in which they are placed; and they muſt be frequently watered, otherwiſe they will not thrive. As the Plants advance, ſo they ſhould be removed into larger Pots, which ſhould be filled with rich Earth; but in doing of this, you ſhould be very careful not to break the Roots, as alſo to preſerve a good Ball of Earth to them; they muſt alſo be well watered, and if their Leaves ſhould hang after being removed, the Plants muſt be ſcreened from the Sun until they have taken new Root; the beſt Time to ſhift theſe Plants is in *July*, that they may be well rooted before the Cold approaches; and the Plants muſt be conſtantly kept in the Bark-ſtove: In Winter they ſhould have a moderate Share of Heat, and in Summer they muſt have a large Share of Air in hot Weather. With this Management the Plants will grow to the Height of ſixteen Feet, or more; and the Leaves, being very large, will make a beautiful Appearance in the Stove. It hath not as yet flowered in *England*, tho' we may expect ſome of the large Plants to flower in a ſhort Time.

HERNIARIA, [of *Hernia*, Lat. *a Rupture*] Rupturewort.

The *Characters* are;

The Calyx is quadrifid, or, for the moſt part, quinquifid, and expanded in form of a Star, having five Stamina in the Center: The Fruit (which grows on the Bottom of the Flower) becomes a membranaceous, furrow'd, round Capſule, which is divided into eight Cells, each of which contains one ſmall pointed Seed.

The *Species* are;

1. Herniaria *glabra. J. B.* Smooth Rupturewort.
2. Herniaria *hirſuta. J. B.* Rough *or* hairy Rupturewort.
3. Herniaria *alſines folio. Tourn.* Rupturewort, with a Chickweed Leaf.
4. Herniaria *fruticoſa, viticulis lignoſis. C. B.* Shrubby Rupturewort, with woody Branches.

Theſe Plants are ſeldom cultivated but in botanick Gardens, for the ſake of Variety: The three firſt are, for the moſt part, annual Plants, ſeldom continuing longer than one Year, and muſt be permitted to ſhed their Seeds, whereby they are better preſerv'd than if ſown with Art. The fourth Sort is an abiding Plant, which may be propagated by Cuttings: but as they are Plants of no Beauty, ſo they are not worth cultivating.

The firſt Sort is what ſhould be uſed in the Shops, but is rarely ſeen in *London*; the Herb-women commonly bringing the *Parſley Break-ſtone* to the Markets, which is ſold inſtead of this Plant.

HESPERIS: [Some derive the Name of this Plant from *Heſperia, Italy*, from whence the People were anciently call'd *Heſperides*; but it is pretty plain that the Name was taken from Ἑσπερος, becauſe moſt commonly they ſmell moſt in an Evening; either of theſe may be admitted. It is call'd *Viola Matronalis*, becauſe it reſembles the *Violet*, and was at firſt cultivated by Women] Dame's Violet, *or* Queen's Gilliflower.

The *Characters* are;

The Flower conſiſts, for the moſt part, of four Leaves, which expand in form of a Croſs; out of the Flower-cup ariſes the Pointal, which becomes a long, taper, cylindrical Pod, which is divided into two Cells by an intermediate Partition, to which the imbricated Valves do adhere on both Sides, and are furniſhed with oblong, cylindrical, or globular Seeds.

The *Species* are;

1. Hesperis *hortenſis, flore purpureo. C. B. P.* Garden Dame's Violet, with a purple Flower.
2. Hesperis *hortenſis, flore candido. C. B. P.* Garden Dame's Violet, with a white Flower.
3. Hesperis *ſylveſtris inodora. C. B. P.* Unſavoury wild Dame's Violet.
4. Hesperis *hortenſis, flore variegato. Jeſſieu.* Garden Dame's Violet, with a variegated Flower.
5. Hesperis *hortenſis, flore purpureo pleno. H. R. Par.* Garden Dame's Violet, with a double purple Flower, *commonly called* Double Purple Rocket.
6. Hesperis *hortenſis, flore albo pleno. H. R. P.* Garden Dame's Violet, with a double white Flower, or double white Rocket.
7. Hesperis *hortenſis, flore vario pleno. H. R. Par.* Garden Dame's Violet, with a variable Flower.
8. Hesperis *maritima ſupina exigua. Tourn.* Low Maritime Dame's Violet.
9. Hesperis *montana pallida odoratiſſima. C. B. P.* Pale Mountain Dame's Violet, with a very ſweet Smell.

There are many other Varieties of this Plant, which are preſerved in botanick Gardens, to add to their Variety; but theſe here mentioned are the moſt beautiful Kinds, and beſt worth propagating in the Flower-Garden.

The ſeven firſt mention'd Sorts are abiding Plants, and may be propagated by parting of their Roots in *Auguſt*, eſpecially thoſe with double Flowers, which never produce Seeds; but the ſingle Kinds are better propagated by ſowing their Seeds in *March*, which will produce ſtronger Plants than thoſe obtained from Off-ſets. The Heads which are divided, ſhould be well furniſhed with Roots, otherwiſe they are very ſubject to miſcarry: Nor ſhould the old Roots be ſeparated into very ſmall Heads, which would occaſion their flowering weak the ſucceeding Seaſon. The Soil in which theſe Plants ſhould be planted, ought to be freſh, and inclining to a ſandy Loam; but ſhould not be mixed with Dung, which often cauſes the Roots to rot: but if you bury ſome rotten Wood-pile Earth, or very rotten Tanners-bark, juſt deep enough for their Fibres to reach it, the Plants will thrive exceedingly, and produce great Quantities of very large fair Flowers, as I have ſeveral Times experienc'd: But if this ſhould be ſo ſhallow as to touch the main Roots, 'tis ten to one if they don't rot away; which is very often the Caſe with theſe Flowers, when they are planted in a rich dung'd Soil. The double white *Rocket* is by far the moſt beautiful Plant of all the Kinds, the Flowers of which are as large and double as the faireſt double *Stock-Gilliflower:* It was formerly planted in great Plenty in the Gardens near *London*, to ſupply the Markets with Flowers for Baſons; for which Purpoſe there is not any Plant better adapted, and will continue in Beauty for a long Time: But of late Years theſe Plants have not ſucceeded ſo well as formerly, which may be owing to the dunging of the Soil; for it is obſervable, that in freſh Ground, which has not been till'd, theſe Plants do ſucceed beſt. The ſingle Kinds have very little Beauty in them, when compar'd with the double, and are therefore ſeldom cultivated in Gardens: But as they are much hardier than the double, and will thrive in a ſhady Border, ſo they may be admitted for Variety. Theſe all produce their Flowers in *May*, and the ſingle Kinds do perfect their Seeds in *Auguſt*; which, if ſuffer'd to ſhed upon the Ground, will come up very well, and ſave the Trouble of ſowing them.

The eighth Sort is a very low Plant, which may be ſown for Edgings, or in Patches on the Borders of the Pleaſure-Garden, as the *Dwarf-Lychnis*, *Venus Looking-glaſs*, and other low annual Plants are uſually cultivated, to imbelliſh the Borders in Autumn, after moſt other Flowers are paſt. The Seed may be ſown in *April* or *May*, to flower late. But the Method to have this Plant in the greateſt Perfection, is to ſow the Seeds in ſmall Patches in the Borders under warm Walls in *Auguſt*, which will come up ſoon after, and the Plants will get Strength enough to endure the Cold; and in the Spring following theſe will produce much larger Flowers than thoſe which come up in the Spring.

The ninth Sort is a biennial Plant, ſeldom continuing longer than two Years: This muſt be propagated by ſowing the Seeds in the Manner directed for the firſt Sorts, and the ſecond Year the Plants will flower; which if you intend to preſerve, you muſt cut off moſt of the Flower-ſtems, before the Flowers decay; which will occaſion the Roots to put out new Heads, if they are ſound, whereby they may be often continued three or four Years.

HIERACIUM, of Ἱέραξ, Gr. a *Hawk*; ſo call'd, becauſe Hawks, as well as Eagles, have a ſtrong and quick Sight; and it is reported, that if, by reaſon of the Heat of the Air, a Film grows over the Eyes of this Bird, then the Parent drops a Drop of the Juice of it in its Eye; and that, in like manner, it is good to clear the human Sight] Hawkweed.

The *Characters* are;

The Stalks are branched and ſlender: The Leaves are produced alternately: The Cup of the Flower is ſhort, firm and expanded: The Flower conſiſts of many Leaves, which are placed in an orbicular Order, and open in form of a Marygold: *The Seeds are ſlender and angular, or furrow'd: To which may be added, the whole Plant hath a milky Juice.*

The *Species* are;

1. HIERACIUM *murorum, folio pilociſſimo. C. B. P.* Golden Hawkweed, with hairy Leaves.

2. HIERACIUM *Pyrenaicum, folio cerinthes, latifolium. Schol. Bot. Pyrenian* Hawkweed, with a broad Honeywort Leaf.

3. HIERACIUM *folio dentis leonis, flore ſuave-rubente. C. B. P.* Red-flower'd Hawkweed, with Dandelyon Leaves.

4. HIERACIUM *lanatum, ſonchi vel erigerontis facie. H. L.* Downy Hawkweed, with the Face of Sowthiſtle, *or* Groundſel.

5. HIERACIUM *medio nigrum Bœoticum majus. Par. Bat.* Greater *Spaniſh* Hawkweed, with yellow Flowers, having black Bottoms.

6. HIERACIUM *medio nigrum Bœoticum majus, flore ſulphureo.* Greater *Spaniſh* Hawkweed, with Brimſtone colour'd Flowers, having black Bottoms.

7. HIERACIUM *barbatum medio nigrum minus. H. L.* Leſſer Hawkweed, with yellow Flowers, having black Bottoms.

8. HIERACIUM *latifolium piloſum coccineum umbellatum Indicum. H. L.* Broad-leav'd *Indian* Hawkweed, with ſcarlet Flowers growing in an Umbel.

9. HIERACIUM *longius radicatum. Ger. Emac.* Long-rooted Hawkweed.

10. HIERACIUM *minus, præmorſa radice. Park.* Hawkweed with bitten Roots, or yellow Devils-bit.

11. HIERACIUM *primum latifolium. Cluſ.* Broad-leav'd *Hungarian* Hawkweed.

12. HIERACIUM *fruticoſum latifolium hirſutum. C. B.* Buſhy Hawkweed, with broad rough Leaves.

13. HIERACIUM *fruticoſum latifolium glabrum. Park. Theat.* Smoother broad-leav'd buſhy Hawkweed.

14. HIERACIUM *fruticoſum anguſtifolium majus. C. B.* Narrow-leav'd buſhy Hawkweed.

15. HIERACIUM *pulmonaria dictum, anguſtifolium. Raii Syn.* Narrow-leav'd Hawkweed, commonly called Golden Lungwort.

16. HIERACIUM *macrocaulon hirſutum, folio rotundiore. D. Lawſon.* Round-leav'd rough Hawkweed, with a tall Stalk.

17. HIERACIUM λεπτοκαῦλον *hirſutum, folio longiore. D. Lawſon.* Slender-ſtalk'd rough Hawkweed, with a longer Leaf.

18. HIERACIUM *murorum laciniatum minus piloſum. C. B.* Golden Lungwort, with more jagged Leaves.

19. HIERACIUM *murorum folio longiore diſſecto, maculis lividis aſperſo. Vaill. Mem. Acad. Scien.* Long cut-leav'd Golden Lungwort, with ſpotted Leaves.

20. HIERACIUM *caſtorei odore, Monſpelienſium. Raii Syn.* Hawkweed of *Montpelier*, ſmelling like Caſtor.

21. HIERACIUM *luteum glabrum, ſive minus hirſutum. J.B.* Smoother yellow Hawkweed.

22. HIERACIUM *montanum, cichorei folio, noſtras. Raii Syn.* Succory-leav'd mountain Hawkweed.

23. HIERACIUM *maximum, chondrillæ folio, aſperum. C. B.* The greateſt rough ſuccory-leav'd Hawkweed.

24. HIERACIUM *echioides, capitulis cardui Benedicti. C. B.* Hawkweed like Vipers Bugloſs, with Heads like the Bleſſed Thiſtle, commonly called Ox Tongue.

25. HIERACIUM *pulmonaria dictum latifolium humilius, ramulis expanſis. Act. Phil. N.* 417. Dwarf branching Hawkweed, with broad Leaves.

26. HIERACIUM *Sabaudum altiſſimum, foliis latis brevibus crebrius naſcentibus. Mor. Hiſt.* Talleſt *Savoy* Hawkweed, with broad Leaves.

27. HIERACIUM *fruticoſum, anguſtiſſimo incano folio. H. L.* Buſhy Hawkweed, with very narrow hoary Leaves.

28. HIERACIUM *Pyrenaicum rotundifolium amplexicaule. Inſt. R. H.* Round-leav'd *Pyrenean* Hawkweed, whoſe Leaves embrace the Stalks.

29. HIERACIUM *murorum, foliis maculis & lituris atrorubentibus, pulchre variegatis. Vaill. Mem. Acad. Scien.* Hawkweed whoſe Leaves are beautifully marked with dark red Spots.

30. HIERACIUM *fruticoſum latifolium, foliis dentatis, glabrum. C. B.* Broad-leav'd buſhy Hawkweed, with ſmooth indented Leaves.

31. HIERACIUM *magnum Dalechampii, folio minus laciniato.* Greater Hawkweed of *Dalechamp*, with leſs cut Leaves.

32. HIERACIUM *magnum Dalechampii, folio majus laciniato.* Greater Hawkweed of *Dalechamp*, with more cut Leaves.

The firſt, ſecond, and eighth Sorts are abiding Plants, and may be propagated by parting their Roots either in Spring or Autumn, and ſhould be planted in a freſh, light Soil, and an open Situation, where they will greatly increaſe, eſpecially the eighth Sort, which is very ſubject to creep under Ground, and ſend forth Abundance of Heads, whereby the Seaſon of Flowering is continued thro' moſt Part of the Summer; for the new Off-ſets commonly produce Flowers ſoon after they come up. Theſe are alſo propagated by Seeds, which ſhould be ſown either in the Autumn, ſoon after they are ripe, or very early in the Spring; for if they are ſown very late, the Plants ſeldom come up until the Autumn following, whereby a whole Seaſon is loſt; but as they increaſe ſo faſt by Off-ſets, it is hardly worth while to ſow their Seeds.

The third, fourth, fifth, ſixth, and ſeventh Sorts are annual Plants, which for the Variety of their Flowers deſerve a Place in a Garden; theſe Plants are much ſtronger, and produce a greater Quantity of Flowers, when they are rais'd in the Autumn, than thoſe which are ſown in the Spring, and they are ſo hardy as to endure the ſevereſt Cold of our Climate in the open Air, provided they are planted or ſown upon a dry Soil, for too much Wet is apt to rot them: The beſt Seaſon for ſowing the Seeds is in *Auguſt*; and towards the latter End of *September* the Plants will be ſtrong enough to tranſplant, which ſhould be into the Borders where they are to remain for Flowering; theſe will produce their Flowers in *May*, and their Seeds will be ripe in *July*, which, if ſuffered to ſhed upon the Ground, will grow, and ſave the Trouble of ſowing them.

The Sorts from the ninth to the twenty-fifth are Natives of *England*; ſome of them grow in ſhady Woods, and others upon dry Banks, and on old Walls in divers Places. The ninth, tenth, eleventh, twelfth, thirteenth, fourteenth, fifteenth, ſixteenth, ſeventeenth, eighteenth, nineteenth, and the twenty-fifth Sorts, are abiding Plants; which may be propagated either by parting of their Roots, or from Seed: If they are propagated by parting of their Roots, it muſt be done about *Michaelmas*, that the Plants may be rooted before the Froſt comes on; for if this Work be deferr'd till the Spring, the Plants will not have taken good Root before the Summer comes on, which will cauſe them to flower weak. Theſe Roots ſhould not be removed oftner than every third Year, becauſe when the Plants have a Number of Heads, they will ſend forth ſo many Stalks for flowering; whereby they will make a more beautiful Appearance.

The five next mentioned Sorts are not Natives of this Country, but they are equally hardy with thoſe before-mentioned, and may be propagated in the ſame Manner. Theſe Plants are ſeldom introduced into Gardens, becauſe they are common in *England*; but they may be planted in Wilderneſs-quarters, and under the Shade of Trees, where they will thrive very well, and afford an agreeable Variety where few other Plants will live; and as they require no farther Care after planting, ſo the Trouble will be little in procuring of the Plants; and when they are once fixed in the Ground, they will abide many Years without any farther Culture. If the Seeds of theſe Plants are permitted to ſcatter, they will produce a plentiful Supply of young Plants. Or when a Perſon is deſirous to propagate them by Seeds, it ſhould be ſown in Autumn, ſoon after it is ripe; for if it is kept till the Spring, it doth not ſucceed ſo well.

The twenty-firſt, twenty-ſecond, twenty-third, and twenty-fourth Sorts are alſo Natives of *England*; but are not abiding Plants, for they ſeldom continue longer than two Years. The Seeds of theſe Plants may be ſown on an open Bed or Border of freſh undunged Earth; and when the Plants come up, they ſhould be cleared from Weeds, and thinned where they are too thick, which is all the Culture they require. If theſe Seeds are ſown in Autumn, ſoon after they are ripe, the Plants will ſoon appear, and get ſtrength before Winter, ſo will flower the following Summer; but if they are not ſown till the Spring, the Plants ſeldom flower until the Year after.

The thirty-firſt and thirty-ſecond Sorts grow wild in the South of *France*, and in *Italy*; yet are hardy enough to endure the Cold of our ordinary Winters very well, in the open Air. The Seeds of theſe Plants ſhould be ſown in the Spring, on a Bed of freſh undunged Earth, where they are deſigned to remain (becauſe they ſeldom ſucceed when they are tranſplanted). When the Plants are come up they ſhould be cleared from Weeds, and where they are too cloſe, they ſhould be thinned, leaving them about eight or ten Inches aſunder. Some of theſe Plants will flower the firſt Year they are ſown, but theſe will not produce good Seeds; but thoſe which live over the Winter, will flower early the following Summer, and, if the Seaſon proves favourable, will produce good Seeds in *Auguſt*. Theſe Plants ſeldom continue longer than two Years; ſo that Seeds ſhould be annually ſown, in order to preſerve their Kinds; for as they continue in Flower the greateſt Part of the Summer, they merit a Place in every good Garden.

HILLS have many Uſes, of which I ſhall only mention two or three.

1ſt, They ſerve as Skreens to keep off the cold and nipping Blaſts of the northern and eaſtern Winds.

2dly, The long Ridges and Chains of lofty Mountains being generally found to run from Eaſt to Weſt, ſerve to ſtop the Evagation of thoſe Vapours towards the Poles, without which they would all run from the hot Countries, and leave them deſtitute of Rain.

3dly, They condenſe thoſe Vapours, like Alembick Heads, into Clouds, and ſo by a kind of external Diſtillation, give Origin to Springs and Rivers; and by amaſſing, cooling and conſtipating them, turn them into Rain, and by that Means render the fervid Regions of the Torrid Zone habitable.

4thly, They ſerve for the Production of a great Number of Vegetables and Minerals, which are not found in other Places.

It has been found by Experiment and Calculation, that *Hills*, tho' they meaſure twice as much Ground as the Plain Ground they ſtand upon, yet the Produce of the one can be no more than the other, and therefore in purchaſing Land, the *Hills* ought not to be bought for more than their ſuperficial Meaſure, *i. e.* to pay no more for two Acres upon the Side of an Hill, than for one upon the Plain, if the Soil be equally rich.

It is true that thoſe Lands that are Hilly and Mountainous, are very different as to their valuable Contents, from what are found in flat and plain Ground, whether be planted, ſown or built upon; as for Example:

Suppoſe an *Hill* contains four equal Sides, which meet in a Point at the Top, yet the Contents of theſe four Sides can produce no more Grain, or bear no more Trees, than the plain Ground on which the *Hill* ſtands, or than the Baſe of it; and yet by the Meaſure of the Sides, there may be double the Number of Acres, Rods, and Poles, which they meaſure on the Baſe or Ground-Plot.

For as long as all Plants preſerve their upright Method of growing, hilly Ground can bear no more Plants in Number than the Plain at the Baſe.

Again, as to Buildings on an *Hill*, the true Sides of an *Hill* will bear no more than the ſame Number of Houſes that can ſtand in the Line at the Baſe.

And as to *Rails*, or *Park-pailing* over an *Hill*, tho' the Meaſure be near double over the *Hill* to the Line at the Bottom, yet both may be incloſed by the ſame Number of Pales of the ſame Breadth.

HIPPOCASTANUM [of Ἵππος, Gr. *a Horſe*, and *Caſtanea*, Lat. *a Cheſnut*] Horſe-Cheſnut.

The *Characters* are;

It hath digitated or finger'd Leaves; the Flowers, which conſiſt of five Leaves, are of an anomalous Figure, opening, as it were, with two Lips; there are Male and Female upon the ſame Spike, which when fully blown, make a ſpecious Shew, being always produced at the Extremity of the Branches; the Female Flowers are ſucceeded by Nuts which grow in green prickly Huſks.

The *Species* are;

1. HIPPOCASTANUM *vulgare. Tourn.* Common Horſe-Cheſnut.

2. HIPPOCASTANUM *vulgare, foliis ex luteo variegatis.* The yellow blotch'd Horſe Cheſnut.

3. HIPPOCASTANUM *vulgare, foliis ex albo variegatis.* The white blotch'd Horſe-Cheſnut.

The firſt of theſe Trees (of which there ſeem to be two or three Varieties differing in the Breadth of their Leaves, and the Colour of their Flowers, one of which hath its Flowers remarkably ſpotted with Red and Yellow, ſo as to be ſeen at a great Diſtance, and is ſomewhat later in flowering) is very common in *England*, having been greatly cultivated for planting Avenues and ſhady Walks near Habitations, where, in the Spring of the Year, (which is their Seaſon for flowering) they make a moſt beautiful Shew, and their Leaves being very large, afford an agreeable Shade in the Heat of Summer; but if the Number of theſe Trees be too great, or too near the Habitation, they cauſe the circumambient Air to be moiſt and unhealthy, by the large Quantities of Moiſture which they perſpire thro' their Leaves, ſo that they ſhould always be placed at ſuch a Diſtance, as to admit of a free Current of Air to paſs between them and the Building, that the rancid Air may be carried off thereby.

This Tree is propagated by planting the Nuts early in the Spring, after the Manner as was directed for the common Cheſnut (to which I refer the Reader, to avoid Repetition) the Spring following the Plants may be tranſplanted into a Nurſery, in Rows at three Feet diſtance, and eighteen Inches aſunder in the Rows, where they may continue three Years; after which Time they may be tranſplanted for Avenues, &c. where they are to remain: The beſt Seaſon for tranſplanting theſe Trees is at the latter End of *February*, or the Beginning of *March*; (tho' indeed, they may be tranſplanted in Autumn, or during any of the Winter Months, when other deciduous Trees are removed) but the other is the ſureſt Seaſon, eſpecially for moiſt Soils.

In tranſplanting of theſe Trees, we ſhould never ſhorten any of their Branches; but only cut off intirely all ſuch as are ill placed, or grow irregular; for theſe Trees have always a large turgid Bud placed at the Extremity of their Branches, in which is incloſed the Shoot for the ſucceeding Spring, which Bud is of great Service in attracting the Nouriſhment, and promoting the future Growth of the Tree; and it is often obſervable, where their Branches are ſhortned, that there is produced a glutinous Subſtance, almoſt of the Conſiſtence of Turpentine, which often occaſions the Decay of thoſe particular Branches, and ſometimes of the whole Tree.

Theſe Trees have ſomething very ſingular in their Growth, *i. e.* that their whole Year's Shoot is commonly performed in three Weeks Time, after which it does no more than increaſe in Bulk, and become more firm and ſubſtantial; and all the latter Part of the Summer is occupied in forming and ſtrengthening the Buds for the next Year's Shoots. There is a great Regularity in the natural Growth of theſe Trees, their Underbranches being always greatly extended, and the ſucceeding ones decreaſing gradually to the Top, do form a natural obtuſe Pyramid, which Regularity is by many People greatly diſliked, as appearing too much like thoſe artificial Pyramids, which were formerly ſo much eſteem'd and cultivated on ever-green Trees; but are now very juſtly deſpiſed by all curious Perſons: Tho' it muſt be allowed, where theſe Trees are rightly diſpoſed in forming of Clumps, &c. their conical Figure has a very good Effect, by rendering ſuch Plantations very agreeable to the Eye at ſome Diſtance, eſpecially when the under Parts of the Trees are hid from Sight, by other Trees which ſurround them.

Theſe Trees were originally brought from *Conſtantinople* into *Europe*; but altho' they are Natives of ſo warm a Country, yet they are now ſo enur'd to the Cold, as to defy the ſevereſt of our Winters, and do grow to be very large Trees, and produce great Quantities of Nuts annually, from which they may be multiplied at Pleaſure. The Fruit of this Tree is very bitter, and of no Uſe amongſt us at preſent; but in *Turky* they give them to Horſes, in their Provender, that are troubled with Coughs, or are ſhort-winded, in both which Diſtempers they are ſuppoſed to be very good.

HIPPOLAPATHUM. *Vide* Lapathum.

HIPPOSELINUM. *Vide* Smyrneum.

HIRUNDARIA. *Vide* Aſclepias.

HOLLOW ROOT. *Vide* Fumaria.

HOLLY-HOCKS. *Vide* Malva roſea.

HOLLY. *Vide* Aquifolium.

HOMOGENEAL or HOMOGENEOUS *Plants*, are ſuch Plants as are of the ſame Kind or Nature with others.

HONEY-SUCKLE. *Vide* Caprifolium.

HOPS. *Vide* Lupulus.

HORDEUM; Barley.

The *Characters* are;

It hath a thick Spike; the Calyx, Huſk, Awn, and Flower, are like thoſe of Wheat or Rye, but the Awns are rough; the Seed is ſwelling in the middle, and for the moſt Part ends in a ſharp Point, to which the Huſks are cloſely united.

The *Species* are;

1. Hordeum *diſtichum. Ger.* Common long-ear'd Barley.
2. Hordeum *polyſtichum, vel hybernum. Park.* Winter or Square Barley, or Bear Barley; by ſome call'd Big.
3. Hordeum *diſtichum, ſpica breviore & latiori, granis confertis. Raii.* Sprat Barley or Battle-door Barley.

The firſt and third Sorts are commonly cultivated in *England*; but the ſecond is rarely to be ſeen near *London*, tho' I think it much preferable to the other two, as producing a larger Seed, and very full thick Spike.

But, beſide theſe three, there are two other Sorts, which are cultivated in *England*; which are, the *Rath-ripe*, and *Naked Barley*; this laſt is ſometimes called *French Barley*: This makes tolerable good Bread, very good Malt, and yields a large Increaſe.

All theſe Sorts of *Barley* are ſown in the Spring of the Year, in a dry Time; in ſome very dry light Land, the Barley is ſown early in *March*, but in ſtrong clayey Soils it is not ſown till *April*, and ſometimes not until the beginning of *May*; but when it is ſown ſo late, if the Seaſon doth not prove very favourable, it is very late in Autumn before it is fit to mow, unleſs it be the Rath-ripe ſort, which is often ripe in nine Weeks from the Time of ſowing.

The *Square Barley* or *Big* is chiefly cultivated in the North of *England*, and in *Scotland*, and is hardier than the other Sorts; but this is ſeldom ſown in the South of *England*, tho' it might be cultivated to good Purpoſe on ſome ſtrong cold clayey Lands, where the other Kinds do not thrive ſo well.

Some People ſow Barley upon Land where Wheat grew the former Year; but when this is practiſed, the Ground ſhould be ploughed the Beginning of *October* in a dry Time, laying it in ſmall Ridges, that the Froſt may mellow it the better, and this will improve the Land greatly: Then in *March* the Ground is ploughed again, and laid even where it is not very wet; but in ſtrong wet Lands the Ground ſhould be laid round, and the Furrows made deep to receive the Wet. When this is finiſhed, the Seed ſhould be ſown with a broad Caſt at two Sowings; the firſt being harrowed in once, the ſecond ſhould be harrowed until the Seed is buried: The common Allowance of Seed is four Buſhels to an Acre.

When the Barley is ſown, the Ground ſhould be rolled after the firſt Shower of Rain, to break the Clods, and lay the Earth ſmooth; which will render it better to mow, and alſo cauſe the Earth to lie cloſer to the Roots of the Corn, which will be of great Service to it in dry Weather.

Where Barley is ſown upon new broken up Land, the uſual Method is, to plough up the Land in *March*, and let it lie fallow until *June*; at which time it is ploughed again, and ſown with *Turnips*, which are eaten by Sheep in Winter, by whoſe Dung the Land is greatly improved; and then in *March* following the Ground is ploughed again, and ſown with Barley as before.

There are many People who ſow *Clover* with their *Barley*, and ſome have ſown the *Lucern* with *Barley*, but neither of theſe Methods are to be commended; for where there is a good Crop of *Barley*, the *Clover* or *Lucern* muſt be ſo weak as not to pay for ſtanding; ſo that the better Way is to ſow the *Barley* alone without any other Crop among it, and then the Land will be at Liberty for any other Crop, when the Barley is taken off the Ground.

When the Barley is ripe, (which may be known by the Colour of the Ears and the Straw) it muſt be mown down; and where there are a great Number of Weeds among it, it muſt lie on the Swarth till the Weeds are decayed; but if there ſhould happen to fall Rain, the *Barley* muſt be ſhook and turned every Day, to prevent its ſprouting or growing muſty; and when it is well dried, it ſhould be made up in Cocks; for if it is houſed or mowed too green, it is very apt to burn; which will render it unfit for Malting, and worſe for moſt Purpoſes, than if it ſprouted in the Field. The uſual Produce is from two to three Quarters of *Barley* on an Acre.

HORIZONTAL SHELTERS, have by ſome Perſon been greatly recommended to preſerve Fruit-Trees from Blights; but with how little Reaſon, or upon what ſlight Experiments, every one who has ever made uſe of them, will eaſily judge; eſpecially thoſe which are contrived by placing Tiles in the Wall at certain Diſtances, nothing being more obvious than that Vegetables, when prevented from receiving the Benefit of Dews, Rains, &c. thoſe kindly Benefits o Heaven, do grow weak, languid, and at laſt intirely decay And ſince from vaſt Numbers of Experiments which have bee lately made, we find that Trees imbibe great Quantities o Nouriſhment through the Pores of their Leaves and Branche whereby they are rendred vigorous and healthy even in ſuc Seaſons, and upon ſuch Soils, where one would think it im poſſible they ſhould receive much Nouriſhment from the Earth ſo to deprive them of this Advantage, is no leſs than deſtroy ing them; though perhaps if the Trees are vigorous, it ma not be effected ſuddenly, but there will be very viſible Signs o Decay on them daily, and a few Years will put a Period t their Lives, as I have more than once obſerved, where ſuc Walls were built.

The only Sort of theſe Shelters which I have ever obſerv uſeful for Fruit-Trees, was made with two Leaves of ſ Deal, join'd over each other and painted; this being fix upon the Top of the Wall with Pullies, to draw up and do at pleaſure, formed a ſort of Penthouſe, which being let dow in great Rains, or cold Nights, during the Time that the Tre were in flower, or the Fruit was ſetting, proved ſerviceable but then theſe Shelters were removed away ſoon after the Fr was ſet, ſo that the Trees might enjoy all the Advantages Rain, Dew, &c. in the Summer; which is abſolutely nec ſary, if we would have healthy Trees, or good Fruit.

HORMINUM [is ſo call'd of ὁρμᾶν, *Gr.* to *ruſh*, or *carried with a Force*, becauſe by its Force it ſtimulates a violently increaſes the venereal Appetite] Clary.

The *Characters* are;

It hath a labiated Flower, conſiſting of one Leaf, whoſe up Lip is ſhort and creſted, but the under one is divided into th Parts, the middle Diviſion is hollowed like a Spoon; out of Flower-cup ariſes the Pointal, fixed like a Nail to the hin Part of the Flower, and attended with four Embryo's which a terwards turn to ſo many roundiſh Seeds, incloſed in the Cup the Flower.

The *Species* are;

1. Horminum *ſylveſtre, lavendulæ flore. C. B. P.* Co mon Engliſh wild Clary, or *Oculus Chriſti.*
2. Horminum *coma purpureo-violacea. I. B.* Clary, w a purple-violet Top.
3. Horminum *ſylveſtre latifolium verticillatum. C. B.* Broad-leav'd wild Clary, with whorled Spikes.
4. Horminum *pratenſe, flore minimo. Schol. Bot.* M dow Clary, with a very ſmall Flower.
5. Horminum *ſpicatum, lavendulæ flore & odore. Rar. Pl.* Spiked Clary, with the Flower and Smell Lavender.

6. H

6. **Horminum** *napi folio. Morif. H. Bleſ.* Turnep-leav'd Clary.

7. **Horminum** *Orientale, betonicæ folio acutiſſimo, flore cæruleo. Tourn. Cor.* Eaſtern Clary, with a ſharp-pointed betony Leaf, and a blue Flower.

8. **Horminum** *Orientale, betonicæ folio acutiſſimo, flore albo. Tourn. Cor.* Eaſtern Clary, with a ſharp-pointed betony Leaf, and a white Flower.

9. **Horminum** *Orientale latifolium glutinoſum, flore partim albo, partim purpuraſcente. Tourn. Cor.* Eaſtern Clary, with broad glutinous Leaves, and a Flower partly white and partly purpliſh.

10. **Horminum** *Orientale latifolium glutinoſum, flore albo. Tourn. Cor.* Eaſtern Clary, with broad glutinous Leaves, and a white Flower.

11. **Horminum** *Orientale, betonicæ folio anguſtiore & inodoro. Tourn. Cor.* Eaſtern Clary, with a narrow betony Leaf, without Smell.

12. **Horminum** *Orientale, lamii folio. Tourn. Cor.* Eaſtern Clary, with a dead-nettle Leaf.

13. **Horminum** *Orientale, foliis ſclareæ, flore albo parvo. Tourn. Cor.* Eaſtern Clary, with the Leaves of *Sclarea*, and a ſmall white Flower.

14. **Horminum** *Orientale, foliis rugoſis & verrucoſis anguſtis, flore albo. Tourn. Cor.* Eaſtern Clary, with rough narrow-warted Leaves, and a white Flower.

15. **Horminum** *verbenæ laciniis, anguſtifolium. Triumph.* Clary with a narrow jagged vervain Leaf.

16. **Horminum** *Orientale annuum, ſativo ſimile, comâ carens, flore violaceo. Tourn. Cor.* Annual Eaſtern Clary, like the Garden Clary, wanting Tops, and a violet-coloured Flower.

The firſt of theſe Plants is found wild upon dry Banks, in diverſe Parts of *England*, and is ſeldom cultivated in Gardens; the Seeds of this Kind are by ſome People greatly eſteem'd for clearing the Eyes, of any thing that may have gotten into them, which is effected by the glutinous Quality of the Seed, which when put into the Eye, and moved about, will faſten any thing thereto which it meets with, and thereby it is taken out.

The ſecond Sort is a beautiful annual Plant and deſerves to have a Place in a good Garden, for the Oddneſs of its Spikes, which have fine purple-violet colour'd Tops: But the third Sort is not very beautiful, and is chiefly cultivated in Botanick Gardens, with many other Varieties of leſs Note.

Theſe may all be propagated by ſowing their Seeds in the Spring in an open Situation, and when the Plants are come up, they ſhould be either tranſplanted out to the Diſtance of a Foot ſquare, or hough'd out to the ſame Diſtance, obſerving to keep 'em clear from Weeds, which is all that is needful to be regarded in their Culture.

The firſt and third Sorts are abiding Plants, their Roots continuing ſeveral Years; but the ſecond Sort will decay ſoon after the Seeds are perfected. If the Seeds of this Kind are permitted to ſhed upon the Ground when they are ripe, the Plants will come up in Autumn, abide the Winter, and flower early in the ſucceeding Summer, and their Flowers will be much larger than thoſe which are ſown in the Spring.

The other Plants were moſt of them diſcovered by Dr. *Tournefort* in the *Levant*, from whence he ſent their Seeds to the *Royal Garden* at *Paris*, where they were cultivated, and have been ſince diſtributed to many curious Botanic Gardens. Theſe are all of them very hardy Plants, which will live in the open Air in *England*, and are all of them abiding Plants except the laſt, which is an Annual; ſo that the Seeds of this Kind muſt be ſown every Spring, and managed as hath been directed for the *Garden-clary*.

They are alſo propagated by Seeds, which ſhould be ſown in *March* on a Bed of freſh light Earth; and when the Plants are come up, they ſhould be carefully weeded, and thinned where they are too cloſe, leaving them about eight or ten Inches apart; and during the Summer Seaſon they muſt be kept clear from weeds, which is the only Culture they will require: The following *Michaelmas* they ſhould be taken up and tranſplanted where they are to remain, allowing them at leaſt two Feet of Room; becauſe, when they have obtained Strength, they will ſend forth a great Number of Shoots, and ſpread pretty much every way. Theſe Plants are preſerved in Botanic Gardens, for the ſake of Variety; but are ſeldom cultivated in other Places. For *Garden Clary*, ſee *Sclarea*.

HORNBEAM. *Vide* Carpinus.

HORSE-CHESNUT. *Vide* Hippocaſtanum.

HORSE-DUNG is of great Uſe to make Hot-beds for the raiſing all Sorts of Early Garden Crops, as *Cucumbers*, *Melons*, *Aſparagus*, *Salletting*, &c. for which Purpoſe no other Sort of *Dung* will do ſo well, this fermenting the ſtrongeſt, and, if mix'd with long Litter, and Sea-coal Aſhes in a due Proportion, will continue its Heat much longer than any other Sort of Dung whatſoever; and afterwards, when rotted, becomes an excellent Manure for moſt Sorts of Land, more eſpecially for ſuch as are of a cold Nature; and for ſtiff clayey Lands, when mix'd with Sea-coal Aſhes, and the Cleanſings of *London* Streets, it will cauſe the Parts to ſeparate much ſooner than any other Compoſt will do; ſo that where it can be obtain'd in Plenty, I would always recommend the Uſe of it for ſuch Lands.

HOSE IN HOSE, a Term us'd in Gardening, to ſignify one long Husk within another, as in the *Polyanthos*.

HOSE-HUSK, is a long round *Huſk*, as in *Pinks*, *Gillyflowers*, &c.

HOT-BEDS are of general Uſe in theſe Northern Parts of *Europe*, without which, we could not enjoy ſo many of the Products of warmer Climes as we do now; nor could we have the Tables furniſh'd with the ſeveral Products of the Garden, during the Winter and Spring Months, as they are at preſent in moſt Parts of *England*. The ordinary *Hot-beds* which are commonly us'd in the Kitchen-Gardens, are made with new Horſe-dung, in the following manner:

1ſt, Provide a Quantity of new Dung from the Stable (in which there ſhould be part of the Litter or Straw which is commonly us'd in the Stable) in proportion to the Length of the *Bed* intended; which, if early in the Year, ſhould not be leſs than one good Load for each Light; this Dung ſhould be thrown up in an Heap, mixing therewith a few Sea-coal Aſhes, which will be of Service to continue the Heat of the Dung; it ſhould remain ſix or ſeven Days, by which Time it will have acquir'd a due Heat: Then in ſome well-ſhelter'd Part of the Garden you muſt dig out a Trench in Length and Width proportionably to the Frames you intend it for, and, if the Ground be dry, about a Foot deep; but if wet, not above ſix Inches; then wheel the Dung into the Opening, obſerving to ſtir every Part of it with a Fork, and lay it exactly even and ſmooth thro' every Part of the *Bed*; as alſo to lay the Bottompart of the Heap (which is commonly free from Litter) upon the Surface of the *Bed*; this will prevent the Steam from riſing ſo plentifully as it would otherwiſe do: And if it be deſigned for a *Bed* to plant out *Cucumbers* or *Melons* to remain for good, you muſt make a Hole in the Middle of each Light about ten Inches over, and ſix deep, which ſhould be fill'd with good freſh Earth, thruſting a Stick into the Middle, to ſhew the Place where the Hole is; then cover the *Bed* all over with the Earth which was taken out of the Trench about four Inches thick, and cover it with the Frame, letting it remain until the Earth be warm, which commonly happens in two Days after the *Bed* is made; then you may place the Plants therein, as is directed for each Kind under their proper Heads.

But if your *Hot-bed* be deſign'd for other Plants, there need be no other Holes made in the Dung; but after having ſmoothed the Surface with a Spade, you ſhould cover the Dung about three or four Inches thick with good Earth, putting on the Frames and Glaſſes as before.

In the making of theſe *Hot-beds*, it muſt be carefully obſerv'd to ſettle the Dung cloſe with a Fork; and if it be pretty full of long Litter, it ſhould be equally trod down cloſe in every Part, otherwiſe it will be ſubject to heat too violently; and conſequently the Heat will be much ſooner ſpent, which is one of the greateſt Dangers this *Bed* may be liable to. During the firſt Week or ten Days after the *Bed* is made, you ſhould cover the Glaſſes but ſlightly in the Night, and in the Day-time carefully raiſe them to let out the Steam, which is ſubject to riſe very copiouſly while the Dung is freſh: but as the Heat abates, ſo the Covering ſhould be increas'd, otherwiſe the Plants in the *Beds* will be ſtunted in their Growth, if not intirely deſtroy'd. In order to remedy this Evil, if the *Bed* be very cold, you muſt put a pretty good Quantity of new hot Dung round the Sides of it, which will add a freſh Heat thereto, and cauſe it to continue a conſiderable Time after; and as the Spring advances, ſo the Sun will ſupply the Loſs of the Dung's Heat; but then it will be adviſeable to lay ſome Mowings of Graſs round the Sides of the *Bed*, eſpecially if the Nights ſhould prove cold, as it often happens in *May*, which is many times, even at that Seaſon, very hurtful to tender Plants on *Hot-beds*.

But although the *Hot-bed* I have deſcribed is what the Kitchen Gardeners commonly uſe, yet thoſe made with Tanner's

Bark are much more preferable, eſpecially for all tender Exotick Plants or Fruits, which require an even Degree of Warmth to be continu'd for ſeveral Months; which is what cannot be effected by Horſe-dung. The Manner of making theſe *Beds* is as follows:

You muſt dig a Trench in the Earth about three Feet deep, if the Ground be dry; but if wet, it muſt not be above a Foot deep at moſt, and muſt be rais'd two Feet above-ground. The Length muſt be proportion'd to the Frames intended to cover it; but that ſhould never be leſs than eleven or twelve Feet, and the Width not leſs than ſix, which is but a ſufficient Body to continue the Heat. This Trench ſhould be brick'd up round the Sides to the above-mentioned Height of three Feet, and ſhould be fill'd in the Spring with freſh Tanner's Bark, (*i. e.* ſuch as the Tanners have lately drawn out of their Vats, after they have us'd it for tanning Leather) which ſhould be laid in a round Heap for three or four Days before it is put into the Trench, that the Moiſture may the better drain out of it, which, if detain'd in too great a Quantity, will prevent its Fermentation; then put it into the Trench, and gently beat it down equally with a Dung-fork: But it muſt not be trodden, which would alſo prevent its heating, by ſettling too cloſe: Then you muſt put on the Frame over the *Bed*, covering it with the Glaſſes, and in about ten Days or a Fortnight it will begin to heat, at which time you may plunge your Pots of Plants or Seeds into it, obſerving not to tread down the Bark in doing of it.

A *Bed* thus prepar'd (if the Bark be new, and not ground too ſmall) will continue in a good Temper of Warmth for ſix Months; and when you find the Heat decline, if you ſtir up the Bark again pretty deep, and mix a Load or two of freſh Bark among the old, it will cauſe it to heat again, and preſerve its Warmth two or three Months longer: There are many People who lay ſome hot Horſe-dung in the Bottom of the Trench, under the Bark, to cauſe it to heat: but this is what I would never practiſe, unleſs I wanted the Bed ſooner than the Bark would heat of itſelf; and then I would put but a ſmall Quantity of Dung at Bottom, for that is ſubject to make it heat too violently, and will occaſion its loſing the Heat ſooner than ordinary; and there will never be any Danger of the Bark's heating, if it be new, and not put into the Trench too wet, tho' it may ſometimes be a Fortnight or more before it acquires a ſufficient Warmth; but then the Heat will be more equal and laſting.

The Frames which cover theſe Beds ſhould be proportion'd to the ſeveral Plants they are deſign'd to contain: For Example; if they are to cover the *Anana*, or *Pine-apple*, the back Part of the Frame ſhould be three Feet high, and the lower Part fifteen Inches, which will be a ſufficient Declivity to carry off the Wet; and the Backſide will be high enough to contain the Plants that are in Fruit, and the lower Side will be ſufficient for the ſhorteſt Plants; ſo that, by placing them regularly according to their Height, they will not only have an equal Diſtance from the Glaſſes, but alſo appear much handſomer to the Sight. And although many People make their Frames deeper than what I have allotted, yet I am fully perſuaded, that where there is but Height enough to contain the Plants, without bruiſing their Leaves, it is much better than to allow a larger Space; for the deeper the Frame is made, the leſs will be the Heat of the Air incloſ'd therein, there being no artificial Warmth but what the Bark affords, which will not heat a large Space of Air: And as the *Pine-apple* requires to be conſtantly kept very warm, in order to ripen the Fruit well; ſo it will be found, upon Trial, that the Depth I have have allowed will anſwer that Purpoſe better than a greater.

But if the *Bed* be intended for taller Plants, then the Frame muſt be made in Depth proportionable thereto: but if it be for ſowing of Seeds, the Frame need not be above fourteen Inches high at the Back, and ſeven Inches deep in the Front, by which Means the Heat will be much greater; and this is commonly the Proportion allow'd to the Frames uſually made uſe of in the Kitchen-gardens. As to their Length, that is generally according to the Fancy of the Owner; but they commonly contain three Lights each, which is in the Whole about eleven Feet in Length; though ſometimes they are made to contain four Lights; but this is too great a Length: The Frames thus made are not ſo handy to remove, as when they are ſhorter, and are more ſubject to decay at their Corners. Some indeed have them to contain but two Lights, which is very handy for raiſing *Cucumber* and *Melon* Plants while young; but this is too ſhort for a Bark-bed, as not allowing Room for a proper Quantity of Bark to continue a Warmth for any conſiderable Time, as was before mentioned; but for the other Purpoſes, one or two ſuch Frames are very convenient.

As to thoſe Frames which are made very deep, it is much the better Way to have them made to take aſunder at the four Corners, ſo that they may be remov'd with Eaſe; otherwiſe it will be very difficult to take the Frame off when there is Occaſion to put in new Bark, or take out the old. The Manner of making theſe Frames is generally known, or may be much better conceiv'd by ſeeing them than can be expreſs'd in Writing, therefore I ſhall forbear ſaying any thing more on this Head.

HOTTONIA, Water-Violet.

The *Characters* are;

It hath a Roſe-ſhaped Flower conſiſting of one Leaf, which is divided into five Parts almoſt to the Bottom; in the Center of the Flower ariſes the Pointal, which afterward becomes a cylindrical Fruit, in which are contained ſeveral ſpherical Seeds.

We have but one *Kind* of this Plant, *viz.*

HOTTONIA, *Boerh. Ind. alt.* Water-Violet.

This Plant is very common in deep ſtanding Waters, and Ditches, in ſeveral Parts of *England*. The Leaves of this Plant appear on the Surface of the Water the Beginning of *April*, and in *May* the Flowers appear on pretty long naked Stalks, growing in a Spike. Theſe Flowers are of a fine roſe Colour, which, together with their fine cut Leaves make a beautiful Appearance on the Water.

It may be propagated in deep ſtanding Waters, by procuring its Seeds when they are ripe, from the Places of their natural Growth; which ſhould be immediately dropp'd into the Water where they are deſigned to grow, and the Spring following they will appear; and if they are not diſturbed, they will ſoon propagate themſelves in great Plenty.

HOUGHING is neceſſary and beneficial to Plants, for two Things: 1ſt, for deſtroying of Weeds; 2dly, becauſe it diſpoſes the Ground the better to imbibe the Night Dews, and keep it in a conſtant Freſhneſs, and adds a Vigour to the Trees, whoſe Fruit, by that means, becomes better-conditioned than otherwiſe it would be.

HUMIDITY, is the *Quality* commonly call'd *Moiſture*, or the Power of wetting others, which Quality ſome Liquo and Fluids are endowed with; and it differs very much fro *Fluidity*, in that it depends altogether on the Congruity of th component Particles of any Liquor to the Pores or Surfaces o ſuch particular Bodies as it is capable of adhering to.

Thus *Quickſilver* is not a moiſt Liquor, in reſpect to ou Hands or Cloaths; and many other Things it will not ſtic to: but it may be call'd a moiſt Liquor, in reſpect to Gold Lead, or Tin, to the Surfaces of which it will preſently adhere.

Nay, Water itſelf, that wets almoſt every thing, and is th great Standard of *Humidity* or *Moiſture*, is not capable o wetting every thing; for it ſtands, and runs eaſily off in globular Drops on the Leaves of *Cabbages*, and many other Plant and will not wet the Feathers of *Ducks*, *Swans*, and othe Water-fowl.

And it is very plain, that it is only the Texture that ma cauſe the Fluid to be humid; becauſe neither *Quickſilver* alone nor *Biſmuth*, will ſtick upon Glaſs: yet being mix'd togethe they will form a Maſs that will ſtick on it, as is very we known in the foliating of Looking-glaſſes, in which ſuch Compoſition is uſed.

HURA, the Sand Box-tree.

The *Characters* are;

It hath a funnel-ſhaped Flower conſiſting of one Leaf, whi is ſpread open at the Brim, and ſlightly cut into twelve Part at the Bottom of the Tube is placed the Pointal, which afte ward becomes a globular compreſſed Fruit, which has twel Cells, in each of which is contained one roundiſh flat Seed.

We know but one *Sort* of this Plant, *viz.*

1. HURA *Americana, abutili Indici folio. H. Amſt.* *American* Hura, with a Leaf like the *Indian* Abutilon. This ſometimes called *Jamaica Walnuts*, and the *Sand Box-tr* and by others *Warnelia* and *Havelia*.

This Shrub is a Native of the *Spaniſh Weſt-Indies*, fro whence the Seeds have been brought into ſeveral Iſlands in t *Weſt-Indies*, where the Inhabitants cultivate theſe Plants their Gardens by way of Curioſity. It riſes to the Height fourteen or ſixteen Feet, and divides towards the Top i

ſeve

ſeveral Branches, which are adorned with large Leaves indented on their Edges, and terminating in a Point; theſe Leaves, as alſo the younger Branches, are of a deep green Colour, and are full of a milky Juice, which iſſues out on their being broken or bruiſed. The Fruit of this Plant, if ſuffered to remain on till they are fully ripe, burſt in the Heat of the Day with a violent Exploſion, making a Noiſe like the firing of a Piſtol, and hereby the Seeds are thrown about to a conſiderable Diſtance. Theſe Seeds, when green, vomit and purge, and are ſuppoſed to be ſomewhat akin to the *Nux Vomica*.

The Seeds of this Plant were ſent from *Carthagena* in *New Spain*, by the late Dr. *William Houſtoun*; and ſince there have been many of the Seeds ſent into *England* from *Barbadoes*, where there are many of the Plants cultivated in the Gardens of the Curious.

It is propagated by Seeds, which ſhould be ſown early in the Spring in Pots filled with light rich Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to water the Earth frequently; and if the Night ſhould prove cold, the Glaſſes of the Hot-bed muſt be covered with Mats, to preſerve a gentle Warmth in the Bed; but when the Days are warm, the Glaſſes of the Hot-bed ſhould be raiſed to admit freſh Air, as alſo to let the Steam of the Bed paſs off: If theſe Rules are duly obſerved, the Plants will appear in about five Weeks after the Seeds are ſown, when they ſhould be carefully cleared from Weeds, and frequently refreſhed with Water. As the Plants will advance very faſt, where due Care is taken of them; ſo they ſhould have a large Share of freſh Air admitted to them in warm Weather, otherwiſe they will draw up too weak. When the Plants are about four Inches high, they ſhould be tranſplanted each into a ſeparate ſmall Pot filled with light rich Earth, and plunged again into the Hot-bed of Tanners-bark, being careful to ſhade them from the Heat of the Sun, until they have taken new Root; after which Time they muſt have free Air admitted to them, by raiſing of the Glaſſes in proportion to the Warmth of the Seaſon, and they ſhould be frequently watered. When the Plants have filled theſe ſmall Pots with their Roots, they muſt be ſhaken out of them, and their Roots trimmed, and then placed in larger Pots; which ſhould be filled with the like rich Earth, and plunged again into the Hot-bed, where they ſhould remain till *Michaelmas*, provided the Plants have Room, without touching of the Glaſſes; at which time they muſt be removed into the Bark-ſtove, and plunged in the warmeſt Part thereof: during the Winter Seaſon they muſt be often watered; but they muſt not have it in ſuch Quantities then, as is given to them in Summer; they muſt alſo be kept very warm, otherwiſe they will not live in this Country. In Summer they muſt have a large Share of freſh Air in warm Weather, but they muſt not be removed into the open Air, for they are too tender to live abroad in the warmeſt Part of the Year in this Country.

There are many of theſe Plants now growing in the Stoves in *England*, ſome of which are eight or ten Feet high; but I have ſeen but one Plant of this Kind in Flower, which was in the Gardens of the Right Honourable Lord *Petre*, at *Ingateſtone-hall* in *Eſſex*.

As theſe Plants have ample Leaves, which are of a beautiful green Colour, ſo they afford an agreeable Variety among other tender exotic Plants in the Stove; for where they are kept warm, and duly refreſhed with Water, they retain their Leaves all the Year in Verdure.

The Fruit of this Plant is, by the Inhabitants of the *Weſt-Indies*, cut open on the Side where the Footſtalk grew, and the Seeds carefully taken out, and the Shells are uſed as a Standiſh, to contain Sand for Writing; which gave Riſe to the Name of Sand-box. When theſe Fruit are brought intire into *England*, it is very difficult to preſerve them; for when the Heat of the Summer comes on, they uſually burſt with an Exploſion, and ſcatter their Seeds about.

HYACINTHUS, [Ὑάκινθος, Gr.] Hyacinth, or Jacinth.

The *Characters* are;

It hath a bulbous Root: The Leaves are long and narrow: The Stalk is upright and naked; the Flowers growing on the upper Part in a Spike: The Flowers conſiſt each of one Leaf, are naked, tubuloſe, and cut into ſix Diviſions at the Brim, which are reflexed: The Ovary becomes a roundiſh Fruit with three Angles, which is divided into three Cells that are fill'd with roundiſh Seeds.

The *Species* are;

1. HYACINTHUS *Anglicus, flore cæruleo. Ger.* Blue Engliſh Hair-bells.

2. HYACINTHUS *Anglicus, flore albo. Ger.* White Engliſh Hair-bells.

3. HYACINTHUS *Anglicus, flore incarnato.* Fleſh-colour'd Engliſh Hair-bells.

4. HYACINTHUS *Orientalis brumalis præcociſſimus, flore albo. Boerh. Ind.* The earlieſt White Oriental Hyacinth, *commonly call'd* Januarius.

5. HYACINTHUS *Orientalis brumalis, flore pallidè cæruleo. Boerh. Ind.* Oriental Jacinth, with a pale blue Flower, *commonly call'd* The Imperial.

6. HYACINTHUS *Orientalis albus primus. C. B.* Common Oriental Jacinth, with a white Flower.

7. HYACINTHUS *Orientalis major præcox, dictus* Zimbul *Indi. Park. Par.* The great Oriental Jacinth, *commonly call'd* Zimbul Indi.

8. HYACINTHUS *Orientalis maximus, flore amœne cæruleo, polyanthus. H. R. P.* The greateſt Eaſtern Jacinth, with many Flowers of a fine blue Colour.

9. HYACINTHUS *Orientalis, flore pleno cæruleo, vel purpureo-violaceo. Park. Par.* The Double blue Oriental Jacinth.

10. HYACINTHUS *Orientalis candidiſſimus, flore pleno. Park. Par.* The whitiſh double Oriental Jacinth.

11. HYACINTHUS *Orientalis, multiplici flore pallidè incarnatus. H. L.* Double Oriental Jacinth, with a pale fleſh-colour'd Flower, *commonly call'd* The Pulchra.

12. HYACINTHUS *Orientalis, flore pleno, cæruleo-purpureo, clavo longo, petalis modice reflexis. Boerh. Ind.* Double blue Oriental Jacinth, with a long Style, and the Petals moderately reflexed, *commonly call'd* The Double Cardinal.

13. HYACINTHUS *Orientalis, flore pleniſſimo albo, intus eleganter roſeo, clavo conico obtuſo, petalis valde reflexis. Boerh. Ind.* The moſt double Oriental Jacinth, with a white Flower of an elegant Roſe-colour in the Middle, and the Petals greatly reflexed, *commonly call'd* The King of Great Britain.

14. HYACINTHUS *Orientalis, flore pleniſſimo candidiſſimo toto & intus, clavo conico obtuſo, petalis valde reflexis. Boerh. Ind.* The moſt double Oriental Jacinth, with a pure white Flower, and the Petals greatly reflexed, *commonly call'd* The Queen of Great Britain.

15. HYACINTHUS *Orientalis, flore pleno lacteo, lituris carneis, clavis longis. Boerh. Ind.* Double Oriental Jacinth, with a Milk-colour'd Flower, ſtreak'd with a pale Red, *commonly call'd* Claudius Albinus.

16. HYACINTHUS *Orientalis, flore pleniſſimo carneo, lituris roſeis, clavo conico longiſſimo, intus roſeo, petalis valde reflexis. Boerh. Ind.* The moſt double Oriental Jacinth, with a Fleſh-colour'd Flower, ſtreak'd with a Roſe-colour, and the Petals greatly reflexed, *commonly call'd* Apollo.

17. HYACINTHUS *Orientalis, flore pleno ſqualide candido, clavo ad baſin utriculato, longo petalis valde reflexis. Boerh. Ind.* Double Oriental Jacinth, with a dirty-white Flower, and reflexed Petals, *commonly call'd* Agaath Mignon.

18. HYACINTHUS *Orientalis, flore pleniſſimo albo, pauxillo carnei admiſto, clavo longo anguloſo plano, ore ampliſſimo. Boerh. Ind.* Double Oriental Jacinth, with a Flower intermix'd with very little fleſh-colour'd Spots, *commonly call'd* Claudius Civilis.

19. HYACINTHUS *Orientalis, flore pleniſſimo, carneo & corallino rubro, clavo craſſo brevi, petalis maxime reflexis. Boerh. Ind.* Oriental Jacinth, with a very double red Coral-colour'd Flower, and the Petals greatly reflexed, *commonly call'd* Coralline.

20. HYACINTHUS *Orientalis, flore pleniſſimo candidiſſimo, in fundo oris roſeo. Boerh. Ind.* Oriental Jacinth, with a very double pure white Flower, and the Bottom of the Rim of a Roſe-colour, *commonly call'd* The Queen of Flowers.

21. HYACINTHUS *Orientalis, flore pleniſſimo candidiſſimo, petalis anguſtis & magis acutis.* Oriental Jacinth, with a very double pure white Flower, with narrow ſharp-pointed Petals, *commonly call'd* The King of Flowers.

22. HYACINTHUS *Orientalis, flore pleniſſimo candidiſſimo toto, clavo conico, petalis maxime reflexis, caule & flore maximis. Boerh. Ind.* Oriental Jacinth, with a very double white Flower, and the Petals very much reflexed, and large Stalks and Flowers, *commonly call'd* Kaiſar's White Jewel.

23. HYACINTHUS *Orientalis, flore pleniſſimo candido carneo, lituris rubellis, clavo breviſſimo craſſiſſimo. Boerh. Ind.* Oriental Jacinth, with double white Flowers ſtreak'd with red, *commonly call'd* The Princeſs Royal.

Beſides theſe here mentioned, there are a great Variety of fine Double *Hyacinths*, with beautiful variegated Flowers, moſt of which have Names impoſed on them according to the Fancy of their Owners; and ſome of theſe are highly eſteem'd by the Floriſts in *Holland*, where, according to their printed Catalogues, they have many Flowers which are valued at five, ſix, ſeven, eight, or ten Pounds *per* Root; but as theſe are Varieties which have been obtained from Seeds, ſo the Number of them are continually increas'd where People do conſtantly ſow of their Seeds; and thoſe new Flowers which are rais'd, if they are large, beautiful, and very double, will always be much valu'd at firſt, until there has been a good Number of Roots obtained from them; after which they conſtantly decreaſe in their Value according to their Plenty. But to enumerate all the Sorts that are now printed in the *Dutch* Catalogues, would be to no Purpoſe in this Place, therefore I ſhall only mention ſome of the ſtarry *Hyacinths*, and afterwards proceed to their Culture:

1. Hyacinthus *ſtellaris bifolius Germanicus. C. B. P. flore cœruleo.* Early blue ſtarry Hyacinth, *vulgo.*
2. Hyacinthus *ſtellaris bifolius, Germanicus, flore exalbido. Boerh. Ind.* Early white ſtarry Hyacinth, *vulgo.*
3. Hyacinthus *ſtellaris Byzantinus. Cluſ.* Great ſtarry Hyacinth, *vulgo.*
4. Hyacinthus *ſtellaris cœruleus amœnus. C. B. P.* Fine blue ſtarry Hyacinth.
5. Hyacinthus *ſtellatus Peruanus. H. Eyſt.* Blue ſtarry Hyacinth of *Peru.*
6. Hyacinthus *ſtellatus Peruanus, flore albo.* White ſtarry Hyacinth of *Peru.*

The firſt of theſe Species is a Native of *England*, growing in Woods, and under Hedges in divers Parts, but eſpecially near *London*. The two next mentioned are Varieties which have been accidentally obtain'd from the firſt, from which they differ only in the Colour of their Flowers. The twenty next mentioned are all of them Varieties of the Oriental *Hyacinths*, which were originally brought from *Aſia*; but by the Induſtry of the Floriſts in *Holland* and *Flanders*, they have been ſo much improv'd, as to become one of the moſt ornamental Flowers of the Spring: And as they continue ſowing Seeds annually of theſe Flowers, ſo they not only increaſe the Numbers of their Flowers, but have yearly ſome extraordinary Beauties appear; which are, according to their Stature, Beauty, and other Properties, highly eſteem'd, and are ſometimes bought at a very great Expence by the curious Delighters in theſe Beauties.

The firſt and ſecond Sorts of the ſtarry *Hyacinths* are found in ſome Parts of *Germany*: The firſt is alſo a Native of *England*; the ſecond being only a Variety of the firſt, which probably was obtain'd from Seeds: The third and fourth Sorts were brought from *Conſtantinople*; and the fifth and ſixth Sorts, tho', by their Names, ſuppos'd to be brought from *Peru*, yet are they found in many Places in the *Levant*, and Monſ. *Tournefort* mentions them as Natives of *Portugal*; but my ingenious Friend Mr. *Henry Hopkey* ſent me ſome Seeds of them which he gather'd upon *Gibraltar* Hills, where he found them growing in great Plenty. The two firſt mentioned do flower in *February*, which cauſes them to be greatly eſteemed. The third and fourth Sorts produce their Flowers in *April*; but the fifth and ſixth do not flower until the Middle of *May*: ſo that they keep a regular Succeſſion from the Middle of *February* until the End of *May*; and if their Roots are permitted to remain three Years undiſturb'd, they will produce many Stems of Flowers from each Tuft, whereby they will make a very beautiful Appearance, and continue the Succeſſion much better than when they are tranſplanted every Year, and their Flowers will be much ſtronger.

All the different Sorts of *Hyacinths* are propagated by Seeds or Off-ſets from the old Bulbs: The former Method has been but little practiſed in *England* 'till very lately; but in *Holland* and *Flanders* it hath been continually follow'd for many Years, whereby they have obtain'd a very great Variety of the moſt beautiful Flowers of this Kind; and it is owing to the Induſtry of the Floriſts in thoſe Countries, that the Lovers and Delighters in Gardening are ſo agreeably entertain'd, not only with the curious Variety of this, but of moſt other bulbous-rooted Flowers; few other Floriſts thinking it worth their Trouble to wait four or five Years for the Flowers of a Plant, which, when produced, perhaps there might not be one in forty that may deſerve to be preſerv'd: but they did not conſider, that it was only the Loſs of the three or four firſt Years after ſowing; for if they continued ſowing every Year after they began, there would be a Succeſſion of Flowers annually, which would conſtantly produce ſome Sorts that might be different from what they had before ſeen; and new Flowers being always the moſt valuable by ſkilful Floriſts, (provided they have good Properties to recommend them) it would always be a ſufficient Recompence for their Trouble, and Loſs of Time.

The Method of raiſing theſe Flowers from Seed, is as follows: Having provided yourſelf with ſome good Seed, (which ſhould be ſaved from either ſemi-double, or ſuch ſingle Flowers as are large, and have good Properties) you muſt have a Parcel of ſquare ſhallow Boxes or Pots, which muſt be fill'd with a freſh, light, ſandy Soil, laying the Surface very level; then ſow your Seeeds thereon as equally as poſſible, covering it about half an Inch thick with the ſame light Earth: The Time for this Work is about the Beginning of *Auguſt*: Theſe Boxes or Pots ſhould be placed where they may enjoy the Morning-Sun only until the Middle or latter End of *September*, at which Time they ſhould be remov'd into a warmer Situation; and towards the End of *October* they ſhould be placed under a common Hot-bed Frame, where they may remain during the Winter and Spring Months, that they may be protected from hard Froſts; tho' they ſhould be expoſed to the open Air at all times when the Weather is mild. In *February* the young Plants will begin to appear above-ground: at which time they muſt be carefully ſkreen'd from Froſts, otherwiſe it will prove very injurious to them: but you muſt never cover 'em at that Seaſon, but in the Night, or in very bad Weather; for when the Plants are come up, if they are cloſe cover'd, they will draw up very tall and ſlender, and thereby prevent the Growth of their Roots. In the Middle of *March*, if the Weather proves good, you may remove the Boxes out of the Frame, placing them in a warm Situation; obſerving, if the Seaſon be dry, to refreſh them now and then with a little Water, as alſo to keep them very clear from Weeds, which would ſoon over-ſpread the tender Plants, and deſtroy them, if permitted to remain.

Towards the latter End of *April*, or the Beginning of *May*, theſe Boxes ſhould be remov'd into a cooler Situation; for the Heat of the Sun at that Seaſon would be too great for theſe tender Plants, cauſing their Blades to decay much ſooner tha they would if they were ſkreen'd from its Violence: In thi ſhady Situation they ſhould remain during the Heat of Summer, obſerving to keep them conſtantly clear from Weeds but you muſt not place them under the Dripping of Trees &c. nor ſhould you give them any Water after their Blad are decay'd, for that would infallibly rot the Roots. Abou the Middle or Latter-end of *Auguſt* you ſhould ſift a little lig rich Earth over the Surface of the Boxes, and then remo them again into a warmer Situation, and treat them, duri the Winter, Spring, and Summer Months, as was before d rected; and about the Middle of *Auguſt* you ſhould prepare Bed of light, rich ſandy Soil, in Proportion to the Quantity your Seedling Plants, and having levell'd the Surface very eve you ſhould take out the Earth from the Boxes in which yo Plants were rais'd, into a Sieve, in order to get out all t Roots, which by this time (if they have grown well) will about the Thickneſs of a ſmall Quill: theſe Roots ſhould placed upon the Bed at about two or three Inches aſunder, o ſerving to ſet the bottom Part of their Roots downwards; th cover them over two Inches thick with the ſame light Eart but as it will be impoſſible to get all the ſmall Roots out of t Earth in the Boxes, ſo you ſhould ſpread the Earth upon a other Bed equally, and cover it over with light Earth; which Method you will not loſe any of the Roots, be th ever ſo ſmall.

Theſe Beds muſt be arched over with Hoops, and in v hard froſty Weather they muſt be cover'd with Mats, &c. protect 'em from Froſt; and in the Spring, when the gr Leaves are above Ground, if the Weather ſhould be very d you muſt refreſh 'em with Water: but do this ſparingly; nothing is more injurious to theſe Bulbs, than too gr Quantities of Moiſture. During the Summer-ſeaſon you m conſtantly keep the Beds clear from Weeds; but after Blades are decay'd, you muſt never give them any Wat And in Autumn you ſhould ſtir the Surface of the Bed wi very ſhort Hand-fork, being exceeding careful not to thru ſo deep as to touch the Roots, which, if hurt, are very ject to periſh ſoon after: Then ſift a little freſh, light, Earth over the Bed about an Inch thick, or ſomewhat mo and in Winter cover 'em again, (as was before directed): this Bed the Roots may continue until they flower, whic commonly five Years after ſowing, obſerving to treat ' both in Summer and Winter, as before.

When their Flowers begin to ſhew themſelves, you ſh mark all ſuch as appear to have good Properties, by thruſti ſmall Stick down by each Root; which Roots, at the T for taking them up, ſhould be ſelected from the reſt, planted by themſelves: Tho' I would by no means adviſe rejecting any of the other Roots, until they have blown Years, before which you cannot be aſcertained of their V

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When the green Leaves of theſe Plants begin to decay, their Roots muſt be taken up; and the Earth of the Bed being rais'd into a Ridge, the better to ſhoot off the Moiſture, they ſhould be laid into the Earth again in an horizontal Poſition, leaving the green Leaves hanging downwards from the Roots, whereby the great Moiſture contained in their very ſucculent Leaves and Flower-ſtalks is exhaled, and prevented from entring the Roots; which, when ſuffer'd to return into them, is very often the Cauſe of their rotting: In this Ridge the Roots ſhould remain until the Leaves are quite dried off, when they muſt be taken up; and after being cleared of all manner of Filth, which would be hurtful to them, they muſt be laid up in Boxes, where they may be preſerved dry until *September*, which is the proper Seaſon for planting them again. The Method of doing this, ſhall be hereafter mentioned, when we treat of the Management of old Roots.

The *Hyacinth* of *Peru* may alſo be raiſed from Seeds in the ſame manner as the common *Hyacinths*, with this Difference only, that as they ſeldom loſe their green Leaves or their Fibres, ſo their Roots muſt not be kept out of the Ground, but ſhould be planted again immediately when they are taken up. The beſt Seaſon for this Work is in *Auguſt*: And they ſhould be planted in a Border expoſed to the Morning Sun; for if they are planted in a very hot Situation, the Flowers decay ſoon after they are expanded, ſo that they ſeldom continue in Beauty above a Week; whereas, if they are ſkreen'd from the violent Heat of the Sun, they may be preſerved near three Weeks, and will have a greater Number of Flowers open at once upon the ſame Stem.

I ſhall now proceed to the Culture of ſuch *Hyacinths* as have either been obtained from *Holland*, or are of our own Product from Seeds, that are very beautiful, and worthy to be preſerved in Collections of good Flowers; and it hath been the want of Skill in the Management of theſe noble Flowers, which has occaſion'd the ill Succeſs moſt People have had with them in *England*, whereby they are almoſt entirely neglected, ſuppoſing their Roots degenerate after they have flower'd in *England*: Which is a great Miſtake; for were the Roots managed with the ſame Art as is practiſed in *Holland*, I am fully convinced they would thrive full as well in *England* as they do in *Holland*, or elſewhere, as I have experienced; for, from about an hundred Roots which I have received from *Holland* at wo or three different times, I have increaſed them to almoſt double the Number of ſtrong Roots, all which flower'd in the Spring *Anno* 1730, ſtronger than they did when I firſt received them; and I dare ſay they were as large, and produced as many Flowers upon their Stems, as the ſame Sorts ever did in *Holland*: And by Letters which I have lately receiv'd from my ery worthy ingenious Friend *James Juſtice* Eſq; near *Edinurgh*, he hath ſucceeded ſo well in the Management of theſe lowers, as to equal any of the *Dutch* Floriſts in the Number nd Strength of his Flowers: And he has raiſed great Quantiies of Flowers from Seed of his own ſaving, from amongſt which he has obtain'd a moſt extraordinary fine one, which he alls *The Royal Britiſh Star*; the Height of its Stem was wenty Inches, upon which were twenty-three Bells, or Flows, placed in a pyramidal Order, each of which was very arge and double, of an extraordinary white Colour on the Upper part of the Petals; but the Lower-part or Centre of the Flower of a very deep Violet Colour. This Flower is thought, y ſeveral curious Gentlemen (who have ſeen the fine Collectins of *Hyacinths* in the *Dutch* Gardens) to be equal to, if not xceeding any Flowers they have ſeen in *Holland*. But to proeed:

The Soil in which theſe Flowers do ſucceed beſt, is a light, ndy, freſh, rich Earth, which may be compos'd after the ollowing Manner: Take half freſh Earth from a Common or Paſture Land which is of a ſandy Loam; this ſhould not be aken above eight or nine Inches deep at moſt; and if you take he Turf or Green-ſward with it, it will ſtill be better, provided you have Time to let it rot; to this you ſhould add a fourth-part of Sea-ſand, and the other fourth-part of rotten Cow-dung; mix theſe well together, and caſt it into an Heap, where it may remain until you uſe it, obſerving to turn it over once in three Weeks, or a Month. If this Compoſt be made wo or three Years before it be uſed, it will be much the better: But if you are obliged to uſe it ſooner, then it ſhould be oftener urn'd, that the Parts may the better unite.

This Soil ſhould be laid ten Inches deep on the Beds which re deſigned for your *Hyacinths*; and you may lay a little rotten Cow-dung or Tanners-bark at the Bottom, which may be within reach of the Fibres; but it ſhould by no means touch e Bulb. If the Soil be very wet where theſe Beds are made, u ſhould raiſe 'em ſeven or eight Inches above the Surface; t if it be dry, they need not be raiſed above three Inches.

The Manner of preparing the Beds, is as follows: Firſt, take all the former old Earth out of the Bed to the Depth you intend, then ſpread a little rotten Dung or Tan in the Bottom, laying it very level; upon this you ſhould lay the above-mention'd Earth five Inches thick, levelling it very even; then ſcore out the Diſtances for the Roots, which ſhould be eight Inches ſquare, in ſtrait Rows each Way; after which, place your Roots exactly in the Squares, obſerving to ſet the Bottom-part downward; then cover the Roots five Inches deep with the ſame prepared Earth; being very careful, in doing of this, not to diſplace any of them: And if the Tops of theſe Beds are made a little rounding, to ſhoot off the Wet, it will be of Service, provided they are not made too high, which is a Fault the other Way.

The beſt Seaſon for planting theſe Roots is towards the Middle or latter End of *September*, according to the Earlineſs or Lateneſs of the Seaſon, or the Weather which then happens: But I would adviſe you, never to plant 'em when the Ground is extreme dry, unleſs there be a Proſpect of ſome Rain ſoon after; for if the Weather ſhould continue dry for a conſiderable Time after, the Roots would receive a Mouldineſs, which will certainly deſtroy them.

Theſe Beds will require no farther Care until the Froſt comes on ſevere, at which Time they ſhould have ſome Peaſe-haulm, or ſuch-like Covering, laid over them, which will keep out the Froſt better than Mats, and lying hollow, will admit the Air to the Surface of the Ground, and alſo permit the Exhalations to paſs off, whereby the Earth will remain dry, and prevent the Roots from rotting; which has often happen'd when the Beds have been too cloſe covered. But you muſt obſerve to take off this Covering whenever the Weather is mild, and only let it continue on in very hard Froſts; for a ſmall Froſt cannot injure the Roots before the green Leaves appear above Ground, which is ſeldom before the Beginning of *February*; at which Time the Beds muſt be arched over with Hoops, that they may be cover'd either with Matts, Canvas, or ſome other light Covering, to prevent the Froſt from hindering the Buds as they ariſe above-ground: But theſe Coverings muſt be conſtantly taken off every Day when the Weather is mild, otherwiſe the Flower-ſtems will be drawn up to a great Height, and become very weak; and the Pedicles of the Flowers will be long and ſlender, and ſo render'd incapable of ſupporting the Bells: Which is a great Diſadvantage to the Flowers; for one of their greateſt Beauties conſiſts in the regular Diſpoſition of their Bells.

When the Stems of the Flowers are advanced to their Height, before the Flowers are expanded, you ſhould place a ſhort Stick down by each Root, to which with a Wire form'd into a Hoop, the Stem of the Flowers ſhould be faſten'd, to ſupport them from falling; otherwiſe, when the Bells are fully expanded, their Weight will incline them to the Ground, eſpecially if they are permitted to receive a Shower of Rain.

During their Seaſon of flowering, they ſhould be cover'd in the Heat of the Day from the Sun, as alſo from all heavy Rains: but they ſhould be permitted to receive all gentle Showers, as alſo the Morning and Evening Sun: but if the Nights are froſty, they muſt be conſtantly defended therefrom. With this Management, you may continue your *Hyacinths* in Beauty at leaſt one whole Month, and ſometimes more, according to their Strength, or the Favourableneſs of the Seaſon.

When their Flowers are quite decay'd, and the Tops of their Leaves begin to change their Colour, you muſt carefully raiſe the Roots out of the Ground with a narrow Spade, or ſome other handy Inſtrument, and then raiſe the Earth of your Beds into a high, ſharp Ridge, laying the Roots into it in an horizontal Poſition, with their Leaves hanging out; by which means a great Part of the Moiſture contained in their thick ſucculent Stalks and Leaves will evaporate, which, if it were permitted to return back to the Roots, would cauſe them to rot and decay after they are taken up, which has been the general Defect of moſt of the *Hyacinths* in *England*.

In this Poſition the Roots ſhould remain until the green Leaves are intirely dried up, which perhaps may be in three Weeks Time, then you muſt take them out of the Ground, and wipe them clean with a ſoft woollen Cloth, taking off all the decay'd Parts of the Leaves, and Fibres, putting them into open Boxes where they may lie ſingly, and be expoſed to the Air: But they muſt be preſerved carefully from Moiſture; nor ſhould they be ſuffered to remain where the Sun may ſhine upon them: In this Manner they may be preſerved out of the Ground until *September*, which is the Seaſon for replanting them again; at which Time you muſt ſeparate all the ſtrong flowering Roots, planting them in Beds by themſelves, that they may make an equal Appearance in their Flowers: But the Off-ſets and ſmaller Roots ſhould be planted in another ſeparate Bed for one Year, in which Time they will acquire

Strength, and by the ſucceeding Year will be as ſtrong as the older Roots.

The ſingle and ſemi-double Flowers ſhould be planted alſo in a Bed by themſelves, where they ſhould be carefully ſhelter'd (as was directed before) from the Froſt, until the Flowers are blown; at which Time their Covering ſhould be intirely removed, and they ſuffered to receive the open Air; which, tho' it may ſoon deface the Beauty of the Flowers, yet it is abſolutely neceſſary to promote their ſeeding: and when the Seeds are quite ripe, you muſt cut off the Veſſels, and preſerve them, with the Seeds therein, until the Seaſon for ſowing it. But you muſt obſerve, that after theſe Flowers have produced Seeds, they ſeldom flower ſo well again, at leaſt not in two Years after; ſo that the beſt Method to obtain good Seeds, is to plant new Roots every Year for that Purpoſe.

The common *Engliſh* and *ſtarry Hyacinths* are very hardy Plants, as are ſome of the ſingle blue and white Oriental Sorts, and do increaſe very faſt by Off-ſets from the old Roots; ſo that it is hardly worth while to propagate them by Seeds, eſpecially ſince it can ſcarcely be expected to receive any great Varieties from them: Theſe Flowers, tho' common, are very pretty Ornaments in the Borders of the Flower-Garden, where being intermix'd with other bulbous-rooted Flowers, they add to the Variety, and continue the Succeſſion of Flowers a long Time in the Spring; and as they are very hardy, and only require to be tranſplanted every other Year, ſo they are worthy of a Place in every good Garden.

The *Hyacinth* of *Peru* is one of the lateſt Flowers of all this Tribe, ſeldom appearing before the Middle, and ſometimes not until the latter End of *May:* This, as I before obſerved, ſhould have a Situation expoſed to the Morning Sun, and a light rich Soil: But as this ſeldom loſes its Leaves or Fibres entirely, ſo it cannot be kept long out of the Ground; the beſt Seaſon for tranſplanting their Roots is in *Auguſt* or *September*; at which Time the Off-ſets ſhould be taken from them, and the ſtrong Roots planted again for flowering; but the ſmall Roots ſhould be placed in a Nurſery-bed, until they have acquired Strength to flower. The Diſtance and Depth of planting theſe, being much the ſame with what I have already mention'd for the other *Hyacinths*, I ſhall forbear repeating it.

I ſhall add in this Place another *Hyacinth*, which is now preſerved in curious Collections of exotick Plants; it was originally brought from the *Cape of Good Hope*; and being a Native of a warm Climate, will not endure the Cold of our Winters in the open Air; but, for the Beauty of its Flowers, well deſerves a Place in a Green-houſe: It is called,

HYACINTHUS *Africanus tuberoſus, flore cæruleo umbellato. Breyn. prod.* The *African* Hyacinth, with a tuberoſe Root, and blue Flowers, growing in Umbels.

The Roots of this Plant ſhould be put in Pots, filled with the ſame Earth as was directed for the other *Hyacinths:* Theſe Pots during the Summer-ſeaſon, may be expoſed to the open Air with other Green-houſe Plants, and in Winter muſt be houſed with them. The Time for tranſplanting the Roots, is towards the End of *March*, before the green Leaves are produced too far; after which it is not ſafe ſo to remove them. During the Time that their green Leaves are in Vigour, they muſt be frequently watered: But when their Leaves begin to decay, it muſt be given them very ſparingly; for much Wet at that Time will rot their Roots: They ſhould alſo have as much free open Air, when the Weather is mild, as they can poſſibly receive; for which Purpoſe they ſhould be placed near the Windows of the Green-houſe; for they require only to be ſhelter'd from Froſt, and extreme cold Air, being in other reſpects very hardy.

This Plant is propagated by Off-ſets taken from the old Roots at the Time of tranſplanting them; which muſt be managed as hath been directed for the old Roots. The Flowers of this Plant are produced in *Auguſt* and *September*; but it ſeldom perfects Seeds in *England*.

HYACINTHUS TUBEROSUS.

The *Characters* are;

It hath a tuberoſe Root: The Stalk is erect, and ſurrounded with a leafy Covering by Intervals: The Flowers are large, and of a Lily-*ſhape, being much longer and larger than thoſe of the Bulbous* Hyacinths.

The *Species* are;

1. HYACINTHUS *Indicus tuberoſus, flore Hyacinthi orientalis. C. B. P.* The *Indian* Tuberoſe-rooted Hyacinth, *commonly call'd,* The Tuberoſe.
2. HYACINTHUS *Indicus tuberoſus, flore pleno. Boerh. Ind. alt.* The *Indian* Tuberoſe-rooted Hyacinth, with a double Flower, *commonly call'd,* The Double Tuberoſe.

The firſt of theſe Plants is very common in moſt Parts of *Europe:* The Roots of this Sort are generally brought from *Genoa* in great Plenty every Spring, by the Perſons that bring over *Orange trees* for Sale. But the ſecond Sort is very rare, and at preſent only in the Gardens of ſome curious Perſons, who have been favour'd with the Roots by Monſ. *de la Court* near *Leyden* in *Holland*, who obtain'd it from Seeds of the ſingle Kind ſome Years ſince. This Curioſity was for many Years kept as a Rarity by the Gentleman that rais'd it from Seeds, who refuſed to part with it 'till of late, tho' he had ſuch Plenty of the Roots, as to deſtroy ſome Hundreds before he would part with any of them.

Theſe Plants are propagated by Off-ſets taken from the old Roots, which ſend them forth in great Plenty; but as they require to be ſhelter'd from the Cold of our Winters, ſo this Method is ſeldom practiſed in *England*, becauſe we can be furniſhed with freſh ſtrong Roots annually from Abroad at a very cheap Rate: I ſhall therefore proceed to the Culture of thoſe Roots which are brought over.

The Roots of this Plant generally arrive here in *February*, which is full early enough to plant them for the firſt Seaſon: But in order to continue a Succeſſion of their Flowers, they ſhould be planted at three different Times: The firſt, at the latter End of *February*, or the Beginning of *March*; theſe will flower at the latter End of *May*, or Beginning of *June*. The ſecond ſhould be planted the Beginning of *April:* Theſe will flower in *July*. The third ſhould be planted in the Beginning of *May*, which will flower in *Auguſt* or *September*, and ſome of them will continue 'till *October*. By which Method we may continue this fragrant Flower for four or five Months in Beauty.

When you are provided with the Roots, you muſt prepare a moderate Hot-bed, upon which ſhould be placed a Parcel of ſmall Flower-Pots, fill'd with freſh, light, rich Earth; then having taken off the Filth and decay'd Leaves, and Fibres of the Roots, as alſo the Off-ſets, (which, if permitted to remain upon the flowering Roots, will exhauſt much of their Nouriſhment, and cauſe 'em to blow very weak) you muſt plant the Roots one into each ſeparate Pot, obſerving that the Bud or Upper Part of the Root is but juſt cover'd with the Earth; for if they are buried too deep, they will ſometimes miſcarry.

Theſe ſhould have but little Water until they apppear abo Ground, but afterwards they require frequently to be refreſhed therewith: And as the green Leaves advance, ſo you mu be careful to give them Air, in Proportion to the Heat of th Weather, and the Bed in which they are planted; for if they are forc'd too faſt, it will cauſe their Flower-ſtems to run u very weak and tall; but the Flowers will be fewer in Number, and much ſmaller, than when they are brought up hardier. As the Stems advance, ſo you muſt raiſe your Coverings, and increaſe the Proportion of free Air; and in the Middle of *May* a ſlight Covering with Mats will be ſufficient; for then you muſt harden them by Degrees to bear the open Air. When the Flowers begin to open, the Pots ſhould be removed int Shelter; for if they are permitted to continue abroad, the We will ſoon deface the Flowers: But if they are ſkreen'd fro Wet, and the violent Heat of the Sun, they will continue i Beauty a long Time.

Thoſe Roots which are planted later in the Seaſon *will require* a leſs Degree of Heat; ſo that if the Hot-*bed does bu* bring them well up above-ground, the Heat of the Sun will b ſufficient for them afterwards, provided the Seaſon be not ver cold and wet; for if it ſhould happen to prove ſo, you mu add freſh Warmth to the old Bed, or remove the Pots to a new one to bring them forward, otherwiſe they will not flower tha Seaſon.

The double-flower'd Sort being propagated by Off-ſets, ſhall ſet down the Method uſed by Monſ. *de la Court*, as obſerv'd when I was at *Leyden*. In the Spring he takes up th old Roots before they begin to ſhoot, from which he takes o all the Off-ſets; then he plants the ſtrong Roots in the Manner above directed for the ſingle Sort: But the Off-ſets h plants about four Inches aſunder, upon a freſh Hot-bed covere over with very rich Earth; this Bed is arched over with Hoops and cloſely cover'd with Canvas and Mats, which are continued on during the Spring Months while the Weather is cold But as the Summer advances, ſo the Coverings are remov'd and the Plants ſuffered to enjoy the free open Air until th Autumn following, that the Nights begin to be cold, when h covers them, as before, until the Leaves are quite wither'd of at which Time he takes up ſome of them, and preſerves th Roots in dry Sand in the Green-houſe: But others he ſuffe to continue in the Beds until the ſucceeding Spring, obſerving to cover them, to preſerve the Roots from Froſts; which if they are not well ſecured from, as alſo from too much Wet, will entirely deſtroy them.

By this Management, I obſerved ſome Hundreds of Roots of this Plant, in the Gentleman's Garden above-mention'd, which were in flower, and a large Quantity of younger Roots, which were for the ſucceeding Year: So that by having a Succeſſion of Roots, he always has a ſufficient Number to flower every Year; for the Off-ſets will be two Years before they flower, and the old Roots will not flower again 'till the third Year.

HYDROCOTYLE, [of ὕδωρ, *Water*, and κότυλη, *a Cavity*; becauſe this Plant has a Cavity in the Leaves, and grows in Marſhes] Water Navelwort.

This Plant grows in great Plenty in moiſt Places in moſt Parts of *England*, and is never cultivated for Uſe, ſo I ſhall paſs it over with only naming it.

HYDROLAPATHUM. *Vide* Lapathum.

HYDROPHYLLON, Water-Leaf.

The *Characters* are;

It hath a bell-ſhaped Flower conſiſting of one Leaf, and cut into ſeveral Segments; from the Bottom-part of the Flower ariſes the Pointal, which afterward becomes a Fruit, opening in two Parts, incloſing Seeds of the ſame Shape as the Veſſel.

We have but one Sort of this Plant, *viz.*

HYDROPHILLON *Morini. Joncq. Hort.* Water-Leaf of *Morinus.*

This Plant is very hardy in reſpect to Cold, but it ſhould be planted in a moiſt rich Soil; if it is planted in a dry warm Soil, it will not live, unleſs it is conſtantly watered in dry Weather. It may be propagated by parting of the Roots, which ſhould be done in Autumn, that the Plants may be well rooted before Spring; for otherwiſe they will require a great deal of Water to preſerve them. The Roots ſhould not be parted too ſmall, nor ſhould it be done every Year, for that will weaken them too much; they will thrive very well in a ſhady Situation, provided it is not under the Drip of Trees. It flowers in *June*, but doth not perfect Seeds in this Country.

HYDROPIPER, the common biting Arſe-ſmart, which grows in great Plenty in moiſt Places near Ditches Sides almoſt every-where.

HYDROSTATICKS, [ὑδροστατικὴ, of ὕδωρ, *Water*, and στατικὴ, f στατὸς, *ſtanding*, of ἵστημι, *I ſtand* or *ſtop*; *Hydroſtaticks* being conceiv'd as the Doctrine of the Equilibrium of Liquors] s the Doctrine of the Gravitation of Fluids; or it is that Part f the Mechanicks which conſiders the Weight or Gravity of luid Bodies, particularly of Water, and of ſolid Bodies immerg'd therein.

To *Hydroſtaticks* belong whatever relates to the Gravities and Equilibria of Liquors; with the Art of weighing Bodies in Water, in order to eſtimate the ſpecifick Gravities.

Of the Uſe of this Science in *Horticulture*, the Reverend Dr. *Hale*, in his excellent Treatiſe of *Vegetable Staticks*, has given many Examples, by Experiments, ſhewing the Quantities of Moiſture imbib'd and perſpir'd by Plants and Trees, neceſſary to be known, in order to promote the Buſineſs of Vegetation.

Some of the moſt uſeful Heads of this Science, are;

1. That the upper Parts of all Fluids preſs upon the lower.

2. That a lighter Fluid may gravitate or preſs upon a heavier.

3. That if a Body that is contiguous to the Water, be altogether or in part lower than the upper Surface of the Water, e lower Part of the Body will be preſs'd upwards by the Water which touches it beneath.

4. There needs only a competent Weight of an external luid to account for the riſing of Water in Pumps, *&c.*

5. If a Body be placed under Water, ſo that its uppermoſt urface lie parallel to the Horizon, the direct Preſſure that it ſtains is no more than that of a Column of Water, whoſe aſe is the horizontal Superficies of the Body, and its Height e perpendicular Depth of the Water. And if the Water hich leans on the Body be contain'd in Pipes, which are open both Ends, the Preſſure of the Water is to be eſtimated by e Weight of a Pillar of Water, the Baſe of which is equal the lower Orifice of the Pipe, and whoſe Height is equal to a Perpendicular which reaches from thence to the Top of the Water, altho' the Pipe ſhould be much inclined any Way, or tho' it ſhould be ever ſo irregularly ſhaped, and much broader in ſome other Place than the Bottom.

6. A Body which is immers'd in a Fluid, ſuſtains a natural Preſſure from the Fluid, which alſo increaſes as the Body is placed deeper beneath the Surface of the Fluid.

7. The Reaſon why Water aſcends in Syphons, and by which it flows thro' them, may be explain'd from the external Preſſure of ſome other Fluid, without having recourſe to the Abhorrence of a Vacuum.

8. The moſt ſolid Body, which will ſink by its own Weight at the Surface; yet, if it be placed at a Depth twenty times greater than that of its own Thickneſs, it will not ſink, if its Deſcent be not aſſiſted by the incumbent Water.

9. If a Body which is ſpecifically lighter than a Fluid, be immers'd in that Fluid, it will riſe with a Force proportionable to the Exceſs of Gravity in that Fluid.

10. If a Body which is heavier than a Fluid be immers'd, it will ſink with a Force that is proportionable to the Exceſs of its Gravity.

11. If any Veſſel be fill'd with Water, or any other Liquor, the Surface of which is capable of being even, it will continue ſo till diſturbed by ſome other external Cauſe.

12. When the Fluids are preſs'd, they are preſs'd *undequaque*, i. e. on all Sides.

How far the Knowledge of any of theſe Properties of *Fluids* may conduce to the Philoſophical Improvement of *Gardening*, and the Buſineſs of *Vegetation*, will be more clearly perceiv'd, when well conſider'd by the ingenious Artiſt, than being ſet forth by Words.

HYGROMETER, [ὑγρόμετρον, of ὕγρος *moiſt*, and μέτρον *meaſure*, of μετρέω *to meaſure*] is a Machine or Inſtrument contriv'd to ſhew or meaſure the Moiſtneſs and Dryneſs of the Air, according as it abounds with moiſt or dry Vapours, and to meaſure and eſtimate the Quantity of ſuch Moiſtneſs and Dryneſs.

There are divers Kinds of *Hygrometers*; for whatever Body either ſwells or ſhrinks by Dryneſs or Moiſture, is capable of being form'd into an *Hygrometer*; ſuch are Woods of moſt Kinds, particularly *Aſh*, *Deal*, *Poplar*, &c. ſuch alſo is a *Cord*, *Cat-gut*, &c.

Stretch a Hempen-cord or *Fiddle-ſtring* along a Wall, bringing it over a Truckle or Pulley, and to the other End tie a Weight, unto which fit a Style or Index; on the ſame Wall fit a Plate of Metal divided into any Number of equal Parts, and the *Hygrometer* is compleat.

For it is a Matter of undoubted Obſervation, that Moiſture ſenſibly ſhortens the Length of Cords and Strings; and that as the Moiſture evaporates, they return to their former Length: And the like may be ſaid of a Fiddle-ſtring.

The Weight therefore, in the preſent Caſe, upon an Increaſe of the Moiſture of the Air, will aſcend; and upon a Diminution of the ſame, will deſcend.

Hence, as the Index will ſhew the Spaces of Aſcent and Deſcent, and thoſe Spaces are equal to the Increments and Decrements of the Length of the Cord or Gut, the Inſtrument will diſcover whether the Air be more or leſs humid now, than it was at another given Time.

The ordinary Contrivance with Whip-cord, is one of the eaſieſt; for that will infallibly ſhorten and lengthen as the Air grows moiſter and drier.

Some recommend a *Cat-gut* as the beſt, which may be a Yard in Length, ſuſpended, having a Plummet or Piece of Lead, with an Index or Pointer, hanging at the lower End, by means of which the *Cat-gut* will twiſt or untwiſt as the Air dries or moiſtens, and ſhorten and lengthen ſo as to raiſe and ſink the Plummet with the Index; and this Index will point out the Degree ſought for.

The Weight of this Lead or Plummet ſhould be about two Ounces.

Some Perſons who approve a fine Whip-cord inſtead of Catgut, uſe a greater Weight of Lead: The twiſting and untwiſting of the *Cat-gut* or *Whip-cord*, will make the Lead with the Index turn round, as well as riſe and fall: The Degrees may be made upon an open Screw of Braſs within, with which the Plummet and Index has its Motion.

When you are provided with a *Barometer* and *Hygrometer*, compare the Motions of the one with the other, in order to judge what Proportion the Riſe or Fall of the Quickſilver in the *Barometer* bears to the twiſting of the *Cat-gut* or *Whipcord*; the Degrees of which Motion may be obſerved by the Index or Pointer of the *Hygrometer*; and at the ſame time both theſe muſt be compared with the riſing and falling of the Spirit in a *Thermometer*, to know what Degree of *Heat* or *Cold* attends every different Change of Weather.

HYGROSCOPE, [of ὑγρος *moiſt*, and σκοπέω *to view or conſider*] a Machine the ſame as the *Hygrometer*, and for the ſame Uſes.

The Inſtruments are of good Uſe in Conſervatories for meaſuring or ſhewing the Dampneſs or Drineſs of them in the Winter-ſeaſon.

HYOSCYAMUS, [of ὗς *a Swine*, and κύαμος *a Bean*, q. d. *Hog's-bean.*] Hen-bane.

The *Characters* are;

The Leaves are ſoft and hairy, growing alternately upon the Branches: The Cup of the Flower is ſhort, and Bell-ſhaped, and divided into five Segments: The Flower conſiſts of one Leaf, the bottom Part of which is tubuloſe, but is expanded at the Top, and divided into five Segments, having five obtuſe Stamina: The Fruit, which is incloſed with the Calyx, reſembles a Pot with a Cover to it, and is divided, by an intermediate Partition, into two Cells, which contain many ſmall Seeds.

The *Species* are;

1. HYOSCYAMUS *vulgaris, vel niger. C. B. P.* Common Black Hen-bane.

2. HYOSCYAMUS *albus major, vel tertius Dioſcoridis, & quartus Plinii. C. B. P.* Greater White Hen-bane.

3. HYOSCYAMUS *major, albo ſimilis, umbilico floris atropurpureo. T. Cor.* Great Hen-bane like the White, but with a dark-purple Bottom to the Flower.

4. HYOSCYAMUS *minor, albo ſimilis, umbilico floris virenti. Jeſſieu.* Leſſer Hen-bane like the White, with a green Bottom to the Flower.

5. HYOSCYAMUS *rubello flore. G. B. P.* Hen-bane, with a reddiſh-colour'd Fruit.

6. HYOSCYAMUS *Creticus luteus major. C. B. P.* Great yellow Hen-bane of *Candia*.

There are ſeveral other Varieties of this Plant, which are preſerv'd in Botanick Gardens, to add to their Numbers of Plants; but ſince they are rarely cultivated for Uſe, ſo I ſhall forbear to ſay any thing of them in this Place.

The firſt of theſe Sorts is very common in *England*, growing upon the Sides of Banks and old Dunghills almoſt every where. This is a very poiſonous Plant, and ſhould be rooted out in all Places where Children are ſuffer'd to come; for in the Year 1729 there were three Children poiſon'd with eating the Seeds of this Plant, near *Tottenham-court*, two of which ſlept two Days and two Nights before they could be awaken'd, and were, with Difficulty recover'd; but the third, being older and ſtronger, eſcaped better.

The ſecond Sort is by moſt Authors ſuppoſed to be the true White *Hen-bane* of the Shops, the Seeds of which ſhould be uſed in Medicine; tho' there is very little Difference in the Seeds of that, and the third and fourth Sorts, either of which may probably do. The other Sorts are of no Uſe or Beauty: but whoever hath a Mind to cultivate any of theſe Plants, may ſow their Seeds in the Spring, upon a light, dry, undung'd Soil; and when the Plants are come up, they ſhould be tranſplanted out, allowing them two Feet Diſtance each way: The ſecond Summer they will produce Flowers and Seeds, and ſoon after the Roots periſh.

HYPECOON.

We have no *Engliſh* Name for this Plant.

The *Characters* are;

The Flower conſiſts of four Leaves, which are placed in Form of a Croſs; theſe are uſually divided into three Parts: Out of the Flower-cup riſes the Pointal, which afterward becomes a plain ſmooth, jointed Pod, full of kidney-ſhaped Seeds, which are incloſed in each Joint.

The *Species* are;

1. HYPECOON *latiore folio. Tourn.* Broad-leav'd Hypecoon.

2. HYPECOON *tenuiore folio. Tourn.* Narrow-leav'd Hypecoon.

3. HYPECOON *Orientale, latiore folio, flore magno. Tourn. Cor. Eaſtern* Hypecoon, with a broader Leaf, and a large Flower.

4. HYPECOON *Orientale, fumariæ folio. Tourn. Cor. Eaſtern* Hypecoon, with a fumitary Leaf.

The firſt and ſecond Sorts grow plentifully in the South of *France*, in *Spain* and *Italy*; but the third and fourth Sorts were diſcovered by Dr. *Tournefort* in the *Levant*; from whence he ſent their Seeds to the *Royal Garden* at *Paris*.

Theſe Plants are all of them annual, ſo their Seeds ſhould be ſown the Beginning of *March*, on a Bed of light freſh Earth, where they are to remain; for they ſeldom ſucceed if they are tranſplanted. When the Plants are come up, they ſhould be carefully cleared from Weeds; and where the Plants are too cloſe, they muſt be thinned, leaving them about ſix or eight Inches apart; after this they will require no other Culture, but to keep them conſtantly clear from Weeds. In *June* theſe Plants will flower, and their Seeds will be ripe in *Auguſt*.

Sometimes, when the Spring proves very dry, the Seeds will not grow the firſt Year; but if the Ground is kept clear from Weeds, and not diſturbed, the Plants will come up the following Spring. I have known the Seeds of theſe Plants remain in the Ground two Years, and the Plants have come up the third Spring very well; ſo that it may be very proper to ſow ſome of their Seeds in Autumn, ſoon after they are ripe, in a warm Border, where the Plants may come up early the following Spring; and theſe will be ſtronger, and more likely to perfect Seeds, than thoſe ſown in the Spring; by which Method the Kinds may be preſerved.

Theſe Plants are ſeldom propagated but by thoſe who are curious in Botany, tho' for the ſake of Variety they may have a Place in large Gardens, becauſe they require very little Trouble to cultivate them; and as they take up but little Room, ſo they may be intermixed with other ſmall annual Plants in large Borders, where they will make a pretty Appearance.

The Juice of theſe Plants is of a yellow Colour, reſembling that of *Celandine*; and is affirmed by ſome eminent Phyſicians, to have the ſame Effect as *Opium*.

HYPERICUM, [ὑπερικῶν, q. d. an *Herb*, the Image of which is Eminent; or becauſe it has reſpect to, or beholds the Sun.] St. John's-wort.

The *Characters* are;

It hath a fibroſe Root: The Leaves grow oppoſite by Pairs a the Joints of the Stalks: The Flower-cup conſiſts of one Leaf which it divided into five Parts, and expanded: The Flower which conſiſts of five Leaves, expands in form of a Roſe, *havin many Stamina in the Center ſurrounding a conical Ovary, whic becomes a three-corner'd pointed Fruit, and is divided into thr Cells containing many ſmall Seeds.*

The *Species* are;

1. HYPERICUM *vulgare. C. B. P.* Common St. John's wort.

2. HYPERICUM *Aſcyron dictum, caule quadrangulo. J. B* St. John's-wort, with a ſquare Stalk, *commonly call'd* St. Peter's wort.

3. HYPERICUM *fœtidum fruteſcens. Tourn.* Stinkin ſhrubby St. John's-wort.

4. HYPERICUM *fruteſcens Canarienſe multiflorum. Hor Amſt.* Shrubby St. John's-wort from the *Canaries*, wit many Flowers.

5. HYPERICUM *Orientale, flore magno. T. Cor. Eaſte* St. John's-wort, with a large Flower.

6. HYPERICUM *villoſum erectum, caule rotundo. Tour* Upright hairy St. John's-wort, with a round Stalk.

7. HYPERICUM *elegantiſſimum non ramoſum, folio lat J. B.* The moſt beautiful St. John's-wort without Branche and a broad Leaf.

8. HYPERICUM *minus erectum. C. B. P.* Small uprig St. John's-wort.

9. HYPERICUM *minus ſupinum, vel ſupinum glabrum. C B. P.* Small ſmooth trailing St. John's-wort.

10. HYPERICUM *folio breviore. C. B. P.* Short-leav'd S John's-wort.

11. HYPERICUM *criſpum, triquetro & cuſpidato folio. Boc Muſ.* Curled St. John's-wort, with a three-corner'd an pointed Leaf.

12. HYPERICUM *perfoliatum & perforatum. Tourn.* Pe foliate and perforated St. John's-wort.

13. HYPERICUM *amplo perfoliato folio. Tourn.* St. John' wort, with a large thorough-wax Leaf.

14. HYPERICUM *Alpinum humilius, magno flore puncta Tourn.* Dwarf St. John's-wort of the *Alps*, with a lar ſpotted Flower.

15. HYPERICUM *latifolium Luſitanicum. Tourn.* Broa leav'd *Portugueſe* St. John's-wort.

16. HYPERICUM *Luſitanicum, linariæ folio. Tourn. Po tugueſe* St. John's-wort, with a toad-flax Leaf.

17. **Hypericum** *tomentoſum Luſitanicum minimum. Tourn.* The ſmalleſt woolly *Portugueſe* St. John's-wort.

18. **Hypericum** *Creticum ſupinum, folio ſubrotundo, flore magno. Tourn. Cor. Candy* trailing St. John's-wort, with a roundiſh Leaf, and a large Flower.

19. **Hypericum** *Creticum, ampliſſimo folio nitido. Tourn. Cor. Candy* St. John's-wort, with a large ſhining Leaf.

20. **Hypericum** *villoſum, foliis caulem ambientibus acutis, cæteris vero circinatis. Tourn. Cor.* Hairy St. John's-wort, with pointed Leaves encompaſſing the Stalk, and the bottom Leaves exactly round.

21. **Hypericum** *Orientale, foliis ſubrotundis auritis, cauli adhærentibus. Tourn. Cor. Eaſtern* St. John's-wort, with roundiſh-eared Leaves adhering to the Stalk.

22. **Hypericum** *Orientale, ptarmicæ foliis. Tourn. Cor. Eaſtern* St. John's-wort, with ſneezwort Leaves.

23. **Hypericum** *Orientale, fœtido ſimile, ſed inodorum. Tourn. Cor. Eaſtern* St. John's-wort, like the ſtinking Kind, but without Smell.

24. **Hypericum** *Orientale ſaxatile, majoranæ folio. Tourn. Cor. Eaſtern* rock St. John's-wort, with a Marjoram Leaf.

25. **Hypericum** *Orientale, androſæmo hirſuto ſimile, ſed glabrum. Tourn. Cor. Eaſtern* St. John's-wort, reſembling hairy Tutſan, but ſmooth.

26. **Hypericum** *Orientale, polygoni folio. Tourn. Cor. Eaſtern* St. John's-wort, with a knot-graſs Leaf.

27. **Hypericum** *Orientale, caule aſpero purpureo. Tourn. Cor. Eaſtern* St. John's-wort, with a rough purple Stalk.

28. **Hypericum** *Orientale, caule aſpero purpureo, linariæ folio. Tourn. Cor. Eaſtern* St. John's-wort, with a rough purple Stalk, and a toad-flax Leaf.

29. **Hypericum** *Orientale, roriſmarini folio glauco. Tourn. Cor. Eaſtern* St. John's-wort, with a ſea-green roſemary Leaf.

30. **Hypericum** *Orientale latifolium ſubhirſutum, caule purpureo villoſo. Tourn. Cor.* Broad-leav'd *Eaſtern* St. John's-wort, ſomewhat hairy, with a purple hairy Stalk.

The firſt and ſecond Sorts are both very common Plants, growing in the Fields in moſt Parts of *England*; the firſt is uſed in Medicine, but the ſecond is of no Uſe: Theſe are rarely propagated in Gardens; but I chuſe to mention them, in order to introduce the other Sorts, which deſerve a Place in every good Garden.

The third and fourth Sorts are ſhrubby Plants, which are very proper to intermix with other flowering Shrubs of the ſame Growths, where, by their long Continuance in Flower, they will make a very handſome Appearance. The third Sort is of an humble Stature, ſeldom riſing above four Feet in Height; but the fourth will grow to the Height of ſeven or eight Feet.

Theſe two Sorts are propagated by Suckers, which are plentifully ſent forth from the old Plants. The beſt Seaſon for taking off theſe Suckers is in *March*, juſt before they begin to ſhoot: They ſhould be planted in a light dry Soil, in which they will endure the ſevereſt Cold of our Climate very well. They may alſo be propagated by Cuttings, which ſhould be planted at the ſame Seaſon; or by Seeds, which muſt be ſown in *Auguſt* or *September*, which is as ſoon as they're ripe; for if they are kept till Spring, few of them will grow: but as they multiply ſo faſt by Suckers, the other Methods of propagating them are ſeldom practiſed in *England*.

The only Care theſe Shrubs require, is, to clear them from Suckers every Spring, and to cut out all decay'd and luxuriant Branches, in order to reduce them to a regular Figure: They produce their Flowers in *July*, and continue flowering until the End of *September*, which renders them very agreeable; but their Leaves, when bruiſed, do emit a very rank Odour.

The Eaſtern Sort is alſo an abiding Plant, but it ſeldom riſes above eighteen Inches, or two Feet high: This is propagated by parting the Roots, and planting Cuttings in the Spring; it is ſomewhat tenderer than the laſt, but will endure the Cold of our ordinary Winters in the open Air, provided it be not too much expoſed to the cold Winds: It may alſo be propagated by ſowing the Seeds in *March* upon a Bed of light Earth, in an open Situation; and when the Plants are large enough to be tranſplanted, they may be placed in the warm Borders of the Pleaſure-garden, and the Summer following they will produce their Flowers in large Quantities upon the Tops of the Branches; which being of a large Size, and a bright-yellow Colour, do make a very handſome Shew.

The ſixth, ſeventh, eighth and ninth Sorts are Natives of *England*, growing in Woods and other ſhady Places in divers Parts. The tenth, eleventh, twelfth and thirteenth Sorts grow in the South of *France*, *Italy*, and *Spain*; yet are hardy enough to endure the Cold of our ordinary Winters very well in the open Air. The fourteenth Sort grows on the *Alps*; the fifteenth, ſixteenth, and ſeventeenth Sorts are Natives of *Portugal*; but all the following Sorts were diſcovered by Dr. *Tournefort* in the *Levant*.

All theſe Plants may be propagated by ſowing of their Seeds ſoon after they are ripe, on a Bed of freſh undunged Earth; and when the Plants are come up, they ſhould be kept clear from Weeds; the following Spring they may be tranſplanted to the Places where they are to remain; after the Plants have taken new Root, they will require no farther Care, but to keep them clear from large Weeds, which, if ſuffered to grow amongſt them, will over-bear and deſtroy them.

Moſt of the Kinds being Natives of Woods and ſhady Places, will grow very well under the Drip of Trees; ſo that they may be planted in large Wilderneſs Quarters, where they will thrive and make a pretty Variety. But it will be proper to keep a few Plants of each Kind in a ſhady Border, where, if they are permitted to ſhed their Seeds, they will produce a Supply of young Plants, whereby the Kinds may be preſerved: for as ſome of the Kinds do not continue above two or three Years, ſo, where there is not Care taken to have a conſtant Supply of young Plants, their Kinds will be loſt; for where the Shade of the Wilderneſs is very thick, the Seeds which fall there will not ſucceed; becauſe the Leaves of the Trees falling in Autumn, when the Seeds are ripe, cover the Ground; whereby the Seeds either do not reach the Earth, or if they do, they are ſo cloſely covered by the falling Leaves, that they cannot enjoy the Benefits of the Air; ſo that they rarely grow.

HYPERICUM FRUTEX. *Vide* Spirea.

HYPOCISTIS.

We have no *Engliſh* Name for this Plant.

The *Characters* are;

It hath a bell-ſhaped Flower conſiſting of one Leaf, which is cut into ſeveral Segments at the brim: the hinder Part of the Flower becomes a ſoft Fruit, divided into Rays, in which are contained the Seeds.

The *Species* are;

1. **Hypocistis** *Cretica, flore purpureo. Tourn. Cor. Candy* Hypociſtis, with a purple Flower.
2. **Hypocistis** *purpurea, flore candicante. Tourn. Cor.* Purple Hypociſtis, with a white Flower.
3. **Hypocistis** *flore luteo. Tourn. Cor.* Hypociſtis, with a yellow Flower.
4. **Hypocistis** *palleſcentis coloris, lineis purpuraſcentibus & nonnihil vireſcentibus diſtincta. Cluſ. Hiſt.* Pale-coloured Hypociſtis, with purpliſh Lines.

Theſe Plants grow from the Root of the *Ciſtus*, or *Rock-roſe*, ſo cannot be cultivated by Art; it being a Super-plant, like the *Miſleto*; and it is not known to grow on any other Plant but the *Ciſtus*. But as one of the Species is uſed in Medicine, I thought it proper to mention the ſeveral Kinds which have been diſcovered.

HYPOHYLLOSPERMOUS Plants, [of ὑπὸ *under*, φλύλον, *a Leaf*, and σπέρμα, *Seed*] are ſuch Plants as bear their Seeds on the Backſides of their Leaves.

HYSSOPUS [takes its Name from the *Hebrew* Word אזוב, in which Language *Hyſſop* ſignifies an holy Herb, or for purging or cleanſing ſacred Places; as it is ſaid in the *Pſalms*, *Purge me with Hyſſop*. But what Plant the *Hyſſop* of the Ancients was, is not known; but that it ſeems to have been a low Plant, becauſe *Solomon* is ſaid to have deſcribed the Plants from the *Cedar* to the *Hyſſop*] Hyſſop.

The *Characters* are;

It is a verticillate Plant, with long narrow Leaves: The Galea (or Creſt) of the Flower is roundiſh, erect, and divided into two Parts: The Barba (or Beard) is divided into three Parts; the middle Part is hollow'd like a Spoon, having a double Point, and is ſomewhat winged: The Whorles of the Flowers are ſhort, and at the Lower-part of the Stalk are placed at a great Diſtance, but towards the Top are cloſer join'd, ſo as to form a regular Spike.

The *Species* are;

1. Hyssopus *officinarum cærulea, ſeu ſpicata.* *C. B. P.* Common *Hyſſop* of the Shops, with blue Flowers growing in a Spike.

2. Hyssopus *vulgaris alba.* *C. B. P.* Common *Hyſſop*, with a white Flower.

3. Hyssopus *rubro flore.* *C. B. P.* *Hyſſop*, with a red Flower.

4. Hyssopus *montana Macedonica, Valerandi Dourez.* *J. B.* Mountain Macedonian *Hyſſop*.

5. Hyssopus *humilior myrtifolia.* *H. R. Par.* Dwarf Myrtle-leaf'd *Hyſſop*.

6. Hissopus *utrinque florida.* *Dod. pempt.* Hyſſop bearing Flowers on every Side.

7. Hyssopus *vulgaris, moſchum redolens.* *C. B. P.* Common *Hyſſop*, ſmelling like Muſk.

8. Hyssopus *criſpa.* *Geſner. Hort.* Curled *Hyſſop*.

9. Hyssopus *foliis diſſectis.* *C. B. P.* *Hyſſop* with cut Leaves.

10. Hyssopus *ſpica brevi & rotunda.* *C. B. P.* *Hyſſop*, with a ſhort and round Spike.

11. Hyssopus *verſicolor ſive aureus.* *Park. Par.* Gold-ſtriped *Hyſſop*.

12. Hyssopus *hirſuta.* *C. B. P.* Hairy *Hyſſop*.

13. Hyssopus *hirſuta, flore albo.* *Tourn.* Hairy *Hyſſop*, with a white Flower.

The firſt five Sorts of *Hyſſop* are propagated either by Seeds or Cuttings: If by the Seeds, they muſt be ſown in *March* upon a Bed of light ſandy Soil; and when the Plants are come up, they ſhould be tranſplanted out to the Places where they are to remain, placing them at leaſt a Foot aſunder each way: But if they are deſigned to abide in thoſe Places for a long time, two Feet Diſtance will be ſmall enough; for they grow pretty large, eſpecially if they are not frequently cut, to keep them within compaſs: They thrive beſt upon a poor dry Soil, in which Situation they will endure the Cold of our Climate better than when they are planted on a richer Soil. If you you would propagare them by Cuttings, they ſhould be planted in *April* or *May*, in a Border where they may be defended from the violent Heat of the Snn; and being frequently water'd, they will take Root in about two Months; after which, they may be tranſplanted where they are to continue, managing them as was before directed for the Seedling Plants.

The firſt Sort was formerly more cultivated than at preſent in *England*, that being the Sort commonly uſed in Medicine. The other Species are preſerved in curious Gardens for their Variety, but they are ſeldom cultivated for Uſe.

It hath been a great Diſpute amongſt modern Writers, whether the *Hyſſop* now commonly known, is the ſame which is mention'd in Scripture: About which there is great room to doubt; there being very little Grounds to aſcertain that Plant: tho' it is moſt generally thought to be the *Winter-Savory*, which Plant is now in great Requeſt amongſt the Inhabitants of the Eaſtern Countries, for Outward Waſhings or Purification.

The other Sorts of *Hyſſop* are very hardy Plants, which will endure the Cold of our Winters in the open Air, provided they are planted in a dry undunged Soil; for when they are planted in a rich Soil, they grow very luxuriant in Summer, and are leſs able to reſiſt the Cold in Winter: ſo that when any of theſe Plants grow out of the Joints of old Walls, (as they frequently do) they will reſiſt the moſt ſevere Froſt; and theſe Plants will be much more aromatic, than thoſe which grow in a rich Soil.

They may be propagated by ſowing of their Seeds in the Spring, in the Manner which is directed for the common Sort, with which Management all theſe Sorts will agree except the ſtriped Kind, which is no way propagated but by Slips, which ſhould be planted the Beginning of *March*, on a Border of freſh undunged Earth, obſerving in dry Weather to water them until they have taken Root; after which time they muſt be kept clear from Weeds, and at *Michaelmas* the Plants ſhould be tranſplanted where they are to remain, which ſhould be on a dry, ſtony or gravelly Spot of Ground, where they will preſerve the Beauty of their variegated Leaves much better than in a good Soil.

J A

JACEA, [of *Jacere*, Lat. *to lie along*; becauſe this Plant often lies on the Ground] Knap-weed.

The *Characters* are;

It is one of the Herbæ Capitatæ *(or Headed Plants) which is deſtitute of Spines: The Calyx (or Cup) is ſquamoſe: The Borders of the Leaves are commonly equal, being neither ſerrated nor indented: The Florets round the Border of the Head are barren; but thoſe placed in the Centre are ſucceeded each by one Seed, having a Down adhering to it.*

The *Species* are;

1. Jacea *nigra pratenſis latifolia.* *C. B. P.* Broad-leav'd Meadow Black Knap-weed.

2. Jacea, *cum ſquamis pennatis, ſive capite villoſo.* *J. B.* Woolly-headed Knap-weed.

3. Jacea *montana candidiſſima, ſtœbes foliis.* *C. B. P.* Mountain Knap-weed, with very white Leaves.

4. Jacea *Luſitanica ſempervirens.* *H. R. Par.* Portugal Ever-green Knap-weed.

5. Jacea *Epidaurica, candidiſſima & tomentoſa.* *Tourn.* White woolly Knap-weed of *Raguſa*.

6. Jacea *cyanoides, echinato capite.* *C. B. P.* Prickly-headed Knap-weed.

7. Jacea *nigra pratenſis latifolia, flore albo.* *Tourn.* Broad-leav'd Meadow Knap-weed, with a white Flower.

8. Jacea *nigra pratenſis anguſtifolia.* Narrow-leav'd Meadow Knap-weed.

9. Jacea *cum ſquamis cilii inſtar piloſis.* *J. B.* Knap-weed with hairy Scales.

10. Jacea *nigra, ſquamoſo capite, major.* *C. B. P.* Greater Black Knap-weed, with a ſcaly Head.

11. Jacea *nigra, ſquamoſo capite, minor.* *C. B. P.* Smaller Black Knap-weed, with a ſcaly Head.

12. Jacea *vulgaris laciniata, flore purpureo.* *Tourn.* Great Knap-weed, or Matfellon.

13. Jacea *vulgaris laciniata, flore albo.* *Tourn.* Great Knap-weed, or Matfellon with a white Flower.

14. Jacea *latiſſimo laciniato folio.* *C. B. P.* Knap-weed with a broad jagged Leaf.

15. Jacea *cinerea laciniata, flore purpureo.* *Triumf.* Jagged aſh-coloured Knap-weed, with a purple Flower.

16. Jacea *foliis cichoraceis villoſis, altiſſima, flore purpureo.* *Tourn.* The talleſt Knap-weed, with hairy ſuccory Leaves, and a purple Flower.

17. Jacea *foliis cichoraceis villoſis, altiſſima, flore albo.* *Tourn.* The talleſt Knap-weed, with hairy ſuccory Leaves, and a white Flower.

18. Jacea *foliis erucæ lanuginoſis.* *Tourn.* Knap-weed with woolly Rocket-leaves.

19. Jacea *foliis candicantibus laciniatis, calyculis non ſplendentibus.* *Tourn.* Knap-weed with whitiſh jagged Leaves, and Empalement not ſhining.

20. Jacea *foliis laciniatis viridibus, calyculis argenteis.* *Tourn.* Knap-weed with green jagged Leaves, and ſilver Empalements.

21. Jacea *calyculis argenteis, minor.* *Tourn.* Leſſer Knap-weed, with ſilver Empalements.

22. Jacea *Alpina, ſucciſæ folio.* *Tourn.* Mountain Knap-weed, with a devils-bit Leaf.

23. Jacea *folio cerinthes, è Rupe Victoriæ.* *Tourn.* Knap-weed, with a honey-wort Leaf.

24. Jacea *Hiſpanica latifolia, nervis foliorum lanuginoſis.* *Bocc. Muſ.* Broad-leav'd Spaniſh Knap-weed, with the Nerves of the Leaves woolly.

25. Jacea *Cretica aculeata incana.* *Tourn.* Hoary prickly Knap-weed of *Crete*.

26. Jacea *tomentoſa, foliis undulatis.* *Tourn.* Woolly Knap-weed, with waved Leaves.

27. Jacea *Cretica ſaxatilis, glaſti folio.* *Tourn. Cor.* Rock Knap-weed of Candy, with a woad Leaf.

28. Jacea *Cretica laciniata argentea, parvo flore flaveſcente.* *Tourn. Cor.* Silver jagged Candy Knap-weed, with a ſmall yellowiſh Flower.

29. Jacea *Cretica acaulos, cichorii folio.* *Tourn. Cor.* Candy Knap-weed, without a Stalk, and a ſuccory Leaf.

30. Jacea *orientalis acaulos, cichorii folio, flore citrino.* *Tourn. Cor.* Eaſtern Knap-weed, without a Stalk, and a citron-coloured Flower.

31. Jacea *orientalis patula, carthami facie, flore luteo magno. Tourn. Cor.* Spreading Eaſtern Knap-weed, with the Face of Baſtard Saffron, and a large yellow Flower.

32. Jacea *orientalis, conyzæ folio, flore magno. Tourn. Cor.* Eaſtern Knap-weed, with a fleabane Leaf, and a large Flower.

33. Jacea *orientalis, cyani folio, flore parvo, calyce argenteo. Tourn. Cor.* Eaſtern Knap-weed, with a blue-bottle Leaf, and a ſmall Flower with a ſilver Empalement.

34. Jacea *orientalis, folio ſinuato ſubtus tomentoſo, flore purpureo. Tourn. Cor.* Eaſtern Knap-weed, with a ſinuated Leaf, hoary underneath, and a purple Flower.

35. Jacea *orientalis maritima incana, coronopi folio. Tourn. Cor.* Eaſtern maritime hoary Knap-weed, with a Bucks-horn Leaf.

36. Jacea *orientalis perennis, lato coronopi folio, flore purpuraſcente. Tourn. Cor.* Perennial *Eaſtern* Knap-weed, with a broad Bucks-horn Leaf, and a purpliſh Flower.

37. Jacea *orientalis perennis, anguſtiſſimo & incano coronopi folio, flore purpuraſcente. Tourn. Cor.* Perennial Eaſtern Knap-weed, with a very narrow and hoary Bucks-horn Leaf, and a purpliſh Flower.

38. Jacea *orientalis laciniata incana & moſchata. Tourn. Cor.* Hoary muſk jagged-leav'd Eaſtern Knap-weed.

39. Jacea *lutea-ſpinoſa centaurioides. C. B. P.* Prickly yellow Knap-weed, like the greater Centaury.

40. Jacea *latifolia purpurea, capitulo ſpinoſo. C. B. P.* Broad-leav'd purple Knap-weed, with a prickly Head.

41. Jacea *ſpinoſa Cretica, an ſpecies hyoſiridis Plinii. Zan.* Prickly Knap-weed of Candy, ſuppoſed to be a Species of Hyoſiris of Pliny.

42. Jacea *marina Bætica. Park. Theat.* Sea Spaniſh Knap-weed.

43. Jacea *cyanoides altera, caule alato. Par. Bat.* Another Knap-weed like Blue-bottle, with a winged Stalk.

44. Jacea *Melitenſis, capitulis conglobatis. Bocc. Rar. Plant.* Knap-weed of Malta, with conglobated Heads.

45. Jacea *orientalis annua, coronopi folio, flore luteo. Tourn. Cor.* Annual Eaſtern Knap-weed, with a Bucks-horn Leaf, and a yellow Flower.

46. Jacea *arboreſcens, ſtyracis folio. Tourn.* Tree-knapweed, with a ſtorax-tree Leaf.

47. Jacea *Cretica fruteſcens, elichryſi folio, flore magno purpuraſcente. Tourn. Cor.* Shrubby Knap-weed of Candy, with a goldylock Leaf, and a large purpliſh Flower.

48. Jacea *fruteſcens, plantaginis folio, flore albo. Tourn. Cor.* Shrubby Knap-weed, with a plantain Leaf, and a white Flower.

The firſt ſix are propagated by Seeds, which ſhould be ſown in *March* upon a Bed of light rich Earth; and when they are come up, they may be tranſplanted into a Nurſery-bed in ſome obſcure Part of the Garden, at about ten Inches or a Foot aſunder, where they may continue until the *Michaelmas* following, at which Time they may be tranſplanted into the Middle of large Borders in the Parterre Garden, where they may remain to flower: But the fifth Sort being tender, ſhould be planted into Pots, and ſhelter'd from great Froſts in Winter, which, if they are expoſed to, will deſtroy them. The ſixth Sort is an annual Plant, which ſhould be planted out in *May*, where it is deſigned to remain, and in *June* it will flower, and the Seeds will ripen in *Auguſt*. The firſt Sort is a Native of *England*, and is very common in Paſture Lands, eſpecially upon the Sides of Banks, or Foot-paths: This is ſeldom cultivated in Gardens.

Theſe Plants may deſerve a Place in large Gardens for Variety; but they are not proper for ſmall Gardens, their Branches taking up too much Room: And their Flowers having no great Beauty to recommend them, it is hardly worth excluding better Plants, to make Room for them.

The ſeventh Sort here mentioned, is a Variety of the common Kind, which differs in the Colour of the Flower; this is ſometimes found wild by the Sides of Hedges and Ditches, in low Paſture Ground.

The eighth Sort is very common by the Path-ſides in ſeveral Parts of *England*, ſo is rarely cultivated in Gardens.

The twelfth and thirteenth Sorts alſo grow wild in uncultivated Places in divers Parts of *England*, yet are worthy of a Place in large Gardens; for as they are laſting Plants, which require very little Care to cultivate them, and their Flowers being large and of long Continuance, ſo they will afford an agreeable Proſpect, in ſome ſhady abject Parts of the Garden, or under the Drip of Trees, where few better Plants will thrive.

The ninth, tenth, and eleventh Sorts, have been found wild in *England*, but theſe are leſs common than either of the former; but in *Holland* and *Flanders* they are very common. Theſe may alſo be allowed a Place in large Gardens for the ſake of Variety, becauſe they will thrive on the pooreſt Soil, and require no Trouble to cultivate them.

The fourteenth, fifteenth, ſixteenth, ſeventeenth, eighteenth, nineteenth, twentieth, twenty-firſt, twenty-ſecond, twenty-third, twenty-fourth, twenty-fifth and twenty-ſixth Sorts, are Natives of *France*, *Spain*, *Italy* and *Germany*; for which Countries they have been procured, and are preſerved in ſome curious botanick Gardens. Theſe, tho' ſome of them are Natives of warmer Countries, yet will live in the open Air in *England*, provided they are planted in a warm, dry, undunged Soil.

The thirty-ninth, fortieth, forty-firſt, and forty-ſecond Sorts, are all Natives of *Spain* and *Italy*; the thirty-ninth Sort, grows erect to the Height of three Feet, and on the Top of the Stalks are produced large yellow Flowers, which appear the Beginning of *June*, and continue in Beauty moſt part of *July*; ſo that it deſerves a Place in large Gardens, for the ſake of Variety. The fortieth, forty-firſt, and forty-ſecond Sorts, have large Heads and Flowers; which being heavy, and their Stalks but weak, they generally trail on the Ground, unleſs they are ſupported by Stakes. Theſe alſo produce a great Number of Branches, ſo that they require a large Share of Room, which renders them leſs valuable.

The twenty-ſeventh, twenty-eighth, twenty-ninth, thirtieth, thirty-firſt, thirty-ſecond, thirty-third, thirty-fourth, thirty-fifth, thirty-ſixth, thirty-ſeventh, and thirty-eighth Sorts, were diſcovered by Dr. *Tournefort* in the *Levant*, from whence he ſent their Seeds to the *Royal Garden* at *Paris*. Theſe Plants are ſomewhat more tender than the Sorts before mentioned; yet they will abide the Cold of our ordinary Winters very well in the open Air, provided they have a dry Soil, and a warm Situation.

Theſe Sorts may be propagated by Seeds, which ſhould be ſown in *March*, on a Bed of freſh undunged Earth, when the Plants begin to appear, they muſt be carefully cleared from Weeds; and as ſoon as they are fit to tranſplant, they ſhould be removed and planted in Beds of undunged Earth, at about a Foot Diſtance every Way. Theſe Plants muſt be watered, and if the Seaſon is hot, they ſhould be ſhaded until they have taken new Root; after which Time they will require no farther Care but to keep 'em clear from Weeds until *Michaelmas* following, when they ſhould be taken up and tranſplanted where they are deſigned to remain; the common hardy Sorts under Trees, in Wilderneſs Quarters, and other abject Parts of the Garden, where they will abide many Years, and only require to be kept clear from the largeſt Weeds, which will overbear them; but as for leſſer Weeds, they will not hurt them: the other Sorts, which are more tender, ſhould be planted in a warmer Situation, and on a lean ſtony Soil, where they will endure the Cold of our ordinary Winters very well, and afford an agreeable Variety.

The forty-third, forty-fourth, and fourty-fifth Sorts, are annual Plants. The Seeds of theſe muſt be ſown either in *March*, or the Beginning of *September*. Thoſe which are ſown in Autumn will come up, and the Plants will be ſtrong enough to reſiſt the Froſt, provided they are in a warm Border; and theſe Plants will flower much ſtronger, and come earlier in the Seaſon, than thoſe ſown in the Spring; ſo that theſe will always produce good Seeds. But if theſe autumnal Plants ſhould be deſtroyed by ſevere Froſt, then ſome of their Seeds ſhould be ſown in *March*, on a Bed of light freſh Earth, where they are deſigned to remain: For theſe Plants will not be large enough to tranſplant till *May*, when the Seaſon is generally warm; ſo that it will be difficult to make the Plants take Root, unleſs they are conſtantly ſhaded and watered: ſo it is the better Method to ſow theſe Seeds in the Spring on the Borders where they are to remain, and then all the Care required will be to clear them from Weeds, and thin the Plants where they come up too cloſe: But thoſe Plants which come up in Autumn, may be tranſplanted out the Beginning of *March*; at which Time they will ſoon take Root, and then will require no farther Culture but to keep them clear from Weeds. Theſe Plants continue a long Time in Flower, eſpecially the forty-third Sort; which renders them worthy of a Place in every large Garden.

The forty-ſixth, forty-ſeventh, and forty-eighth Sorts are ſhrubby Plants, which riſe to the Height of four or five Feet, and their Stems become woody. Theſe are Natives of the *Archipelago*, from whence their Seeds have been ſent to ſeveral curious botanick Gardens; but at preſent they are very rare in *England*. They may be propagated by ſowing of their Seeds in *March*, on a warm Border of freſh Earth; and when the Plants are come up, they muſt be carefully weeded, and in very dry Weather they ſhould be frequently refreſhed with Water. When the Plants have acquired Strength enough, they ſhould be carefully taken up, and each tranſplanted into a ſeparate ſmall Pot filled with freſh light Earth, and then placed in the Shade until they have taken new Root; when they may be removed into an open Situation, where they may remain till *October* following; during which Time they muſt be watered in dry Weather, and kept clear from Weeds; but in Winter they ſhould be ſheltered under a Hot-bed Frame, where they ſhould have as much free Air as poſſible in mild Weather, by taking off the Glaſſes every Day; but in hard Froſts they muſt be cloſely covered with Mats or Straw over the Glaſſes, to ſecure them from the Cold. The following Spring a few Plants of each Kind may be ſhaken out of the Pots, and planted in warm dry Borders, where they will live thro' the Winter, provided the Froſt is not very ſevere, and theſe Plants will flower much ſtronger than thoſe in Pots; but it will be proper to keep two Plants of each Kind in Pots to be ſheltered in Winter, for fear thoſe Abroad ſhould be deſtroyed, that the Kinds may be preſerved.

Theſe Plants ſeldom produce good Seeds in this Country, ſo that when the Plants are obtained, they may be propagated by Cuttings, which ſhould be planted about the Middle of *June* on a ſhady Border; where, if they are duly watered, they will take Root in about two Months; but it will be proper to let them remain in the ſame Border until the Beginning of *September*, when they ſhould be carefully taken up and planted into Pots, and placed in the Shade until they are rooted: Then they may be expoſed in an open Situation till the Middle or latter End of *October*, when they ſhould be removed into Shelter, and managed as hath been directed for thoſe Plants which are raiſed from Seeds. In Summer theſe Plants will flower, when they will afford an agreeable Proſpect, if they are placed among other hardy exotic Plants; and as they are evergreen, ſo they add to the Variety in Winter.

JACOBÆA, [ſo called of St. *James*, as ſays *Johannes Bauhinus*, becauſe it is ſaid to grow about the Chapel of St. *James* in *Spain*] Ragwort.

The *Characters* are;

It hath a radiated Flower, the Tube of which is almoſt of a cylindrical Figure, and the Seeds are faſten'd to Down: To which may be added, the Leaves are deeply laciniated, or jagged.

The *Species* are;

1. JACOBÆA *maritima. C. B. P.* Ragwort.
2. JACOBÆA *Africana fruteſcens, flore amplo purpureo, elegantiſſimo ſenecionis folio. Volk.* Shrubby African Ragwort, with an ample purple Flower, and Leaves like Groundſel.
3. JACOBÆA *Africana fruteſcens, foliis inciſis, & ſubtus cineraceis. Com. Rar.* African ſhrubby Ragwort, with cut Leaves, and the under Part of an Aſh Colour.
4. JACOBÆA *Africana fruteſcens, foliis abſinthii umbelliferi incanis. H. A.* Shrubby African Ragwort, with hoary Leaves like the umbellated Wormwood.
5. JACOBÆA *vulgaris laciniata. C. B. P.* Common Ragwort.
6. JACOBÆA *latifolia paluſtris, ſive aquatica. Raii Hiſt.* Broad-leav'd Marſh Ragwort.
7. JACOBÆA *Alpina, foliis ſubrotundis ſerratis. C. B. P.* Roundiſh ſawed-leav'd Ragwort of the *Alpes*.
8. JACOBÆA *Alpina, foliis longioribus ſerratis. Tourn.* Ragwort of the *Alpes*, with long ſaw'd Leaves.
9. JACOBÆA *montana, betonicæ folio. Barr. Icon.* Mountain Ragwort, with a betony Leaf.
10. JACOBÆA *chryſanthemi Cretici folio glauco. Tourn.* Ragwort with a ſea-green Chryſanthemum Leaf.
11. JACOBÆA *ſenecionis folio incano, perennis. Raii Hiſt.* Perennial hoary Ragwort, with groundſel Leaf.
12. JACOBÆA *Pannonica prima. Claſ. Hiſt.* Mountain Ragwort, with an undivided Leaf.
13. JACOBÆA *foliis amplioribus incanis. Mor. H. R. Blæſ.* Ragwort with large hoary Leaves.
14. JACOBÆA *maritima, ſive cineraria latifolia. C. B. P.* Broad-leav'd Sea Ragwort.
15. JACOBÆA *foliis ferulaceis, flore minore. Tourn.* Ragwort with fennel-giant Leaves and a ſmaller Flower.
16. JACOBÆA *foliis ferulaceis, flore majore. Tourn.* Ragwort with fennel-giant Leaves and a larger Flower.
17. JACOBÆA *Africana, botryos folio. Boerh. Ind. alt.* African Ragwort, with an Oak of *Jeruſalem* Leaf.
18. JACOBÆA *Chia, ſenecionis folio villoſo, flore magno. Tourn. Cor.* Ragwort of *Chio*, with a hoary groundſel Leaf, and a large Flower.
19. JACOBÆA *Orientalis, ſenecionis folio tenuiſſimè diviſo, non incano, flore magno. Tourn. Cor.* Eaſtern Ragwort, with a very narrow divided groundſel Leaf, not hoary, and a large Flower.
20. JACOBÆA *Græca maritima, foliis ſuperne virentibus, inferne incanis. Tourn. Cor. Greek* Sea Ragwort, with Leaves green on their upper Side, but hoary underneath.
21. JACOBÆA *Africana fruteſcens, abrotani folio. Oldenl.* Shrubby African Ragwort, with a ſouthernwood Leaf.
22. JACOBÆA *Africana abſinthii foliis. Oldenl.* African Ragwort, with Wormwood Leaves.
23. JACOBÆA *Americana odorata & viſcoſa, florum radiis breviſſimis albis. Houſt.* Sweet-ſmelling viſcous American Ragwort, with very ſhort white Rays to the Flower.

The firſt Sort was formerly nurs'd up with great Care, and preſerv'd in Winter amongſt *Oranges*, *Myrtles*, &c. in Green-houſes: But of late it has been tranſplanted into the open Air, where it is found to thrive exceeding well; and if planted in a dry Soil, and warm Situation, will very well endure the ſevereſt Cold of our Climate.

This Plant, tho' there is no great Beauty in its Flowers, yet, for the Oddneſs of its hoary, regular jagged Leaves, deſerves to have a Place in every good Garden.

The ſecond Sort is preſerved for the Beauty of its fine purple Flowers, which do continue a long Time; and growing in large Bunches, afford an agreeable Proſpect.

The third and fourth Sorts grow to the Height of five or ſix Feet, and will abide ſeveral Years, if carefully preſerv'd in Winter from extreme Cold: Theſe are commonly preſerved in the Green-houſe among other Exotick Plants, for their Variety.

Theſe Sorts may be propagated by Seeds, or Cuttings: But if you propagate them by Seeds, you ſhould ſow them in *March* upon a Bed of light Earth: Obſerving to water the Bed frequently in dry Weather, otherwiſe the Plants will not come up. About the Middle of *May*, if your Seeds ſhould ſucceed well, the Plants will be fit to tranſplant out; at which Time you ſhould put ſome of the three laſt Sorts into Po fill'd with light freſh Earth, ſetting them in the Shade unti they have taken Root; after which they may be expoſed in a open Situation until the latter End of *October*, when they mu be removed into Shelter. During the Winter-ſeaſon they mu be frequently water'd, without which they will ſoon decay and in Summer they muſt be often pruned, eſpecially the ſecon and third Sorts, to make them regular; otherwiſe they ar apt to be very rude and unſightly, for they grow very vigorouſly.

The ſecond Sort will produce Flowers and Seeds the fir Year, and is often treated as an annual Plant: But if it b houſed in the Winter, it will live very well for two Year They ſhould be renewed every Year or two at leaſt, otherwiſe they are ſubject to decay: The Cuttings whereof ma be planted in a ſhady Border in any of the Summer Months which, if carefully watered, will take Root in a Month' Time, whereby they may be greatly increaſed.

The *Sea Ragwort* may be alſo propagated by Cuttings o Slips, which muſt be planted and managed as the others; and when they are rooted, may be tranſplanted into a warm Situation, where they may continue to flower and ſeed. It is ver ſubject to degenerate when rais'd from Seeds, whereby th Whiteneſs, which is the greateſt Beauty of this Plant, i greatly diminiſhed, eſpecially upon the upper Parts of thei Leaves; ſo that the ſureſt Method is, to propagate it by Cuttings.

The fifth Sort is one of the moſt troubleſome Weeds, o poor wet Paſture Lands, and on Commons in almoſt ever Part of *England*; ſo is never admitted into Gardens, becau where the Seeds are permitted to ſcatter, the Down whic adheres to them, will carry them to a great Diſtance; ſo th all the Ground will be filled with the Weeds. The onl Method to deſtroy this Plant in Paſtures is, to go over th Land in *April*, when the Weather is dry, and with a Spaddl cut up the Plants by their Roots; and, if the Weather continues dry, they will ſoon dry up. This Work ſhould alſo b repeated in *Auguſt*, to cut up ſuch Plants as may have come u ſince *April*; and if this be repeated two or three Yea never ſuffering any of the Plants to ſtand to flower, it will e fectually deſtroy them.

The ſixth Sort is alſo a very common Weed on low marſ Lands, where the Water uſually ſtands in Winter. This alſo a very troubleſome Weed on many Commons, and oth Paſtures; but may be deſtroyed in the ſame Manner as t former.

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The ſeventh, eighth, and ninth Sorts are Natives of the *Alpes* and *Pyrenean* Mountains, from whence they have been procured, and are preſerved in ſeveral curious botanic Gardens, for the ſake of Variety. They may be propagated by Seeds, which ſhould be ſown in the Spring, on a Bed of freſh Earth; and when the Plants are come up, they ſhould be carefully weeded; and when they are ſtrong enough to be removed, they ſhould be tranſplanted into a ſtrong loamy Soil, where they will continue many Years and require no other Culture but to clear them from Weeds.

The tenth, twelfth, ſeventeenth, eighteenth, and nineteenth Sorts are annual Plants, which ſhould be ſown in the Spring, on a Bed of light freſh Earth, where they are deſigned to remain; and when the Plants come up, they ſhould be thinned where they are too cloſe, and kept clear from Weeds; which is all the Culture they require. In *June* they will flower, and their Seeds will ripen ſoon after; which, if permitted to ſcatter, will furniſh a Supply of young Plants where-ever the Seeds do fall.

The eleventh and twelfth Sorts grow wild in *England*; the eleventh is a laſting Plant which grows under Hedges, and in Woods in divers Parts of *England*; but the twelfth Sort is an annual Plant, which is uſually found on dry Hills, in ſome Counties near *London*.

The fourteenth Sort differs from the *common Sea Ragwort* in being much broader-leav'd, and not ſo hoary: This is a laſting Plant, which will endure the Froſt in the open Air very well, and may be treated as is directed for the *common Sea-Ragwort*.

The fifteenth and ſixteenth Sorts are alſo abiding, which may have a Place in large Gardens for the ſake of Variety. Theſe Plants have fine cut Leaves, and the Stems grow erect about two Feet high, on the Tops of which the Flowers grow in an Umbel, which are of a fine yellow Colour.

Theſe may be propagated by Seeds, which ſhould be ſown the Beginning of *March*, on a Bed of light freſh Earth; and when the *Plants* come up, they ſhould be carefully cleared from *Weeds*; and draw out ſome of the Plants where they are very cloſe together, that thoſe remaining may grow ſtronger: When the Plants are ſtrong enough to remove, they ſhould be tranſplanted in a Bed of freſh Earth about ſix Inches apart, where they may remain till *Michaelmas*, being careful to keep them clear from Weeds; then the Plants may be taken up, and tranſplanted into large Borders amongſt other hardy Plants; where they will flower the following Summer, and make an agreeable Variety.

JALAPA: [It is call'd *Marvel of Peru*, becauſe of its Beauty: Hence, by the *French*, it is call'd *Merveille*, and *Belle de Nuit*] Jalap, *or* Marvel of *Peru*.

The *Characters* are;

It hath a long, thick, fleſhy, ſucculent Root: The Leaves, which eſemble thoſe of Nightſhade, *grow by Pairs oppoſite upon the Branches: The Stalks and Branches are very full of Knots: The Flower conſiſts of one Leaf, and is ſhaped like a Funnel: In he Center of the Flower is placed the Ovary, inwrapp'd in one f the Flower-cups, which becomes an oblong, five-corner'd, umilicated Fruit, conſiſting of a mealy Nut.*

The *Species* are;

1. JALAPA *flore flavo. Tourn.* Jalap, *or* Marvel of *Peru*, ith a yellow Flower.
2. JALAPA *flore purpureo. Tourn.* Jalap, *or* Marvel of *eru*, with a purple Flower.
3. JALAPA *flore exalbido. Tourn.* Jalap, *or* Marvel of *eru*, with a whitiſh Flower.
4. JALAPA *flore ex rubro, luteo, & albo mixto. Tourn.* alap, *or* Marvel of *Peru*, with red, yellow, and white Flowrs mix'd upon the ſame Plant.
5. JALAPA *flore ex albo & purpureo elegantiſſime variegato.* alap, *or* Marvel of *Peru*, with white and purple Flowers finely ariegated.
6. JALAPA *parvo flore. Tourn.* Jalap, with a ſmall lower.
7. JALAPA *officinarum, fructu rugoſo. Tourn.* True Jalap f the Shops, with a rough Fruit.

Theſe Plants are all propagated by Seeds, which ſhould be wn upon a moderate Hot-bed in *March*; and when they me up, they ſhould be tranſplanted into another Hot-bed, at x Inches Diſtance from each other; and when they have ken Root, the Glaſſes muſt be rais'd every Day, that the lants may have a great deal of Air, otherwiſe they are very bject to be drawn up tall and weak; nor can they be revered to a ſufficient Strength again in a Month's Time, if ce they are thus drawn. When the Plants are grown to be a Foot high, they ſhould be put into Pots fill'd with rich light Earth, which ſhould be plung'd into a very moderate Hot-bed, to facilitate their taking Root: And in removing them, you muſt be very careful to preſerve as much Earth to their Roots as you can; for their Roots have but few Fibres to retain it in a Ball, as many other Plants will do: And it ſometimes happens, when the Root is left bare, it ſeldom takes freſh Hold of the Ground, at leaſt not in a conſiderable Time; ſo that the Plants will make but a poor Figure that Seaſon. When they are tranſplanted into the Pots, and have taken Root again, they ſhould be harden'd to endure the open Air, for they are not very tender: But, on the contrary, they will not thrive well, if too much drawn or forced in the Hot-bed. In the Middle of *May* the Pots may be removed into the Places where they are deſigned to be continu'd for that Seaſon; obſerving to ſupport the Branches with a ſtrong Stake, and to water them as often as they require it. You may alſo in *May* plant ſome of them into the Middle of the large Borders of the Pleaſure-Garden, doing it carefully, and obſerving to ſhade and water them until they have taken Root; after which, they will require no farther Care but to ſupport them from being broke down by the Winds, which they are very ſubject to be, eſpecially when their Heads are large.

The Plants thus raiſed, will grow to the Height of three or four Feet, and ſpread their Branches very wide, (eſpecially if the Roots have Room in the Pots) and their Flowers will begin to appear in *June*, and they will continue conſtantly flowering until the Froſt prevents them; which, together with the great Diverſity of Colours in the Flowers upon the ſame Plant, renders them valuable to every curious Perſon. The Flowers of theſe Plants never expand in the Day-time while the Sun is hot; but in the Evening, when the Sun declines, they begin to open, and do continue expanded, till the Sun ſhines warm upon them the next Day; ſo that when it happens to be cloudy Weather, as alſo late in the Autumn, when the Weather is cool, the Flowers will remain open moſt Part of the Day.

As the Flowers are produced ſucceſſively almoſt every Day, ſo the Seeds are in a ſhort time after ripe, and do ſoon fall to the Ground; ſo that when your Seeds begin to ripen, you muſt carefully look for them upon the Ground twice a Week; otherwiſe, if they lie too long upon the Ground, and there ſhould fall ſome Rain, they will ſprout, and be good for nothing. In ſowing theſe Seeds, you ſhould be careful to take them from ſuch Plants as produced the greateſt Variety of Flowers; for if you ſave them from ſuch as produce only plain-coloured Flowers, the Seeds will always produce the ſame Sort; and thoſe with yellow and red variegated Flowers will conſtantly produce the ſame; theſe never varying from the Red and Yellow to the Purple and White, tho' they will ſometimes degenerate into plain Yellow or Red Flowers, as will the other into plain Purple or White; but they will conſtantly retain one or both of their original Colours.

Altho' in the above-written Culture of theſe Plants, I have directed their Seeds to be ſown on a Hot-bed, yet they may be propagated by ſowing them in a warm Border of light Earth towards the latter End of *March*; and when the Plants come up, they ſhould be tranſplanted as before directed: In which Method they will ſucceed very well, but will not flower ſo ſoon by a Month or ſix Weeks as thoſe rais'd on the Hot-bed, nor will the Plants grow ſo large.

When the Froſt has pinch'd the Leaves and Stems of theſe Plants, you ſhould take up their Roots, which ſhould be laid to dry, and then may be preſerv'd in dry Sand all the Winter, if ſecured from the Froſt; and in the following Spring theſe Roots ſhould be planted into large Pots, and plung'd into a moderate Hot-bed, to promote their taking Root; and when the Shoots appear above-ground, they ſhould be treated as was directed for the ſeedling Plants, hardening them by degrees to endure the open Air. The Plants ſo raiſed will be much larger than the Seedlings, and will flower earlier in the Year.

Theſe Plants are all affirm'd by *Pere Plumier* to be different Sorts of Jalap; but the ſeventh Sort, he ſays, is the particular Plant, whoſe Root is commonly us'd in Medicine. But I have been ſince inform'd by my worthy Friend Mr. *William Houſtoun*, that the Jalap is the Root of a Convolvulus, and is not akin to either of theſe Plants.

JANUARY:

Work to be done in the Kitchen Garden.

If the Weather be mild, you muſt continue to dig and trench your Ground for Spring Crops, that it may be ready for ſowing or planting the following Months; and on warm Borders and Banks, near Walls, Pales or Hedges, you may now ſow early Radiſhes, Carrots, Spinach, Lettuce, and ſmall Salleting, and put in ſome Peaſe to ſucceed thoſe which were ſown in the Autumn. You may alſo plant the firſt Crop of *Windſor* or *Sandwich* Beans, which will come in as the early *Spaniſh* Beans are going off.

When this Month proves froſty, ſo as that the Ground is frozen ſo hard as not to be dug, (as it often happens) then you may carry Dung upon the Ground, repair Hedges, rub out and clean your Seeds, and prepare all your Tools ready for Uſe againſt the Froſt's going off, that you may not be hindred with theſe Things when every other Part of the Buſineſs is in great Haſte; for if at this Seaſon you omit putting in your Crops, you will find a great Loſs attend it the following Spring.

Make Hot-beds for early Cucumbers and Melons; as alſo for Aſparagus, to ſucceed that which was made the laſt Month, that there may be no Want in the Kitchen, where theſe Things are required.

Sow Creſſes, Muſtard, Rape, Radiſh, Turnep, and other Sorts of ſmall Sallet-Herbs, upon moderate Hot-beds, to bring them forward; for at this Seaſon thoſe Seeds which are ſown in the natural Earth will not come on very faſt, the Ground being cold; and if the Froſt ſhould prove ſevere, thoſe in the open Air would miſcarry.

Look carefully to your Cauliflower-plants, which are under Frames, pulling off all decay'd Leaves from them, which, if permitted to remain upon them, would endanger the Plants, if the Weather ſhould prove ſo bad that the Glaſſes could not be opened for three or four Days to give them Air, which ſometimes happens at this time of the Year; then theſe rotten Leaves cauſe the incloſ'd Air in the Beds to turn rancid and damp, to the great Prejudice of the Plants; therefore you ſhould always pick them off ſo ſoon as they appear, and be ſure to give the Plants as much Air as poſſible in mild Weather; for if they are drawn weak at this Seaſon, they will not be able to reſiſt the Cold of the open Air the next Month, when they ſhould be planted out.

Thoſe who have Cucumber and Melon Plants already up, muſt be very careful of them at this Seaſon, otherwiſe a ſmall Neglect will deſtroy them all: The Beds muſt be conſtantly kept to an equal Temper for Heat, and Air muſt be given to them at every Opportunity, that the Steam of the Bed may paſs off; but this muſt be done with great Care; for if too much cold Air be admitted, it will be equally deſtructive to the Plants; ſo that the great Art in raiſing theſe Plants early, depends upon the juſt obſerving theſe Things.

The Aſparagus-beds, which were made the laſt Month, will now begin to have ſome Buds appear, when you muſt earth them the full Thickneſs over the Crown of the Roots, which ſhould be five or ſix Inches at leaſt; and the Frames ſhould now be put over them; but if you find the Heat of the Bed begin to decline, it will be neceſſary to add ſome hot Dung round the Sides (which, in the Gardener's Phraſe, is called lining the Beds); this will renew the Heat of the Dung, and bring the Aſparagus forward; and you ſhould obſerve alſo to cover the Glaſſes with Mats and Straw every Night and in bad Weather.

Toward the latter End of the Month (if the Seaſon proves mild) you may tranſplant ſome Cabbage-plants of the Sugar-loaf kind, to ſucceed thoſe which were planted out in *November*, and you may ſow the Ground with Spinach before the Plants are planted.

Tranſplant Carrots, Parſnips, Leeks, and Cabbages for Seed, obſerving to hang up the Cabbages by their Stalks in ſome dry Place three or four Days before they are planted, that the Water may drain out from between their Leaves. Theſe ſhould be placed near a Hedge, Pale, or Wall, where they may be ſheltered from ſtrong Winds, which often break down their Branches of Seed in Summer, when they are too much expoſ'd thereto.

You may now deſtroy all Snails and other Vermin, which are at this Seaſon cloſely laid up in the Holes of Walls, and under Reed-hedges, and ſuch other Places of Shelter, where they may be eaſily taken before they get abroad.

Product of the Kitchen Garden.

You have now Cabbages, Savoys, Parſnips, Turneps, Carrots, Potatoes, Leeks, Onions, Garlick, Shalots, Beets, Borecole, *&c.* in Plenty; as alſo Celery, Endive, Lettuce; and upon moderate Hot-beds all Sorts of young Sallet-herbs, as Creſſes, Turnep, Radiſh, Rape, Muſtard, Coriander, and Mint; and Aſparagus on Hot-beds made in *November*: You have alſo Skirrets, Broccoli, Spinach, and Cardoons, with ſome others.

Work to be done in the Fruit Garden.

Cover the Roots of all new-planted Trees with Mulch, to guard them from the Froſt, provided it be not already done, or that it may have waſted; and the Fig-trees, which are againſt Walls, Pales, or Eſpaliers, ſhould be covered either with Mats or Reeds, which will preſerve their tender Shoots from being injured by Froſt, and cauſe the Fruit to come out much earlier in the Spring, and in greater Quantity.

You may now cut out all dead or canker'd Branches from your Standard Fruit-trees; as alſo ſuch as croſs each other, and are ill-plac'd; but be careful in doing this, to make the wounded Part as ſmooth as poſſible, and ſloping, that the Wet may not be detain'd there, and enter to the great Prejudice of the Trees.

If the Seaſon be mild, you may prune Dwarf-trees, and any hardy Sorts of Fruits, as Pears, Apples, and Vines; but Stone-fruit, which was not prun'd in Autumn) ſhould be deferr'd until next Month, becauſe if hard Froſt ſhould ſet in ſoon after they are prun'd, it will penetrate the Wounds of the tender Shoots, and decay them.

Cut Grafts from all the Sorts of early Fruits, laying them in the Earth under a dry Wall or Pale; and if the Weather be ſevere, they ſhould be covered with Litter or Straw, to protect them from Injury. The Reaſon for cutting them ſo early, is to prevent their Buds from ſwelling too much; therefore, as the Winter proves more or leſs ſevere, ſo you muſt be directed to cut the Grafts ſooner or later, according as the Trees are diſpos'd for budding.

In mild Weather you muſt prepare ſuch Borders as are deſign'd for planting with Fruit-trees the ſucceeding Month, laying a good Quantity of freſh Earth therein, making it level, that it may have ſome Time to ſettle before the Trees are planted. You may alſo repair the Borders about old Fruits, which want Amendment, by laying ſome freſh Earth and well-rotted Dung upon them: But if the Trees are old, it will be of little Service to add this near their Stems, for the Roots which ſupply them with Nouriſhment are extended to conſiderable Diſtance; therefore the whole ſhould be amended to the Diſtance of ten or twelve Feet from the Stems, (if poſſible) that the young Roots may receive Nouriſhment therefrom.

Mend and repair all your decay'd Eſpaliers with new Pole where they want them, and faſten ſuch Places where the Pol or Rails are looſe with Wire, which is the ſtrongeſt Faſtnin You muſt alſo plaſh and tye your Fruit-trees thereto wi ſmall Oſier Twigs, but obſerve to train their Branches regularly at proper Diſtances, and not to faſten them too cloſe wi the Twigs, ſo as to pinch the Shoots when they grow the following Summer.

You may yet plant Strawberries and Raſpberries, tho' would have been better if done in Autumn, eſpecially if th Soil be dry. Thoſe who are curious to have early Strawberries, ſhould now plant them in Pots filled with good Eart and place them in a ſheltered Situation till they are roote after which the Pots ſhould be plunged into a moderate Ho bed, which will bring them forward in a ſhort Time. Tho Perſons who are very curious to have early Fruit in forcin Frames, muſt now obſerve to keep up their Heat, whether be Dung or Fire which they uſe; for if, after they have forc the Trees out into Bloſſom, they neglect to keep them nea to the ſame Temperature of Heat, the Bloſſoms will fall and come to nothing. There ſhould alſo be the ſame Care let in freſh Air whenever there are Opportunities; for if th are kept too cloſe, they ſeldom ſucceed well; therefore it not proper to apply the Heat too early to the Trees, becau this Month is often unfavourable to tender Things, and th Air is generally too cold to be admitted to them; ſo that, the Heat be not apply'd before the Beginning of this Month the Bloſſoms will not appear till the Beginning of the ne Month, when the Weather is generally leſs ſevere than in this ſo that there will be leſs Danger of miſcarrying, and the Fru will be ripe almoſt as early as thoſe which were forced all *December*.

Fruits in prime, or yet laſting.

Pears; L'Eſſacherie, Colmar, when well preſerv'd, Virg leuſe, Ambrette, Epine d'Hyver, S. Germain, St. Auguſtin Winter Beurre, Martin Sec, Winter Boncretien, Citro d'Hyver, Rouſelette d'Hyver, Franc Real; and for Bakin the Cadillac, Black Pear of *Worceſter*, Engliſh Warden, a the Pickering.

Apples; Golden Pippen, Nonpareil, French Pippen, Golden Ruſſet, Wheeler's Ruſſet, Pile's Ruſſet, Harvey Apple, Kentiſh Pippen, Holland Pippen, Aromatick Pippen, Winter Pearmain, Monſtrous Rennet, Pear Ruſſet, Aromatick Ruſſet, John Apple, with many others of leſs Note; as alſo Nuts, Almonds, Services, and Medlars.

Work to be done in the Pleaſure Garden *and* Wilderneſs.

In froſty Weather you ſhould cover the Beds of Ranunculus's, Anemonies, Hyacinths, and other choice Flowers: Such of them as are not come up above Ground, may be covered with Peaſe-haulm, or ſome other light Covering, which will admit the Air, but prevent the Froſt from penetrating the Earth: But ſuch of the Flowers as are come up, muſt be arched over with Hoops, and covered with Mats or Cloths; for if they are not protected from the Froſt at this Seaſon, the Roots are many times deſtroy'd; but in mild Weather they ſhould be uncover'd, and expos'd to the Air as much as poſſible; for if they are too cloſely cover'd, they are apt to mould and decay.

Cover all Pots and Tubs of ſeedling Flowers in hard Froſts, and from great Snows, which are very injurious to them, eſpecially to the ſeedling Hyacinths, Perſian Iris's, Spring Cyclamen, and ſome other bulbous-rooted Flowers, which, tho' hardy enough to reſiſt the Cold of our Climate, when their Roots are fully grown, yet, while young, are in Danger of being deſtroy'd by ſevere Froſt.

In mild Weather you may plant ſuch Roots of Ranunculus's, Anemonies, and Tulips, as were kept out of the Ground to retard them, that they might ſucceed thoſe which were planted in Autumn; but this ſhould not be done when the Earth is over-wet, which would endanger the rotting of their Roots.

Turn over your Heaps of Compoſt, that the Froſt may mellow them, and break the Clods; the oftner theſe are turn'd, the ſooner they will be fit for Uſe. You ſhould alſo at this Seaſon make new Parcels for a conſtant Supply; for without this there are but ſmall Hopes of having choice Flowers in any tolerable Degree of Perfection.

Toward the End of this Month, if the Seaſon be mild, you muſt pick off all decay'd Leaves from your Auricula's, and take the Earth out from the Tops of the Pots as low as you can conveniently without diſturbing their Roots, then fill the Pots with freſh rich Earth, which will greatly ſtrengthen their Flowers. You muſt alſo obſerve to place the Pots where they may be ſhelter'd from Froſts, which will blight and deſtroy their Buds, which are forming in the Center of the Plants; but you muſt let them have as much free Air as poſſible in mild Weather, for if they are drawn, it will weaken their Flowers; nor ſhould they be kept too dry, for tho' they require to be guarded from great Rains, yet they ſhould have the Benefit of moderate Showers, which will be of great Service to them.

Your choice Carnations ſhould alſo be guarded from heavy Rains, Snow, and ſevere Froſt, which are often very deſtructive to them; but you muſt give them as much free Air as poſſible in mild Weather, otherwiſe they will draw up weak and come to little. At this Seaſon you muſt be alſo careful to protect them from Vermin, which, for want of other Food, will deſtroy them, particularly Rats and Mice do often make great Havock with them; and where Hares or Rabbets can come to them, they generally make clear Work, ſeldom leaving any in their Reach.

At the latter End of this Month you muſt provide ſome new Dung, which ſhould be thrown on a Heap to warm, to make ſome Hot-beds to ſow the choiceſt Sorts of annual Flowers upon, that they may be brought forward to flower; and this Method will render them ſtronger than if they are ſown later in the Seaſon.

Prune up Wilderneſs Trees, where they grow too much out of Shape, and dig up the Ground in Wilderneſs Quarters, obſerving to clear it from the Roots of all hurtful Weeds. This Digging will be of great Service to the Trees, and add a Neatneſs to the Wilderneſs. But in doing of this you muſt be careful not to diſturb the Roots of thoſe Wood-plants which are intermix'd under the Trees for the ſake of their Flowers.

Plants now in Flower in the open Air.

Winter Aconite, Helleboraſter or Bearsfoot, True Black Hellebore, ſome Single Anemonies, Blue and White Winter Hyacinths, Early Starry Hyacinth, Polyanthus's, Primroſes, Single and Double Snow-drops, Black Hellebore with Green Flowers, Round-leav'd Spring Cyclamen, and, in a warm Situation, the Duke van Tol Tulip.

Hardy Trees and Shrubs now in Flower.

Lauruſtinus, two or three Sorts, Glaſtenbury Thorn, Mezerion, Spurge Laurel, Strawberry Tree, Manna Aſh, Cornelian Cherry, Clematitis Bætica, Alaturnus's, and ſome others.

Work to be done in the Nurſery.

If this Month ſhould prove hard Froſt, you muſt carry on Dung upon the Ground where you intend to tranſplant young Trees or Stocks in the Spring: You may alſo lay ſome Dung between the Rows of young Trees where it is wanted, that it may be ready to be dug in, when the Froſt is gone out of the Ground. You may now trim and plaſh Hedges; but it is better to delay it until the Froſt is over, becauſe where Trees are greatly wounded, the Froſt often penetrates, and greatly injures them.

When the Weather is mild, you ſhould continue trenching the Ground where you intend to plant young Trees in the two following Months; and prepare ſome Beds for ſowing Kernels of Fruit-trees, or Maſt and Berries of Foreſt-trees or flowering Shrubs, which muſt be ſown the latter End of this Month, or the Beginning of the next. You ſhould alſo continue digging the Ground between the Rows of Trees in the Nurſery, being careful not to injure their Roots; but you ſhould ſhorten all ſuch Roots as do extend too far from the Trees, which will cauſe them to put out new Fibres nearer the Stems, and thereby render them much ſafer to tranſplant.

In open Weather you may trim up your hardy Foreſt-trees in the Nurſery; but be careful to leave ſome ſmall Shoots on the Stems of all young Trees, to detain the Sap for the Augmentation of their Stems, otherwiſe they will be too weak to ſupport their Heads, but theſe ſhould not be left in too great Quantity, leſt you prevent the upright Growth of the Trees.

Work to be done in the Green-houſe *and* Stove.

If this Month proves very ſevere (as it often happens) you muſt be careful to keep the Froſt out of your Green-houſe; for if it reaches the Earth of your Orange-trees, it will cauſe all the Fruit to drop off, and many times a great Part of the Leaves alſo; therefore it is very uſeful to have a Flue contriv'd under the Pavement, in the Front of the Green-houſe, which may be uſed in very hard Winters, when it will be very difficult to keep the Froſt out of the Houſe, where it is wanting; but where there is no ſuch Contrivance, you ſhould light three or four large Candles to burn in the Green-houſe every Night: Beſides, in great Thaws, when the Air is fill'd with Moiſture, which occaſions a great Damp in Green-houſes, it will be of great Uſe to make two or three gentle Fires where there are Flues.

You muſt alſo obſerve to pick off all dead Leaves, or ſuch as are mouldy, which, if ſuffered to remain on, would infect thoſe which grow near them, and alſo corrupt the Air of the Houſe, to the Prejudice of your Plants. In mild Weather you muſt let Air into the Houſe, without which the Plants would alter their Colour, and ſometimes caſt their Leaves; but this muſt be done cautiouſly at this Seaſon. You muſt alſo refreſh them with Water, as often as you find it neceſſary, but give it to them ſparingly; for it is better to give it to them often, and in ſmall Quantities, than to over-water them at this Time, becauſe it may prove very hurtful to them, eſpecially if bad Weather ſhould ſet in ſoon after, which will oblige you to keep the Houſe cloſely ſhut up for two or three Days.

The hardy ſucculent Plants muſt have as much Air as poſſible in mild Weather; for if they are too cloſely ſhut up, they often caſt their Leaves, and appear unſightly, eſpecially the Sedums, Cotyledons, Senecio's, and the Ficoides's, which, when drawn too much, will not appear handſome, nor produce near ſo many Flowers, as thoſe which are kept more airy.

Your Anana's, or Pine-Apples, which begin now to ſhew their Heads for Fruit, muſt be carefully look'd after, obſerving to refreſh them frequently with Water, for Want of which they are often ſtarved, and the Fruit is rendred ſmall: But this Water ſhould be placed in the Stove at leaſt twelve Hours before it is uſed, that it may acquire an equal Warmth with the Air of the Houſe, otherwiſe it will be too cold for them. You muſt alſo keep up the Warmth of the Houſe, and not ſuffer the Heat to decline at this Seaſon, leſt you ſtarve the Fruit.

The Coffee-trees, and other woody Plants, which are plac'd in the Bark-bed in the Stove, muſt alſo be often refreſh'd with Water, and their dead or mouldy Leaves conſtantly taken off; and where any of the Leaves have contracted Filth, it ſhould be carefully waſh'd off; as ſhould Inſects, where-ever the Plants are infeſted with them, otherwiſe they will increaſe and ſpread over all the Plants in the Houſe.

If the Bark in the Bed has ſettled unequally (as it often happens) ſo that the Pots do not keep their Poſition, it will be proper to take out the Pots in a fine Day, and ſtir the Bark adding a little new Bark (which has been in ſhelter a Week or ten Days to drain off the Moiſture) and plunge the Pots down again: This will renew the Heat of the Bed, and be very uſeful to the Plants.

The tender Sorts of Aloes, Cereus's, Euphorbiums and Melon Thiſtles, ſhould now have very little Water given to them, for Moiſture at this Seaſon is very injurious to them.

Plants in Flower in the GREEN-HOUSE *and* STOVE.

Double Naſturtium, Alaternoides ericæ folio, Perſian Cyclamens, Senecio Africanus folio retuſo, Geranium with a ſcarlet Flower, Indian yellow Jaſmine, Spaniſh Jaſmine, African Gladiolus, Hæmanthus, Senecio Africanus arboreſcens folio ficoidis, Cryſanthemum populi folio, Jaſminum Ilicis folio, Aloe Succotrina, Aloe Margaritifera major & minor, Cuſhion Aloe, Hedgehog Aloe, Partridge-Aloe, Doria Africana atriplicis folio, Anemonoſphermos's of ſeveral Sorts, Aſcyron Balearicum, Canary Campanula, Ficoides's of ſeveral Sorts, Amomum Plinii in Fruit, with Oranges and Lemons.

JASMINOIDES, Baſtard Jaſmine.

The *Characters* are;

It hath a tubulous bell-ſhap'd Flower conſiſting of one Leaf, which is cut into five ſhort Segments; from the Flower-cup (which is alſo divided into five Parts) ariſes the Pointal, fixed like a Nail in the inner-part of the Flower, which afterwards becomes a round ſoft Fruit or Berry, in which are twelve or fourteen Seeds.

The *Species* are;

1. JASMINOIDES *Africanum, jaſmini aculeati foliis & faciæ. Ac. Reg. Scien.* Baſtard Jaſmine with Leaves and the Face of prickly Jaſmine.
2. JASMINOIDES *laureolæ folio, flore candido, interdiu odorato. Hort. Elth.* Baſtard Jaſmine with a large laurel Leaf, and a white Flower, which ſmells ſweet in the Day.
3. JASMINOIDES *folio piſhaminis, flore vireſcente, noctu odoratiſſimo. Hort. Elth.* Baſtard Jaſmine with a piſhamin Leaf, and a greeniſh Flower, which is very ſweet in the Night.
4. JASMINOIDES *arboreſcens, nicotianæ folio, flore albo. Houſt.* Tree-like Baſtard Jaſmine, with a Tobacco Leaf, and a white Flower.
5. JASMINOIDES *aculeatum, ſalicis folio, flore parvo ex albo purpuraſcente. Michel. Nov. Gen.* Prickly Baſtard Jaſmine, with a willow Leaf, and a ſmall Flower of a purpliſh white Colour.
6. JASMINOIDES *aculeatum humile, halimi minoris folio, flore majori violaceo, fructu craſſiore, per maturitatem flaveſcente. Michel. Nov. Gen.* Dwarf prickly Baſtard Jaſmine, with a leſſer halimus Leaf, a larger violet-coloured Flower, and a thicker Fruit, which turns yellowiſh when ripe.

The firſt and fifth Sorts have been old Inhabitants in the *Engliſh* Gardens, and have been generally known by the Name of *Rhamnus* or *Buckthorn*. They are pretty hardy Shrubs, which in very mild Winters will live Abroad in the open Air; but in hard Froſt they are deſtroyed where they are not protected: ſo that they are generally kept in Pots or Tubs, and removed into the Green-houſe in Winter.

The ſixth Sort is more rare in *England* than either of the former, but is very common in *Italy*. This is as hardy as the two former, and may be treated in the ſame manner.

Theſe Plants may be propagated by Cuttings, which ſhould be planted the Beginning of *May* on a Border of light freſh Earth, obſerving to water and ſhade them until they have taken Root, and conſtantly keep 'em clear from Weeds. When theſe Cuttings are ſtrongly rooted, (which may be known by their ſending forth ſtrong Shoots) they ſhould be carefully taken up with Balls of Earth to their Roots, and planted each into a ſeparate Pot filled with freſh light Earth; and then placed in a ſhady Situation; until they have taken new Root; after which Time they ſhould be removed into a ſheltered Situation, where they may remain with other pretty hardy exotic Plants, until the Beginning of *November*; when they ſhould be removed into Shelter, with *Bays*, *Oleanders*, and other ſuch hardy Plants, as only require to be ſheltered from extreme Froſt; but ſhould have as much free Air as poſſible in mild Weather.

In Summer theſe Plants muſt be plentifully watered in dry Weather, for they are very thirſty; there ſhould alſo be Care taken that they do not root thro' the Pots into the Ground, which they are very apt to do, if they are permitted to ſtand long in a Place unremoved; ſo that, when their Roots are torn off by taking of them up, the Leaves are apt to fall, and their young Shoots will wither. In Winter theſe Plants muſt be frequently watered while they are in the Green-houſe; but the Water muſt not be given to them in ſo large Quantities at that Seaſon as in Summer.

Theſe Plants may alſo be propagated by laying down their tender Branches in the Spring of the Year, which, if duly watered, will take Root by Autumn, when they ſhould be taken off from the old Plants, and planted in Pots, as was directed for the Cuttings. As theſe Plants ſhoot very freely, ſo they ſhould be pruned, to reduce them and keep them in Compaſs; otherwiſe they will grow very rude and unſightly, and their Heads will ſoon grow too large for their Stems; they ſhould alſo be ſhifted out of the Pots at leaſt once a Year, when their Roots ſhould be well trimmed; and as their Roots increaſe in Bulk, ſo they muſt be put into larger Pots.

The firſt Sort will flower very freely moſt part of Summer, and where the Plants are duly water'd, they will often produce ripe Fruit, and flower again in Winter.

But the fifth and ſixth Sorts do not flower ſo kindly in *England*, tho' they ſhoot moſt luxuriantly, when their Roots are not too much confined.

The ſecond, third and fourth Sorts are much tenderer Plants than the former, theſe being Natives of the warmeſt Parts of *America*: the Seeds of the ſecond Sort I received from the *Spaniſh Weſt-Indies*, by the Name of *Dama de Dia*; and the third, by the Name of *Dama de Noche*; the Flowers of one Sort being very ſweet in the Day, and thoſe of the other being ſweet in the Night.

The fourth Sort was diſcovered by Father *Plumier* in the *French* Settlements in *America*, who calls it in his Catalogue, *Jaſminum arboreſcens, nicotianæ folio, flore albo.* But I received the Seeds of this Sort from *la Vera Cruz*, which were ſent me by the late Dr. *William Houſtoun*, who had carefully examined the Flowers and Fruit of this Plant, and accordingly ranked it amongſt the *Baſtard Jaſmines*.

Theſe three Sorts may be propagated either by Seeds or Layers; but as they do not produce Seeds in this Country, ſo their Seeds muſt be procured from the Places of their natural Growth. If they are propagated by Seeds, they ſhould be ſown in the Spring in Pots filled with light freſh Earth, covering them about a quarter of an Inch with Mould; then plunge the Pots into a Hot-bed of Tanners-bark, obſerving to water the Earth as often as it appears dry; for if the Earth is not kept moiſt and warm, the Seeds will not vegetate; therefore, if the Nights ſhould prove cold, the Glaſſes of the Hot-bed ſhould be covered with Mats, to preſerve a moderate Heat in the Bed; but in the Day-time, when the Sun ſhines warm, the Glaſſes ſhould be raiſed to let the Steam of the Bed paſs off, as alſo to admit freſh Air. When the Plants begin to appear, they muſt be duly watered, and carefully cleared from Weeds, obſerving to admit freſh Air to them in hot Weather, as alſo to cover the Glaſſes every Night, when it is cold, to keep them warm. When the Plants are about three Inches high, they ſhould be ſhaken out of the Pots carefully, and each tranſplanted into a ſeparate ſmall Pot filled with light freſh Earth, and then plunged into the Hot-bed again, obſerving to ſhade the Plants from the Heat of the Sun until they have taken new Root; after which Time the Glaſſes of the Hot-bed ſhould be raiſed every Day, to admit freſh Air to the Plants in proportion to the Warmth of the Seaſon; and they muſt be conſtantly watered in hot Weather, for they are thirſty Plants. When the Plants are grown ſo tall as to reach near the Glaſſes, they ſhould be removed out of the Hot-bed, and plunged into the Bark-bed in the Stove, where they muſt remain all the Winter; during which Seaſon they muſt be kept very warm, and muſt be frequently refreſhed with Water. With this Management they will thrive very faſt, and the following Summer will produce their Flowers; but they ſhould be conſtantly kept in the Stove, giving them a larger Share of freſh Air in Summer as alſo Plenty of Water; for if they are placed Abroad in Summer, they will not produce their Flowers, nor will their Leaves continue in Beauty; for as the Weather often alters in this Climate, ſo, whenever it is cold or ſtormy Weather, theſe Plants, when expoſed thereto, are ſo much pinched as not to recover their Verdure till after they have been removed into the Stove for ſome Time; and often, when they are much pinched by cold Nights or Winds in Summer, they do not recover till the following Spring.

If you propagate theſe Plants by Layers, ſome of their tender Branches ſhould be laid down in *April*; and if the Pots are at that time placed in a warm Bed of Tanners-bark, it will greatly promote their Rooting, eſpecially if they are duly watered. Theſe Layers will be ſufficiently rooted for Tranſplantation in about three Months after Laying; when they ſhould be raiſed up, and cut off from the old Plants, and each planted into a Pot filled with light rich Earth, and then plunged into a moderate Hot-bed of Tanners-bark, obſerving to ſhade them until they have taken new Root; after which Time they may be treated as has been directed for the ſeedling Plants.

The ſecond Sort may alſo be propagated by Cuttings, which ſhould be planted in *May*, in Pots filled with light rich Earth, and plunged into a moderate Hot-bed of Tanners-bark, obſerving to ſhade them from the Heat of the Sun until they have taken Root, as alſo to give them Plenty of Water. When the Cuttings are well rooted, they ſhould be each planted into a ſeparate Pot, and managed as the Layers.

JASMINUM, [This Name is *Arabick*] The Jaſmine, *or* Jeſſamine-Treee.

The *Characters* are;

The Leaves are in many Species pinnated; the Cup of the Flower conſiſts of one Leaf, but is divided at the Top into five Segments; the Flower conſiſts of one Leaf, is Funnel-ſhap'd, and divided into five Segments: The Flowers are ſucceeded by Berries, which ſplit in the Middle, each Side for the moſt part containing a ſeparate Seed.

The *Species* are;

1. JASMINUM *vulgatius, flore albo.* C. B. P. The common white Jaſmine.
2. JASMINUM *vulgatius, flore albo, foliis ex luteo elegantiſſime variegatis.* The common white Jaſmine, with yellow ſtrip'd Leaves.
3. JASMINUM *vulgatius, flore albo, foliis ex albo elegantiſſime variegatis.* The common white Jaſmine, with white ſtrip'd Leaves.
4. JASMINUM *humile luteum.* C. B. P. Dwarf yellow Jaſmine, *commonly called*, The Italian yellow Jaſmine.
5. JASMINUM *luteum, vulgo dictum bacciferum.* C. B. P. The common yellow Jaſmine.
6. JASMINUM *humilius magno flore.* C. B. P. The Spaniſh white, *or* Catalonian Jaſmine.
7. JASMINUM *humilius, magno flore pleno.* The double Spaniſh Jaſmine.
8. JASMINUM *Indicum flavum odoratiſſimum.* *Fer. Flor.* The yellow Indian Jaſmine.
9. JASMINUM *Azoricum trifoliatum, flore albo, odoratiſſimum.* H. A. The Three-leav'd Azorian Jaſmine, with very ſweet white Flowers, *commonly called*, The Ivy-leav'd Jaſmine.
10. JASMINUM *Africanum, folio ilicis, flore ſolitario, ex alis foliorum proveniente, albo.* *Com. Rar.* African Ilex-leav'd Jaſmine, with a ſingle white Flower produced from the Wings of the Leaves.
11. JASMINUM *ſive Sambach Arabum, Alpini.* J. B. The ſingle Arabian Jaſmine.
12. JASMINUM *Arabicum, foliis limonii conjugatis, flore albo pleno odoratiſſimo.* *Boerh. Ind.* The double Arabian Jaſmine.
13. JASMINUM *Arabicum, caſtaneæ folio, flore albo odoratiſſimo, cujus fructus Coffee in officinis dicuntur nobis.* *Com. Pl. Uſ.* The Coffee-Tree.
14. JASMINUM *Malabaricum, foliis mali aurantii, flore niveo odoratiſſimo.* *Com.* Jaſmine of Malabar, with Orange Leaves, and a ſnow-white very ſweet ſcented Flower.
15. JASMINUM *Americanum, foliis conjugatis, floribus ſpicatis albis.* *Houſt.* American Jaſmine, with Leaves growing oppoſite, and white Flowers growing in Spikes.
16. JASMINUM *arboreſcens, foliis laurinis, flore umbellato.* *Houſt.* Tree-like Jaſmine, with Bay Leaves, and Flowers growing in an Umbel.

The firſt Sort is very common in moſt *Engliſh* Gardens, being much cultivated for the Sweetneſs of its Flowers. The ſecond and third Sorts are accidental Varieties from the firſt, and may be obtain'd by inoculating the Buds of theſe into the common *Jaſmine*; which, altho' the Buds ſhould periſh, (as it often happens) yet it ſeldom fails to ſtain both the Leaves and Branches of the old Plant into which the Buds were put: So that by inoculating ſome of theſe Buds into ſome young Branches in divers Parts of an old Tree, they will not fail to tinge the whole Tree in a ſhort Time.

The common white *Jaſmine* is eaſily propagated by laying down the tender Branches in the Spring, which, by the ſucceeding Spring, will be rooted ſtrong enough to be tranſplanted. They may alſo be propagated by Cuttings, which ſhould be planted in *March* in a moiſt Border, where they may have the Morning Sun: But they muſt be ſkreen'd from the Violence of the Sun in the Heat of the Day, and frequently water'd in dry Weather. The Cuttings thus manag'd, will many of them live, and have Roots fit to be removed in the following Spring: But this Method is ſeldom practiſed, the Layers always making the beſt Plants.

When theſe Plants are remov'd, they ſhould be planted where they are deſign'd to be continued, which ſhould be either againſt ſome Wall, Pale, or other Fence, where the flexible Branches may be ſupported: For altho' it is ſometimes planted as a Standard, and form'd into a Head, yet it will be very difficult to keep it in any handſome Order; or if you do, you muſt cut off all the flowering Branches: For the Flowers are always produc'd at the Extremity of the ſame Year's Shoots, which, if ſhortned before the Flowers are blown, will intirely deprive the Trees of Flowers. Theſe Plants ſhould be permitted to grow rude in the Summer, for the Reaſon before given: Nor ſhould you prune and nail them until the Middle or latter End of *March*, when the froſty Weather is paſt; for if it ſhould prove ſharp froſty Weather after their rude Branches are prun'd off, and the ſtrong ones are expos'd thereto, they are very often deſtroyed; and this Plant being very backward in Shooting, there will be no Danger of hurting them by late pruning.

The two ſtrip'd Sorts ſhould be planted in a warm Situation, eſpecially the white ſtrip'd, for they are much more tender than the plain, and are very ſubject to be deſtroy'd by great Froſts, if they are expos'd thereto; therefore it will be proper to preſerve a Plant of each Kind in Pots, which may be removed into the Green-houſe in Winter, leſt, by expoſing them to the Cold, they ſhould all be deſtroyed, and ſo you loſe the Sorts.

The common yellow *Jaſmine* was formerly in greater Plenty in *England* than at preſent, and was planted againſt Arbours, *&c.* to cover them, tho' it is not near ſo proper for that Purpoſe as the white Sort, it being of much ſlower Growth, nor will it ever extend its Branches ſo far as that; but however, it may have a Place among the flowering Shrubs of low Growth, where it may be with more Eaſe reduced to a Standard than the other. This Plant flowers in *May* and *June*; but they have very little Scent, which has occaſioned its being leſs regarded. It may be propagated by Suckers, which it generally produces in great Numbers; or by Layers, as was directed for the common Sort, and be full as hardy.

The Dwarf yellow *Jaſmine* is ſomewhat tenderer than the former; yet will it endure the Cold of our ordinary Winters, if it be planted in a warm Situation. The Flowers of this Kind are generally larger than thoſe of the common Sort, and better ſcented, but are ſeldom produced ſo early in the Seaſon. It may be propagated by laying down the tender Branches, as was directed for the common white Sort; or by budding or inarching it upon the common yellow *Jaſmine*; the latter of which is preferable, as making the Plants hardier than thoſe which are obtain'd from Layers: They ſhould be planted againſt a warm Wall; and in very ſevere Winters will require to be ſheltered with Mats, or ſome other Covering, otherwiſe they are ſubject to be deſtroyed. The Manner of Dreſſing and Pruning being the ſame as was directed for the white *Jaſmine*, I ſhall not repeat it.

The *Spaniſh* white, or *Catalonian Jaſmine*, is one of the moſt beautiful of all the Sorts, as alſo extremely ſweet-ſcented: The Flowers of this Kind are much larger than any of the others, and are commonly of a red Colour on the Outſide. This Plant is propagated by Budding or Inarching it upon the common white *Jaſmine*, on which it takes very well, and is rendered hardier than thoſe which are upon their own Stocks But thoſe of this Kind being brought over from *Italy* every Spring in ſo great Plenty, they are ſeldom raiſed here: I ſhall therefore proceed to the Management of ſuch Plants as are uſually brought into *England* from the Place above-mentioned, which generally are ty'd up in ſmall Bunches, containing three or four Plants, and wrapped about their Roots with Moſs, to preſerve them from drying: Which, if it happen that the Ship has a long Paſſage, will often occaſion them to puſh out ſtrong

Shoots from their Roots, which muſt always be taken off before planted, otherwiſe they will exhauſt the whole Nouriſhment of the Plant, and deſtroy the Graft.

When you receive theſe Plants, you muſt clear the Roots of the Moſs, and all decay'd Branches ſhould be taken off; then place their Roots into a Pot or Tub of Water, which ſhould be ſet in the Green-houſe, or ſome other Room, where it may be ſkreen'd from the Cold: In this Situation they may continue two Days; after which you muſt prune off all the dry Roots, and plant them into Pots fill'd with freſh light Earth; then plunge the Pots into a moderate Hot-bed of Tanners-bark, obſerving to water and ſhade them, as the Heat of the Seaſon may require. In about three Weeks or a Month's Time they will begin to ſhoot, when you muſt carefully rub off all ſuch as are produc'd from the Stock below the Graft; and you muſt now let them have a great Share of Air, by raiſing the Glaſſes in the Heat of the Day: And as the Shoots extend, they ſhould be topp'd, to ſtrengthen them, and, by Degrees, ſhould be hardened to endure the open Air, into which they ſhould be removed in *June*: But muſt have a warm Situation the firſt Summer; for if they are too much expos'd to the Winds, they will make but indifferent Progreſs, being rendered ſomewhat tender by the Hot-bed. If the Summer be warm, and the Trees have ſucceeded well, they will produce ſome Flowers in the Autumn following, tho' they will be few in Number, and not near ſo ſtrong as they will be the ſucceeding Years, when the Trees are ſtronger, and have better Roots.

Theſe Plants are commonly preſerv'd in Green-houſes, with Oranges, Myrtles, *&c.* and, during the Winter-ſeaſon, will require to be frequently water'd, which ſhould be given them ſparingly each Time, eſpecially in cold Weather; for too much Wet at that Seaſon will be apt to rot the Fibres of their Roots: They ſhould alſo have a great Share of free Air, when the Weather will permit; for which Purpoſe they ſhould be placed in the cooleſt Part of the Green-houſe, among Plants that are hardy, where the Windows may be opened every Day, except in froſty Weather: nor ſhould they be crouded too cloſe among other Plants, which often occaſions their growing mouldy, and decays the younger Branches. In *April* the Shoots of theſe Plants ſhould be ſhorten'd down to four Eyes, and all the weak Branches ſhould be cut off; and if you have the Conveniency of a Glaſs Stove, or a deep Frame, to place the Pots into at that Seaſon, to draw them out again, it will be of great Service in forwarding their flowering: Yet ſtill you ſhould be careful not to force them too much; and as ſoon as they have made Shoots three or four Inches long, the Glaſſes ſhould be opened in the Day-time, that the Plants may by degrees be inur'd to the open Air, into which they ſhould be removed by the latter End of *May*, or the Beginning of *June*, otherwiſe their Flowers will not be ſo fair, nor continue ſo long. If the Autumn proves favourable, theſe Plants will continue to produce freſh Flowers until *Michaelmas*; and ſometimes, when they are ſtrong, they will continue flowering till *Chriſtmas*, or after: But then they muſt have a great Share of Air when the Weather is mild and will admit of it, otherwiſe the Flower-buds will grow mouldy, and decay.

But notwithſtanding moſt People preſerve theſe Plants in Green-houſes, yet they will endure the Cold of our ordinary Winters in the open Air, if planted againſt a warm Wall, and covered with Mats in froſty Weather; they'll alſo produce ten Times as many Flowers in one Seaſon as thoſe kept in Pots, and the Flowers will likewiſe be much larger: But they ſhould not be planted abroad till they have ſome Strength; ſo that it will be neceſſary to keep them in Pots two or three Years, whereby they may be ſhelter'd from the Froſt in Winter: And when they are planted againſt the Wall, which ſhould be in *May*, that they may take good Root in the Ground before the ſucceeding Winter, you muſt turn them out of the Pots, preſerving the Earth to their Roots; and having made Holes in the Border where they are to be planted, you ſhould place them therein, with their Stems cloſe to the Wall; then fill up the Holes round their Roots with good freſh rich Earth, and give them ſome Water, to ſettle the Ground about them, and nail up their Shoots to the Wall, ſhortening ſuch of them as are very long, that they may puſh out new Shoots below, to furniſh the Wall, continuing to nail up all the Shoots as they are produced. In the middle, or toward the latter End of *July*, they will begin to flower, and continue to produce new Flowers until the Froſt prevents them; which, when you obſerve, you ſhould carefully cut off all the Tops of ſuch Shoots as have Buds form'd upon them, as alſo thoſe which have the Remains of faded Flowers left; for if theſe are ſuffered to remain on, they will ſoon grow mouldy, eſpecially when the Trees are cover'd, and thereby infect many of the tender Branches, which will greatly injure the Trees.

Toward the middle of *November* (if the Weather be cold, and the Nights froſty) you muſt begin to cover your Trees with Mats, which ſhould be nail'd over them pretty cloſe; but this ſhould be done when the Trees are perfectly dry, otherwiſe the Wet being lodged upon the Branches, will ſoon cauſe a Mouldineſs upon them, and the Air being excluded therefrom, will rot them in a ſhort Time; it will alſo be very neceſſary to take off theſe Mats as often as the Weather will permit, to prevent this Mouldineſs, and only keep them cloſe covered in froſty Weather, at which Time you ſhould alſo lay ſome Mulch upon the Surface of the Ground about their Roots, and faſten ſome Bands of Hay about their Stems, to guard them from the Froſt; and in very ſevere Weather, you ſhould add a double or treble Covering of Mats over the Trees, by which Method, if duly executed, you may preſerve them thro' the hardeſt Winters. In the Spring, as the Weather is warmer, ſo you ſhould by degrees take off the Covering; but you ſhould be careful not to expoſe them too ſoon to the open Air, as alſo to guard them againſt the Morning Froſts, and dry Eaſterly Winds, which often reign in *March*, to the no ſmall Deſtruction of tender Plants, if they are expoſed thereto; nor ſhould you quite remove your Covering until the middle of *April*, when the Seaſon is ſettled, at which time you ſhould prune the Trees, cutting out all decayed and weak Branches, ſhortening the ſtrong ones to about two Feet long, which will cauſe them to ſhoot ſtrong, and produce many Flowers.

The Double of this Kind is at preſent very rare in *England*, and only to be found in ſome very curious Gardens; tho' in *Italy* it is pretty common, from whence it is ſometimes brought over amongſt the Single: The Flowers of this Kind have only two Rows of Leaves, ſo that it is regarded rather for its Curioſity, than for any extraordinary Beauty in the Flowers: This may be propagated by budding it upon the common White *Jaſmine*, as has been directed for the Single, and muſt be treated in the ſame Manner.

The Yellow *Indian Jaſmine* is propagated either by Seeds, or laying down the tender Branches: If you would propagate them by Seeds, (which they often produce in *England* in great Plenty) you ſhould make a moderate Hot-bed in the Spring, into which you ſhould plunge ſome ſmall Pots, filled with freſh light Earth, and in a Day or two after, when you find the Earth in the Pots warm, you muſt put your Seeds therein, about four in each Pot will be ſufficient, covering them about half an Inch thick with the ſame light Earth, and obſerve to refreſh the Pots with Water as often as you ſhall perceive the Earth dry; but do not give them too much at each Time, which would be apt to rot the Seeds.

In cold Weather, and in the Night, theſe Beds muſt be covered with Mats over the Glaſſes; but in warm Weather, the Glaſſes ſhould be raiſed with Stones, to admit freſh Air, as alſo to let out the Steam of the Bed. In about five or ſix Weeks after ſowing, the Plants will appear above Ground, at which Time it will be neceſſary to remove the Pots into another freſh Hot-bed, of a moderate Temperature, in order to bring the Plants forward; you muſt alſo be careful to water them as often as is neceſſary, and in the great Heat of the Day the Glaſſes ſhould be tilted pretty high, and ſhaded with Mats, to prevent the Plants from being ſcorched with Heat; about the Middle of *May* you ſhould begin to harden them to the open Air, by taking off the Glaſſes when the Weather is warm; but this muſt be done cautiouſly, for you ſhould not expoſe them to the open Sun in a very hot Day at firſt, which would greatly injure them; but rather take off the Glaſſes in warm, cloudy Weather at firſt, or in gentle Showers of Rain, and ſo by degrees inure them to bear the Sun, and in *June* you ſhould take the Pots out of the Hot-bed, and carry them to ſome well-ſheltered Situation, where they may remain until the Beginning of *October*; at which Time they muſt be carried into the Green-houſe, obſerving to place them where they may enjoy as much free Air as poſſible when the Windows are opened, as alſo to be clear from the Branches of other Plants.

During the Winter-Seaſon they will require to be often watered, but you muſt be careful not to give them too much at each Time; and in *March* you muſt remove theſe Plants each into a ſeparate Pot, being careful not to take the Earth from their Roots; and if at this Time you plunge them into a freſh moderate Hot-bed, it will greatly facilitate their Rooting again, and be of great Service to the Plants; but when you perceive they are rooted, you muſt give them a great deal of Air; for if you draw them too much, they will become weak in their Stems, and incapable to ſupport their Heads, which is a great Defect in theſe Trees.

You muſt alſo harden them to the open Air, into which they ſhould be removed about the Middle of *May*, obſerving, as was before directed, to place them in a Situation that is defended from ſtrong Winds, which are injurious to theſe Plants, eſpecially while they are young. In Winter houſe them, as before, and continue the ſame Care, with which they will thrive very faſt, and produce annually great Quantities of Flowers.

Theſe Plants are pretty hardy, and will require no other Care in Winter, than only to defend them from hard Froſts; nor do I know whether they would not live in the open Air, if planted againſt a warm Wall, which is what I am this Year [1730] trying, for I have planted ſome againſt a Wall for that Purpoſe, and I think we have little Reaſon to doubt of the Succeſs, ſince they are much hardier than the *Spaniſh*; but there is this Difference between them, *viz.* theſe Plants have large, thick, ever-green Leaves, ſo that if they were covered with Mats, as was directed for the *Spaniſh Jaſmine*, the Leaves would rot and decay the Shoots; but as theſe will only require to be covered in extreme Froſt, ſo, if their Roots are well mulch'd, and a Mat or two looſely hung over them in ordinary Froſts, it will be ſufficient, and theſe Mats being either rolled up, or taken quite off in the Day, there will be no great Danger of their being hurt, which only can proceed from being too long cloſe covered.

In the Spring theſe ſhould be pruned, when you ſhould cut off all decay'd Branches; but you muſt not ſhorten any of the other Branches, as was directed for the *Spaniſh* Sort; for the Flowers of this Kind are produced only at the Extremity of the Branches, which, if ſhorten'd, they would be cut off, and this growing of a more ligneous Subſtance in the Branches than the other, will not produce Shoots ſtrong enough to flower the ſame Year.

If you would propagate this Plant from Layers, the Shoots ſhould be laid down in *March*; and if you give them a little Cut at the Joint, (as is practiſed in laying of Carnations) it will promote their Rooting: You ſhould alſo obſerve to refreſh them often with Water, when the Weather is dry; which, if carefully attended to, the Plants will be rooted by the ſucceeding Spring fit to be tranſplanted, when they muſt be planted in Pots filled with light Earth, and managed, as was before directed for the ſeedling Plants.

The *Azorian Jaſmine* is alſo pretty hardy, and requires no more Shelter than only from hard Froſts; and I am apt to think, if this Sort was planted againſt a warm Wall, and managed, as hath been directed, for the Yellow *Indian Jaſmine*, it would ſucceed very well; for I remember to have ſeen ſome Plants of this Kind growing againſt a Wall in the Gardens at *Hampton-Court*, where they had endured the Winter, nd were in a more flouriſhing State than ever I ſaw any of the Kind in Pots, and produced a greater Quantity of Flowers. Theſe Plants are propagated in the ſame Manner as the yellow *Indian*, and require the ſame Management. The Flowers of his Kind are ſmall, but being produced in large Bunches, do make a handſome Figure, and are of a very agreeable Scent, nd the Leaves being large and of a ſhining green Colour, add o the Beauty of the Plant very much.

The *Ilex-leav'd Jaſmine* affords the leaſt Pleaſure of any of he Kinds of *Jaſmines*, the Flowers being only produced ſingly rom the Wings of the Leaves, and are very ſmall; the Leaves lſo are of a pale Green, and the Plant naturally growing very agged, has occaſion'd its being but little valued; however, it hould not be wanting in good Collections of Plants, for tho' he Flowers are ſmall and produc'd ſingly, yet it continues owering moſt part of the Year. This Plant is propagated by lanting Cuttings in any of the Summer-months, which ſhould e put into Pots fill'd with light ſandy Earth, and plunged into Hot-bed, obſerving to water and ſhade them as the Seaſon ay require. When theſe are rooted, (which will be in about ve or ſix Weeks Time) they may be remov'd into ſeparate ots; and when they have taken freſh Root, they may be reoved into a Situation where they may be defended from rong Winds, in which Place they may remain until the midle of *October*; at which Time they muſt be hous'd with *Geraniums*, &c. obſerving to water them frequently, and give em as much free Air as poſſible, when the Weather is mild nd will permit; for if they are too much drawn in Winter, eir tender Shoots will be ſubject to grow mouldy and rot. heſe Plants ſhould be often renew'd by planting Cuttings, for e old ones are very ſubject to decay.

The *Arabian Jaſmines* of both Sorts are commonly brought to *England* from *Genoa* every Spring amongſt the *Spaniſh aſmines*. Theſe are all grafted upon the common *Jaſmine* ock, as are the *Spaniſh*; but being much tenderer than thoſe, e very often greatly injured in their Paſſage, (which is always the Winter-ſeaſon) ſo that you ſhould carefully examine em (when you purchaſe them of the *Italians*, who bring them over) to ſee if their Grafts are freſh and ſound; if ſo, there is little Danger of ſucceeding. Theſe muſt be put into Water and waſhed, pruning their Roots and Branches, and planting them as was directed for the *Spaniſh Jaſmines*, to which I ſhall refer the Reader, to avoid Repetition.

Theſe Plants are more tender than any of the Sorts beforementioned, and muſt be preſerved in a warm Stove in Winter, nor ſhould they be expoſed to the open Air in Summer, if you would have them flower well, (tho' indeed the Plants will live and thrive in the open Air in *June*, *July*, and *Auguſt*) but then they will rarely produce any Flowers; and thoſe which may appear, are ſoon deſtroy'd by either Winds or Rain, both which will ſoon ſcatter them, being but ſlenderly faſtened upon the Plants. The only Method in which I have found theſe Plants to thrive and flower well is this, *viz.* After having preſerved the Plants in a moderate Stove all the Winter, I clean'd their Leaves and Stems from Duſt; then I took out the Earth from the upper Part of the Pots, and refill'd them with freſh Earth; then I plunged the Pots into a moderate Bed of Tanners-bark, which had loſt moſt of its Heat: This occaſioned the Plants to ſhoot very ſtrong, and in *June* and *July* I had great Quantities of Flowers, which were exceeding ſweet, but of a ſhort duration, ſeldom continuing longer than two Days: However theſe were ſucceeded by freſh Flowers thro' the greateſt Part of *June* and *July*, during which Time my Plants were never entirely deſtitute of Flowers.

Theſe *Jaſmines* may alſo be propagated by laying down their tender Branches in the Spring, in the ſame Manner as was directed for the yellow *Indian Jaſmine*, which will take Root in leſs than three Months, provided the Pots are plunged into a Hot-bed, otherwiſe they will not be rooted until the ſucceeding Spring. Theſe muſt be planted into a light ſandy Earth, and frequently watered in hot Weather; but during the Winter-ſeaſon, it muſt be given them but ſparingly, for too much Moiſture at that Time will deſtroy them.

The Sort with double Flowers, which we have now in *England*, has rarely more than two Rows of Leaves, (as I obſerved in the *Spaniſh*) ſo that it is but little better than the ſingle: But there is another Sort of this *Jaſmine*, which was formerly in *England*, and is now in the Duke of *Tuſcany*'s Gardens at *Piſa*, which produces Flowers almoſt as large as a Cinnamon Roſe, and as double, as alſo of a moſt inoffenſive ſweet Scent; but this is not in *England* at preſent, nor is it likely to be obtained here, ſince it is not known to be growing in any other Part of *Europe* but the Garden at *Piſa*, where it is kept under a Guard to prevent its being ſtolen away: Such is the narrow Temper of the preſent Poſſeſſor, that he will not ſuffer it to be diſtributed into any other Gardens; tho' the Profeſſor of Botany to that Garden ſays, it increaſes greatly by Layers, by which Means all *Europe* might be ſoon ſupply'd with this valuable Plant, were it but once in the Poſſeſſion of any communicative Perſon.

The *Coffee-tree* is propagated by Seeds, which ſhould be ſown ſoon after they are gathered from the Tree: for if they are kept but a ſhort Time out of the Ground, they will not grow, which is the chief Reaſon that this Tree has not been ſpread into more different Countries; for the Seeds will not keep good long enough to be ſent to any diſtant Place: ſo that, in order to cultivate this Plant in any Part of the World, it is abſolutely neceſſary to have it carry'd thither growing. But as this Difficulty is now overcome, by the Quantity of theſe Trees there are now growing both in *Europe* and *America*, ſo we may expect to be furniſhed with them from many different Parts, but eſpecially from the *Caribbee Iſlands*, where the Trees are found to ſucceed as well as in their native Place of Growth: But whether the *Coffee* produced in the *Weſt-Indies* will prove as good as that brought from *Mocha*, Time will diſcover; but if it ſhould, it may be of great Advantage not only to the Inhabitants there, but alſo may turn to great Account to the *Weſt-Indies* Trade. The Manner how this Tree was firſt brought into *Europe*, and the ſeveral Parts of the World to which it is now ſpread, may be fully ſeen in Doctor *Douglaſs*'s curious Account of the *Coffee*, publiſhed at *London*, *Anno* 1727.

The Berries of this Plant are commonly ripe with us in *April*, at which time they ſhould be ſown in Pots of freſh light Earth, covering them about half an Inch thick with the ſame light Earth; then plunge the Pots into a moderate Hotbed of Tanner's Bark, obſerving to refreſh them often with Water, as alſo to raiſe the Glaſſes in the Heat of the Day, to admit freſh Air; and in very hot Weather it will be proper to ſhade the Glaſſes with Mats, for otherwiſe the Earth in the Pots will dry too faſt, and prevent the Vegetation of the Seeds. I muſt here obſerve, that the taking off the Pulp of the Berries, which has been by ſome People directed as abſolutely neceſſary before they are planted, is a great Miſtake; for I have experienced, that thoſe Berries which were planted whole as they came from the Tree, produced ſtronger Plants, and came up ſooner, than thoſe which were cleared from the Pulp; and altho' they are commonly two Seeds in each Berry, (both which ſeldom fail to grow) yet when the Plants are young, they are eaſily parted and planted into ſeparate Pots; which is abſolutely neceſſary to be done when they are about an Inch and an half high. When theſe Plants are removed, great Care ſhould be taken not to break or injure their Roots, as alſo to preſerve the Earth to their Roots: nor ſhould they be kept any Time out of the Ground; for if their Fibres are ſuffer'd to dry, they are very ſubject to mould, and periſh ſoon after.

The Soil in which I have found theſe Plants to thrive beſt, was compos'd in the following Manner; *viz.* one Load of freſh light Earth, one Load of rotten Cow-dung, with half a Load of Sea-ſand: Theſe were well mix'd together, and laid in an Heap ſix Months before it was uſed; in which Space it was turn'd ſeveral times, the better to incorporate the ſeveral Parts.

It muſt alſo be obſerv'd, that in tranſplanting theſe Plants, they ſhould never be put into Pots too large, in which they ſeldom thrive. The young Plants, when taken out of the Pots in which they were ſown, ſhould be planted each into a ſmall half-penny Pot fill'd with the above-mention'd Earth, and then plung'd into a moderate Hot-bed of Tanner's Bark, obſerving to water them frequently, tho' they ſhould not have too much given them at one Time: The Glaſſes ſhould alſo be raiſed, to admit freſh Air every Day, and in the Heat of the Day ſhould be ſhaded with Mats; for if they are too much expoſed to the Sun, they will perſpire ſo freely, as to have little Moiſture remaining in their Leaves, whereby they will hang, and appear very ſickly, as will alſo the tender Shoots, by which their Growth will be greatly retarded. As theſe Plants advance in Height, ſo ſhould they have a greater Proportion of freſh Air at all Times when the Weather is warm; and their Waterings ſhould be frequently repeated, tho' it muſt be perform'd with great Moderation, for too much Moiſture is very ſubject to rot the Roots, and when once the Roots are decay'd, it ſeldom happens that thoſe Plants are ever recover'd, tho' managed with all poſſible Skill and Care.

During the Winter-ſeaſon theſe Plants ſhould be placed in a Bark-ſtove, that the Fibres of the Roots may not be too much dry'd, (which often happens when the Pots are placed upon Shelves in a dry Stove) whereby the Top-ſhoots of the Plants are often decayed, and the Leaves are apt to turn brown and fall off, which is of very ill Conſequence to them; for if once the Leaves fall intirely off, the Plants are ſeldom recovered again ſo as to be beautiful.

This Stove ſhould be kept up to the temperate Heat, (mark'd on Mr. *Fowler's* Thermometers) with which they thrive better than in a greater Warmth; for if they are kept over-hot, they perſpire too freely, ſo that their Leaves will droop, and change their Colour. In this Situation they ſhould be water'd frequently; but it muſt be given them ſparingly, and the Water ſhould always be placed in the Stove twenty-four Hours before it be uſed, that it may acquire a Warmth nearly equal to the Temperature of Air in the Stove.

You muſt alſo clean their Leaves frequently from Filth, which they are ſubject to contract when ſhut up cloſe; as alſo many ſmall Inſects are harbour'd upon the Surfaces of the Leaves, which, if not carefully clean'd off, will greatly injure the Plants. The beſt Method to clean off theſe, is with a ſoft Woollen Cloth dipt in Water, with which you may eaſily waſh them off: but you ſhould be careful not to bruiſe their Leaves, nor to wet them too much, eſpecially in the Depth of Winter.

You ſhould alſo be careful, in placing them in the Stove, not to ſet them under the Branches of other Plants, nor too cloſe to them, whereby their Branches may intangle therewith, which will cauſe them to ſhed their Leaves, or at leaſt occaſion their diſcolouring; and in the Spring, when their Bloſſoms begin to appear, they muſt be more frequently watered, as alſo their Leaves and Branches often clean'd, which will cauſe their Leaves to look of a beautiful Green, and their Flowers to be ſtrong, and their Fruit will ſet the better.

In the Summer they muſt be continued in the Stove, with their Pots plung'd in Bark, (which ſhould not be too hot): but they muſt have a great Share of freſh Air in warm Weather, and the Glaſſes ſhould be ſhaded in the Heat of the Day; for they do not care to be too much expoſed to the direct Rays of the Sun, which occaſions their tender Shoots and Leaves to flag and hang down, and thereby retards the Growth of the Plants: You muſt alſo obſerve to ſhift them into freſh Earth whenever you find their Roots to ſhoot thro' the Holes at the Bottom of the Pots: but this will ſcarce happen oftener than twice a Year; ſo that I would adviſe the ſhifting them in *May*, and the Beginning of *Auguſt*, which are the propereſt Seaſons for this Work: but in the doing of it, you ſhould be careful to preſerve the Earth to their Roots, and only to pare off the Outſide of the Ball, cutting away all mouldy or decay'd Fibres; then put them into Pots one Size bigger than thoſe which they came out of, filling up the Pots with the before-mention'd Earth, obſerving to water and ſhade them, as the Heat of the Weather ſhall require: And if at theſe Times you mix a little new Bark in the Bed to add a freſh Heat thereto, before the Pots are plung'd therein, it will greatly facilitate their rooting again: but you muſt be careful not to make the Bed too hot. You ſhould alſo, in Summertime, refreſh all the Branches and Leaves of the Trees, by watering them gently with a fine-headed Watering-pot all over their Heads; and if in a very warm, gentle Shower of Rain, you draw off the Top Glaſſes of the Stove, and let them receive the Benefit thereof, it will be of great Service to them: but you muſt be careful not to expoſe them to hard Rains, or ſtrong Winds, which would prove very hurtful to them.

Theſe Directions, if carefully attended to, will be found ſufficient to inſtruct any Perſon in the Culture of this beautiful Plant; and altho' there may, perhaps, ſomething occur to them which is not here related, yet I believe it will rarely happen, but that the Appearances, be they from what Cauſe ſoever, may be found owing to ſome Neglect or contrary Practice to this here mentioned. But before I leave this Head, I cannot help mentioning another Method in which I have propagated this Plant; which is, by laying down ſome of their tender Shoots into Pots of Earth in the Spring of the Year, ſlitting them at a Joint, (as is practiſed in laying *Carnations*) obſerving to refreſh them frequently with Water, and in about three Months Time they will be rooted enough to tranſplant, when they ſhould be gently cut from the old Plant, and planted into ſeparate Pots, managing them as was directed for the ſeedling Plants.

There are ſome who have aſſerted, that this Plant will grow from Cuttings: but of all the different Trials which I have made, I could never obtain one Plant that way, tho' many times the Cuttings have remain'd freſh for ſeveral Months, and ſometimes have made ſmall Shoots; yet, upon taking them up, they have not had the leaſt Appearance of any Roots.

The fourteenth Sort of Jaſmines was formerly brought from *Malabar* in the *Eaſt Indies* into *Italy*, where it is now pretty common in the curious Gardens; but in *England* it is ſtill very rare. The fifteenth and ſixteenth Sorts were diſcovered by the late Dr. *Houſtoun* at *la Vera Cruz* in *America*, from whence he ſent Specimens and Seeds of both Kinds to *England*.

Theſe Plants may be propagated by Seeds or Layers; but as they do not produce Seeds in *Europe*, and they are rarely brought from the Countries of their natural Growth, ſo the only Method of propagating them is by Layers: Theſe Layers ſhould be laid down early in the Spring, at which Time the Pots ſhould be plunged into a moderate Hot-bed of Tanners-bark, obſerving to water them duly in hot Weather, as alſo to let them have a good Share of freſh Air. With this Management the Layers will be rooted in three or four Months, fit to tranſplant; when they ſhould be carefully taken up, and cut off from the old Plants, and each planted into a ſeparate ſmall Pot filled with light rich Earth, and then plunged into the Hot-bed again, obſerving to water and ſhade them until they have taken new Root; after which Time they may be removed into the Stove, where they ſhould be kept warm during the Winter Seaſon; and they ſhould be frequently refreſhed with Water. In Summer theſe Plants ſhould have a large Share of freſh Air admitted to them in warm Weather, by opening of the Glaſſes of the Stove; but they ſhould never be ſet abroad in the open Air, for they are too tender to thrive abroad in this Climate, even in the hotteſt Seaſon of the Year. Theſe Plants alſo require a large Share of Moiſture in hot Weather, and their Leaves ſhould be frequently refreſhed with Water, and waſhed with a Sponge, to clear 'em from the Filth, which they are very ſubject to contract by remaining conſtantly in the Houſe.

With this Management theſe Plants will thrive and produce Plenty of Flowers every Year in *July* and *Auguſt*; and their Leaves remaining green thro' the Year, they make an agreeable Variety in the Stove, amongſt other tender exotic Plants.

The *Spaniſh* or *Catalonian* Jaſmine, as it is vulgarly called, is a Native of *America*, from whence I ſuppoſe it was brought to *Spain*; ſoon after the *Spaniards* had poſſeſſed themſelves of the South Continent of *America*, becauſe this Plant is not known to grow wild in any Part of *Europe*; but in many

Places in the *Spaniſh Weſt-Indies*, the Woods are full of it; as I have been informed by Mr. *Robert Millar*, Surgeon, who ſent over many Specimens of this Plant from them.

IBERIS, or SCIATICA-CRESS. *Vide* Lepidium.

IBISCUS, or MARSH-MALLOW. *Vide* Althæa.

ICACO, *American* Plum, *vulgò*.

The *Characters* are;

It hath a Roſe-ſhaped Flower, conſiſting of ſeveral Petals, which are placed in a circular Order; from whoſe Flower-cup ariſes the Pointal, which afterward becomes an oval ſoft fleſhy Fruit, incloſing a rough Stone of the ſame Form, in which is contained a round Kernel.

The *Species* are;

1. ICACO *fructu ex albo rubeſcente. Plum. Nov. Gen.* The Maiden Plum-tree.
2. ICACO *fructu nigro. Plum. Nov. Gen. American* Plum-tree.
3. ICACO *fructu purpureo. Plum. Nov. Gen.* Plum-tree with purple Fruit.
4. ICACO *fructu luteo. Houſt.* The yellow Plum-tree.

Theſe Trees are very common in *Jamaica, Barbadoes*, and ſeveral other Parts of *America*, where the Fruit is eſteemed by ſome of the Inhabitants, but by others it is thought to cauſe the dry Gripes. They uſually grow to the Height of ſixteen or eighteen Feet, and the laſt Sort doth often riſe to the Height of thirty Feet, and ſpreads into a great Number of Branches.

In *Europe* they are preſerved with other curious exotic Plants in the warmeſt Stoves; for they are too tender to live thro' the Winter, unleſs they are kept very warm. They are commonly propagated by ſowing of their Stones, in Pots fill'd with freſh light Earth, and plunged into a Hot-bed of Tanners-bark; obſerving to water them frequently, as alſo to cover the Glaſſes of the Hot-bed every Night, to preſerve a Warmth in the Bed. When the Plants begin to appear, they muſt be carefully weeded, and duly watered; and the Glaſſes of the Hot-bed ſhould be raiſed every Day, to admit freſh Air to the Plants, to prevent their being drawn up too weak. When theſe Plants are about three or four Inches high, they ſhould be carefully taken up, and each tranſplanted into a ſeparate Pot, filled with light rich Earth, and then plunged into the Hot-bed again, obſerving to water them duly, as alſo to ſhade them from the Sun, until they have taken new Root; after which Time the Glaſſes of the Hot-bed ſhould be raiſed every Day to admit freſh Air to the Plants, in proportion to the Heat of the Seaſon: Theſe Plants require a pretty large Quantity of Water in hot Weather, and the Pots muſt be conſtantly kept clear from Weeds. In this Hot-bed the Plants may remain until *Michaelmas*, when they ſhould be removed into the Stove, and plunged into the Hot-bed of Tanners-bark, where they may enjoy a good Share of Heat. During the Winter Seaſon the Plants muſt be frequently watered, but they ſhould not have it in large Quantities, eſpecially in cold Weather, or when they have caſt off their Leaves. In Summer they ſhould have a large Share of freſh Air admitted to them in warm Weather, by opening the Glaſſes of the Stove; but theſe Plants are too tender to bear the open Air of this Country, even in the hotteſt Seaſon of the Year; ſo that they ſhould conſtantly remain in the Stove, and always ſhould be plunged into the Tan. As the Plants advance in their Growth, ſo they ſhould be ſhifted into larger Pots; but they will not require to be tranſplanted oftener than once a Year, which ſhould always be done the latter End of *March*, or the Beginning of *April*, juſt before the Plants put out their freſh Leaves.

If theſe Plants are carefully managed, according to the foregoing Directions, they will thrive very faſt, and in three or or four Years will produce Fruit, which I have ſometimes ſeen perfectly ripe in *England*; ſo that they deſerve a Place amongſt other tender exotick Plants, as a great Curioſity.

In *America* the Inhabitants propagate theſe Plants by Truncheons or large Branches, which if cut off and planted in the rainy Seaſons, take Root very ſoon, and in a Year or two become large Plants. They are often planted to make Hedges in *Jamaica* and *Barbadoes*, and are eſteemed very proper for that Purpoſe, being quick in Growth.

The Name *Icaco*, which Father *Plumier* has applied to this *Genus*, is the *American* Name, by which the *Creolians* called the Fruit: but of late Years the *Engliſh* have given them the Epithet of *Plums*, as being, in their Opinion, ſomewhat near our *European* Plums.

ICE is a hard, tranſparent Body, formed from ſome Liquor congealed or fixed.

Ice is ſaid to be the natural State of Water, which remains firm, and not liquid, when no external Cauſe acts upon it.

The true Cauſe of the Congelation of Water into *Ice*, ſeems to be the Introduction of frigorifick Particles into the Pores or Interſtices between the Particles of Water; and by that means getting ſo near them, as to be juſt within the Spheres of one another's Attractions, and then they muſt cohere into one ſolid or firm Body.

It may be wonder'd why *Ice* goes to the Top of the Water; for one would imagine, that being colder than flowing Water, it ought to be more condenſed, and conſequently heavier: But it is to be conſidered, that there are always ſome Bubbles of Air interſpers'd in *Ice*. It is certain, by the ſwimming of *Ice* upon Water, that it is ſpecifically lighter than the Water out of which it is made by freezing: And it is as certain, that this Lightneſs of *Ice* proceeds from thoſe numerous Bubbles that are produced in it by Congelation.

Water, when it is frozen into *Ice*, takes up more Space than it did before it was congeal'd. It is viſible, that the Dimenſions of Water are increas'd by freezing; its Particles being kept at ſome Diſtance the one from the other, by the Intervention of the frigorifick Matter.

And beſides, there are many little Volumes of Air included at ſeveral Diſtances, both in the Pores of the watery Particles, and in the Interſtices made by the ſpherical Figures. Now by the Inſinuation of theſe Cryſtals, the Volumes of Air are driven out of the watery Particles, and many of them uniting, form larger Volumes; theſe have thereby a greater Force to expand themſelves than when they are diſperſed, and ſo both inlarge their Dimenſions, and leſſen the ſpecifick Gravity of Water thus congealed into *Ice*.

It ſeems very probable, that Cold, and Freezing, and conſequently *Ice*, are produced by ſome Subſtance of a ſaline Nature floating in the Air; in that, Salts, and more eminently ſome particular ones, when mixed with *Ice* or *Snow*, do wonderfully increaſe the Force and Effects of Cold.

It is alſo viſible, that all ſaline Bodies do cauſe a Stiffneſs and Frigidity into thoſe Bodies into which they enter.

It is manifeſt, by obſerving Salts by Microſcopes, that the Figures of ſome Salts, before they ſhoot into Maſſes, are then double Wedge-like Particles, which have Abundance of Surface in reſpect to their Solidity; and this is the Reaſon why they ſwim in Water, when once they are raiſed in it, altho' they are ſpecifically heavier: Theſe ſmall Points of Salts getting into the Pores of the Water, whereby they are, in ſome meaſure, ſuſpended in the Winter, when the Heat of the Sun is not ordinarily ſtrong enough to diſſolve the Salts into a Fluid, to break their Points, and to keep them in perpetual Motion; which being leſs diſturb'd, are more at Liberty to approach one another; and by ſhooting into Cryſtals, of the Form above mentioned, do, by their Extremities, inſinuate themſelves into the Pores of Water, and by that means freeze it into a ſolid Form call'd *Ice*.

As to Thawing, the Reaſon ſeems to be, that Heat afterwards ſeparating them, and putting thoſe ſaline or frigorifick Particles into Motion, breaks this Union, and ſeparates the Particles ſo far from one another, that they get out of the Diſtance of the attracting Force, and into the Verge of the repelling Force, and then the Water reſumes its fluid Form.

Monſ. *Mariotte*, in his Treatiſe of *Hydroſtaticks*, gives the ſubſequent Account of what happens to Water in freezing, which he diſcover'd by the following Experiment.

Having fill'd a cylindric Veſſel of about ſeven or eight Inches high, and ſix Inches diameter, within two Inches of the top, with cold Water, he expoſed it to the open Air, in a great Froſt, and obſerved exactly the whole Progreſs of the freezing of it.

The firſt Congelation was in the upper Surface of the Water, in little long Water-ſhoots or Laminæ, which were jagged like a Saw, the Water between them remaining ſtill unfrozen, though the reſt of the Surface was already frozen to the Thickneſs of more than two Lines; he obſerved that ſeveral Bubbles of Air were formed in the *Ice*, that began to fix on the Bottom and Sides of the Veſſel, ſome would riſe up, and others remained intangled in the *Ice*, which made him imagine that theſe Bubbles taking up more Space in the Water, than when their Matter was, as it were, diſſolved in it, they puſhed up a little Water through the Hole at the Top, after the ſame manner that new Wine works out at the Bung-hole of a Veſſel when it begins to heat; and the little Water that ouzed out at this little Hole in the *Ice*, ſpreading itſelf upon the upper Surface of the Water, which was already frozen, became *Ice* alſo, and there began to form an Hill of *Ice* ; and that Hole continuing open, by reaſon of the Water which paſſed ſucceſſively through it, being puſhed up by the new Bubbles which formed themſelves in the *Ice*, which continued to increaſe about the Sides and Bottom of the Veſſel ; he obſerv'd that the upper Surface of the Water was frozen above an Inch thick towards the Edges of the Veſſel, and above an Inch and an half round about the little Hole, before the Water that was contained in it, as in a Pipe, became frozen ; but at laſt it was frozen : Then the middle of the Water remaining unfrozen, and the Water which was compreſſed by the new Bubbles, which formed themſelves for two or three Hours, having no Vent at the little Hole, the *Ice* broke at once towards the Top, by the Spring of the included Air.

He try'd the Experiment a ſecond time ; and when the *Ice* was about two Inches thick, he warmed the Sides of the Veſſel to melt the Outſide of the *Ice*, and by that means drew it whole out of the Veſſel, without ſpilling the Water that was contained in the Middle of the *Ice* ; then expoſing this *Ice* to the open Air, that the reſt of the Water might freeze, it broke three or four Hours after, and he found a Cell in the Middle of about one Inch and an half diameter, containing the Water that remained ſtill unfrozen, which ran out upon the breaking of the *Ice*.

He made the Experiment the third time ; and having taken out the *Ice*, as before, with a large Pin he made a Hole in the *Ice*, over the little Pipe or Channel above-mentioned, where the *Ice* was an Inch higher than any where elſe, by reaſon of the Water which had ouzed out at the little Hole, and was there frozen ; and as ſoon as he drew out the Pin, ſome Water ſpouted out at the Hole, and then the Hole was frozen up again ; ſtill as the Hole was frozen up, he prick'd the *Ice*, 'till all the Water was frozen, then he expoſed that Lump of *Ice* to the Air for a whole Night without its breaking : which plainly ſhew'd, that, in the foregoing Experiments, the Spring of the Air-bubbles was the only Reaſon of the breaking of the *Ice*.

The Middle of the frozen Lump had about as much Air in it as *Ice* ; but there were but few Bubbles towards the Outſide, in Proportion to the *Ice*.

If by boiling the Water you drive the Aerial Matter out of it, before you ſet it out to freeze, you will have *Ice* two or three Inches thick, without any viſible Bubbles, and ſo tranſparent, as to be fit to burn by the Sun's Rays, as Convex Glaſſes do.

JET D'EAU is a *French* Word, which ſignifies a *Fountain* that caſts up Water to any conſiderable Height in the Air.

Monſ. *Mariotte*, in his Treatiſe of *Hydroſtaticks*, ſays, That a *Jet D'eau* will never riſe ſo high as its Reſervatory ; but always falls ſhort of it by a Space which is in a ſubduplicate Ratio of that Height : And this he proves by ſeveral Experiments ; That tho' *Jets* ought to riſe to the Height of the Reſervatories, yet the Friction of the Sides of the Ajutages, and the Reſiſtance of the Air, are the Cauſes that in *Jets* that have very high Reſervatories, the Height of the *Jets* does not come up to that of the Reſervatory by a great deal.

He adds ; That if a greater branches out in many ſmaller ones, or is diſtributed through ſeveral *Jets*, the Square of the Diameter of the main Pipe muſt be proportion'd to the Sum of all the Expences of its Branches : That if the Reſervatory be 52 Feet high, and the Ajutage half an Inch in diameter, the Pipe ought to be three Inches in diameter.

He ſays ; That the Beauty of *Jets* of Water conſiſts in their Uniformity and Tranſparency at the going out of the Ajutage, and ſpreading but very little, and that to the higheſt Part of the *Jet*.

That the worſt Sort of Ajutages are thoſe that are Cylindrical ; for they retard very much the Height of the *Jets* ; the Conic retard it leſs : but the beſt way is, to bore the Horizontal Plane, which ſhuts the Extremity of the Pipe or Conduit, with a ſmooth and poliſh'd Hole ; taking care that the Plate be perfectly plain, poliſh'd, and uniform.

ILEX [takes its Name of אלה, Heb, *an Oak*, becauſe this Tree is a Species of Oak] the Ever-green Oak.

The *Characters* are ;

The Leaves are, for the moſt part, indented or ſinuated, (and in ſome the Edges of the Leaves are prickly) and are Evergreen : It hath amentaceous Flowers, which are produced at remote Diſtances from the Fruit, on the ſame Tree : The Fruit is an Acorn, *like the common* Oak.

The *Species* are ;

1. Ilex *folio anguſto non ſerrato.* C. B. P. The Olive-leaf'd Ever-green Oak.
2. Ilex *folio oblongo ſerrato.* C. B. P. Narrow-leaf'd Ever-green Oak, with ſerrated Leaves.
3. Ilex *folio Agrifolii. Bot. Monſp.* Holly-leaf'd Ever-green Oak.
4. Ilex *folio rotundiore molli, modiceque ſinuato, ſive ſmilax Theophraſti.* C. B. P. The Ever-green Oak, with round, ſmooth, ſinuated Leaves.
5. Ilex *aculeata cocciglandifera.* C. B. P.

There are ſeveral other Varieties of theſe Trees, which differ in the Shape of their Leaves ; ſome being long and ſmooth, others are rounder, and have many Prickles upon their Edges ; and ſome have their Leaves ſinuated and waved like thoſe of the *Holly* : but as theſe are only ſeminal Variations, and will ariſe from Seeds taken from the ſame Tree, ſo it is not worth troubling myſelf or the Reader to enumerate their ſeveral Diſtinctions in this Place ; ſince thoſe above mentioned are the moſt common Varieties ; and all the other Differences will be nearly allied to one or other of the four firſt Sorts.

Theſe Trees are propagated by ſowing their Seeds ; the beſt Seaſon for this Work is in the Beginning of *March* : but then, as the Acorns are ripe in Autumn, they ſhould be preſerved either in Sand or dry Earth until the Spring, otherwiſe they will loſe their growing Faculty ; which is commonly the Caſe with thoſe brought annually from *Genoa*, ſcarce one Seed in fifty of them ever riſing ; however, ſince we have many large Trees now in *England* which produce good Seeds, we need not ſend to *Italy* for them : But were I to adviſe, I ſhould much rather have them from *Portugal* than *Italy* ; for the Voyage being much ſhorter, they are generally brought from thence in very good Condition.

The Manner in which I would adviſe their being ſown, is, if for large Quantities, in Drills at about two Feet Diſtance ; but for a ſmall Parcel, they muſt be ſown in Rows on a Bed much nearer.

The Ground in which theſe Seeds are ſown, ſhould be well dug and cleanſed from the Roots of all noxious Weeds, *&c.* and levell'd even, and the great Clods broken ; then draw the Rills with a Hough in a ſtrait Line (as is practiſed in the ſowing of *Kidney-beans*) about two Inches deep, laying the Acorns therein two or three Inches aſunder ; then draw the Earth over them with the Head of a Rake, obſerving that none of them are left uncovered, which would intice the Vermin to attack your Acorns, eſpecially the Mice, whereby your Seminary will be greatly injured, if not wholly deſtroy'd.

In the Middle of *April* the young Plants will appear above-ground ; you muſt then clear the Ground from Weeds, which would ſoon overſpread and deſtroy the Plants ; which muſt conſtantly be obſerv'd, eſpecially while they are young. The firſt Year from Seed they will make but ſmall Progreſs, but afterwards they will make Amends by their quick Growth, (eſpecially if they agree with the Soil) ; in *March* following you muſt gently dig up the Ground between the Rows of Plants, in order to deſtroy the Weeds, and to render it light for the Roots to ſtrike out on each Side, which will greatly promote the Growth of the Plants : but in doing of this, you ſhould be very careful not to diſturb the Roots of the Plants, which would greatly injure them : In this Place they may remain until the ſecond Spring after ſowing, when, in the Beginning of *April*, you ſhould take up the Plants where they are too cloſe, and tranſplant them where they are deſigned to remain. But as theſe Trees are ſubject to have Tap-roots, ſo they are very difficult to be removed ; you muſt therefore obſerve to take them up with a good Ball of Earth to their Roots, and carry them immediately to the Places where they are to be planted, placing them into Holes which ſhould be well prepared before ; and if the Weather be dry, you ſhould pour a good Quantity of Water into the Holes about the Earth like Pap ; then placing the Plants therein, you ſhould fill up the Holes about their Roots with the like pappy Earth ; and then lay ſome Mulch upon the Surface of the Ground round their Roots, and give them ſome Water to ſettle the Earth to their Roots : And if the Seaſon ſhould continue dry, you muſt repeat watering them once a Week, which Water ſhould be poured all over the Heads of the Plants : but by no means give them too much, which, as I have already ſaid, deſtroys more new-planted Trees than any other Accident whatever.

But in taking up theſe Plants from the Seminary, you ſhould be careful not to injure the Roots of thoſe left remaining : nor muſt the Ground about their Roots remain long open ; but as ſoon as you have taken up thoſe that are to be tranſplanted, the whole Ground ſhould be ſlightly dug and levell'd even: The Diſtance theſe Plants ſhould be left in the Rows where they were ſown, ought to be two Feet, which will allow them Room enough to grow three or four Years longer, at which Time they muſt be tranſplanted, (eſpecially all ſuch as are not deſign'd to remain for good): but you ſhould, the precedent Spring, dig near the Roots of thoſe which are to be removed, and cut underneath them with your Spade, to take off the Tap-roots: but you muſt obſerve not to cut them too cloſe to the Plants, leſt you deſtroy them; this will occaſion their puſhing out many Fibres, whereby the Earth will be better preſerved to their Roots when they are tranſplanted, and there will be leſs Danger of their not growing.

It has been directed by moſt People who have written on theſe Trees, to ſow the Acorns in Pots, and when the Plants have grown two or three Years therein, to ſhake them out of the Pots, preſerving all the Earth about them, and to plant them where they are to remain: which is a very good Method for ſmall Quantities; but the Trouble of this in large Plantations would be too great, eſpecially if we conſider that theſe Plants, while in Pots, will require conſtantly to be water'd in dry Weather; otherwiſe they will be ſubject to fail, or at leaſt will make but poor Progreſs. And altho' it is generally thought very hazardous to remove theſe Trees, yet I believe, if great Care be taken, firſt, to obſerve the juſt Seaſon, which is in the Beginning of *April*; ſecondly, to preſerve as much Earth to their Roots as poſſible; and, thirdly, not to keep them long above ground, the removing of theſe Trees will not be found ſo dangerous as moſt People imagine.

And I am convinced, that Trees of ſeven or eight Years Growth, are in leſs Danger of ſuffering by Tranſplantation, than thoſe that are much younger; for in the Year 1727, I removed many of theſe Trees which were five or ſix Feet high, and though they had not been ſo well managed in the Place where they were rais'd, as might be wiſh'd, yet but one of the whole Number fail'd, notwithſtanding the Seaſon prov'd dry for near a Month after.

Theſe Trees are by many People greatly eſteem'd for Hedges to ſurround Wilderneſs Quarters; but they are ſubject to grow too large for that Purpoſe, becauſe we ſhould never hide the Tops of the Trees in ſuch Places from the Sight; for they are, if rightly diſpoſed in the Quarters, vaſtly more agreeable to the Eye, than the fineſt ſhear'd Hedge in the World; but they may do well enough for a large Fence, to obſtruct the Sight, or to defend a new Plantation of tender Trees; for which Purpoſe the Acorns ſhould be ſown in the Place where the Hedge is deſign'd; and when the Plants are come up, they ſhould be thinned, where they are to cloſe; and if the Ground is kept clear from Weeds, and every Spring dug about the Plants, they will ſoon form a good Hedge: But you ſhould obſerve not to let them grow too much in Height before the bottom part of the Hedge is well ſtrengthen'd, which would occaſion its bending, and the Branches would be ſubject to be diſplaced with ſtrong Winds, or great Snows, and thereby become very unſightly: But if they are regularly train'd up, they will make a good thick Hedge from the Ground to the Height of forty Feet, and that in leſs Time than any other Tree whatever.

The Soil in which theſe Trees thrive beſt, is a hazelly Loam, not too ſtrong, nor over-light, in which they will grow to a large Size, and reſiſt the ſevereſt Cold of our Climate; and retaining their Leaves all the Winter, do afford an agreeable Proſpect in that Seaſon: But they ſhould by no means be planted near ſuch Walks, or other Parts of the Garden, as are intended to be kept clean; for in the Month of *April*, when they caſt their old Leaves, they make a great Litter, and are apt to blow about with the Wind, and become very troubleſome; and in *June*, when their Male Flowers fall off, they occaſion no leſs Trouble to clean them up daily in ſuch Places; and in the pleaſanteſt Seaſon of the Year they are the moſt unſightly Trees in a Garden, the old Leaves decaying at that Seaſon, and falling off; and the Male Flowers, which are generally in great Plenty, are then produced, which renders it not ſo valuable in Places much frequented: But for larger Plantations, at a remote Diſtance from the Habitation, ſo as to be juſt within the View, they make a very handſom Appearance, eſpecially in the Winter-ſeaſon.

The Wood of this Tree is accounted very good for many Sorts of Tools and Utenſils, as *Mallet-Heads*, *Mall-Balls*, *Chairs*, *Wedges*, *Beetles*, *Pins*, &c. as alſo for *Paliſado's*; and affords the moſt durable *Charcoal* in the World, and is the common Fuel in the Southern Parts of *France* and *Italy*.

The *Kermes*, or *Holm-Oak* is of a much lower Stature than the former Sorts, and ſeldom grows to the Height of a Tree: This, tho' a Native of the warmeſt Parts of *France*, yet will endure the Cold of our Climate in the open Air. It may be propagated in the ſame Manner as the former, and deſerves a Place amongſt other Shrubs of low Growth, for its Curioſity, as being the Plant upon which the *Kermes* are bred; the Hiſtory of which may be ſeen at large in *Garidel's Hiſtory of the Plants which grow in* Provence, it being too long to be inſerted here.

IMPERATORIA, Maſterwort.

The *Characters* are;

It is planted with a Roſe and umbellated Flower, conſiſting of ſeveral Petals, which are ſometimes heart-ſhaped, and ſometimes intire, ranged in a Circle, and reſting on the Empalement; which afterward becomes a Fruit, compoſed of two Seeds, which are plain, almoſt oval, gently ſtreaked and bordered, and generally caſting their Cover. To theſe Marks muſt be added, that their Leaves are winged, and pretty large.

The *Species* are;

1. IMPERATORIA *major*. *C. B. P.* Common Maſterwort.
2. IMPERATORIA *Pyrenaica tenuifolia*. *Tourn.* Narrow-leav'd *Pyrenean* Maſterwort.
3. IMPERATORIA *Alpina maxima*. *Tourn.* Greateſt Maſterwort of the *Alpes*.

The Root of the firſt Species is uſed in Medicine; it has a very hot acrid Taſte, and is eſteemed alexipharmic, ſudorific, and a great Attenuater and Opener.

This Sort is cultivated in Gardens to ſupply the Markets. It may be propagated either by Seeds, or parting of the Roots: If you would propagate it by Seeds, they ſhould be ſown in Autumn, ſoon after they are ripe, on a Bed or Border of light Earth, in a ſhady Situation; obſerving not to ſow the Seeds too thick, nor ſhould they be covered too deep. In the Spring the Plants will appear, when they ſhould be carefully weeded, and if the Seaſon ſhould prove very dry, they ſhould be now and then refreſhed with Water, which will greatly promote the Growth of the Plants; towards the Beginning of *May*, if you find the Plants come up too cloſe together, you ſhould prepare a moiſt ſhady Border (and thin the Plants carefully, leaving them about four Inches aſunder); and plant thoſe which you draw up, into the Border about ſix Inches apart every Way, being careful to water them duly, if the Seaſon ſhould prove dry, until they have taken Root; after which Time, theſe Plants (as alſo thoſe remaining in the Seed-beds) will require no other Culture but to keep them clear from Weeds, which may be eaſily effected by houghing the Ground between the Plants now and then in dry Weather, which will deſtroy the Weeds, and by ſtirring of the Ground, will be of great Service to the Plants. The following Autumn, theſe Plants ſhould be tranſplanted where they are deſigned to remain; which ſhould be in a rich moiſt Soil, and a ſhady Situation; where they will thrive much better, than if too much expoſed to the Sun, or in a dry Soil; for they delight in Shade and Moiſture; ſo that where theſe are wanting, the Plants will require a conſtant Supply of Water in dry Weather, otherwiſe they will thrive but ſlowly. The Diſtance which theſe Plants ſhould be placed, muſt not be leſs than twenty Inches, or two Feet every Way; for where they like their Situation, they will ſpread and increaſe very much. When theſe Plants are rooted, they will require no other Culture, but to keep them clear from Weeds; and in the Spring before they ſhoot, the Ground ſhould be every Year gently dug between the Plants; in doing of which great Care ſhould be had, not to cut or bruiſe their Roots: Theſe Plants, with this Management will continue ſeveral Years, and will produce Seeds in plenty.

If you would propagate theſe Plants by Off-ſets, their Roots ſhould be parted at *Michaelmas*, and planted in a ſhady Situation, at the ſame Diſtance as has been directed for the ſeedling Plants, obſerving to water them until they have taken Root; after which Time they muſt be managed as the Seedlings.

The other two Sorts are preſerved in botanic Gardens for the ſake of Variety; but as they are not uſed in Phyſic, nor are ornamental Plants, ſo they are ſeldom allowed a Place in other Gardens. Theſe two Sorts may be propagated in the ſame Manner as the former, and are both equally hardy; ſo that they may be placed in any ſhady moiſt cold Situation, where they will thrive very well.

INARCHING, is a Method of *Grafting*, which is commonly call'd *Grafting by Approach*. This Method of *Grafting* is uſed, when the Stock you intend to graft on, and the Tree from which you would take the Graft, ſtand ſo near, (or can be brought ſo near) that they may be joined together. The Method of performing it is as follows: Take the Branch you would inarch, and having fitted it to that Part of the Stock where you intend to join it, pare away the Rind and Wood on one Side about three Inches in Length. After the ſame Manner cut the Stock or Branch in the Place where the Graft is to be united, ſo that they may join equally together, that the Sap may meet; then cut a little Tongue upwards in the Graft, and make a Notch in the Stock to admit it; ſo that when they are join'd, the Tongue will prevent their ſlipping, and the Graft will more cloſely unite with the Stock. Having thus placed them exactly together, you muſt tie them with ſome Baſs, or other ſoft Tying; then cover the Place with grafting Clay, to prevent the Air from entering to dry the Wound, or the Wet from getting in to rot the Stock: You ſhould alſo fix a Stake into the Ground to which that Part of the Stock, as alſo the Graft, ſhould be faſten'd, to prevent the Wind from breaking them aſunder, which is often the Caſe when this Precaution is not obſerved.

In this Manner they are to remain about four Months, in which Time they will be ſufficiently united, and the Graft may then be cut from the Mother-tree, obſerving to ſlope it off cloſe to the Stock: And if at this Time you cover the join'd Parts with freſh grafting Clay, it will be of great Service to the Graft.

This Operation is always perform'd in *April* or *May*, that the Graft may unite with the Stock before the ſucceeding Winter, and is commonly practis'd upon *Oranges*, *Myrtles*, *Jaſmines*, *Wall-nuts*, *Firs*, *Pines*, and ſeveral other Trees, which will not ſucceed by common Grafting or Budding. But altho' I have mentioned *Orange-trees* among the reſt, yet I would by no means adviſe this Practice where the Trees are deſigned to grow large, which, in this Method they rarely ever will do: And it is chiefly practis'd upon thoſe Trees only as a Curioſity, to have a young Plant with Fruit upon it, in a Year or two from Seed, by inarching a bearing Branch into a young Stock, whereby it is effected: Yet theſe Plants are ſeldom long-liv'd.

INDIGO. *Vide* Anil.

INGA.

This is the *American* Name of the Plant, for which we have no *Engliſh* Name at preſent.

The *Characters* are;

It hath a funnel-ſhaped Flower, conſiſting of one Leaf, whoſe Tube is furbelowed; from the Flower-cup ariſes the Pointal, fixed like a Nail in the Hinder-part of the Flower, which afterward becomes a ſoft fleſhy Pod; in which are contained many irregular Seeds incloſed in a ſweet Pulp.

We know but one *Species* of this Plant, *viz.*

INGA *flore albo fimbriato, fructu dulci. Plum. Nov. Gen.* Inga with a white furbelowed Flower, and a ſweet Fruit.

This Tree is very common on the North Side of the Iſland of *Jamaica*, at *La Vera Cruz*, and in ſeveral other Parts of the *Spaniſh Weſt-Indies*; where it riſes to the Height of ſixteen or twenty Feet, and ſends forth many crooked ſtraggling Branches, which hang downward, and are covered with a whitiſh Bark. The Flowers come out at the Ends of the Branches which are ſucceeded by the Pods, which are ſometimes eaten by the Negroes.

In *Europe* this Plant is preſerved by thoſe Perſons who are curious in exotic Plants; it is propagated by Seeds, which ſhould be ſown early in the Spring, in Pots filled with light rich Earth, and plunged into a Hot-bed of Tanners-bark, obſerving frequently to water them; and if the Nights are cold, the Glaſſes of the Hot-bed ſhould be covered as ſoon as the Sun goes off, in order to preſerve a gentle Warmth in the Bed. When the Plants are come up two Inches high, they ſhould be carefully tranſplanted into ſeparate Pots, filled with light rich Earth, and then plunged into the Hot-bed again, being careful to ſhade them from the Sun until they have taken new Root; after which Time they muſt be plentifully watered; and in hot Weather the Glaſſes of the Hot-bed ſhould be raiſed every Day, to admit freſh Air to the Plants, to prevent their being drawn up too weak. At *Michaelmas* theſe Plants muſt be removed into the Stove, and plunged into the Tan in the warmeſt Part of the Bed. During the Winter-ſeaſon theſe Plants muſt be kept very warm, and they muſt be frequently refreſhed with Water; but it muſt not be given to them in too large Quantities in cold Weather; in the Summer they muſt be plentifully watered, and in hot Weather they ſhould have a large Share of freſh Air, by opening of the Glaſſes of the Stove; but they muſt not be removed out of the Stove, for they are too tender to endure the open Air of this Country, in the warmeſt Part of the Year. When the Plants have filled the Pots with their Roots, they ſhould be tranſplanted into larger, and their Roots ſhould be then carefully trimmed: With this Management the Plants will thrive, and in a few Years produce Flowers, ſo will add to the Variety amongſt other tender exotic Plants.

INOCULATING, *or* Budding: This is commonly practiſed upon all Sorts of Stone-Fruit; in particular, ſuch as *Peaches*, *Nectarines*, *Cherries*, *Plums*, &c. as alſo upon *Oranges* and *Jaſmines*, and is preferable to any Sort of Grafting for moſt Sorts of Fruit. The Method of performing it is as follows: You muſt be provided with a ſharp Pen-knife, having a flat Haft, (the Uſe of which is to raiſe the Bark of the Stock, to admit the Bud) and ſome ſound Baſs-mat, which ſhould be ſoak'd in Water, to increaſe its Strength, and make it more pliable; then having taken off the Cuttings from the Trees you would propagate, you ſhould chuſe a ſmooth Part of the Stock about five or ſix Inches above the Surface of the Ground, if deſign'd for Dwarfs; but if for Standards, they ſhould be budded ſix Feet above-ground: Then with your Knife make an horizontal Cut croſs the Rind of the Stock, and from the Middle of that Cut make a Slit downwards about two Inches in Length, ſo that it may be in the form of a T: But you muſt be careful not to cut too deep, leſt you wound the Stock: Then having cut off the Leaf from the Bud, leaving the Foot-ſtalk remaining, you ſhould make a croſs Cut about half an Inch below the Eye, and with your Knife ſlit off the Bud, with part of the Wood to it, in form of an Eſcutcheon: This done you muſt with your Knife pull off that part of the Wood which was taken with the Bud, obſerving whether the Eye of the Bud be left to it, or not; (for all thoſe Buds which loſe their Eyes in ſtripping, ſhould be thrown away, being good for nothing): Then having gently rais'd the Bark of the Stock with the flat Haft of your Pen-knife clear to the Wood, you ſhould thruſt the Bud therein, obſerving to place it ſmooth between the Rind and the Wood of the Stock, cutting off any part of the Rind belonging to the Bud, which may be too long for the Slit made in the Stock; and ſo having exactly fitted the Bud to the Stock, you muſt tie them cloſely round with Baſs-mat, beginning at the Under-part of the Slit, and ſo proceed to the Top, taking Care that you do not bind round the Eye of the Bud, which ſhould be left open.

When your Buds have been inoculated three Weeks, or a Month, you will ſee which of them have taken; thoſe of them which appear ſhrivelled and black, being dead; but thoſe which remain freſh and plump, you may depend are join'd: And at this Time you ſhould looſen the Bandage; which, if not done in Time, will pinch the Stock, and greatly injure, if not deſtroy the Bud.

The *March* following you muſt cut off the Stock about three Inches above the Bud, ſloping it, that the Wet may paſs off, and not enter the Stock: To this Part of the Stock left above the Bud, it is very proper to faſten the Shoot which proceeds from the Bud, and would be in danger of being blown out, if not prevented; but this muſt continue on no longer than one Year; after which, it muſt be cut off cloſe above the Bud, that the Stock may be cover'd thereby.

The Time for *Inoculating*, is from the Middle of *June* until the Middle of *Auguſt*, according to the Forwardneſs of the Seaſon, and the particular Sorts of Trees; which may be eaſily known, by trying the Buds whether they will come off well from the Wood. But the moſt general Rule is, when you obſerve the Buds form'd at the Extremity of the ſame Year's Shoots, which is a Sign of their having finiſh'd their Spring Growth.

The firſt Sort commonly inoculated is the *Apricot*; and the laſt the *Orange-tree*, which ſhould never be done until the Middle of *Auguſt*. And in doing of this Work, you ſhould always make choice of Cloudy Weather; for if it be done in the Middle of the Day in very hot Weather, the Shoots will perſpire ſo faſt, as to leave the Buds deſtitute of Moiſture. Nor ſhould you take off the Cuttings from the Trees long before they are uſed: but if you are oblig'd to fetch your Cuttings from ſome Diſtance, as it often happens, you ſhould then be provided with a Tin Inſtrument, having a Socket about ten Inches long, and a Cover to the Top, which muſt have five or ſix Holes; in this Socket you ſhould put as much Water as will fill it about two or three Inches high, and place your Cuttings therein in an upright Poſition, ſo that that Part which was cut from the Tree may be ſet in the Water, and ſo faſten down the Cover to keep out the Air; and the Holes in the Cover will be ſufficient to let the Perſpiration of theſe Branches paſs off; which, if pent in, would be very hurtful to them: And you muſt be careful to carry it upright, that the Water may not reach to the Buds; for it is a very wrong Practice in thoſe who throw their Cuttings all over in Water, which ſo ſaturates the Buds with Moiſture, that they have no attractive Force left to imbibe the Sap of the Stock, whereby they very often miſcarry.

But before I leave this Head, I beg Leave too bſerve, that tho' it is the ordinary Practice to diveſt the Bud of that Part of the Wood which was taken from the Shoot with it; yet, in many Sorts of tender Trees, it is beſt to preſerve a little Wood to the Bud, without which they often miſcarry. The not obſerving this, has often occaſioned ſome People to imagine that ſome Sorts of Trees are not to be propagated by *Inoculation*; whereas, if they had perform'd it in this Method, they might have ſucceeded, as I have ſeveral Times experienced.

INTYBUS. *Vide* Endivia.

JONQUIL. *Vide* Narciſſus.

JONTHLASPI, Treacle Muſtard.

The *Characters* are;

It hath a Flower conſiſting of four Leaves, which are placed in Form of a Croſs; out of whoſe Flower-cup riſes the Pointal, which afterward becomes a Fruit, which is flat, round, and ſhaped like a Buckler, having but one Cell, in which is contained a flat round Seed.

The *Species* are;

1. JONTHLASPI *luteo flore, incanum montanum diſcoides. Col.* Hoary Mountain Treacle Muſtard, with a yellow Flower.
2. JONTHLASPI *minimum ſpicatum lunatum. Col.* The ſmalleſt ſpiked Treacle Muſtard.
3. JONTHLASPI *orientale, fructu echinato. Tourn. Cor.* Eaſtern Treacle Muſtard, with a prickly Fruit.

The firſt Sort is found in Plenty upon the Mountains near the *Tiber*; the ſecond Sort grows wild about *Montpelier*, as alſo in the Fields near *Niſmes*, and other Places in the South of *France*; likewiſe in *Spain* and *Italy*: But the third Sort was diſcovered by Dr. *Tournefort* in the *Levant*, from whence he ſent the Seeds to the *Royal Garden* at *Paris*.

All theſe Plants are annual, ſo muſt be ſown every Spring, on a Bed or Border of freſh light Earth; and when the Plants are come up, they ſhould be carefully weeded or houghed, and where they are too cloſe, they ſhould be thinned, leaving them about four or five Inches apart; after this they will require no other Care but to keep them clear from Weeds. In *June* they will flower, and their Seeds will ripen in *Auguſt*, which, if permitted to ſcatter, will come up, and ſtand thro' the Winter; and theſe autumnal Plants will flower early the following Spring. All theſe Sorts ſhould be ſown in the Places where they are deſigned to remain; for they do not ſucceed, if they are tranſplanted. They are all very ſmall Plants, ſeldom riſing above four or five Inches high, ſo do not make any Figure in a Garden; for which Reaſon they are ſeldom propagated, but in botanick Gardens for the ſake of Variety.

IRIS, [Ἶρις, *a Rainbow*] Fleur-de-Lys.

The *Characters* are;

It hath an oblong, fleſhy, creeping Root: The Flower conſiſts of ſix Leaves, three of which are bifid, and ſtand erect; the other three are reflexed: Upon the Under-part of the arched Leaves is placed a Congeries of Hairs reſembling a Beard. From the very Bottom ariſe the Male Stamina, carefully defended by a hollow Caſe of Petals. The Flower grows to the Apex of the Ovary, which ſends forth theſe Beards and Caſe-like Tubes; and hence it appears like a nine-leav'd Flower.

The *Species* are;

1. IRIS *purpurea, ſive vulgaris. Park. Par.* Common purple *Fleur-de-Lys.*
2. IRIS *hortenſis pallide cærulea. C. B.* Pale-blue Garden *Fleur-de-Lys.*
3. IRIS *hortenſis alba Germanica. C. B.* White Garden *German Fleur-de-Lys.*
4. IRIS *alba Florentina. C. B.* White *Florentine Fleur-de-Lys.*
5. IRIS *Dalmatica major. C. B.* Greater *Fleur-de-Lys* of *Dalmatia.*
6. IRIS *Suſiana, flore maximo ex albo nigricante. C. B.* The *Chalcedonian Iris*, with a large black and white Flower.
7. IRIS *latifolia Pannonica, colore multiplici. C. B.* Broad-leaf'd *Hungarian Fleur-de-Lys*, with a many-colour'd Flower.
8. IRIS *Illyrica, flore majore. Tourn. Fleur-de-Lys* of *Illyricum*, with a large Flower.
9. IRIS *ſativa lutea. C. B. P.* Yellow Garden *Fleur-de-Lys.*
10. IRIS *lutea variegata. Cluſ.* Yellow variegated *Fleur-de-Lys.*
11. IRIS *latifolia, candida, purpureis venis diſtincta. C. B.* Broad-leaf'd *Fleur-de-Lys*, with a white Flower ſtriped with purple.
12. IRIS *humilis minor, flore purpureo. Tourn.* Dwarf purple *Fleur-de-Lys.*
13. IRIS *anguſtifolia maritima major. C. B.* Greater narrow-leaf'd Sea *Fleur-de-Lys.*
14. IRIS *anguſtifolia maritima minor. C. B.* Leſſer narrow-leaf'd Sea *Fleur-de-Lys.*
15. IRIS *anguſtifolia minor Pannonica, ſive verſicolor. Cluſ.* Small variable narrow-leaf'd *Fleur-de-Lys* of *Hungary.*
16. IRIS *humilis minor anguſtifolia, flore variegato.* Dwarf narrow-leaf'd *Fleur-de-Lys*, with a variegated Flower.
17. IRIS *ſylveſtris, quam Xyrim vocant. Plin. Raii Syn.* Stinking Gladdon, *or* Gladwyn.
18. IRIS *hortenſis latifolia. C. B. P.* Broad-leav'd Garden *Fleur-de-Lys.*
19. IRIS *latifolia minor alba, oris cæruleis. Suvert.* Small broad-leav'd *Fleur-de-Lys*, with white Flowers, having blue Borders.
20. IRIS *latifolia minor alba, oris dilute purpureis. H. R. Par.* Leſſer broad-leav'd *Fleur-de-Lys*, with white Flowers with pale purple Borders.
21. IRIS *Aſiatica cærulea polyanthos. C. B. P.* Many-flower'd blue *Aſiatic Fleur-de-Lys.*
22. IRIS *Aſiatica purpurea. C. B. P.* Purple *Aſiatic Fleur-de-Lys.*
23. IRIS *peregrina ſubrubens inodora. C. B. P.* Reddiſh foreign *Fleur-de-Lys*, without ſmell.
24. IRIS *peregrina, odore oxyacanthæ. C. B. P.* Foreign *Fleur-de-Lys*, ſmelling like Haw-thorn.
25. IRIS *Byzantina purpuro-cærulea. C. B. P.* Purple blue *Fleur-de-Lys* of *Conſtantinople.*
26. IRIS *Damaſcena polyanthos. C. B. P.* Many-flower'd *Fleur-de-Lys* of *Damaſcus.*
27. IRIS *latifolia Germanica, odore ſuavi. C. B. P.* Broad-leav'd *German Fleur-de-Lys*, with a ſweet Smell.
28. IRIS *latifolia Germanica, odore ſambuci. C. B. P.* Broad-leav'd *German Fleur-de-Lys*, ſmelling like Elder.
29. IRIS *latifolia Germanica ochroleucos. C. B. P.* Broad-leav'd *German Fleur-de-Lys*, with a yellowiſh white Flower.
30. IRIS *latifolia Germanica candido-purpurea. C. B. P.* Broad-leav'd whitiſh purple *German Fleur-de-Lys.*
31. IRIS *latifolia alba viridis. C. B. P.* White and green broad-leav'd *Fleur-de Lys.*
32. IRIS *latifolia candida, caule aphyllo. C. B. P.* Broad-leav'd white *Fleur-de-Lys*, with a naked Stalk.
33. IRIS *latifolia Belgica, odore ſambuci. C. B. P.* Broad-leav'd *Dutch Fleur-de-Lys*, ſmelling like Elder.
34. IRIS *latifolia Belgica verſicolor, odore ſambuci. C. B. P.* Broad-leav'd *Dutch Fleur-de-Lys*, with a changeable Flower, ſmelling like Elder.
35. IRIS *latifolia Belgica variegata. C. B. P.* Broad-leav'd variegated *Dutch Fleur-de-Lys.*
36. IRIS *Belgica cærulea-verſicolor. C. B. P.* Blue variegated *Dutch Fleur-de-Lys.*
37. IRIS *latifolia humilior purpurea. C. B. P.* Broad-leav'd dwarf purple *Fleur-de-Lys.*
38. IRIS *latifolia humilior verſicolor. C. B. P.* Broad-leav'd dwarf variegated *Fleur-de-Lys.*
39. IRIS *Dalmatica minor. Cluſ. Hiſp.* Small *Fleur-de-Lys* of *Dalmatia.*
40. IRIS *paluſtris lutea. Tabern. Icon.* Yellow marſh *Fleur-de-Lys.*
41. IRIS *paluſtris pallida. Raii Syn.* Pale Water *Fleur-de-Lys.*
42. IRIS *pratenſis anguſtifolia humilior. C. B. P.* Lower narrow-leav'd meadow *Fleur-de-Lys.*
43. IRIS *anguſtifolia candida, lineis rubentibus notata. C. B. P.* White narrow-leav'd *Fleur-de-Lys*, ſtrip'd with reddiſh Lines.
44. IRIS *anguſtifolia, prunum rodolens, minor. C. B. P.* Smaller narrow-leav'd *Fleur-de-Lys*, ſmelling like Plums.
45. IRIS *humilis candicans, venis & orâ cæruleis. Tourn.* Low whitiſh *Fleur-de-Lys*, with blue Veins and Borders.
46. IRIS *humilis Pyrenaica, foliis repandis è luteo vireſcentibus. Tourn.* Low *Pyrenean Fleur-de-Lys*, whoſe bending Leaves are of a greeniſh yellow Colour.
47. IRIS *humilis, foliis repandis vireſcentibus, cum lineis cæ-*

ruleis. Tourn. Low *Fleur-de-Lys*, whoſe bending Leaves are greeniſh, with blue Lines.

48. Iris *humilis flore rubello. Tourn.* Dwarf *Fleur-de-Lys* with a reddiſh Flower.

49. Iris *humilis minor, flore variè picto. Tourn.* Leſſer dwarf *Fleur-de-Lys*, with a variegated Flower.

50. Iris *humilis, flore pallido & albo. Tourn.* Dwarf *Fleur-de-Lys*, with a pale and white Flower.

51. Iris *humilis, flore luteo. Tourn.* Dwarf yellow *Fleur-de-Lys.*

52. Iris *humilis, flore pallidè luteo. Tourn.* Dwarf *Fleur-de-Lys*, with a pale yellow Flower.

53. Iris *humilis candicans, venis variis diſtincta. Tourn.* Dwarf white *Fleur-de-Lys*, ſtriped with various Veins.

54. Iris *humilis ſaxatilis Gallica. Tourn.* Dwarf rock *Fleur-de-lys* of *France.*

55. Iris *humilis latifolia ſaxatilis Luſitanica. Tourn.* Dwarf broad-leav'd rock *Fleur-de-Lys* of *Portugal.*

56. Iris *humilis latifolia major acaulis. Tourn.* Greater broad-leav'd dwarf *Fleur-de-Lys*, without a Stalk.

57. Iris *humilis orientalis, flore dilutè ianthino & veluti leucophæo. Tourn. Cor.* Dwarf Eaſtern *Fleur-de-Lys*, with a pale violet-colour'd, or, as it were, pale whitiſh Flowers.

58. Iris *Americana verſicolor, ſtylo non crenato. Hort. Elth.* Party-colour'd *American Fleur-de-Lys*, whoſe Style is not crenated.

59. Iris *Americana verſicolor, ſtylo crenato. Hort. Elth.* Party-colour'd *American Fleur-de-Lys*, with an indented Style.

60. Iris *Virginiana pumila, ſive Chamæiris verna anguſtifolia, flore purpuro-cœruleo odorato. Baniſt.* Dwarf narrow-leav'd Spring *Fleur-de-Lys* of *Virginia*, with a purple-blue ſweet-ſmelling Flower.

61. Iris *Virginiana pumila, ſive chamæiris verna odoratiſſima latifolia cœrulea repens. Baniſt.* The moſt ſweet-ſcented, dwarf Spring *Fleur-de-Lys* of *Virginia*, with broad Leaves, and a blue Flower.

The firſt ſeventeen Sorts are eaſily propagated by parting their tuberoſe Roots, which commonly increaſe very faſt. The beſt Seaſon for this Work is in *Auguſt*, when their Flower-ſtems are decay'd, and their Leaves begin to change their Colour. But you ſhould obſerve to do it when the Weather is moiſt, otherwiſe the Roots will grow mouldy, and decay: So that if *Auguſt* ſhould prove dry, you may defer doing it 'till *September*; tho' the ſooner it be done, the better, that the Roots may be fixed before the Froſt comes on, which is apt to looſen the Ground, and prevent their taking Root. Theſe Plants ſhould have a ſhady Situation, and a moderately light Soil; but ſhould not be over-dung'd, which is often deſtructive to their Roots: And when they are too much expoſed to the Sun, their Flowers ſoon fall away.

The greateſt Part of theſe Plants grow too large for ſmall Flower-Gardens; and their Leaves generally harbour great Quantities of Snails, and other Vermin, which come forth in the Night, and deſtroy whatever curious Plants grow near them: For which Reaſons they are generally baniſh'd from very curious Gardens, and are proper only for large Gardens, or to plant in Wilderneſs Quarters, where, if the Trees are not too cloſe, they will thrive and flower extremely well, eſecially if the Ground about them be annually dug: And the Flowers being proper Ornaments in Baſons, for Halls, Chimnies, &c. in the Summer Seaſon, they may be allow'd a Place in ſome remote Part of the Garden, where few other Things will thrive.

Theſe Roots ſhould be taken up every other Year, and parted, otherwiſe they will ſpread greatly over the Ground, and become very troubleſome, in harbouring great Quantities of Vermin: or if they are planted in Wilderneſs Quarters, they ſhould be cut round at the leaſt every Year with the Spade, to take off the outſide Roots, and keep them within Compaſs.

The firſt, fourth, and ſeventh Sorts are uſed in Medicine; for which Purpoſe they may be eaſily propagated in the Manner above directed; obſerving to plant the fourth Sort in a warmer Soil than the others; and the ſeventeenth into a moiſt ſhady Situation, where it will thrive exceedingly.

The ſixth, fifteenth, and ſixteenth Sorts are not ſo ſubject to ſpread as the others, and, for their Beauty, may be admitted into every curious Garden: Theſe ſhould be planted under a Wall or Pale where they may have the Morning Sun; but muſt not be expoſed to the great Heat of the Mid-day Sun, which would ſoon deſtroy them: They delight moſt in a freſh, light, loamy, undung'd Soil, and to be pretty moiſt.

Theſe may alſo be propagated by Seeds, which the Plants generally produce in great Plenty; which ſhould be ſaved from ſuch as have variegated Flowers, thoſe being moſt likely to produce the greateſt Variety.

The Seeds ſhould be ſown either in Caſes of Earth, or upon an Eaſt Border, ſoon after they are ripe, which will come up the ſucceeding Spring: But if the Seeds are kept 'till that Time before they are ſown, they will not come up until the ſecond Year, and ſometimes will not grow. The young Plants ſhould be conſtantly kept clean from Weeds, and in dry Weather ſhould be water'd, which will greatly promote their Growth; and the *Michaelmas* following they ſhould be tranſplanted into an Eaſt Border, at about eight or ten Inches Diſtance, where they may continue until they flower, which, in the ſmall Sorts, will be the ſucceeding Spring; but the large Sorts will not flower 'till the third Year from ſowing, when you may mark all ſuch as produce valuable Flowers, which at *Michaelmas* may be tranſplanted into the Garden: But thoſe which are of little Beauty may be pull'd up in flower, and thrown away, to give the better Sorts more Room.

The Sorts from the eighteenth to the thirty-ſixth have been introduced into ſome curious Gardens, from *Germany*, *Spain*, and the *Levant*, which are the Countries of their natural Growth. Theſe are all of them hardy Plants, which will thrive in the open Air in this Climate, and require very little Care to cultivate them; and as they afford a great Variety, and continue long in Flower, (eſpecially in a ſhady Poſition) ſo they merit a Place in every large Garden. Theſe Sorts uſually grow from two to four Feet high in a good Soil; ſo ſhould be placed amongſt hardy Flowers of the ſame Growth.

The thirty-ſeventh, thirty-eighth, and thirty-ninth Sorts, are of lower Growth than either of the former; theſe ſeldom riſe above a Foot high, but have Leaves as broad as thoſe before-mentioned, but they do not ſpread ſo faſt by their Roots, ſo do not require ſo much Room. Theſe Sorts flower earlier in the Spring, than the tall growing Kinds; therefore, if ſome of theſe Roots are planted in a warm Poſition, their Flowers will appear in *March*; and thoſe which have an Eaſt Expoſure, will ſucceed theſe; ſo that ſome of them may be continued near two Months in Beauty.

The fortieth and forty-firſt Sorts grow wild in marſhy Places in ſeveral Parts of *England*; but the forty-firſt is much leſs common than the fortieth, which is found in ſtanding Waters and Ditches almoſt every-where. The Roots of this Sort are uſed in Medicine, under the Title of *Acorus adulterinus*, or *falſe Acorus.* Theſe two Sorts being very common, are ſeldom allowed a Place in Gardens; but where there happens a Bog, or any low moiſt Place in a Garden, ſome of theſe Plants may be planted there to make a Variety.

The forty-ſecond Sort grows wild in moiſt Meadows in *France* and *Germany*; but is not a Native of this Country. This Sort hath narrow Leaves, and is a much leſs Plant than either of the former; ſo may be allowed a Place in ſhady moiſt Borders for the ſake of Variety, being a very hardy Plant, and requiring very little Care to cultivate it.

The forty-third, forty-fourth, forty-fifth, forty-ſixth, forty-ſeventh, forty-eighth, forty-ninth, fiftieth, fifty-firſt, fifty-ſecond, fifty-third, fifty-fourth, fifty-fifth, fifty-ſixth, and fifty-ſeventh Sorts, are alſo of humble Growth, ſeldom riſing above eighteen Inches high; theſe have alſo narrow Leaves, and do not ſpread ſo much as thoſe Sorts before-mentioned; ſo may be allowed Places in ſmaller Gardens, becauſe there is a great Variety in their Flowers. They ſhould be planted in an Eaſt Border, where the Soil is rather moiſt than dry; in which Poſition they will thrive, and produce a great Number of Flowers. The Places of their natural Growth are mentioned to their different Names; from whence their Seeds or Roots may be procured.

The fifty-eighth, fifty-ninth, ſixtieth, and ſixty-firſt Sorts, are Natives of *America*, from whence their Seeds and Roots have been ſent into *England*: The fifty-eighth and fifty-ninth Sorts were ſent from *Maryland*, where their Roots are uſed in Venereal Caſes. Theſe flower late in the Summer, after all the other Sorts are paſs'd, ſo ſhould be admitted into every curious Garden; for they are as hardy, and require as little Care to cultivate them, as any of the before-mentioned Kinds.

All theſe Sorts of Flower-de-luce may be propagated by parting of their Roots; the beſt Seaſon for performing this is at *Michaelmas*, that they may be well rooted before the Froſt begins; for if it be delayed till Spring, the Plants will require to be frequently watered, if the Seaſon ſhould prove dry; and they will not flower near ſo ſtrong, as thoſe which were well rooted before Winter. The dwarf and narrow-leav'd Kinds may be removed and parted every ſecond or third Year; becauſe as theſe do not ſpread ſo faſt as the larger Kinds, ſo they may be eaſily kept within Compaſs, without being tranſplanted often. But all the larger Sorts ſhould be either removed and parted every Year, or dug about and reduced; otherwiſe they will ſpread ſo much as to injure ſuch Plants as grow near them: Indeed, in ſuch Places where they are planted under Trees in large Wood-work, where they are allowed Room enough, they may be permitted to grow many Years unremoved.

Theſe large growing Sorts will thrive very well under Trees in Wilderneſs Quarters (provided the Shade be not too great); in which Places they will continue a long Time in Flower, and make a pretty Variety.

All the Sorts of Flower-de-luce may be propagated by Seeds, as before-mention'd.

IRIS BULBOSA. } *Vide* Xiphium.
IRIS PERSICA. }

ISATIS; Woad.

The *Characters* are;

The Flower conſiſts of four Leaves, which are diſpoſed in form of a Croſs; out of whoſe Flower-cup riſes the Pointal, which afterwards turns to a Fruit in the Shape of a Tongue, flat at the Edge, gaping two Ways, having but one Cell, in which is contain'd, for the moſt part, one oblong Seed.

The *Species* are;

1. Isatis *ſativa, ſive latifolia. C. B.* Broad-leaf'd manured Woad.
2. Isatis *ſylveſtris, vel anguſtifolia. C. B.* Narrow-leaf'd wild Woad.
3. Isatis *Dalmatica major. Bobart.* Greater *Dalmatian* Woad.

There are ſeveral other Varieties of this Plant, which are preſerv'd in ſome curious botanick Gardens: But as they are Plants of little Uſe or Beauty, ſo I ſhall omit mentioning them here.

The firſt Sort is that which is cultivated, in *England*, for the Uſe of *Dyers*, who uſe it for laying the Foundation of many Colours, eſpecially all Sad-colours.

It is a very rich Commodity, and well worth the propagating, which is done by Seed.

The Soil that it requires, is one that is dry and warm: It will not be amiſs if it be a little gravelly or ſandy; and it ſhould have reſted long, to be in good Heart: And the richeſt Garden Ground near great Towns is the beſt, tho' it will do well in many other Places.

Woad is commonly ſown upon a Lay, which they plough into high Ridges, except the Land be very dry, and they harrow the Turf 'till they break it to Pieces, and pick out all the Graſs, Weeds, and Lumps of Earth, and fling them into the Furrows to rot.

The Land for this Seed ought to be finely plough'd and harrow'd, and all the Clods and Turfs broke, and the Stones pick'd up and carry'd off.

The beſt Time for ſowing it, is the latter End of *July*, ſoon after the Seed is ripe, which will come up in *Auguſt*, and muſt be hough'd out, as is practis'd to *Turnips*, leaving the Plants ten or twelve Inches aſunder; by which means they will grow ſtrong, and produce much larger Leaves: And beſides, that ſown at this Seaſon doth ſeldom miſcarry; whereas, that which is ſown in the Spring will be very liable thereto; and if it doth not, the Plant will not have half the Strength the firſt Summer.

It ought to be kept conſtantly weeded; but if it come up good, it will need the leſs weeding: The ordinary Price of Weeding is Eight Shillings *per* Acre.

Some recommend the ſowing of it about the Beginning of *February*; for which they give this Reaſon, That whereas it is apt to be ſpoil'd by the Fly and Grub, it eſcapes the better being early ſown; and if they do kill any of it, they have the better Opportunity of ſowing more.

They do this by making Holes with a Stick about ſeven or eight Inches aſunder, and put five or ſix Seeds into each Hole.

They ſeldom or never ſow it more than two Years upon the ſame Piece of Land; becauſe if it be long continued, it robs the Soil: But if it be moderately uſed, it prepares Land for Corn; and where the Soil is rank, it abates the too great Fertility of it.

It is ripe when the Leaf is come to its full Growth, and retains its perfect Colour, and lively Greenneſs, which is ſometimes ſooner, and ſometimes later, as the Year proves dry or moiſt.

As ſoon as it is fit to cut, it ſhould be done with all the Speed that poſſibly may be, that it may not fade, or grow pale; and when it is cut, it ought to be immediately carry'd to the Mill. The Manner of doing which, and the Way of ordering it, is beſt learn'd from experienced Workmen, and is not to be truſted to a verbal Deſcription of it.

In ploughing it up, and ſowing it again, they pick up all the old Roots as they harrow it, except what they deſign for Seed, which they let ſtand to the next Year: It many Times produces fifty Quarters upon an Acre.

They always keep a good Quantity of Seed by them, to plant the Ground that fails: The Seed of two Years old will ſometimes grow as well as at the firſt. And if they ſow or plant it late, if the Ground be dry and hard, they ſteep it in Water the Day before they ſow it, which cauſes it to come up the ſooner.

Good *Woad* may yield five or ſix Crops in a plentiful Year; tho' it ordinarily yields but four, ſometimes but three, eſpecially if it be let ſtand to grow for Seed: But what grows in Winter they do not uſe, tho' it is very good for Sheep. The two firſt Crops are the beſt, which are uſually mixed in the ſeaſoning. The latter Crops are much the worſe, which, if mixed with either of the former Crops, ſpoil the whole.

It many Times ſells from ſix Pounds to thirty Pounds a Ton, an Acre commonly yielding about a Ton.

ISORA, The Screw-tree.

The *Characters* are;

It hath a ſpreading anomalous Flower, conſiſting of one or many Leaves, divided into ſeveral Parts, and appearing like two Lips: from the Bottom of the Flower ariſes the Pointal, whoſe Apex afterward becomes a twiſted Fruit, conſiſting of many Cells, which are intorted like a Screw; in which are contained ſeveral almoſt kidney-ſhaped Seeds.

The *Species* are;

1. Isora *althææ foliis, fructu breviori & craſſiori. Plum. Nov. Gen.* The Screw-tree with marſh-mallow Leaves, and a ſhorter and thicker Fruit.
2. Isora *althææ foliis, fructu longiori & anguſtiori. Plum. Nov. Gen.* The Screw-tree with marſh-mallow Leaves, and a longer and ſlenderer Fruit.
3. Isora *althææ folio ampliſſimo, fructu craſſiſſimo & villoſo. Houſt.* The Screw-tree with very large marſh-mallow Leaves, and a very thick hairy Fruit.

Theſe Plants are Natives of the *Eaſt* and *Weſt-Indies*, where they grow to the Height of ten or twelve Feet, and become ſhrubby. The firſt of theſe Sorts I received from the *Bahama Iſlands*, where it grows in great Plenty; as alſo in ſeveral other Places in the warm Parts of *America*. The ſecond Sort was found by Mr. *Robert Millar*, Surgeon, at *Carthagena* in the *Spaniſh Weſt-Indies*, from whence he ſent the Seeds to *England*; from which there have been ſeveral Plants raiſed. The third Sort was diſcovered by Dr. *William Houſtoun* in *Jamaica*; who ſent the Seeds and dried Samples of this Kind to *England*.

All theſe Plants are propagated by Seeds, which ſhould be ſown in Pots, filled with light rich Earth, and then plunged into a moderate Hot-bed of Tanners-bark, being careful to water the Earth as often as it appears dry; and if the Nights prove cold, the Glaſſes of the Hot-bed ſhould be covered with Mats, to preſerve a gentle Warmth in the Bed; but in the Heat of the Day, the Glaſſes ſhould be raiſed to let the Steam of the Bed paſs off, as alſo to admit freſh Air. When the Plants begin to appear, they ſhould be gently refreſhed with Water three or four times a Week, and the Weeds muſt be carefully pulled up out of the Pots; otherwiſe they will ſoon ſpread over the young Plants, and deſtroy them. The Glaſſes of the Hot-bed muſt alſo be tilted every Day when the Weather is warm, to admit freſh Air to the Plants, to prevent their being drawn up too weak; and when they are grown about three Inches high, they ſhould be carefully tranſplanted, each into a ſeparate ſmall Pot, filled with light rich Earth, and then plunged into the Hot-bed again, obſerving to ſhade them until they have taken new Root; after which time the Glaſſes of the Hot-bed ſhould be raiſed every Day, in proportion to the Warmth of the Seaſon, to admit freſh Air to the Plants; and they muſt be frequently watered in hot Weather, for they are thirſty Plants. During the Summer Seaſon theſe Plants may remain in the Hot-bed (provided they are not ſo high as to touch the Glaſſes); but at *Michaelmas* they ſhould be removed into the Stove, and plunged into the Bark-bed. During the Winter they ſhould be kept very warm, and they muſt be often watered; and if their Leaves contract Filth, they ſhould be waſhed with a Sponge; otherwiſe Inſects will attack them, which will weaken and deſtroy the Plants.

Theſe Plants are too tender to thrive in the open Air in this Climate, if they are expoſed thereto, even in the warmeſt

Seaſon; ſo that they ſhould conſtantly remain in the Stove, obſerving in very hot Weather to open the Glaſſes of the Stove, to admit freſh Air to the Plants, and to give them plenty of Water; as alſo to ſhift them into larger Pots, as they increaſe in Magnitude. With this Management the Plants will thrive very well, and in two Years, from Seed, will produce their Flowers and Fruits.

The Name *Iſora*, which Father *Plumier* has given to this *Genus*, is the *Indian* Name for the Plant; but by the *Engliſh* Inhabitants of *America*, it is called *Screw-tree*, from the Form of the Fruit, which is twiſted like a Screw.

JUDAICA ARBOR. *Vide* Siliquaſtrum.

JUJUBE. *Vide* Ziziphus.

JULIANS, or ROCKETS. *Vide* Heſperis.

JULY FLOWER. *Vide* Caryophyllus.

JULY.

Work to be done in the KITCHEN GARDEN

The Beginning of this Month ſow the laſt Crop of Kidney Beans, where they may be defended from Morning Froſts in Autumn; for this Crop will continue bearing 'till *Michaelmas*, provided they are not injured by Froſt. If the Ground is very dry when theſe are planted, it will be proper to ſoak the Beans ſix or eight Hours in Water before they are planted, which will greatly facilitate their Growth.

Clean the Ground where your Summer Cauliflowers grew, from their Leaves, and any other Rubbiſh which may be there; and if you have Cucumbers for Picklers, between the wide Rows (as is the common Practice of the *London* Gardeners) you muſt draw up the Earth round the Holes with a Hough, forming it in a Hollow like a Baſon, to contain the Water given them; and if there are Cabbages for Winter Uſe in the narrow Rows (which is alſo practiſed) they ſhould have Earth drawn to their Stems, and the whole Ground intirely clear'd from Weeds.

About the Middle of this Month you ſhould ſow Spinach for Winter Uſe, as alſo Coleworts, Carrots, and Onions to ſtand the Winter for Spring Uſe; and Turneps ſhould now be ſown in the open Field for Winter Uſe. Tranſplant Savoys, Broccoli, and Cabbages for Spring Uſe, and plant out Cauliflowers for the Autumn Crop.

Plant Celery into Drills for blanching, (if it be of the *Italian* Sort; but if it be the Turnep rooted Sort, it is better to plant it on level Ground) and plant out Endive for blanching. Continue ſowing all Sorts of ſmall Sallad-herbs, which at this Seaſon do ſoon grow too large for Uſe.

In dry Weather obſerve to water all ſuch Plants as have been lately tranſplanted, and be ſure always to do this in an Evening; for one Watering at that Time is of more Service than three at any other Time of the Day, the Moiſture having Time to penetrate the Ground (and reach to the extreme Fibres of the Root, by which they receive their Nouriſhment) before the Sun appears to exhale it; whereas when it is given in a Morning, the Sun coming on ſoon after, the Moiſture is drawn up before it reaches the Root.

You muſt now diligently deſtroy the Weeds in every Part of the Garden, which, if ſuffered to remain, will ſoon perfect their Seeds; and when theſe are permitted to ſcatter upon the Ground, they will fill it with Seeds for a ſeven Years Crop, to the no ſmall Trouble of the Gardener, as alſo to the great Injury of the Crops. Obſerve alſo to clear your Dunghils from Weeds, for theſe are too often neglected; and if the Weeds are permitted to feed there, they will be brought into the Garden, and be as troubleſome as if they had ſcattered in the Garden; which is what few People regard, tho' it is a Thing of great Moment, as is alſo the keeping the Borders round the Outſide of the Garden free from Weeds, eſpecially thoſe which have downy Seeds; for theſe will be wafted by the Winds into the Garden, and produce a plentiful Crop.

Gather Seeds of all Sorts that are ripe, cutting off their Stalks, and ſpread them upon Mats or Cloths in a dry airy Place that they may harden, and then rub or beat them out of their Huſks or Pods, and put them up in a Place where Vermin can't come to them to deſtroy them.

Pull up Onions, Garlick, Rocamboles, Shallots, *&c.* when their Leaves begin to wither, and ſpread them thin in a dry airy Place, that they may be perfectly dry before they are laid up for Winter Uſe.

Continue to earth up Celery which was planted in the Drills the former Month, as it advances in Height: but be careful not to draw the Earth up into the Heart or Middle of the Plants; for that will ſtop their Growth, and rot them: And tie up the Endive, which is full grown, to blanch it, obſerving always to do this Work in dry Weather; for if the Leaves are moiſt when they are ty'd, they will rot.

Pull up the Stalks of Beans, Cabbages, *&c.* and the Haulm of Peaſe, and other leguminous Plants which have done bearing, that the Ground may be clear; for if theſe are permitted to remain, they will harbour Vermin, to the Prejudice of your other adjoining Crops.

Your Melons which now begin to ripen, ſhould have very little Water given them, becauſe it would render them watery and ill-taſted; tho' ſuch Perſons who are fond of very large Fruit, do find their Account in ſupplying their Plants conſtantly with Water in great Plenty, eſpecially in hot Weather: but theſe Perſons do not regard the Quality of their Fruit, ſo much as the Size of them.

In this Month you may repair your young Aſparagus-beds which were planted the laſt Spring, by planting freſh Plants where any of them have failed: but this ſhould be done in moiſt Weather.

The Cucumbers which were brought up under Hand-glaſſes, being now in full Bearing, muſt be duly watered in dry Weather, otherwiſe they will be exhauſted in a ſhort Time, and decay.

Clear the Artichokes which were planted the laſt Spring from Weeds, and all other Crops, that they may have full Liberty to ſpread; for if they are crouded with any other Plants at this Seaſon, they will produce ſmall Fruit: And thoſe Artichokes which are now cut for Uſe, ſhould have their Stems broken down cloſe to the Root, that the Stocks may not be injured thereby.

Products of the KITCHEN GARDEN.

Cauliflowers, Artichokes, Cabbages, Carrots, Beans, Peaſe, Kidney-beans, Turneps, Lettuce, Cucumbers, Melons, and all Sorts of ſmall Sallad, as Radiſh, Rape, Muſtard, Creſſes, Purſlain, and in ſome Places Celery and Endive, Finnochia, Onions, Garlick, Rocambole, and moſt Sorts of Herbs for diſtilling.

Work to be done in the FRUIT GARDEN *and* VINEYARD.

The Beginning of this Month you muſt look carefully over your Wall and Eſpalier-trees, rubbing off all foreright Shoots that are produced, and train in all ſuch regular Shoots as are deſign'd to remain cloſe to the Wall or Eſpalier in their due Poſition, whereby the Fruit will have the Advantage of Sun and Air to ripen them, and give them their proper Flavour. If this be rightly executed, there will be no occaſion to diveſt the Branches of their Leaves, (as is by ſome unſkilful Perſons practiſed, to the great Prejudice both of their Fruit and Trees): Nor can I here forbear repeating what I have elſewhere often taken notice of, *viz.* not to ſuffer Fruit-trees to remain neglected till this Seaſon, (as is too commonly practiſed) and then to Summer-prune them, as it is called, when they cut off all the luxuriant Branches, and ſhorten thoſe deſigned to remain, and then nail them cloſe to the Wall; ſo that from being (before this Dreſſing) in a very rude diſorderly Way, they are reduced into an exact Order at once: but hereby the Fruit, which was greatly ſhaded by the luxuriant Growth of the Branches, is ſuddenly expoſed to the Sun and Air, which hardens their outward Skins, and retards their Growth; whereas if the Shoots had been conſtantly train'd to the Wall or Eſpalier, the Fruit would have continually been under an equal Coverture of Leaves, and ſo conſequently leſs liable to ſuffer from any Extremes; and will alſo be conſiderably earlier, than when they are managed in the other way: ſo that as this Practice is too generally follow'd, I think it cannot be too much expoſed, and the proper Directions cannot be too often inculcated.

In the Beginning of this Month you muſt bud all Sorts of Fruits, which were not done the preceding Month, obſerving always to do it in an Evening, or in cloudy Weather.

Hough and clean your Nurſeries of young Trees from Weeds, as alſo the Borders near your Fruit-trees; for if they are permitted to grow at this Seaſon, they will rob the Trees of their Nouriſhment: and cut off all Suckers which ariſe from the Roots of the Trees, as they are produced; for theſe injure them much, if they are ſuffer'd to remain.

Look carefully after Snails in the Morning and Evenings, but eſpecially after a Shower of Rain, when they will be tempted to come abroad, and may be at that Time eaſily taken; for theſe Vermin do great Miſchief to Stone-fruit.

Place Glaſs Phials fill'd with Honey-water in different Parts of your Walls, to deſtroy the Waſps and Piſmires, which would infeſt your choice Fruit, but are, by the Sweetneſs of the Water tempted into the Phials, and frequently drowned.

The Vineyard muſt now be carefully look'd over, and all dangling Shoots and wild Wood muſt be diſplaced, that the Fruit may not be too much covered with Leaves; but by no means diveſt any of the Fruit-branches of their Leaves, (as ſome unſkilful Perſons too often practiſe) for theſe are abſolutely neceſſary to the Growth of the Fruit: Nor will there be any Occaſion for this Practice where the Shoots are duly placed, and the wild Wood conſtantly rubb'd off as it is produced. Where this Method is begun early in the Seaſon, and conſtantly purſu'd as there may be Occaſion, the Fruit will be forwarded above three Weeks, (as I have experienced) and will be much fairer, and better-taſted, than in the contrary Management; for when the Shoots of the Vines are permitted to hang looſe from the Walls or Stakes, their Leaves will take a contrary Direction; which, upon having their Shoots afterwards ty'd up, will have their Back-ſide upwards; and until their Leaves are turn'd into their proper Poſition, the Fruit will be at a Stand, and make no Progreſs in their Growth, which is commonly eight or ten Days in effecting; ſo that the Fruit loſes eight or ten Days in the principal Seaſon of its Growth, which, together with being too much ſhaded in the former Month, is ſcarcely ever to be retrieved in this Climate.

You muſt alſo keep the Ground conſtantly clear'd from Weeds and other Plants between the Rows of Vines, which is alſo of great Conſequence in this Country; for where there are other Plants ſuffered to grow, they not only rob the Roots of the Vines of their Nouriſhment, but alſo, by perſpiring, do cauſe a Damp in the Air about the Vines, and prevent the Sun and Wind from drying the Surface of the Ground, whereby the Fruit is fill'd with crude Nouriſhment, and render'd leſs delicate.

Fruits in prime, or yet laſting.

Pears; The Primitive, Robine, Petit Muſcat, Muſcadelle-rouges, Cuiſſe Madame, Petit Banquette, Jargonelle, Green Chiſſel, Orange Muſque, Windſor, Calliorosat, with ſome others; and where they have been well preſerved, the Black Pear of Worceſter, and Lord Cheney's Green Pear, are yet in being.

Apples; Codling, Margaret Apple, White Juneating, Stubbard's Apple, Summer Coſting, Summer Pearmain, Pomme de Rambour; and ſtill continue the Deux-ann's or John-Apple, the Stone-Apple, and Oaken Pin.

Cherries; Kentiſh, Gaſcoign's Heart, Carnation, Lukeward, Ox-Heart, Amber-Heart, Coroon, Amber, White Spaniſh, and Black Cherries.

Peaches; Brown and White Nutmeg, Anne Peach, Albemarle, Smith's Newington, Bellis or Bellows, Red Magdalen, Roſſanna, Minion, Montabonne, Bordine, Royal George, Early Admirable, and ſome others.

Nectarines; Fairchild's Early Nutmeg, Roman Red, Elruge, Brunion, and Newington.

Plums; Jean Hative, Morocco, Orleans, Blue Primordian, Violet Royal, Blue Perdrigon, Mirabelle, Imperial, White Matchleſs, Maitre Claude, Green Gage, Damoiſine, Drap d'Or, Gros Damas Violet, Cheſton, with ſome others of leſs Note.

Apricots; The Orange, Roman, Breda, Algier, Bruxelles, and Turkey.

As alſo Gooſeberries, Raſpberries, Currants; and in the Stove, the Ananas or Pine-Apple.

Work to be done in the NURSERY.

Continue to bud Apricots, Peaches, Nectarines, Cherries, Plums, Pears, *&c.* This Method ſhould, if poſſible, be done in a cloudy Day, or in a Morning or Evening, when the Sun is not violent; becauſe the Cuttings are very apt to ſhrink in very hot Sunſhine, which cauſes the Buds to adhere too cloſely to the Wood, unleſs they are put in Water, which is what moſt People practice: but this is not ſo proper; for thoſe Buds which are cover'd with Water will be ſo much ſaturated with Moiſture, as to prevent their attracting from the Stock, ſo that they often miſcarry.

In about three Weeks after the Stocks are budded, you ſhould look over them to looſen the Bandage, otherwiſe the Buds will be pinched, and deſtroyed.

Obſerve to keep your Nurſery clean from Weeds at this Seaſon; for now the Weeds will ſoon ripen their Seeds if they are permitted to remain, which will fill the Ground ſo as not to be cleared again for Years.

You muſt continue to train your Ever-green Trees for the Purpoſes they are deſigned; and where any of your Foreſt Trees ſhoot too vigorouſly near their Roots, thoſe Branches may be pruned off to encourage their Heads.

Keep your Beds wherein your young Stocks and Trees were ſown in the Spring, clear from Weeds; and in very dry Weather ſupply them with Water, which will greatly promote their Growth.

Work to be done in the PLEASURE GARDEN *and* WILDERNESS.

Take up the Bulbs of ſuch late Flowers as were not fit the laſt Month; ſuch as Ornithogalums, White Lilies, Martagons, and ſome other Sorts; and tranſplant the Roots of Perſian and Bulboſe Iris's, as alſo Fritillaria's, Hyacinth of Peru, Dens Canis, Narciſſus's, and ſuch other Bulboſe-rooted Flowers which will not endure to be kept long above Ground; and this being the Time they are not in Action, is the moſt proper Time for tranſplanting them, before they put forth new Fibres, after which Time it will not be proper to remove them.

Continue to make Layers of Pinks, Carnations, Sweet-Williams, *&c.* (where it was not done the former Month): but the ſooner this is done the better, provided the Shoots are ſtrong enough to lay down.

Tranſplant ſuch Biennial or Perennial Fibroſe-rooted Flowers as were ſown late in the Spring; ſuch as Pinks, Carnations, Stock-gilliflowers, Wall-flowers, Hollyhocks, French Honeyſuckles, Canterbury Bells, and ſome others, which ſhould be planted in Nurſery-beds, where they may have Room to grow till *Michaelmas*, when they ſhould be tranſplanted into the Borders of the Flower-Garden.

Clean your Borders diligently from Weeds, but eſpecially ſuch Sorts as ſoon ſhed their Seeds; for if they are permitted to ſtand until their Seeds are ſcatter'd, it will be a conſtant Trouble, for ſeveral Years, to extirpate them.

Gather the Seeds of all Sorts of Flowers as they ripen, and preſerve them in their Huſks or Pods until the Seaſon for ſowing them: but you ſhould dry them carefully before they are put up, otherwiſe they will grow mouldy, and decay.

Cut down the Stalks of ſuch Flowers as begin to wither and decay, and tie up all tall growing Plants which are yet to flower, leſt the Winds blow them down, and break them.

Inoculate Roſes, Jaſmines, and other Sorts of curious flowering Shrubs and Trees; this Month being the principal Seaſon for that Work.

Cut and trim Hedges, clip Box-edgings, mow Graſs-plots, and keep the Walks conſtantly rolled, and the Weeds ſhould be taken out of them; for if they are ſuffered to remain at this Seaſon, they will ſeed in a little Time, and fill the Walks with Weeds.

Your choice Carnations being now in flower, ſhould be carefully attended, to open the Pods when they begin to burſt on the contrary Side, that they may blow equally; for if this be not done in time, the Leaves will come all out on one Side of the Pod, and render them ill-ſhaped. You muſt alſo guard them from Inſects, which will deſtroy them in a ſhort Time, if they can come to them; and they ſhould be covered with Glaſſes or Baſons to keep off the Wet, and the ſcorching Heat of the Sun. But in all this there muſt be great Diligence in managing them according to the Temperature of the Seaſon, where Perſons would excel in the Largeneſs and Beauty of their Flowers; therefore theſe are not ſo proper for Perſons who have other Buſineſs on their Hands, but rather for thoſe who want ſome ſuch eaſy Employment to divert themſelves.

You may now increaſe the Double Scarlet Lychnis, by planting Cuttings of it in a ſhady Border of light freſh Earth, obſerving to refreſh them with Water according to the Drought of the Seaſon.

Toward the latter End of this Month you may take off the Layers of Pinks, Carnations, Sweet-Williams, *&c.* which have taken Root, and plant them either into Pots or Borders of good freſh Earth, where they may continue until you have Conveniency of planting them where they are to remain for flowering; for it is not proper to let them continue too long upon the old Roots; becauſe, if they ſhould not be ſound, the Layers would be infected by them: but when you plant theſe out, they muſt be carefully watered and ſhaded until they have taken Root.

The latter End of this Month you ſhould ſow ſome Seeds of Annual Flowers, in warm Borders, to ſtand the Winter, that they may flower early the next Summer; by which Method you may obtain good Seeds of many Sorts of Plants, which, if ſown in the Spring, do not conſtantly produce good Seeds; ſuch as the Great Blue and Fleſh-colour'd Lupines, Sweet-ſcented Pea, Sweet Sultan, Indian Scabious, Double Larkſpur, Dwarf Annual Stock, Venus Navelwort, Xeranthemums, Jacea's, with ſome others. Theſe Plants will not only come earlier to flower, but alſo will grow much larger, and produce their Flowers in much greater Plenty, than if they were ſown in the Spring.

Your choice Auricula's ſhould now be kept clear from Weeds, and all decay'd Leaves; which, if ſuffer'd to remain upon them, would rot and ſpoil them; and they ſhould be plac'd in a ſhady Situaiton, but not under the Droppings of Trees.

The ſeedling Auricula's which came up the laſt Spring, muſt now be planted out into Tubs or Pots fill'd with rich Earth, and placed in a ſhady Situation: and as they are ſmall, ſo they muſt be treated tenderly, giving them Water gently; and be careful that they are not drawn out of the Ground by Worms, nor eaten by Snails or Slugs, both which Vermin are great Enemies to them.

Keep the Walk and Quarters of your Wilderneſs free from Weeds and Litter; and ſuch Trees as grow too much out of Order may be pruned, ſo as to render them beautiful; for this is a Seaſon when Wilderneſſes and ſhady Walks are chiefly frequented; ſo that they ſhould be well kept, otherwiſe they will be diſagreeable.

Plants now in Flower in the PLEASURE GARDEN.

Carnations, Pinks, Sweet-Williams, Fairchild's Mule, Double and Single Ragged Robin, Dwarf Annual Stock, French Willow, Single and Double Virgin's Bower, Antirrhinum or Calf's-ſnout, Linaria's of ſeveral Sorts, Jacea's of ſeveral Sorts, Everlaſting Pea, Sweet-ſcented Pea, Tangier Pea, Blue-flower'd Lathyrus, Hieraciums, White Lily, Scarlet Martagon, Day Lily, Ornitholagum Spicatum, White Hellebore with green Flowers, Aconitum Luteum, Anthora, Acanthus, Lavatera's, Indian Scabious, Sea-Holly, Sweet Sultan, African Poppies of divers Kinds, Peach-leaf'd Campanula, Venus Looking-glaſs, Venus Navelwort, Double Ptarmica, Double Feverfew, Double Camomile, Buphthalmums, Annual Stock Gilliflower, Double Roſe Campion, Larkſpurs, Spaniſh Scorphularia, Nigella, two ſorts of African Marygolds, Lupines of ſeveral ſorts, Amaranthus's, Amaranthoides, Capſicum Indicum, Leucanthemums, Xeranthemums, Red Garden Valerian, Hollyhocks, Lychnidea, Caoliniana, Sunflowers of ſeveral ſorts, Virginian Spiderworts, Scarlet Lychnis, Golden Rod of ſeveral kinds, French Marygold, Female Balſamine, Marvel of Peru, China Pink, ſome ſorts of Starwort, Dwarf Lychnis, Candy Tuft, Mallows of ſeveral kinds, Naſturtium Indicum, Cryſanthemums, Ricinus or Palma Chriſti, Globe-Thiſtle three or four ſorts, Campanula Pyramidalis, Limoniums of ſeveral kinds, Catanance Quorundam, Eupatoriums, Greater Centaury of ſeveral ſorts, Statice Major, Clove Gilliflowers, Double and Single Sopewort, Coronilla Herbacea flore vario, Heliotropium majus, with ſome others.

Hardy Trees and Shrubs now in Flower.

Several ſorts of Roſes, Spaniſh Broom, White Jaſmine, Dwarf Yellow Jaſmine, Canary Hypericum, Shrubby Stinking Hypericum, Double and Single Pomegranate, Virginian Trumpet Flower, Agnus Caſtus or the Chaſte-tree, Maleciſtus ſeveral kinds, Ciſtus Ledon ſeveral ſorts, Phlomis or Sage-tree, Oleaſter, Shrub-Cinquefoil, Spirea with Willow Leaves, Spirea with Marſh-Elder Leaves, Althæa Frutex, Paſſion Flower, Cytiſſus Lunatus, Cateſby's Climber, Bladder Senna, Dutch Honey-ſuckle, Ever-green Honey-ſuckle, Long-blowing Honey-ſuckle, Late White Honey-ſuckle, Scarlet Virginian Honey-ſuckle, the Tulip-tree, Virginian Sumach, Myrtle-leaf'd Sumach, Geniſta, Tinctoria, Geniſtella, Ketmia's, with ſome others.

Work to be done in the GREEN-HOUSE, GARDEN, *and* STOVE.

Gather the Flowers of your Orange-trees, where they are produced too cloſe to each other; and where there was a ſufficient Number of Fruit ſet upon the Trees the former Month, it will be proper to diveſt them of all the Flowers which are now produced; for theſe being too late in the Seaſon, the Fruits which ſucceed them will not have Time to grow to any conſiderable Size before Winter, and ſo will be in Danger of falling off before Spring. You ſhould alſo obſerve, where you may have overlook'd ſome Bloſſoms the laſt Month, which now are become Fruit, to pull them off, leaving but few upon each Tree, and thoſe well ſituated, and upon ſtrong Shoots; for where there are too many Fruits left upon the Trees, it renders them weak; and the Fruit not having Nouriſhment, does ſeldom grow to any conſiderable Size; and where they are upon weak Shoots, they rarely come to any thing.

Continue to make Cuttings of ſuch Exotick Plants which you want to increaſe, provided you have not done it the preceding Month: The beſt Method of planting Cuttings at this Seaſon, is, to prepare a Bed of light rich Earth, into which the Cuttings ſhould be planted, and then arch the Bed over with Hoops, in order to ſhade the Cuttings in hot dry Weather, and obſerve to water them duly, as they may require; but let them be expoſed every Night to receive the Dew, which will be of great Uſe to them: but this is to be practiſed upon ſuch Sorts of Plants as are not very tender, becauſe thoſe will require a moderate Hot-bed to make them root, eſpecially the tender ſucculent Plants, ſuch as Cereus, Euphorbiums, *&c.* but all the Sorts of Geraniums, Myrtles, Jacobeas, and other Shrubs from the *Cape of Good Hope*, will take root much better in a Bed of rich Earth, than if planted in a Hot-bed.

Shift ſuch Exotick Plants as have been rais'd from Seeds in the Spring, putting them into larger Pots according to their various Growth, and plunge ſuch of them as are tender into the Hot-bed of Tanners-bark, obſerving to water them, and ſhade the Glaſſes, until they have taken new Root; after which they muſt have Air and Water according to the Heat of the Weather.

Waſh and clean the Leaves and tender Shoots of your choice Exotick Plants from Filth and Inſects, both which do commonly infeſt them at this Seaſon, (eſpecially thoſe in the Bark-ſtove); and if they are not clean'd in time, the Plants will ſuffer greatly, and the Inſects will ſpread themſelves over moſt of the other Plants, ſo as not to be eaſily deſtroyed.

In hot Weather you ſhould give your tender Exoticks as much free Air as poſſible, eſpecially when there is not much Wind ſtirring; and in the Middle of the Day it will be proper to ſhade the Glaſſes of the Stove, when the Sun is violently hot, otherwiſe the Earth in the Pots will dry too faſt.

Stir up the Bark of ſuch Beds whoſe Heat begins to decline, and add a little new Bark to them, which will renew the Heat, and cauſe it to continue a conſiderable time longer. At the ſame time, ſuch Plants as require it, ſhould now be ſhifted, giving them larger Pots if their Roots require it.

The Anana's will now ripen very faſt, if the Seaſon is warm; therefore, when the Fruit is cut from the Plants, the Pots with the old Plants ſhould be plung'd into a warm Bed, to force out the Suckers early enough to take off before Winter; in order to which they ſhould be frequently water'd, otherwiſe they will make but indifferent Progreſs.

Make Layers of the Spaniſh, Arabian, and Azorian Jaſmines; as alſo of all the tender Sorts of Granadilla, which will eaſier take Root at the tender Joints of the new Shoots, than from the Shoots of the former Year: but you muſt obſerve to plunge the Pots into which they are laid, in a Hot-bed, otherwiſe they will not ſucceed.

Gather all Sorts of Exotick Seeds as they ripen, and ſpread them upon Papers, in a dry Place to harden and dry; after which they ſhould be carefully preſerv'd in their Pods or Huſks, until the proper Seaſon for ſowing them.

Such of the tender Annuals as will endure the open Air, ſhould now be ſet out of the Hot-beds, in ſome well-ſhelter'd Situation, where they will produce Seeds better than if kept conſtantly in the Beds.

Where any of your tender Stove Plants are very much infeſted by Inſects, or have contracted much Filth upon their Leaves, you ſhould waſh them clean, and expoſe them to the open Air, in a warm Situation, where they may be ſhelter'd from ſtrong Winds, which will be of great Service to the Plants. You ſhould alſo keep ſome of the Top-glaſſes of the Stove conſtantly drawn down, both Day and Night; for at this Seaſon moſt Plants do perſpire freely, which, if pent up too cloſe, will cauſe them to look ſickly, and occaſion their Leaves to change their Colour, ſo that Inſects will ſoon attack them.

Plants in Flower in the GREEN-HOUSE *and* STOVE.

Oranges, Lemons, Limes, Citrons, and Shaddocks, Myrtles of ſeveral ſorts, Amomum Plinii, Barba Jovis or Silver-buſh, Ciſtus halimi folio, Ciſtus Ledon two or three ſorts, Male-Ciſtus of ſeveral ſorts, Spaniſh Jaſmine, Geraniums of ſeveral ſorts, Tree Scabious of two ſorts, Yellow Indian Jaſmine, Azorian Jaſmine, Ilex-leaf'd Jaſmine, and Arabian Jaſmine, Colutea Æthiopica Barbæ Jovis folio, Apocynum Africanum erectum ſalicis folio flore albo, Apocynum Americanum erectum ſalicis folio flore aurantio, Blue and ſcarlet Cardinal's Flowers, Elichryſums of ſeveral ſorts, Caſſia's of two or three ſorts, Acacia Indica Aldini, Guidonia Ulmi facie, ſenſitive and humble Plants of ſeveral ſorts, Coral-tree, Lotus Argentea Cretica, Lotus Hæmorrhoidalis, Anonis two or three ſorts, Granadilla's two or three ſorts, Coffee tree, White Spaniſh Broom, Fabago Africana arboreſcens flore ſulphureo fructu rotundo, Red and White Oleanders, Double Oleander, Sweet-ſcented Oleander, Fritillaria Craſſa, ſeveral ſorts of Ficoides's, Small Creeping Cereus, Large upright Cereus, Ketmia's of ſeveral ſorts, Cotyledons of ſeveral kinds, Ricinus or Palma Chriſti of ſeveral ſorts, Papaya, Ricinoides folio multifido, Ricinoides Goſſipii folio, Ricinoides Staphyſagriæ folio, Cotton-plant, Baſſella, Dracunculoides, Double Indian Naſturtium, Myrto-Ciſtus, Polygala Africana fruteſcens, Digitalis Acanthoides, Heliotropium Scorodoniæ folio, Gnaphaliums, Caltha Africana Croci folio, Viburnums, Phalangiums, Blue African umbellated Hyacinth, Olives, Tetragonocarpos, Rhamnus's, Aloes of ſeveral ſorts, Yucca, Indian flowering Reed, Lilium Zeylanicum, Turnera, Plumeria, Hedyſarums, Lilio-Narciſſus's, Pancratium, with ſome others.

JUNCUS, Ruſh.

The *Characters* are;

It hath a Flower compoſed of many Leaves, which are placed orbicularly, and expand in form of a Roſe; from the Center of which riſes the Pointal, which afterward becomes a Fruit or Huſk, which is generally three-cornered, opening into three Parts, and full of roundiſh Seeds.

The *Species* are;

1. JUNCUS *acutus, capitulis ſorghi. C. B. P.* Prickly large Sea Ruſh.
2. JUNCUS *acutus maritimus Anglicus. Park. Engliſh* Sea-prickly Ruſh.
3. JUNCUS *acutus, paniculâ ſparſâ. C. B. P.* Common hard Ruſh.
4. JUNCUS *lævis, paniculâ ſparſâ, major. C. B. P.* Common ſoft Ruſh.
5. JUNCUS *lævis, paniculâ non ſparſa. C. B. P.* Soft Ruſh, with a more compact Panicle.
6. JUNCUS *acumine reflexo, major. C. B. P.* The greater bending Ruſh.

Theſe Sorts of Ruſhes are not cultivated, but grow wild in ſeveral Parts of *England*; and ſome Sorts of them are very troubleſome Weeds, in low, moiſt ſtrong Lands. The firſt and ſecond Sorts grow on the Sea-ſhores, where they are frequently watered by the Salt-water. Theſe two Sorts are planted with great Care on the Banks of the Sea in *Holland*, in order to prevent the Water from waſhing away the Earth; which being very looſe, would be in Danger of removing every Tide, if it were not for the Roots of theſe Ruſhes; which faſten themſelves very deep in the Ground, and mat themſelves near the Surface, ſo as to hold the Earth cloſely together. Therefore, whenever the Roots of theſe Ruſhes are deſtroyed, the Inhabitants immediately repair them, to prevent farther Damage. In the Summer-time, when the Ruſhes are fully grown, the Inhabitants cut them, and tie them up into Bundles, which are dried, and afterward carried into the larger Towns and Cities, where they are wrought into Baſkets, and ſeveral other uſeful Things, which are frequently ſent into *England*. Theſe Sorts do not grow ſo ſtrong in *England* as they do on the *Maeze*, and ſome other Places in *Holland*, where I have ſeen them upward of four Feet high.

The third and fourth Sorts grow on moiſt ſtrong uncultivated Lands in moſt Parts of *England*, and deſtroy the Herbage where they are ſuffer'd to remain. The beſt Method of deſtroying theſe Ruſhes, is to pare them up clean in *July*; and after having let them lie a Fortnight or three Weeks to dry, to lay them in Heaps, and burn them gently; and the Aſhes which theſe afford, will be good Manure for the Land; but in order to prevent their growing again, and to make the Paſture good, the Land ſhould be drained and well ploughed, and ſown with *Rygraſs*, which will make a good Sward in one Year, if it be rightly managed; for the right ordering of which you are deſired to turn to the Article *Paſture*, where there are proper Inſtructions exhibited.

JUNE.

Work to be done in the KITCHEN GARDEN.

The Beginning of this Month you muſt tranſplant Cabbage and Savoy Plants, which are to ſupply the Kitchen in Winter, either on an open Spot of Ground, or between Rows of Beans, Cauliflowers, *&c.* which will be taken off the Ground in a ſhort Time, and then the new-planted Plants will have Room to grow; and being ſhaded by the other Crops at firſt planting, they will take Root ſooner than if they were planted in an open Situation: And by thus obſerving to put one Crop to ſucceed another, a ſkilful Perſon will produce more Things from one Acre of Land, than ſome others can from two or three, which is what every Perſon, who is acquainted with the *London Gardeners Practice*, muſt be convinc'd of.

The Cauliflower Plants which were ſown the laſt Month for Winter Uſe, ſhould now be prick'd out into Beds of rich Earth, obſerving to ſhade them until they have taken Root, and be ſure to water them duly, otherwiſe they are apt to ſtunt, and be infeſted with Inſects.

Hough and clean Carrots, Parſnips, Turnips, Onions, Leeks, Beets, and all other late Crops; for if the Weeds are permitted to grow at this Seaſon, many of them will ſhed their Seeds in a ſhort Time, and become troubleſome hereafter, and the larger Sorts will over-bear the Crops, and draw them to their great Prejudice.

You may yet make Slips of Sage, Roſemary, Stœchas, Lavender, Hyſſop, Winter Savory, and other Aromatick-plants; tho' it had been better if done earlier in the Year, becauſe this Month often proves hot and dry, and the Plants having long tender Shoots, are in greater Danger of miſcarrying.

Plant out young Plants of all Sorts of ſweet Herbs which were ſown in *March*, as Thyme, Hyſſop, Sweet-Marjoram, *&c.* and alſo Clary, Burnet, Sorrel, Marygolds, and many other Sorts, obſerving to allow them Room enough to ſpread, which will render them much ſtronger than thoſe which remain in the Seed-beds.

Clear and hough the Ground whereon your earlieſt Cauliflowers grew, which will be all gone by the middle or latter end of this Month. And if you have Ridges of Cucumbers or Melons made between the Rows of Cauliflowers, (as is the Practice of the *London Gardeners*) you ſhould dig all the Ground between the Ridges, and lay out the Vines in regular Order; this will not only looſen the Ground for the Roots of the Plants but alſo deſtroy the Weeds, and render the Surface of the Ground wholſomer for the Vines to lie upon: But in doing of this you ſhould be very careful not to bruiſe or break the Vines, which would be very injurious to them, and (if poſſible) let it not be done in moiſt Weather.

Sow Turnips upon a moiſt Spot of Ground, and when there is a Proſpect of Rain in a little Time, which will bring up the Plants in a few Days; for in dry Weather the Seeds will remain in the Ground, and not vegetate; beſides, if the Plants do come up, and the Weather be very hot and dry, the Fly will take them, and deſtroy them in a ſhort Time.

In the Beginning of this Month you may ſow ſome Brocoli-ſeed for the ſecond Crop, and Finnochia, to ſucceed that which was ſown in the Middle of the former Month; for in very hot weather this Plant will not remain good above a Fortnight, before it will run to Seed; ſo that if it be not often ſown, there will be a Want to ſupply the Kitchen.

Tranſplant Celery into ſhallow Trenches for blanching, allowing about four or five Inches Space between each Plant in the Rows, and make the Trenches three Feet aſunder, that there may be Room enough to earth up the Plants when they are full grown.

Plant Kidney-Beans to ſucceed thoſe which were planted in *April*; and ſow Brown Dutch, and Common Cabbage-Lettuces, for a late Crop; and tranſplant ſuch Lettuces as were ſown in *May*, obſerving to place them in a ſhady Situation, but not under Trees, nor near Walls or other Buildings, which will draw them up weak, and prevent their cabbaging.

Tranſplant Endive in an open moiſt Spot of Ground for blanching, allowing the Plants a Foot Diſtance each Way, that they may have Room to ſpread, and ſow ſome Endive-ſeed for a latter Crop.

Continue to ſow ſmall Sallet herbs every three or four Days, ſuch as Creſſes, Muſtard, Turnip, Rape, Radiſh, *&c.* for at this Seaſon they will ſoon grow too large for Uſe.

You muſt now thin the Finnochia-plants which were ſown the former Month, obſerving to allow them Room enough to grow, otherwiſe they will draw up weak, and never ſwell at Bottom; but the Plants which are taken out ſhould not be tranſplanted, for they rarely are good for any Thing, being very ſubject to run to Seed, before they arrive to any Size.

The Broccoli which was ſown in *May* ſhould be now prick'd out into Beds at about three Inches aſunder, where they will grow ſtrong, in order for planting out the next Month; for where they are ſuffer'd to grow in the Seed-bed too long, they draw up weak, and never produce ſo good Heads, as thoſe which are ſhort and ſtrong in their Stems.

Weed and thin the Plants in your Cucumber-holes which were ſown for pickling, obſerving to leave but four of the ſtrongeſt and beſt ſituated Plants in each Hole, and at the ſame Time earth up their Shanks, which will greatly ſtrengthen them, and give them ſome Water to ſettle the Earth about them.

In dry Weather gather Seeds of all Sorts that are ripe, ſpreading them upon Mats or Cloths to dry, before they are rubb'd or beaten out of their Huſks or Pods.

Gather Herbs for drying of ſuch Sorts as are now in Flower, and hang them up in a dry ſhady Place, where they may dry leiſurely, which will render them better for any Purpoſe, than if they were dried in the Sun.

Your Melons which are now Setting, ſhould be ſhaded in the Heat of the Day with Mats, if the Weather be warm, otherwiſe their Fruit will drop; and you ſhould be careful not to give them too much Water, which is often injurious to them.

Gather up Snails in the Morning and Evening, and after Showers of Rain, at which Times they will come abroad from their Holes and Places of Harbour, ſo that they are eaſily deſtroy'd.

The Weeds which now come up in moſt Gardens, are Wild Orachs, Nightſhade, Thorn-Apple, Groundſel, ſow-Thiſtles, *&c.* which if permitted to grow amongſt Crops, will ſoon out-grow them, and ſpoil whatever Plants are near them.

You may now tranſplant Leeks out of the Seed-beds in the Places where they are to remain, obſerving to water them until they have taken Root: This is often practis'd in ſmall Gardens, where an early Crop of Beans or Cauliflowers have been produc'd on the ſame Ground, before the Leeks are put on it.

Products of the KITCHEN-GARDEN.

Cauliflowers in Plenty, Cabbages, young Carrots, Beans, Peaſe, Artichokes, Aſparagus, Turnips, Cucumbers, Melons, Kidney-Beans, Cabbage-Lettuces of various Kinds; all Sorts of young Sallet-herbs, as Chervil, Creſſes, Muſtard, Rape, Radiſh, Corn-ſallet, *&c.* ſome Early Finnochia, with other Kinds.

All ſorts of Sweet-herbs, as Lavender, Thyme, Winter Savory, Hyſſop, Marum, Maſtick, Stœchas, *&c.* as alſo Sage, Roſemary, Origanum, Mint, Baum, Penny-Royal, Parſley, Sorrel, Burnet, Bugloſs, Borage, with many other Kinds of Medicinal or Culinary Plants.

Work to be done in the FRUIT GARDEN.

Begin to inoculate Stone-fruits toward the Middle of the Month, doing it in an Evening, or in cloudy Weather: the firſt Sort, which is fit to Bud, is the Maſculine Apricock; and ſo proceed to the other Sorts, according to their Times of ripening their Fruits.

You muſt now look over your Wall and Eſpalier-trees again, and rub off all fore-right, ill-plac'd, or luxuriant Branches, and train the others regularly at equal Diſtances to the Wall or Eſpalier; but be not too officious with the Knife at this Seaſon, neither ſuffer any of the Leaves to be pull'd from the Branches, which will expoſe the Fruit too much to the Sun in the Day, and Cold in the Night.

Where Peaches and Nectarines have been left too cloſe together when they were thinn'd, they ſhould now be taken off, being careful not to ſuffer two or more Fruits to grow nearer than four or five Inches apart, which will greatly improve the Fruit, and ſtrengthen the Tree.

Look carefully after Snails and other Vermin, which infeſt your choice Fruit, and, if not timely prevented, will ſpoil it in a ſhort Time at this Seaſon.

In dry Weather water ſuch Trees as were tranſplanted the former Seaſon, obſerving to preſerve Mulch upon the Surface of the Ground about their Roots, to prevent their being dry'd by the Sun and Wind, and faſten thoſe Shoots which have been produc'd either to the Wall or Eſpalier, in the Order they ſhould grow; for if they are permitted to grow looſe, they will be in danger of being broken by Winds, *&c.*

Obſerve to keep the Ground about your Trees clear from Weeds and all other Plants; for if they are ſuffer'd to grow, they will exhauſt the Nouriſhment of the Ground, to the great Injury of the Trees, and the Fruits which ſuch Trees produce, will not be near ſo large, nor well taſted, as thoſe which are produc'd from Trees where no Plants are ſuffer'd to grow about them.

Your Vines ſhould now be look'd over again, and the Branches which are looſe muſt be faſten'd to the Wall; and all Side-ſhoots, or weak-trailing Branches, muſt be intirely diſplac'd, that the Fruit may enjoy the Benefit of the Sun and Air, which is abſolutely neceſſary to promote their Growth; but this is often neglected in many Gardens, and the Branches permitted to hang from the Wall, and entangle with each other, ſo that when they are put in their proper Places to the Wall, their Leaves will often have their back Parts upward, whereby the Fruit will be retarded, until they have obtain'd their proper Poſition again: And it is this Neglect which occaſions the late ripening or ill Taſte of the Fruit, and alſo renders the Wood ſoft and pithy, ſo that it ſeldom produces Fruit the following Year.

The Vineyard ſhould alſo be thus manag'd at this Seaſon, faſtening the Shoots to the Stakes in regular Order, ſo that each may equally have the Advantage of Sun and Air, and keep the Ground perfectly clear from all other Plants or Weeds, which if permitted to grow, would greatly prejudice the Vines.

Fruits in prime, or yet laſting.

Strawberries of ſeveral ſorts, Currants, Gooſeberries, Kentiſh, Duke, Flanders-heart, White-heart and Black-heart Cherries, Maſculine Apricock; and in the Forcing-frame, Peaches, Nectarines, and Grapes; and in the Hot-bed, Anana's or Pine-Apples.

Golden Ruſſet, Pile's Ruſſet, Stone-Pippen, Deux Anns or John-Apple, Oaken Pin, and ſome other Apples, where they are carefully preſerv'd.

As alſo the Black Pear of Worceſter, Lord Cheney's Green English Warden, and Bezy du Chaumontelle Pears.

Work to be done in the NURSERY.

You muſt obſerve in this Month (as was directed in the former) to keep the Ground between your Rows of Trees in the Nurſery intirely clear from Weeds, for theſe are very injurious to the Trees, and nothing can have a worſe Appearance, than a Nurſery over-grown with Weeds, therefore this Caution cannot be too often repeated: Obſerve alſo to keep the Seed-beds clear from Weeds.

Toward the latter End of the Month you muſt begin to bud Apricocks, and ſome early Peaches and Nectarines, but in this you muſt be guided by the Condition of the Trees from whence the Cuttings are taken; for if the Spring has prov'd very dry, the Buds will not eaſily part from the Shoot, in which Caſe it will be proper to defer this Work a little longer.

Obſerve to renew the Mulch about your new-planted Trees, where it is decay'd; for at this Seaſon, if the Weather proves dry, the Moiſture of the Earth will be exhaled, and the young Fibres will be dry'd up, where this Work is not carefully perform'd.

You may yet lay down the tender Shoots of Virgin's-bower, Granadilla's, *&c.* obſerving to water the Layers in dry Weather, which will greatly promote their taking Root. You may alſo make Layers of ſeveral hardy exotick Trees, which, if laid in the young Wood, will many of them take Root; ſo that whatever ſcarce Plants you have a mind to increaſe, may be tried this Way, ſince we are not aſſured what Plants will not take Root in this Management.

Trim up your Ever-greens according to the Uſes for which they are deſign'd, for if you ſuffer them to grow rude in Summer, they cannot be ſo ſafely reduc'd afterwards; beſides, the ruder they grow, the more naked they will be near their Stems.

Work to be done in the FLOWER GARDEN.

Tranſplant Annual Flowers out of the Hot-bed into the Borders of the Flower-Garden, ſuch as Capſicums, Balſamines, Convolvulus's, Love-Apple, Africans, French Marygolds, Amaranthus's, Indian Pinks, *&c.* obſerving to do it in a cloudy Day, or in an Evening, and give them ſome Water to ſettle the Earth to their Roots.

You muſt now lay down your Carnations, Pinks, Double Sweet-Williams, and ſuch other Fibroſe-rooted Plants, as are propagated by Layers, being careful to water them as ſoon as it is done ; but it muſt be given to them very gently, otherwiſe you will endanger the waſhing them out of the Ground, or breaking them, and this Watering ſhould be frequently repeated, which will greatly facilitate their Rooting.

This is a proper Seaſon for taking up and tranſplanting the Roots of Cyclamens, Fritillaria's, Dens Canis, Saffron, Narciſſus's, and ſuch other Bulboſe-rooted Flowers, as do not ſucceed well, if their Roots are kept any Time out of the Ground.

Cut off the Stalk of ſuch Flowers as have done blowing, and whoſe Stalks are decaying ; and tye up ſuch Flowers as are yet to blow, eſpecially your tall Autumnal Plants, which are often broken down by the Wind, if they are not timely ſupported with ſtrong Stakes.

Take up your Hyacinth-roots out of the Beds wherein they were laid the former Month to ripen ; and clear them from Filth, laying them upon a Mat in a ſhady Place to dry ; after which they may be put up into Drawers or Boxes, where they may enjoy the free Air, without which they will grow mouldy and decay.

It it now time to take up the Roots of Tulips, Anemonies and Ranunculus's, whoſe Leaves are decay'd, and ſpread them upon Mats in a ſhady Place to dry ; then clean them from Filth, and put them up in Boxes or Bags until the Seaſon for planting them, being careful to put them out of the Reach of Rats and Mice, otherwiſe they will eat them up.

Your Carnations which begin to break their Pods, ſhould be open'd in two or three different Parts, that their Flowers may expand equally on every Side, otherwiſe they will throw their Leaves out on one Side of the Pods : You muſt alſo obſerve to cover them with Glaſſes ſoon after their Pods are open, to ſkreen them from Moiſture, and the Heat of the Sun, both which are very injurious to them ; and look carefully after Ear-wigs and Ants, for if theſe can come at the Flowers, they will deſtroy them in a ſhort Time.

Tranſplant ſuch Sorts of Perennial of Biennial Fibroſe-rooted Plants, as were not done the former Month, into Nurſery-beds, where they ſhould be allow'd Room enough to grow till Autumn, which is the proper Seaſon for placing them in the Borders of the Flower-Garden to remain. Of theſe Kinds are French Honeyſuckles, Pinks, Sweet-Williams, Stock-Gilliflowers, Columbines, Dames Gilliflowers, Canterbury Bells, Hollyhocks, Scabious's, *&c.* all of which muſt be raiſed in the Flower-Nurſery the firſt Seaſon, and then brought into the Flower-Garden to blow.

Plant Cuttings of Lychnidea's, Double Sweet-Williams, Double Scarlet Lychnis's, Pinks and ſuch other Fibroſe-rooted Plants as you want to increaſe, which, if planted in a Bed of light rich Earth, and ſhaded and duly water'd, will take root very well.

Plants now in Flower.

Larkſpurs, White Lily, Orange Lily, red Day Lily, Everlaſting Pea, Sweet-ſcented Pea, Tangier Pea, Canada Golden Rod, Broad-leav'd up-right Dogsbane, Apocynum, Lilii convallii flore, yellow Aconite, horned Poppies of ſeveral Sorts, Capnoides, white, black and yellow Swallow-wort, Veronica's, Blattaria's, Scarlet Lychnis, Roſe Campion, Pinks, Double and Single Virgin's Bower, Flammula Jovis, Hyſſop, Clary's, Oriental Bugloſs, Double Ptarmica, Sweet Sultan, Xeranthemums, Coronilla herbacea flore vario, Jacea's, Santonina's, Acanthus, Snapdragons, Linarias, Tree Primroſe, Willow-weed or French Willow, yellow Loſeſtrife, purple Loſeſtrife, Valerianella Cornucopoides, Caltha Africana, Hieraciums, Chryſanthemums, Lychnis's, Nigella, Peach-leav'd Bell-flower, Lychnidea Caroliniana, Gentianella, white Wall-flower double and ſingle, white and red French Honeyſuckles, Lobel's Catchfly, Venus Navelwort, Flos Adonis, Venus Looking-glaſs, Double and Single Sweet-Williams, Double Catchfly, Bulboſe fiery Lily, Martagons ſeveral ſorts, Ornithogalums, Bulboſe Iris's, Bloody Cranesbill, red, white and Garden Valerian, Greek Valerian with blue and white Flowers, Oriental Ox-eye with yellow and white Flowers, Leucanthemums, red and white Batchelor's Button with double and ſingle Flowers, Double Ragged Robin, Savoy, and Tradeſcant's Spiderworts, Poppies of various Kinds, Columbines of various Colours, Spaniſh Figwort, Indian Scabious, ſeveral ſorts of Thrift, Candy Tuft, Dwarf Lychnis, Dwarf Annual Stock, Fox Gloves, Corn Flags two or three Sorts, white Hellebore, yellow Perennial and Tangier Fumitories, Sea Ragwort, Africans, Female Balſamine, Periwinkles, Fraxinella with purple and white Flowers, Great Blue Wolfsbane, Calcedonian Iris, Helianthemums, Sea Lavender's, Smilax, Phalangiums, Aſphodel's, Eupatoriums, Cyanus's of ſeveral Sorts, with ſome others of leſs Note.

Hardy Trees and Shrubs now in Flower.

Bladder Senna, Pomegranate with double and ſingle Flowers, Spaniſh Broom, Broad-leav'd yellow Jaſmine, white Jaſmine, Roſes of various ſorts, Tamariſk, Virginian Sumach, Dorycnium, Althæa fruteſcens Bryoniæ folio, Althæa fruteſcens flore parvo, Oleaſter, Frutex trifoliatus Ulmi Samarris, Nettle-tree, Upright Sweet Canada Raſpberry, Lime-tree, Shrub Cinquefoil, Tree Germander, Late-red, Dutch, Evergreen and Long-blowing Honeyſuckles, Spirea ſalicis folio, Cateſby's Climber, or Carolina Kidney-Bean-tree, Perennial Shrubby Lamium or Baſe Hore-hound, Syringa, Cytiſſus Lunatus, Mallow-tree, Tulip-tree, Scarlet-flowering Horſe Cheſnut, and ſome others of leſs Note.

Work to be done in the GREEN-HOUSE *and* STOVE.

Your Orange-trees, being now in Flower, ſhould be conſtantly ſupply'd with Water, to encourage them to ſet their Fruit, and the Earth on the Surface of their Tubs and Pots ſhould be ſtirr'd, and ſome rotten Neats-dung laid thereon, raiſing it round the Outſide of the Tubs or Pots, ſo as to make a Hollow to contain the Water ; but you ſhould never lay any new Dung upon the Pots, nor put any Dung into the Water to inrich it, as is by too many Perſons done, to the great Prejudice of their Trees ; for theſe ſtrongly impregnated Waters, inſtead of affording Nouriſhment to the Trees, do cauſe their their Leaves to change to a pale yellow Colour, and the Trees are apt to flower out of their proper Seaſon, which renders them weak, and many Times deſtroys them in two or three Years Time. The beſt Water for theſe Trees, is ſuch as is taken from Rivers or Ponds, where it is fully expos'd to the Sun and Air ; ſo that if you have no other than Spring or Well Water, it ſhould always be expos'd to the Sun and Air two or three Days before it is uſed. You muſt alſo gather off the Flowers as they blow, leaving but a few upon each Tree for Fruit, and thoſe upon the ſtrongeſt Branches, and where they are beſt ſituated to ſtand.

Plant Cuttings of Myrtles in a Bed of light rich Earth, obſerving to water and ſhade them until they have taken Root ; and now you may plant Cuttings of Geraniums, Cytiſſus's, and many other exotick Plants, which are ſhrubby, treating them in the Manner directed under their ſeveral Heads.

You may now ſhift any of your Green-houſe Plants into larger Pots, obſerving to pare off all the mouldy and decay'd Roots, which generally grow round next the Sides of the Pots, and take out as much of the old Earth from the Ball as you can conveniently without leaving their Roots too bare. When they are new-planted, they ſhould be placed in a ſhady Situation, and where they may be defended from ſtrong Winds, until they have taken new Root ; after which they may be removed to the Places where they are to remain during the Summer Seaſon.

Take off Cuttings from the ſeveral Kinds of Cereus's, Sedums, Euphorbiums, Ficoides's, Cotyledons, and other ſucculent Plants, laying them in a ſhady Part of the Stove for about a Fortnight, that their wounded Parts may heal over before they are planted, otherwiſe they will be in danger of rotting.

Stir up the Bark in thoſe Hot-beds which have been long made, and add ſome new Bark to them, which will renew their Heat, and plunge the Pots down again immediately : But this ſhould be done in ſoft, warm Weather, when there is little Wind, leſt by expoſing the Plants in cold Weather to the open Air, they ſhould ſuffer.

In fine Weather you ſhould give Air freely to your moſt tender exotick Plants, but it will be proper to ſhade the Glaſſes of the Stove in the Middle of the Day, when the Sun is very hot.

Tranſplant ſuch ſeedling exotick Plants as were rais'd in the Spring into larger Pots, and ſuch of them as are very tender, ſhould be plunged into a freſh Hot-bed, to promote their Growth ; but thoſe which are hardy will only require to be ſhelter'd until they have taken Root, after which Time they may be removed to the Places where they are to remain the Summer-ſeaſon.

You may now take up the Roots of the Canary Campanula, and all the Bulboſe Roots which come from the *Cape of Good Hope*, as the Hæmanthus, African Corn-Flag, blue Tuberoſe-rooted Hyacinth, Lilies, and ſeveral other Sorts whoſe Leaves are intirely decay'd, when they ſhould be parted and planted into Pots of freſh Earth immediately, placing them where they may have the Morning Sun till Eleven o' Clock, and give them now and then a little Water in very dry Weather; but do it ſparingly until they puſh forth new Leaves, for much Wet at this Seaſon, when the Roots are almoſt unactive, will rot them.

This is alſo a proper Seaſon for tranſplanting the Roots of the Guernſey and Belladonna Lilies, their Leaves being intirely decay'd; and at this Time freſh Roots ſhould be procur'd from abroad; for thoſe which are taken up after this Time, do ſeldom thrive ſo well. Theſe Roots ſhould be planted in Pots filled with the following Compoſt, *viz.* one third Part freſh Earth from a Paſture, a third Part of Sea Sand, and a third Part of Lime Rubbiſh. Theſe ſhould be well mix'd, and the Bottoms of the Pots cover'd with Stones, to make an open Paſſage for the Water to drain off; then fill the Pots with the Compoſt, and place the Roots therein, and ſet the Pots in a Situation where they may enjoy the Morning Sun, but give them little or no Water until their Leaves appear.

Your Tuberoſes which were planted early will now begin to flower, when they may be removed into Pots, (preſerving as much Earth as poſſible to their Roots) and placed where they are deſign'd to remain for flowering, obſerving to refreſh them often with Water; and thoſe which were planted later in order to ſucceed thoſe firſt planted, muſt have as much free Air as poſſible, and be frequently water'd, which will render them ſtrong, and cauſe them to produce a greater Quantity of Flowers.

The Anana's muſt now be frequently refreſh'd with Water, and in hot Weather ſhould have much free Air, for if the Glaſſes are kept too cloſe down, their Leaves will be ſcorch'd, to the great Prejudice of the Plants, and the Fruit will be leſs delicate; but if they have too much Water, and the Glaſſes left open in the Day-time, (as ſome have injudiciouſly done) the Plants will ſuffer as much that Way; for upon proportioning the Quantity of Air and Water equally, depends the whole Succeſs.

In the middle of this Month you may begin to take out of the Stove ſome of the hardier Sorts of Aloes, and other ſucculent Plants, placing them at firſt in a ſhady Situation, where Snails and other Vermin are not in too great Plenty, for when they are expos'd to the Violence of the Sun as ſoon as they are taken out of the Houſe, they change Colour, and appear unſightly, ſo they ſhould be inured to it by Degrees; and if Snails can come to them, they will gnaw their Leaves, and greatly deface them. After the Stove is thinn'd of ſome of theſe hardier Sorts, the others ſhould be placed at a greater Diſtance on the Stands, and cleaned from Filth, by which they will enjoy more Air, and be rendered ſtronger and more vigorous.

Plants now in Flower in the GREEN-HOUSE, GARDEN, *and* STOVE.

Oranges, Lemons, Limes, Citrons, and Shaddocks, Myrtles, Olives, Ciſtus halimi folio, Male Ciſtus of ſeveral ſorts, Ciſtus Ledon, Barba Jovis Africana, and Apocynum Africanum erectum ſalicis folio flore albo, Anemonoſpermos's ſeveral ſorts, Elichryſum flore aureo, Jaſminum Ilicis folio, Ketmia Papayæ folio, Cotton-plant, Ficoides's ſeveral Kinds, Indian yellow Jaſmine, Sedums ſeveral ſorts, Colutea Æthiopica Barbæ Jovis folio, Alcea Africana fruteſcens flore rubro, Barba Jovis or Silver Buſh, Dwarf American, Campanula, African Tree-Scabious, Baſſella, Melianthus two ſorts, Mimoſa, White Spaniſh Brooms, Cotyledons, Ricinoides folio multifido, Ricinoides Staphyſagriæ folio, Indian Arrow-root, Double Indian Naſturtium, Coffee-tree, Polygala Africana fruteſcens, Amomum Plinii, Aloes of ſeveral ſorts, Dwarf Pomegranate, Indian Flowering Reed, Cytiſſus lunatus, Phlomis's three or four ſorts, Cytiſſus Canarienſis, Geraniums of ſeveral ſorts, ſeveral ſorts of Paſſion-Flower, Plumeria, Caſſia's, Oleanders, Teucrium Bœticum, Lotus argentea Cretica, Lotus hæmorrhoidalis major & minor, Lilio-Narciſſus's, Pancratium, Abutilons, with ſome others.

JUNIPERUS, [is derived of *junior*, *younger*, and *pariens*, Lat. *bringing forth*; becauſe this Plant puts forth its young Fruits when other Berries are ripe] The Juniper-Tree.

The *Characters* are;

The Leaves are long, narrow, and prickly: The Male Flowers are in ſome Species produced at remote Diſtances from the Fruit on the ſame Tree, but in other Species they are produced on different Trees from the Fruit: The Fruit is a ſoft, pulpy Berry, containing three Seeds in each.

The *Species* are;

1. JUNIPERUS *vulgaris fruticoſa. C. B.* The common *Engliſh* Juniper.

2. JUNIPERUS *vulgaris arbor. C. B.* The Tree, or *Swediſh* Juniper.

3. JUNIPERUS *Virginiana. H. L. Folio ubique juniperino. Boerh. Ind.* The Cedar of *Virginiana.*

4. JUNIPERUS *Virginiana, foliis inferioribus juniperinis, ſuperioribus ſabinam, vel cypreſſum referentibus. Boerh. Ind.* Red *Virginian* Cedar.

5. JUNIPERUS *Virginiana, baccis albis.* The White-berry'd *Virginian* Cedar.

6. JUNIPERUS *Bermudiana. H. L.* The Cedar of *Bermudas.*

7. JUNIPERUS *minor montana, folio latiore, fructuque longiore. C. B. P.* Leſſer Mountain Juniper, with a broader Leaf, and a longer Fruit.

8. JUNIPERUS *major, baceâ cæruleâ. C. B. P.* Greater Juniper, with a blue Berry.

9. JUNIPERUS *major, baccâ rufeſcente. C. B. P.* Greater Juniper, with a reddiſh Berry.

10. JUNIPERUS *Cretica, ligno odoratiſſimo,* κέδρος *Græcorum recentiorum. Tourn. Cor.* Juniper of *Crete*, with a ſweet-ſcented Wood; which is the Cedar of the modern *Greeks.*

11. JUNIPERUS *latifolia arborea, ceraſi fructu. Tourn. Cor.* Broad-leav'd Eaſtern Tree Juniper, with a Cherry-ſhaped Fruit.

12. JUNIPERUS *orientalis, vulgari ſimilis, magno fructu nigro. Tourn. Cor.* Eaſtern Juniper, like the common Sort, with a large black Fruit.

The firſt of theſe Plants is very common upon dry Heaths in divers Parts of *England*, but has been introduced into Gardens, and was formerly in great Requeſt for Ever-green Hedges: Yet as it is very ſubject to decay in Patches, and thereby renders ſuch Hedges very unſightly, as alſo being very troubleſome to ſheer, they have been of late almoſt intirely rejected. But however improper theſe Trees may be for Hedges, or to clip into Pyramids or Balls, yet they may have a Place in ſmall Wilderneſs Quarters amongſt Ever-green Plants of low Stature, where, by their Diverſity, they will add to the Beauty of thoſe Plantations.

The ſecond Sort will grow to a larger Magnitude, ſometimes riſing to the Height of eighteen or twenty Feet: This may alſo be intermix'd with other Ever-green Trees of the ſame Growth, where, by its different-ſhap'd Leaves and Colour, it will increaſe the Beauty of ſuch Places.

Theſe Plants are both propagated by ſowing their Seeds, the beſt Seaſon for which is in *September* as ſoon as they are ripe; for if they are kept until Spring before they are ſown, they will not come until the ſecond Year. The Ground in which theſe Seeds are ſown ſhould be freſh and light, but it ſhould not be dung'd: It ſhould be well dug, and levell'd very even, then ſow your Seeds thereon pretty thick, and ſift ſome Earth over them about half an Inch thick: This Bed will require no farther Care, than only to keep it clear from Weeds; and toward the Middle or latter End of *April* you will find ſome of your Plants appear above Ground; tho' the greateſt Part of them perhaps may lie till the Spring following before they come up, at which Time you ſhould carefully clear the Beds from Weeds, and in very dry Weather refreſh them with ſome Water, which will greatly promote their Growth: In this Bed they ſhould remain till the following Spring, when you muſt prepare ſome Beds to tranſplant them into, which ſhould alſo be of light, freſh, undung'd Soil; and having well dug and cleans'd the Ground from all noxious Weeds and Roots, you ſhould make them level: Then, in the Beginning of *April*, which is the proper Seaſon for removing theſe Plants, you ſhould raiſe up the young ones with a Trowel, preſerving as much Earth as poſſible to their Roots, and plant them into the Beds about a Foot aſunder each Way, giving them ſome Water, to ſettle the Earth to their Roots: And if it ſhould prove very dry Weather, you may lay a little Mulch upon the Surface of the Ground round their Roots, which will be of great Service to the Plants.

In theſe Beds they may remain two Years, obſerving to keep them clear from Weeds; and in the Spring you ſhould ſtir the Ground gently between them, that their Roots may with greater Eaſe ſtrike into it; after which Time they ſhould be tranſplanted either into a Nurſery, at the Diſtance of three Feet Row from Row, and eighteen Inches aſunder in the Rows, or into the Places where they are to remain for good. The beſt Seaſon to tranſplant them (as I before obſerv'd) is in the Beginning of *April*; and you ſhould take 'em up carefully, to preſerve a Ball of Earth to their Roots; and when planted, their Roots ſhould be mulch'd: All which, if carefully attended to, as alſo obſerving to refreſh them with Water in very dry Weather, until they have taken new Root, will preſerve them from the Danger of not growing; and they being extreme hardy, in reſpect to Cold, will defy the ſevereſt of our Winters to injure them, provided they are not planted in a moiſt or rich Soil.

In order to have theſe Trees aſpire in Height, their under Branches ſhould be taken off, eſpecially where they are inclin'd to grow out ſtrong: But they muſt not be kept too cloſely prun'd, which would retard their Growth; for all theſe Ever-green Trees do more or leſs abound with a reſinous Juice, which in hot Weather is very apt to flow out from ſuch Places as are wounded: ſo that it will not be adviſeable to take off too many Branches at once, which would make ſo many Wounds from which their Sap in hot Weather would flow in ſuch Plenty, as to render the Trees weak and unhealthy.

The three Sorts of *Virginian Cedars* grow to a much greater Height than the former, and in their native Country afford excellent Timber for many Uſes; but with us there are very few which are above twenty or twenty-five Feet high: Tho' there is no doubt of their growing larger; for they thrive very faſt after the three firſt Years, and reſiſt the ſharpeſt Froſts of our Climate exceeding well, and are very apt to grow ſtrait and regular, provided they are not ſuffer'd to ſhoot out too much at Bottom.

Theſe Plants are alſo propagated by Seeds, which muſt be procured from *Virginia* or *Carolina*, (for they rarely produce ripe Seeds in *England)* and ſown as was directed for the other *Junipers:* But as this Seed can't be procur'd in *England* 'till Spring, ſo, when ſown at that Seaſon, it remains in the Ground until the ſucceeding Spring before the Plants appear; therefore you muſt obſerve to keep the Beds clear from Weeds, and not ſuffer the Seeds to be diſturb'd; which is often the Fault of ſome impatient People, who think, becauſe the Plants do not riſe the firſt Year, that they will never come up, and ſo dig up the Ground again, whereby their Seeds are buried; but if they are let remain, they ſeldom fail to grow. When the Plants are come up, they muſt be carefully weeded; and in dry Weather ſhould be refreſhed with Water, which will greatly forward their Growth; and the Spring following they ſhould be tranſplanted into Beds (as was directed for the common *Juniper)* in *April*, obſerving to preſerve a Ball of Earth to their Roots; and after they are planted, if the Seaſon be dry, they muſt be carefully water'd, and the Surface of the Ground cover'd with Mulch, to prevent the Sun and Wind from entering the Earth, to dry their Fibres: But they ſhould not be too much water'd, which often proves injurious to theſe Trees, by rotting their tender Fibres ſoon after they are emitted, whereby the Plants have been often deſtroy'd.

In theſe Beds they may remain two Years, obſerving to keep them clear from Weeds; and in Winter you ſhould lay a little freſh Mulch upon the Surface of the Ground round their Roots, which will prevent the Froſt from penetrating to them, and effectually preſerve them; for while the Plants are ſo young, they are liable to be impair'd by hard Froſts, when too much expos'd thereto; but when they have attain'd a greater Strength, they will reſiſt the ſevereſt of our Cold.

After two Years, they ſhould either be remov'd into a Nurſery, (as was directed for the common *Juniper)* or tranſplanted where they are deſign'd to remain; obſerving always to take them up carefully, otherwiſe they are ſubject to fail upon tranſplanting; as alſo to mulch the Ground, and water them as was before directed, until they have taken root; after which they will require no farther Care, than only to keep the Ground clear about their Roots, and to prune up their Side-branches to make them aſpire in Height.

The Soil in which you plant theſe Trees, ſhould be freſh and light, but muſt not be dung'd, eſpecially at the Time when they are planted; for Dung is very hurtful to them, eſpecially if it be not quite rotted to Mould; therefore the Mulch which is laid upon the Surface of the Ground ſhould not be Dung, but rather ſome freſh Turf cut from a Common, and the Graſs turn'd downward; which is certainly the beſt Sort of Mulching for moſt Plants, it affording no ill Scent, nor is it ſubject to breed Vermin, or be unſightly, and will effectually anſwer all the Purpoſes of Mulch, without any Danger of hurting the Plants.

Theſe Trees, being thus manag'd, will in a few Years riſe to a conſiderable Stature, and, by the Variety of their Evergreen Leaves, and Manner of Growth, will greatly add to the Beauty of ſuch Plantations, if rightly diſpoſed; which indeed is what we ſeldom obſerve in any of the *Engliſh* Gardens or Wilderneſſes; for there are few People who conſider the different Growths of the ſeveral Trees with which they compoſe ſuch Plantations, ſo as to place the talleſt growing Trees the backwardeſt from Sight, and the next Degree to ſucceed them, and ſo gradually diminiſhing till we come to the Common *Juniper*, and others of the ſame Growth, whereby all the Trees will be ſeen, and the gradual Declivity of their Tops will appear like a verdant Slope, and be much more agreeable to the Sight, as alſo more advantageous to the Growth of the Trees, than to place Shrubs of humble Growth near ſuch Plants as will grow to the firſt Magnitude, whereby the Shrub is hid from Sight, and will be over-ſhadow'd and deſtroy'd: nor can the Diſtance which each Tree requires, be ſo juſtly proportion'd any other way; for in this Diſtribution, the largeſt Trees being ſeparated by themſelves, may be planted at a due Diſtance; and then thoſe of a middling Growth ſucceeding, may be accordingly allowed ſufficient Room; and the ſmaller, which are next the Sight, being plac'd much cloſer, will hide the naked Stems of the larger Trees, and have an agreeable Effect upon the Sight.

The Timber of theſe Trees is of excellent Uſe in *America* for building of Veſſels, wainſcotting Houſes, and for making many Sorts of Utenſils, it abounding with a bitter Reſin, which prevents its being deſtroy'd by Vermin; but it is very brittle, and ſo not proper for ſtubborn Uſes: but however, by increaſing the Number of our Timber Trees, we ſhall find many Advantages, beſides the Pleaſure their Variety affords; for we may hereby have Trees of very different Kinds, which are adapted to grow in various Soils and Situations, whereby we ſhall never want proper Trees for all the different Sorts of Soils in *England*; if proper Care be taken in their Choice; which would be a great Improvement to many Parts of this Kingdom, which now lie unplanted, becauſe the Owner, perhaps, finds that neither *Oaks* nor *Elms* will thrive there, and ſo conſequently concludes that no other Sort will: which is a great Miſtake; for if we conſider how different the Structure of Trees is, (being deſign'd by the wiſe Author and Contriver of all Things, to grow on different Soils and Situations) and only obſerve what Sorts are adapted for growing upon dry, barren Mountains, and what are deſign'd for the lower and richer Valleys, we need never be at a Loſs for proper Trees for all Sorts of Ground.

The *Bermudas Cedar* coming from a more temperate Climate, is ſomewhat tenderer than the former, and more impatient of our Cold, (eſpecially while the Plants are young) but afterwards it endures it very well, as may be ſeen by divers Trees which are now growing in *England*, ſome of which are upward of twenty Feet high, and have reſiſted ſeveral ſevere Winters without Injury: but theſe *Cedars* are not of ſo quick a Growth here, as in a more temperate Climate; for in their native Country they will grow to be large enough for Ship Timber in twenty Years, from Seed, (as I have been credibly inform'd by ſeveral Perſons who have lived there many Years): however, when they have been ſome time naturalized to our Country, there is no doubt but they will thrive much better than at preſent, eſpecially when the Trees here produce Berries; for the young Plants raiſed therefrom will be much hardier than thoſe procured from foreign Seeds, as is evident in many other Kinds.

Theſe Plants are propagated by Seeds in the ſame Manner as the former, with only this Difference, that theſe ſhould be ſown in Tubs or Pots of Earth, that they may be remov'd into Shelter in Winter-time, otherwiſe the young Plants are often hurt by hard Froſts: but they will require no more Care than only to be placed under a common Hot-bed Frame, that the Glaſſes may be conſtantly kept off in mild Weather, when they can't have too much free Air, and only cover'd in hard Froſts. Theſe Seeds do conſtantly remain in the Ground until the ſecond Year, before they come up, therefore the Earth in the Pots ſhould not be diſturb'd; and in the Summer-time they ſhould be plac'd in the Shade, to prevent the Earth from drying too faſt; and in very dry Weather they ſhould be often water'd; but do not give too much Water to them at once, which would rot the Seeds.

The Spring following, when the young Plants come up, they muſt be carefully clear'd from Weeds, and in dry Weather refreſh'd with Water; but ſhould ſtand, during the Summer-ſeaſon, in a Place defended from ſtrong Winds; and in Winter muſt be plac'd into Shelter, where they may be cover'd in hard froſty Weather, but muſt have open Air when the Weather is mild. In *April* following you ſhould tranſplant them each into a ſingle Half-penny Pot fill'd with rich light Earth, being careful to raiſe them up with a Ball of Earth to their Roots; and when they are planted, you ſhould water them, to ſettle the Earth to their Roots; then place the Pots in a warm Situation, where they may be defended from Sun and Wind: but if you will beſtow a moderate Hot-bed to plunge the Pots upon, it will greatly promote their taking new Root: however, you muſt carefully defend them from the great Heat of the Sun, which is injurious to them when freſh remov'd; but when they have taken Root, you may expoſe them by Degrees to the open Air: If you ſuffer the Pots to remain plung'd all the Summer, it will preſerve the Earth therein from drying ſo faſt as it would do, if they were ſet upon the Ground.

In *October* you ſhould again remove theſe Pots into Shelter, or elſe plunge their Pots into the Ground under a warm Hedge, where they may be protected from the cold North and Eaſt Winds; and in the Spring following you muſt ſhift the Plants into Pots a Size bigger, taking away ſome of the Earth from the Outſide of the Ball, and adding ſome freſh, which will promote their Growth; and ſo continue to manage them as was before directed, until you plant them out in the Places where they are deſign'd to remain; which ſhould not be done till they are three or four Years old, by which time they will be ſtrong enough to bear the Cold.

The Reaſon for my directing theſe Plants to be preſerv'd in Pots until they are planted out for good, is, becauſe they are difficult to tranſplant; and being tender, will require ſome Shelter while young; and whoever obſerves the Method here laid down, will find the Plants ſo manag'd to gain two Years Growth in ſix, from thoſe rais'd in the open Air, and be in leſs Danger of being deſtroy'd: And as the Trouble and Expence in raiſing 'em this way is not great, ſo it is worth practiſing, ſince in a few Years the Trees will recompence the Trouble.

Theſe Plants ſhould have a freſh, light, undung'd Soil, as the former, and may be plac'd in Plantations with them, obſerving to let theſe be plac'd in a Line below thoſe; for they will not grow ſo faſt with us as they do, nor do I believe they will make ſuch large Timber; tho' this is much preferable to the Timber of the other Sorts.

The Timber of this Tree is of a reddiſh Colour, and very ſweet, and is commonly known in *England* by the Name of *Cedar Wood*, tho' there are divers Sorts of Wood call'd by that Name, which come from very different Trees, eſpecially in the *Weſt-Indies*, where there are ſeveral Trees of vaſtly different Appearances, which have that Appellation; it is this Sort of Wood which is uſed for Pencils, as alſo to wainſcot Rooms, and making Stair-caſes, it enduring longer ſound than moſt other Sorts of Timber; which, perhaps, may be owing to ſome extreme bitter Taſte in the Reſin, with which the Tree abounds; for it is very remarkable, that the Worms do not eat the Bottoms of the Veſſels built with this Wood, as they do thoſe built with *Oak*; ſo that the Veſſels built with *Cedar* are much preferable to thoſe built with any other Sort of Timber, for the Uſe of the *Weſt-India* Seas; but they are not fit for Ships of War, the Wood being ſo brittle as to ſplit to pieces with a Cannon Ball; but when well poliſh'd, and neatly fitted up in Wainſcot, it appears very handſome, and will be found a valuable Timber in *England*.

The ſeventh Sort grows in great Plenty in the *Alpes*, and alſo on the Hills in *Germany*. The eighth Sort grows wild in the *Pyrenean* Mountains, and alſo on ſome Hills in the *South* of *France*. The ninth Sort grows plentifully in *Spain*, from whence the Berries have been brought to *England*, and many Plants have been raiſed. The tenth, eleventh, and twelfth Sorts were diſcovered by Dr. *Tournefort* in the *Levant*, from whence he ſent their Berries to the *Royal Garden* at *Paris*. The tenth Sort hath a ſweet-ſcented Wood, ſomewhat like that of *Bermudas*, and is by the modern *Greeks* called *Cedar*.

The ſix laſt Sorts may be propagated by ſowing of their Berries early in the Spring, on Borders of light freſh Earth, which are expoſed to the Morning-Sun, covering them about half an Inch thick with light Earth. Theſe Berries will remain in the Ground one whole Year, ſo that during that time the Ground ſhould be kept clear from Weeds, and in very dry Weather the Borders ſhould be now and then watered. The following Spring the Plants will begin to appear, when they muſt be kept very clear from Weeds, and in dry Weather they ſhould be duly watered. With this Management the Plants will make a conſiderable Advance the firſt Seaſon, ſo that they will be fit to tranſplant the following Spring; when you ſhould prepare ſome Beds of freſh Earth in a ſheltered Situation, into which the Plants muſt be removed juſt before they begin to ſhoot, and planted about a Foot aſunder every way. In doing of this great Care ſhould be taken not no break or tear the Roots of the Plants, and alſo to plant them as ſoon as poſſible, for if they remain but two or three Hours out of the Ground, their Roots will dry, and the Plants rarely ſurvive their Removal. This Work ſhould alſo be done in moiſt or cloudy Weather, when the Air is ſoft; for if it is done when the dry Eaſterly Winds reign, the Plants ſeldom thrive. When they are planted, the Surface of the Ground about their Roots ſhould be covered with Mulch, to prevent the Sun and Wind from penetrating the Earth to their Roots, which, if not prevented, will deſtroy the Plants. In dry Weather they ſhould be now and then gently watered; but they ſhould by no means have too great a Quantity of Moiſture; for that will rot their tender Fibres, and deſtroy the Plants.

In theſe Beds the Plants ſhould remain two Years, during which Time the Ground ſhould be kept conſtantly clear from Weeds; and the Spring after tranſplanting, the Ground ſhould be gently dug, to looſen it, being careful not to expoſe the Roots of the Plants to the Air. And at the two Years End, they may be removed to the Places where they are deſigned to remain, provided the Ground is ready; but if the Plantation is not laid out, then the Plants ſhould be removed into a Nurſery, for a Year or two longer, placing them in Rows three Feet apart, and the Plants two Feet aſunder in the Rows. This ſhould alſo be done in the Spring, juſt before they begin to ſhoot; and the ſame Care ſhould be had to mulch their Roots as before, as alſo to do the Work in moiſt and cloudy Weather. When the Plants have taken Root either in the Nurſery, or in the Plantation where they are deſigned to remain, they will require no other Care but to keep them clear from Weeds, until the Plants are grown ſtrong enough to bear down the Weeds, and keep them under.

The eighth, ninth, and tenth Sorts riſe to a great Height, and will grow to a pretty large Size; ſo theſe ſhould be planted amongſt other Ever-green-trees of the ſame Growth, where they will afford an agreeable Variety; for they are naturally diſpoſed to grow in a pyramidal Form, ſomewhat like the *Cypreſs*; and may be planted round Buildings, where they will make a fine Appearance. They are all of them hardy enough to reſiſt the Cold of our Winters, and will grow on ſtony cold Lands.

The ſeventh, eleventh, and twelfth Sorts are of humbler Growth, ſo may be planted amongſt lower evergreen Shrubs, in Front of the larger Trees, where they may be placed ſo as to render them very beautiful, and greatly to add to the Variety. The ſeventh Sort ſeldom riſes above a Foot high; but the others will grow to the Height of five or ſix Feet, and have nearly the ſame Appearance with our common *Juniper*.

JUSTICIA.

This Plant was ſo named by the late Dr. *Houſtoun*, in Honour to *James Juſtice*, Eſq; a great Lover and Encourager of Gardening and Botany.

The *Characters* are;

It hath an anomalous Flower conſiſting of one Leaf, which is divided into two Lips almoſt to the Bottom, the under one being for the moſt part intire, but the upper Lip is divided into two; the Flowers are ſucceeded by inverſed ſpear-ſhaped Fruit, which have one Cell, containing many flat Seeds.

The *Species* are;

1. JUSTICIA *annua, hexangulari caule, foliis circææ conjugatis, flore miniato. Houſt.* Annual Juſticia, with an hexangular Stalk, Enchanters Night-ſhade Leaves growing oppoſite, and a carmine Flower.

2. JUSTICIA *fruteſcens, floribus ſpicatis majoribus, uno verſu diſpoſitis. Houſt.* Shrubby Juſticia, with larger Flowers growing in Spikes, appearing on one Side of the Stalk.

Theſe two Plants were diſcovered by the late Dr. *Houſtoun*, at *la Vera Cruz*, from whence he ſent the Seeds and Specimens to *England*. The firſt Sort grows about two or three Feet high, and periſhes ſoon after the Seeds are ripe; but the ſecond Sort grows to the Height of ſix or ſeven Feet, and divides into many Branches, which become woody; at the End of the Branches the Flowers are produced in Spikes, which are of a carmine Colour.

Theſe Plants may be propagated by Seeds, which ſhould be ſown early in the Spring in ſmall Pots filled with light freſh Earth, and plunged into a moderate Hot-bed of Tanners-bark, obſerving to water the Earth gently as it appears dry, and alſo to cover the Glaſſes of the Hot-bed every Night, to preſerve a kindly Warmth in the Bed. When the Plants begin to appear, the Weeds ſhould be carefully pulled out of the Pots, and the Glaſſes of the Hot-bed ſhould be raiſed every Day when the Weather is warm, to admit freſh Air to the Plants; but if the Nights are cold, the Glaſſes ſhould be duly covered with Mats ſoon after the Sun is gone off from the Bed. The Plants muſt alſo be frequently watered in warm Weather; but it ſhould not be given to them in large Quantities while the Plants are young, becauſe they are then very tender, and ſubject to rot at the Bottom of their Stems, with much Moiſture.

When the Plants are about two Inches high, they ſhould be carefully taken up, and each tranſplanted into a ſeparate ſmall Pot filled with light freſh Earth, and then plunged into the Hot-bed again, being careful to water and ſhade the Plants until they have taken new Root; after which Time they ſhould have Air admitted to them every Day, in proportion to the Warmth of the Seaſon, and they ſhould be duly watered every Day in hot Weather.

As the Plants advance in their Growth, ſo they ſhould be ſhifted into larger Pots; for if their Roots are too much confined, the Plants will not make any conſiderable Progreſs; but they ſhould not be over-potted, for that will be of worſe Conſequence than under-potting of them; for when they are planted in very large Pots, they will ſtarve and decay, without producing any Flowers. Theſe Plants are too tender to endure the open Air in this Country, therefore they ſhould always remain in the Hot-bed, being careful to let them have a due Proportion of Air in hot Weather: and the annual Sort ſhould be brought forward as faſt as poſſible in the Spring, that the Plants may flower early, otherwiſe they will not produce good Seeds in *England*.

The ſecond Sort ſhould remain in the Hot-bed during the ſummer Seaſon (provided there be Room under the Glaſſes, without being ſcorched); but at *Michaelmas*, they ſhould be removed into the Stove, and plunged into the Bark-bed; where they muſt remain during the Winter Seaſon, obſerving to keep them warm, as alſo to water them gently two or three Times a Week, according as they ſhall require. The following Summer theſe Plants will flower, and will abide ſeveral Years; but they rarely produce good Seeds in *Europe*.

KA

KALI, [is an *Aſiatick* Name, which ſignifies a Sea-Plant] Glaſs-wort.

The *Characters* are;

It hath a Flower conſiſting of many Leaves, which are placed in a Circle, and expand in form of a Roſe: out of the middle of which riſes the Pointal, which afterward becomes an almoſt globular membranaceous Fruit, containing one ſingle Seed, which is twiſted like a Periwinkle, and generally infolded in the Leaves of the Flower.

The *Species* are;

1. KALI *majus, cochleato ſemine. C. B. P.* Snail-ſeeded Glaſſwort.
2. KALI *ſpinoſum, foliis longioribus & anguſtioribus. Tourn.* Prickly Glaſſwort, with longer and narrower Leaves.
3. KALI *ſpinoſum, foliis craſſioribus & brevioribus. Tourn.* Prickly Glaſſwort, with thicker and ſhorter Leaves.
4. KALI *Siculum lignoſum, floribus membranaceis. Bocc. Rar. Plant.* Sicilian ligneous Glaſſwort, with membranaceous Flowers.
5. KALI *fruticoſum Hiſpanicum, tamariſci folio. Tourn.* Shrubby Spaniſh Glaſſwort, with a Tamariſk Leaf.
6. KALI *fruticoſum Hiſpanicum, geniſtæ fronde. Tourn.* Shrubby Spaniſh Glaſſwort, with Broom-tops.
7. KALI *fruticoſum Hiſpanicum, capillaceo folio villoſo. Tourn.* Shrubby Spaniſh Glaſſwort, with a hairy and downy Leaf.
8. KALI *foliis longioribus & anguſtioribus ſubhirſutis. Tourn.* Glaſſwort, with longer and narrower ſomewhat hairy Leaves.
9. KALI *orientale fruticoſum ſpinoſum, camphoratæ folio. Tourn. Cor.* Eaſtern ſhrubby prickly Glaſſwort, with a ſtinking ground-pine Leaf.
10. KALI *orientale fruticoſum, flore maximo albido. Tourn. Cor.* Eaſtern ſhrubby Glaſſwort, with a very large whitiſh Flower.
11. KALI *orientale fruticoſum, foliis ſedi minoris, flore purpureo. Tourn. Cor.* Eaſtern ſhrubby Glaſſwort, with Leaves like the leſſer Houſleek, and a purple Flower.
12. KALI *orientale fruticoſum altiſſimum, florum ſtaminibus purpureis. Tourn. Cor.* The talleſt ſhrubby Eaſtern Glaſſwort, with Flowers having purple Stamina.
13. KALI *orientale fruticoſum lanuginoſum. Tourn. Cor.* Woolly Eaſtern ſhrubby Glaſſwort.
14. KALI *orientale fruticoſum, linariæ folio. Tourn. Cor.* Eaſtern ſhrubby Glaſſwort, with a toad-flax Leaf.
15. KALI *orientale fruticoſum, flore magno purpureo. Tourn. Cor.* Shrubby Eaſtern Glaſſwort, with a large purple Flower.
16. KALI *orientale fruticoſum, floribus albis. Tourn. Cor.* Shrubby Eaſtern Glaſſwort, with white Flowers.
17. KALI *orientale ſpinoſum ſubhirſutum, tenuiſſimo folio. Tourn. Cor.* Prickly Eaſtern hairy Glaſſwort, with a very narrow Leaf.
18. KALI *orientale, capillaceo folio, flore purpuraſcente. Tourn. Cor.* Eaſtern Glaſſwort, with a capillaceous Leaf, and a purpliſh Flower.

The firſt Sort here mentioned grows wild in the *Mediterranean* in ſeveral Places, where it is gathered for the making *Sode*, which is a ſort of Pot-aſh uſed in the making of Soap. It is alſo cultivated in the South of *France*, in ſalt Marſhes, for the ſame Purpoſe. This Plant ſeldom grows large, unleſs it is cultivated, which greatly improves its Size, ſo that it often grows from two to three Feet high, and divides into many Branches, whereas in the natural Places of its Growth, it is ſeldom above a Foot high. The *Spaniards* alſo cultivate ſeveral of the Species here mentioned, in order to make *Sode* thereof, the beſt of which is brought from *Alicant* and *Cartagena*. I believe moſt of the Sorts may be uſed indifferently for the making Pot-aſh; for in the ſeveral Countries, from whence we have the Pot-aſh, it is made of different Sorts. But the beſt *Pot-aſh* is that which comes from the *Levant*, which is called *Barillia*; the Salt of theſe Aſhes are clear and white, ſo is uſed in making of the fineſt Glaſs, and the hardeſt Soap. But this is made of a different Plant from any of this Genus, and is before mentioned under the article *Ficoides*.

The Inhabitants of thoſe warmer Countries, who cultivate theſe Plants, ſow their Seeds early in the Spring, on low marſhy Grounds near the Sea, or on ſalt Ponds, where the Plants ſoon come up, and in about three Months will be fit to cut for Uſe; when they mow it down, and dry it after the manner of Hay. When it is well dried, they dig Holes or Pits, in the nature of *Lime-Kilns*; then they ſet Fire to a Bundle of the Herb, which they throw into the Pit; and after that they throw three or four more Bundles into the Pit, which they ſuffer to be well lighted; then they fill the Pit with the dried Herb, and ſtop the Top of it up, leaving it to conſume for ſome Time, to be reduced to Aſhes. When they open the Pit, they find the Salt incorporated into a ſolid Rock, which they are obliged to break and raiſe up as Stones out of a Quarry.

There are ſome ſorts of Pot-aſh, which are made of many Kinds of Sea-weeds; but theſe are very little eſteemed; they may be eaſily known by their dark Colour, and fetid Scent, as alſo by their Moiſture.

The third and fourth Sorts of Glaſſwort grow at a greater Diſtance from the Sea: Theſe are frequently preſerved in Botanic Gardens, for Variety, as are ſome of the other *Species*, tho' there are not many Kinds which will perfect their Seeds in *England*. All the Kinds are propagated by Seeds, which ſhould be ſown the Beginning of *March*, on a Bed of freſh light Earth in an open Situation; and when the Plants come up, the Weeds ſhould be carefully drawn out from amongſt them; and where the Plants are too cloſe, they ſhould be thinned, ſo as to leave them about ſix or eight Inches aſunder every way: as the Plants advance, ſo they ſhould be kept clear from Weeds; and the laſt Time of thinning of the Plants, they ſhould be left a Foot aſunder, which will be ſufficient Room for any of the Sorts to grow to Maturity. Theſe Plants flower in *July* and *Auguſt*, and if the Autumn proves warm, ſome of the Sorts will produce ripe Seeds about *Michaelmas*.

As theſe Plants do not bear Tranſplanting, ſo where they are cultivated for Uſe, the beſt Method will be to hough the Plants ſoon after they come up, as is practiſed for *Turnips*, *Carrots*, and ſeveral other eſculent Plants, which will deſtroy the Weeds, when it is carefully performed in dry Weather; and by ſtirring of the Ground between the Plants, it will occaſion their growing much larger than where this is not practiſed. But as our Seaſons in *England* are ſeldom warm enough to bring theſe Plants to Perfection, ſo it is not worth the Trouble of cultivating here. In ſome of the *Engliſh* Colonies in *America*, this Commodity may pay the Inhabitants very well, if they would cultivate it; but then I ſhould adviſe the ſowing the *Barillia* only, which is the moſt valuable Kind.

KARATAS, The Penguin or wild Ananas.

The *Characters* are;

It hath a tubulous bell-ſhaped Flower, which is divided into three Parts at the Mouth; from whoſe Calyx ariſes the Pointal, fixed like a Nail in the hinder Part of the Flower; which afterward

terward becomes a fleſhy almoſt conical Fruit, which is divided by Membranes into three Cells, which are full of oblong Seeds.

There is but one Sort of this Plant at preſent known, which is;

Karatas *foliis altiſſimis, anguſtiſſimis & aculeatis. Plum. Nov. Gen.* The wild Ananas or Penguin.

Father *Plumier* has made a great Miſtake in the Figure and Deſcription of the Characters of this Plant, and the *Caraguata*; for he has joined the Flower of the *Caraguata* to the Fruit of the *Karatas*, and *vice verſa*.

This Plant is very common in the *Weſt-Indies*, where the Juice of its Fruit is often put into *Punch*, being of a ſharp acid Flavour. There is alſo a Wine made of the Juice of this Fruit, which is very ſtrong; but it will not keep good very long, ſo is only for preſent Uſe. This Wine is very intoxicating, and heats the Blood; therefore ſhould be drank very ſparingly.

In *England* this Plant is preſerved as a Curioſity; for the Fruit ſeldom arrives to any Degree of Perfection in this Country; and if it were to ripen as thoroughly here, as in its native Country, it would be little valued on account of its great Auſterity; which will often take the Skin off from the Mouths and Throats of thoſe People, who eat it incautiouſly.

This Plant is propagated by Seeds; for tho' there are often Suckers ſent forth from the old Plants, yet they coming between the Leaves, are ſo long, ſlender, and ill-ſhapen, that if they are planted, they ſeldom make regular Plants. Theſe Seeds ſhould be ſown early in the Spring, in ſmall Pots filled with light rich Earth, and plunged into a Hot-bed of Tanners-bark, obſerving if the Nights ſhould prove cold, to cover the Glaſſes with Mats, to keep the Bed in a due Temper of Heat; as alſo gently to water the Earth, as often as it appears dry. When the Plants are come up, they ſhould be carefully cleared from Weeds; and in the Day-time the Glaſſes of the Hot-bed ſhould be raiſed, to admit freſh Air to the Plants, that they may not draw up too weak; they muſt alſo be frequently refreſhed with Water. When the Plants are ſtrong enough to tranſplant, they ſhould be carefully taken up, each planted into a ſeparate Pot, filled with light rich Earth, and plunged into the Hot-bed again, obſerving to refreſh them frequently with Water, until they have taken new Root; after which Time they ſhould have Air and Water in proportion to the Warmth of the Seaſon. In this Bed the Plants may remain till *Michaelmas*, at which Time they ſhould be removed into the Stove, and plunged into the Bark-bed, where they ſhould be treated in the ſame Manner as the *Ananas*.

Theſe Plants will not produce their Fruit in *England*, until they are three or four Years old; ſo they ſhould be ſhifted into larger Pots, as the Plants advance in their Growth; for if their Roots are too much confined, they will make but little Progreſs. They ſhould alſo be placed at a pretty great Diſtance from each other; for their Leaves will be three or four Feet long, which turning downward, occupy a large Space.

A KATKIN, is an Aggregate of Summits, hanging down in Form of a Rope, or Cat's Tail, as in the *Sallow*, *Haſel*, *Birch*, &c. and is call'd in Latin *Iulus*.

KEMPFERA.

This Plant was ſo named by the late Dr. *Houſtoun*, in Honour to the Memory of Dr. *Kempfer*, a Learned Botaniſt.

The *Characters* are;

It hath an anomalous Flower conſiſting of one Leaf and divided at the Brim into five Parts: after the Flower is parted, the Pointal becomes a hard Fruit, which is divided into four Cells, which are full of ſmall Seeds.

We know but one Sort of this Plant, *(viz.)*

Kempfera *fruteſcens, chamædryos folio, floribus ſpicatis cœruleis. Houſt.* Shrubby Kempfera, with a *Germander* Leaf; and blue Flowers growing in a Spike. This Plant is figured and deſcribed in the *Paradiſus Batavus*, under the Title of *Veronicæ ſimilis fruticoſa Curaſſavica, teucrii foliis, flore galericulato*.

It is very common in *Jamaica*, and ſeveral other Iſlands in the *Weſt-Indies*, where it grows to the Height of three or four Feet, and becomes woody. The Flowers are produced in Spikes at the Extremity of the Branches, which are of a fine blue Colour.

This Plant is propagated by Seeds, which ſhould be ſown early in the Spring, in Pots filled with light rich Earth, which muſt be plunged into a Hot-bed of Tanners-bark, where they muſt be kept warm, and frequently refreſhed with Water. In about five Weeks the Plants will begin to appear; when they muſt be carefully cleared from Weeds, and duly watered; but this muſt be done very gently, becauſe the Plants are very tender while they are young. In the middle of the Day, the Glaſſes of the Hot-bed ſhould be raiſed to admit freſh Air to the Plants, to prevent their drawing up too weak; but if the Nights ſhould prove cold, the Glaſſes of the Hot-bed ſhould be covered with Mats, ſoon after the Sun is gone off the Bed, to keep the Bed in a due Temperature of Warmth. When the Plants have obtained ſufficient Strength to tranſplant, they ſhould be carefully turned out of the Seed Pots, and parted, placing each into a ſeparate ſmall Pot, filled with light rich Earth, and then plunged into the Hot-bed again, obſerving to water them pretty well to ſettle the Earth to their Roots, as alſo to cover the Glaſſes every Day with Mats, to ſcreen the Plants from the Sun, until they have taken new Root, after which Time they ſhould have freſh Air admitted to them every Day, in proportion to the Warmth of the Seaſon; and they muſt be frequently watered in hot Weather, for they naturally grow on moiſt Places.

In this Hot-bed the Plants may remain during the Summer Seaſon; but at *Michaelmas*, they ſhould be removed into the Stove, and plunged into the Bark-bed, where they muſt be kept very warm during the Winter Seaſon, for they are very impatient of Cold; they ſhould alſo be frequently refreſhed with Water, but it muſt be given to them in ſmall Quantities during the cold Weather; for they are very ſubject to rot with too much Moiſture at that Seaſon. In the Spring of the Year the Plants may be removed into a freſh Hot-bed of Tanners-bark, which will greatly forward their Growth; but there ſhould be great Care the Bed be not too hot, leſt it ſcorches their Roots. If the Plants thrive well the firſt Seaſon, they will flower the ſecond Summer; but they ſeldom produce good Seeds in this Country, however the Plants may be maintained ſeveral Years, with proper Care.

KETMIA, [is a *Syriack* Word: It is commonly call'd *Althæa arboreſcens.*]

The *Characters* are;

The Flower is compoſed of one intire Leaf, which expands in the Form of thoſe of the common Mallow: *The Fruit is oblong, and divided into ſeveral Cells, in each of which are contain'd ſeveral roundiſh Seeds.*

The *Species* are;

1. Ketmia *Syrorum, quibuſdam. C. B. Althæa frutex*, with red Flowers.

2. Ketmia *Syrorum, flore purpureo-violaceo. Tourn. Althæa frutex*, with purple Flowers.

3. Ketmia *Syrorum, flore albo. Boerh. Ind. Althæa frutex*, with white Flowers.

4. Ketmia *Syrorum, floribus ex albo & rubro variis. Tourn. Althæa frutex*, with ſtriped Flowers.

5. Ketmia *Syrorum, foliis ex albo eleganter variegatis. Cat. Plant. Hort. Lond. Althæa frutex*, with ſtriped Leaves.

6. Ketmia *Sinenſis, fructu ſubrotundo, flore ſimplici. Tourn.* China Roſe, *vulgo*.

7. Ketmia *Sinenſis, fructu ſubrotundo, flore pleno. Tourn.* Double China Roſe, *commonly called* in the *Weſt-Indies*, Martinico Roſe.

8. Ketmia *Virginienſis, folio inferiori ulmi, ſuperiori aceris. Boerh. Ind.* Virginian *Ketmia*, with under Leaves like the *Elm*, and upper Leaves like *Maple*.

9. Ketmia *Carolinienſis, folio ribeſii, flore amplo flaveſcente, fundo purpureo.* Carolina *Ketmia*, with Currant Leaves, and an ample yellowiſh Flower with a purple Bottom.

10. Ketmia *Carolinienſis, folio oblongo magis acuminato, flore amplo purpureo.* Carolina *Ketmia*, with a long ſharp-pointed Leaf, and an ample purple Flower.

11. Ketmia *Americana, folio papayæ, flore magno flaveſcente, fundo purpureo, fructu erecto pyramidali, hexagono, ſemine rotundulo, ſapore fatuo. Boerh. Ind.* American *Ketmia*, with a Papaw Leaf, and a large yellowiſh Flower with a purple Bottom, an hexagonal pyramidal Pod growing upright, and roundiſh Seeds.

12. Ketmia *Indica, vitis folio ampliore. Tourn.* Indian *Ketmia*, with an ample Vine-Leaf.

13. Ketmia *Ægyptiaca, ſemine moſchato. Tourn.* Egyptian *Ketmia*, with Seeds ſmelling like Muſk, *commonly called* in the *Weſt-Indies*, Muſk-ſeed.

14. KETMIA *Indica aculeata, foliis digitatis. Tourn.* Indian *Ketmia*, with rough-finger'd Leaves.

15. KETMIA *Indica, goſſypii folio, acetoſæ ſapore. Tourn. Capſula ſeminali rubra.* Indian *Ketmia*, with a Cotton Leaf, whoſe Fruit taſtes like Sorrel, *commonly called* in the *Weſt-Indies*, Indian *or* Red Sorrel.

16. KETMIA *Indica, goſſypii folio, acetoſæ ſapore, capſula ſeminali albida.* Indian *Ketmia*, with a Cotton Leaf, and a whitiſh Seed-veſſel, taſting like Sorrel, *commonly called*, White Sorrel.

17. KETMIA *Braſilienſis, folio ficus, fructu pyramidato ſulcato. Tourn.* Braſil *Ketmia*, with a Fig-Leaf, and a pyramidal furrow'd Fruit, *commonly called* in the *Weſt-Indies*, Okra.

18. KETMIA *Indica, folio ficus, fructu pentagono recurvo eſculento, graciliore & longiore.* Indian *Ketmia*, with a Fig-Leaf, and a five-corner'd, long, ſlender, eatable Fruit, recurv'd at the Top, *commonly called* in the *Weſt-Indies*, Long Okra.

19. KETMIA *veſicaria vulgaris. Tourn.* Venice Mallow, *or* Bladder *Ketmia*.

20. KETMIA *veſicaria Africana. Tourn.* African Bladder *Ketmia*.

21. KETMIA *Africana veſicaria, foliis profundius inciſis, vix crenatis. Boerh. Ind.* African Bladder *Ketmia*, with deeply-cut Leaves.

22. KETMIA *Indica, folio haſtato, fructu duro. Tourn.* Indian *Ketmia*, with a Spear-ſhaped Leaf, and a hard Fruit.

23. KETMIA *Ægyptiaca, vitis folio, parvo flore. Tourn.* Egyptian *Ketmia*, with a Vine-Leaf, and a ſmall Flower.

24. KETMIA *Americana aculeata, flore ampliſſimo coccineo. Plum. Cat.* Prickly American *Ketmia*, with a very large ſcarlet Flower.

25. KETMIA *Americana, ampliſſimo folio cordiformi, flore vario. Plum. Cat.* American Ketmia, with a very large heart-ſhaped Leaf, and a variable Flower.

26. KETMIA *Americana fruteſcens, mori folio, flore purpupureo. Plum. Cat.* American ſhrubby Ketmia, with a mulberry Leaf, and a purple Flower.

27. KETMIA *Americana, ampliſſimo folio angulato, fructu hiſpido clypeato. Plum. Cat.* American *Ketmia*, with a large angular Leaf, and a rough Fruit ſhaped like a Shield.

28. KETMIA *Indica, tiliæ folio. Plum. Cat.* Indian *Ketmia*, with a Lime-tree Leaf, *commonly called* the *Mangrove-Tree* in America.

29. KETMIA *Indica, folio anguſto, longiſſimo & crenato, flore phœnicio.* Indian *Ketmia*, with a narrow very long crenated Leaf, and a ſcarlet Flower.

30. KETMIA *Indica humilis, folio diſſecto aſpero, flore parvo candido, inſtar jaſmini Hiſpanici explicato, fundo purpuraſcente. Breyn.* Low Indian *Ketmia*, with a rough cut Leaf, and a ſmall white Flower, which when open, is like the Flower of *Spaniſh* Jaſmine, having a purple Bottom.

31. KETMIA *Indica humilis, folio diſſecto, flore parvo purpureo.* Low Indian *Ketmia*, with a cut Leaf, and a ſmall purple Flower.

The five firſt Sorts are very hardy Shrubs, growing to the Height of ſeven or eight Feet, and may be train'd up to regular Heads: Theſe are very great Ornaments in ſmall Wilderneſs Quarters, when regularly diſpoſed amongſt Plants of the ſame Growth. They produce their Flowers in *Auguſt*; and, if the Autumn proves favourable, their Seeds will be ripe ſoon after *Michaelmas*. Theſe are commonly ſold by the Nurſerymen, with other flowering Shrubs, under the Name of *Althæa frutex*: But by the modern Botaniſts they are removed from that Genus, and call'd by the Name of *Ketmia*, becauſe their Seeds are produced in Veſſels; whereas thoſe of *Althæa* grow in Form of Cheeſes, in the ſame Manner as thoſe of the common *Mallow*.

Theſe Plants are propagated by Seeds, which ſhould be ſown upon a Bed of rich light Earth, in *February* or *March*: And when they come up, they ſhould be conſtantly clear'd from Weeds; and, in dry Weather, often refreſh'd with Water, which will forward their Growth. In theſe Beds they ſhould remain until the ſucceeding Spring; when, in *March*, they muſt be carefully tranſplanted into Beds of the like Soil, at about ten Inches ſquare each Way, obſerving to water them in dry Weather, as alſo to keep them clear from Weeds: In theſe Beds they may continue two Years, by which Time they will ſpread ſo as to meet each other; therefore you muſt, in *March*, remove them either into the Places where they are deſign'd to remain, or into a Nurſery, allowing them three Feet diſtance, Row from Row, and eighteen Inches aſunder in the Rows; being careful, in taking them up, not to break or bruiſe their Roots, which would endanger their growing; and, in dry Weather, give them ſome Water, until they have taken Root; and lay ſome Mulch upon the Surface of the Ground, to prevent its drying too faſt; and be careful to cut down the Weeds between them.

Theſe Plants may alſo be propagated by Layers, or Suckers taken from the Roots of old Trees: But the latter Method is by no means adviſeable; becauſe the Plants raiſed that Way are ſeldom ſo well rooted, and are very ſubject to produce Suckers, whereby the Shrubs are rendered unſightly.

The former Method may be practiſed, in order to preſerve the particular Kinds: But as they are ſo eaſily propagated by Seeds, which generally produce the handſomeſt Plants, and there will be a Chance to obtain different colour'd Flowers that Way, ſo it is generally preferr'd to any other Method. They will alſo take by Inarching, whereby the ſeveral colour'd Flowers may be obtain'd upon one and the ſame Tree; and by this Method, that Sort with variegated Leaves may be increaſed. Theſe Shrubs require very little Culture, but only to clear them from Weeds, and to dig the Ground about them every Spring; and if there are any decayed Branches, they may be at that Time cut out; but they will not require any other Pruning.

The ſixth and ſeventh Sorts are tender, coming from a warmer Country: Theſe may be propagated by Seeds, which ſhould be ſown on a Hot-bed in the Spring; and when they are come up, they ſhould be tranſplanted into another moderate Hot-bed, to bring them forward: After which, they muſt be planted into Pots fill'd with freſh light Earth, and plunged into a Hot-bed, to incourage their Rooting; and in *June* they may be expoſed to the open Air, in ſome Place where they may be defended from ſtrong Winds: But they muſt be houſed early in Autumn, when they ſhould be placed in a warm Green-houſe, where they will endure the Winter very well, without any artificial Warmth, tho' indeed they will make but very little Progreſs in this Management, nor will they ever produce Flowers, unleſs they are in they ſucceeding Spring placed into a moderate Bark-bed in the Stove, where they will thrive exceedingly; and if a due Proportion of Air be given to them, that they may not draw up too faſt, they will produce Flowers in the Autumn: But unleſs they have the Aſſiſtance of a Fire, they will ſcarcely ripen their Seeds in *England*.

Theſe Plants were originally brought from *China*, where they are greatly admired, not only for their Beauty, but alſo for an odd Circumſtance in their Flowers, which is, their changing Colour at different Times of the ſame Day; in the Morning they are White, at Noon Red, and in the Evening Purple. Theſe Flowers are in Shape ſomewhat like the *Holihock*, but ſeem to be of ſhort Duration: The Double being much preferable to the Single, the Seeds of that ſhould be conſtantly ſow'd; for amongſt the Plants produced from Seeds of the Double, there will always be Single Flowers produced; as is the Caſe of all double Flowers which produce Seeds. They are known in the *Weſt-Indies*, where they are now in great Plenty, by the Name of *Martinico Roſe*; I ſuppoſe, becauſe the Inhabitants of that Iſland firſt procured the Seeds; and from thence they have ſince been ſpread into moſt of the other Iſlands.

The eighth, ninth, and tenth Sorts are perennial Plants, which die to the Surface every Winter, and riſe again the ſucceeding Spring: They commonly produce their beautiful Flowers late in Autumn, but rarely perfect Seeds in our Climate. They are propagated by Seeds, which are eaſily procured from *Virginia* or *Carolina*, where they are in great Plenty. The Seeds ſhould be ſown in *March*, upon a moderate Hot-bed; and when the Plants come up, they ſhould be removed into ſmall Pots fill'd with light rich Earth, and plunged into another Hot-bed, to bring them forward: And in the Month of *June*, they may be expoſed to the open Air, in a well-ſhelter'd Situation, where they may remain until *October*, when they muſt be removed into Shelter for the Winter Seaſon: during which Time they will require no farther Care than to be protected from ſevere Froſts; ſo that if they are placed into a Hot-bed Frame, where they may be expoſed to the open Air in mild Weather, and only cover'd in Froſts, they will do better than when they are placed into the Green-houſe.

In the Spring they may be turn'd out of the Pots, and planted into the full Ground, under a warm Wall or Pale, where they will thrive much better than in Pots, and will produce their Flowers much larger, and in greater Quantities: tho', if you would obtain Seeds from them, the only Method is, to keep one of each Sort in Pots, which ſhould be plung'd into a very moderate Bark-bed in the Stove, giving them a great Share of Air; in which Place they will flower in *June*, and produce ripe Seeds in Autumn.

The eleventh, twelfth, thirteenth, fourteenth, fifteenth, ſixteenth, ſeventeenth, and eighteenth Sorts are much tenderer than any of the former: Theſe are all propagated by Seeds, which muſt be ſown on a Hot-bed early in the Spring; and when the Plants are come up, they ſhould be each of them tranſplanted into a ſeparate ſmall Pot, fill'd with light freſh Earth, and plung'd on a freſh Hot-bed, where they ſhould be frequently water'd; and in warm Weather, the Glaſſes ſhould be raiſed with Bricks, to admit freſh Air to them, which will prevent their drawing up weak; and when their Roots have fill'd the ſmall Pots, they ſhould be ſhaken out of them, and put into larger, and removed to a third Hot-bed, where they may remain until they are grown up to touch the Glaſſes; obſerving (as was before directed) to give them Water frequently, as alſo a large Share of Air in warm Weather; then you ſhould put them into larger Pots, and remove them into the Stove, where they will produce their Flowers in *July*, and in *Auguſt* their Seeds will ripen: But except they are thus managed, they will rarely produce either Seeds or Flowers in our Climate; tho' they may be kept alive in the Summer, if planted in the full Ground.

Theſe Plants, tho' they may produce Seeds the firſt Year, yet they may be continued two or three Years, if preſerved in a moderate Stove in Winter, and frequently refreſh'd with Water: Yet ſince they are eaſily raiſed from Seeds, and young Plants are much more ſightly than the old ones, it is hardly worth while to fill a Stove with them, ſince there are ſo many other Sorts that will not flower or ſeed the firſt Year, which will take up all the Room there in Winter.

The Flowers of theſe Plants are very beautiful, but are of ſhort Duration, ſeldom continuing longer than one Day; but they are ſucceeded by freſh Flowers, if the Plants are ſtrong and healthy, otherwiſe there is little Pleaſure in them in our Country: But in the *Weſt-Indies*, where they grow in great Plenty, and often ariſe to the Height of a Shrub, they are more productive of Flowers, and are in great Eſteem amongſt the Inhabitants of thoſe Countries.

The thirteenth Sort is by ſome People valued for the exceeding Sweetneſs of its Seeds; as are the fifteenth and ſixteenth Sorts for their Seed-veſſels, the Juice of which the People of *Barbadoes*, *Jamaica*, &c. make uſe of, to add a pleaſant Tartneſs to their Viands. And the Pods of the ſeventeenth and eighteenth Sorts are by them put into their Soups, to thicken them. For all which Purpoſes theſe Plants are much cultivated in thoſe Countries; but with us they are only preſerved as Curioſities.

The nineteenth, twentieth, and twenty-firſt Sorts are annual Plants, which are propagated by ſowing their Seeds in *March*, in the Places where they are deſigned to remain; for they generally form downright Woody Roots, and ſeldom ſucceed well if tranſplanted, except it be done while the Plants are very young: They delight in a freſh light Soil, and an open Situation; for if they are over-ſhaded with Trees, they never thrive well, nor produce ſo great a Number of Flowers.

They are very proper Ornaments for the Borders of Pleaſure-Gardens, where, being intermix'd with other annual Plants, they make an agreeable Variety, and are very hardy, requiring no other Culture than only to ſow their Seeds, and keep them conſtantly clear from Weeds. They produce their Flowers in *June* and *July*, and their Seeds are perfected ſoon after; and tho' their Flowers are of ſhort Duration, ſeldom continuing open above half a Day, (which occaſion'd *Gerard*, in his *Herbal*, to call them *Flowers of an Hour*,) yet they are every Day ſucceeded by freſh Flowers, until the Froſt prevents them.

The laſt ten Sorts of Ketmia are tender Plants, being Natives of the warmeſt Climates; the twenty-ſecond, twenty-third, twenty-fourth, twenty-fifth, twenty-ſixth, twenty-ſeventh, twenty-eighth, and twenty-ninth Sorts, will abide two or three Years, provided they are kept in a warm Stove in Winter, tho' all of them will produce Flowers and good Seeds the firſt Seaſon, (provided they are brought forward early in the Spring) except the twenty-eighth Sort, which grows to the Height of fifteen or ſixteen Feet, ſo ſeldom flowers in its native Country until the ſecond or third Year. The thirtieth and thirty-firſt Sorts are annual Plants, which periſh ſoon after they have perfected their Seeds.

Theſe Plants are propagated by Seeds, which ſhould be ſown on a Hot-bed early in the Spring; and when the Plants are come up two Inches high, they ſhould be each tranſplanted into a ſeparate ſmall Pot, filled with light rich Earth, and plunged into the Hot-bed again, obſerving to water and ſhade them until they have taken new Root; after which Time they ſhould have a large Share of freſh Air in warm Weather, and muſt be frequently watered. As the Plants advance in their Growth, ſo they ſhould be ſhifted into larger Pots, and brought forward in Hot-beds after the manner directed for *Amaranths*; by which Method they may be brought to flower in *July*, and their Seeds will ripen in *September*.

The twenty-eighth Sort grows naturally in low ſwampy Places in the *Weſt-Indies*, where their Branches bend down to the Earth, and ſend forth Roots, ſo that one ſingle Plant will in few Months have many Trunks, which will ſpread over a large Spot of Ground. The Bark of theſe Trees is wrought into Ropes, and is of great Uſe to the Inhabitants of *America*.

KITCHEN-GARDEN: The *Kitchen-Garden* ſhould always be ſituated on one Side of the Houſe, ſo as not to appear in Sight, but muſt be placed near the Stables, for the Conveniency of Dung, which ought always to be conſider'd in the Diſpoſition of the Buildings, and the laying out of the Garden: for if this Garden be placed at a great Diſtance from the Stables, the Labour will be very great in wheeling the Dung; and ſuch Expences ſhould ever be avoided, if poſſible.

As to the Figure of the Ground, that is of no great Moment, ſince in the Diſtribution of the Quarters all Irregularities may be hid; tho', if you are at full Liberty, an exact Square is preferable to any other Figure.

The great Thing to be conſider'd, is, to make Choice of a good Soil, not too wet, nor over dry, but of a middling Nature; nor ſhould it be too ſtrong or ſtubborn, but of a pliable Nature, and eaſy to work: And if the Place where you intend to make the *Kitchen-Garden* ſhould not be level, but high in one Part, and low in another, I would by no means adviſe the levelling it; for by this Situation you will have an Advantage which could not be obtain'd on a perfect Level, which is, the having one Part of dry Ground, for early Crops, and the low Part for late Crops, whereby the Kitchen may be the better ſupplied throughout the Seaſon with the various Sorts of Herbs, Roots, &c. And in very dry Seaſons, when in the upper Part of the Garden the Crops will greatly ſuffer with Drought, then the lower Part will ſucceed, and ſo *vice verſa*; but I would by no means direct the chuſing a very low moiſt Part of Ground for this Purpoſe; for altho' in ſuch Soils Garden-Herbs are commonly more vigorous and large in the Summer Seaſon, yet they are ſeldom ſo well taſted or wholſome as thoſe which grow upon a moderate Soil: and eſpecially ſince in this Garden your choice Fruits ſhould be planted, ſo it would be wrong to have a very wet Soil.

This Garden ſhould be fully expoſed to the Sun, and by no means over-ſhadow'd with Trees, Buildings, &c. which are very injurious to your Kitchen-Plants and Fruit-Trees; but if it be defended from the North Wind by a diſtant Plantation, it will greatly preſerve your early Crops in the Spring; as alſo from the ſtrong South-Weſt Winds, which are very hurtful in Autumn to Fruit and Garden-Herbs.

The Quantity of Ground neceſſary for a *Kitchen-Garden* muſt be proportion'd to the Largeneſs of the Family, or the Quantity of Herbs deſired: For a ſmall Family, one Acre of Ground may be ſufficient; but for a large Family, there ſhould not be leſs than three or four Acres; becauſe, when the Ground is regularly laid out, and planted with Eſpaliers of Fruit-Trees, as will hereafter be directed, this Quantity will be found little enough, notwithſtanding what ſome Perſons have ſaid on this Head.

This Ground muſt be wall'd round, and if it can be conveniently contrived ſo as to plant both Sides of the Walls, it will be a great Advantage to the Quantity of Wall-Fruit. Theſe Walls ſhould be built about 12 Feet high, which will be a ſufficient Height for any Sort of Fruit. If the Soil where you intend to place your *Kitchen-Garden* be very ſtrong, then you ſhould plow or dig it three or four times before you plant any thing therein; and if you throw it up in Ridges, to receive the Froſt in Winter, it will be of great Service to meliorate and looſen its Parts.

The Manure which is moſt proper for ſuch Soils, is Seacoal Aſhes, and the Cleanſing of Streets or Ditches, which will render it light much ſooner than any other Dung or Manure; and the greater the Quantity of Aſhes, the better, eſpecially if the Ground be cold; and where theſe Aſhes are not to be obtain'd in Plenty, Sea Sand is very proper, or rotten Wood; or the Parts of Vegetables rotted are very good: all which will greatly looſen the Soil, and cauſe it to be not only eaſier to work, but alſo more advantageous for the Growth of Plants.

But, on the contrary, if your Soil be light and warm, you ſhould manure it with rotten Neats-dung, which is much preferable to any other, for hot Soils; but if you uſe Horſe-dung, it muſt be well rotted, otherwiſe it will burn up the Crops, upon the firſt hot dry Weather.

The Soil of this Garden ſhould be at leaſt two Feet deep, (but if deeper, it will be ſtill better) otherwiſe there will not be Depth enough for many Sorts of eſculent Roots, as *Carrots*, *Parſnips*, *Beets*, &c. which run down pretty deep in the

Ground; and moſt other Sorts of eſculent Plants delight in a deep Soil.

You ſhould alſo endeavour to have a Supply of Water in the different Parts of this Garden, which, if poſſible, ſhould be contain'd in large *Baſons* or *Reſervoirs*, where it may be expoſed to the open Air and Sun, that it may be ſoften'd thereby; for ſuch Water as is taken out of Wells, *&c.* juſt as it is uſed, is by no means proper for any Sort of Plants.

In the Diſtribution of this Garden, after having built the Walls, you ſhould lay out Banks or Borders under them, which ſhould be at leaſt ten Feet broad, whereby the Roots of the Fruit-Trees will have greater Liberty than in ſuch Places where the Borders are not above three or four Feet wide; and upon theſe Banks you may ſow many Sorts of early Crops, if expoſed to the South; and upon thoſe expoſed to the North, you may have ſome late Crops: but I would by no means adviſe the planting any Sort of deep-rooting Plants too near the Fruit-Trees; but rather to have ſome Reed Hedges fix'd in ſome of the warmeſt Quarters, under which you ſhould ſow and plant early *Peas*, *Beans*, &c. where they will thrive as well as if planted under a Wall, and hereby your Fruit-Trees will be intirely freed from ſuch troubleſome Plants.

Then you ſhould proceed to dividing the Ground out into Quarters, which muſt be proportion'd to the Largeneſs of the Garden; but, I would adviſe, never to make them too ſmall, whereby your Ground will be loſt in Walks, and the Quarters being incloſed by Eſpaliers of Fruit-Trees, the Plants therein will draw up ſlender, and never arrive to half the Size as they would do in a more open Expoſure.

The Walks of this Garden ſhould be alſo proportion'd to the Size of the Ground, which in a ſmall Garden ſhould be ſix Feet, but in a large one ten; and on each Side of the Walk ſhould be allow'd a Border three or four Feet wide between the Eſpalier and the Walk, whereby the Diſtance between the Eſpaliers will be greater, and the Borders being kept conſtantly work'd and manur'd, will be of great Advantage to the Roots of the Trees; and in theſe Borders may be ſown ſome ſmall Sallet, or any other Herbs, which do not continue long, or root too deep; ſo that the Ground will not be loſt.

But the Walks of theſe Gardens ſhould not be gravell'd; for as there will conſtantly be Occaſion to wheel Manure, Water, *&c.* upon them, ſo they would ſoon be defaced and render'd unſightly; nor ſhould they be laid with Turf; for Green Walks would abſorb the Rays of Light too much, and thereby cauſe the Fruit to be ill-taſted: but, on the contrary, only level the Surface of the Walks; and if you have either Lime-Rubbiſh or Sand juſt to cover over the Tops of them, to render them drier or fitter to walk on than the natural Soil, they will be much preferable to any other Sort of Walks.

The beſt Figure for the Quarters to be diſpoſed into, is a Square or an Oblong, where the Ground is adapted to ſuch a Figure; otherwiſe they may be triangular, or of any other Shape, which will be moſt advantageous to the Ground.

Theſe Quarters ſhould be conſtantly kept clear from Weeds; and when any Part of the Ground is unoccupied, it ſhould always be trench'd up into Ridges, that it may ſweeten, and imbibe the nitrous Particles of the Air, which is of great Advantage to all Sorts of Land, and the Ground will then be ready to lay down, whenever it is wanted.

The Ground in theſe Quarters ſhould not be ſown or planted with the ſame Crop two Years together; but the Crops ſhould be annually changed, whereby they will prove much better than when they conſtantly grow upon the ſame Spot. Indeed the *Kitchen-Gardeners* near *London*, where Land is dear, are often obliged to put the ſame Crop upon the Ground for two or three Years together; but then they dig and manure their Land ſo well every Year, as to render it almoſt new: tho' notwithſtanding all this, it is conſtantly obſerved, that freſh Land always produces the beſt Crops.

In one of theſe Quarters, which is ſituated neareſt to the Stables, and beſt defended from the cold Winds, ſhould be the Place where you raiſe your early *Cucumbers* and *Melons*; for which Purpoſe it will be very proper to ſurround that Part with a Reed-Hedge, which will hide the Beds from Sight, and preſerve them from Winds: The Size of this Place ſhould alſo be proportion'd to the Quantity of Beds intended; but it ſhould be large enough to contain two Years Beds, or elſe you ſhould have two of theſe Places, that you may every Year change them, which will be found of great Advantage to your Plants: but if your Garden be too ſmall to admit of this, then you ſhould always prepare a ſufficient Quantity of freſh Earth for theſe Beds, otherwiſe they will not ſucceed well.

The moſt important Points of general Culture conſiſt in well digging and manuring the Soil, and giving a proper Diſtance to each Plant, according to their different Growths, (which is conſtantly exhibited in their ſeveral Articles in this Book) as alſo to keep them clear from Weeds; for if Weeds are permitted to grow until their Seeds are ripe, they will ſhed upon the Ground, and fill it ſo as not to be gotten out again in ſeveral Years. You ſhould alſo obſerve to keep your Dunghils always clear from Weeds; for it will be to little Purpoſe to keep the Garden clean if this is not obſerved; for the Seeds falling among the Dung, will be brought into the Garden, whereby there will be a conſtant Supply of Weeds yearly introduced, to the no ſmall Damage of your Plants, and a perpetual Labour occaſion'd to extirpate them again. As for all other neceſſary Directions, they will be found in the Articles of the ſeveral Sorts of *Kitchen-Garden* Plants; which renders it needleſs to be repeated in this Place.

KNIGHTS CROSS, or SCARLET CROSS, is the Scarlet Lychnis. *Vide* Lychnis.

L A

LABIATE-FLOWERS, are ſuch as have Lips; or, more properly, a Labiated Flower is an *irregular monopetalous Flower*, divided into two Lips; the upper is call'd the *Creſt*, the under, the *Beard*: Sometimes the *Creſt* is wanting, and then the *Style* and *Chives* ſupply its Place; as in the *Ground-Pine*, *Scordium*, *Bugula*, &c. but the greateſt Part have two *Lips*, which, in ſome Species, the *Upper-Lip* is turn'd upwards, as the *Ground-Ivy*, &c. but moſt uſually the *Upper-Lip* is convex above, and turns the hollow Part down to the *Lower-Lip*, and ſo repreſents a kind of *Helmet* or *Monk's Hood*, from whence theſe are call'd *Galeate*, *Cucullate*, and *Galericulate* Flowers, in which Form are moſt of the *Verticillate Plants*.

LABLAB. *Vide* Phaſeolus.

LABRUM VENERIS. *Vide* Dipſacus.

LABRUSCA. *Vide* Vitis.

LABURNUM. *Vide* Cytiſſus.

LABYRYNTH, [Λαβύρινθος,] a winding, mazy, and intricate turning to and fro thro' a Wilderneſs or a Wood.

The Deſign of a *Labyrinth* is, to cauſe an intricate and difficult Labour to find out the Center; and the Aim is, to make them ſo intricate, that a Perſon may loſe himſelf in it, and meet with as great a Number of Stops and Diſappointments as is poſſible, they being the moſt valuable that are moſt intricate.

As to the Contrivance of them, it will not be poſſible to give Directions in Words; there are ſeveral Plans and Deſigns in Books of Gardening: They are rarely met with but in great and noble Gardens, as *Hampton-Court*, &c.

There are two Ways of making them, the firſt is, with ſingle Hedges: This Method has been practiſed in *England*. Theſe, indeed, may be beſt, where there is but a ſmall Spot of Ground to be allow'd for the making them; but where there is Ground enough, the double are moſt eligible.

Double ones, or thoſe that are made with double Hedges of a conſiderable Thickneſs of Wood between Hedge and Hedge, are approved as much better than ſingle ones, as is the Manner of making them in *France*, and other Places, of all which that of *Verſailles* is allow'd by all to be the nobleſt of its Kind in the World.

It is an Error in *Labyrinths* in making them too narrow, for by that means the Hedges muſt be kept cloſe clipt; whereas, if the Walks be made wider, according to the foreign Practice, they will not ſtand in need of it.

The Walks are made with Gravel, uſually ſet with Hornbeams; the Paliſades ought to be ten, twelve, or fourteen Feet high; the Horn-beam ſhould be kept cut, and the Walks roll'd.

LACRYMA JOBI, [ſo call'd, becauſe the Seed of it reſembles a Tear or Drop.] Job's Tears.

The *Characters* are;

It hath the whole Habit of a Reed; the Male Flowers (which have no Petals) are produced in a Spike on different Parts from the Female of the ſame Plant; the Ovary is a long Tube with two Horns, which becomes a hard ſtrong Fruit, containing one Seed.

The *Species* are;

1. LACHRIMA JOBI. *Cluſ. Hiſt.* Common Job's Tears.
2. LACHRYMA JOBI *latiore folio. Tourn.* Broad-leav'd Job's Tears.
3. LACHRYMA JOBI *Americana altiſſima, arundinis folio & facie. Plum.* Talleſt American Job's Tears, with a Leaf and the Face of Reeds.

The firſt Sort is a Kind of Corn which is often cultivated in *Portugal*, *Italy*, and ſome other warm Countries, where they ſtring the Seeds (which are very ſmooth, and of a bright Aſh Colour) for Beads; and in ſcarce Years of other Grain, I have been inform'd, the poorer Sort of People make Bread of it; but I do not find it is any where cultivated for that Purpoſe: the natural Place of its Growth is in *Candia*, and the other Iſlands of the *Archipelago*.

The ſecond Sort is a Variety of the firſt, from which it differs, in having a much broader Leaf. Theſe are ſeldom cultivated in *England*, unleſs in ſome curious Gardens for the ſake of Variety. Theſe are both annual Plants, which muſt be ſown the Beginning of *March*, on a warm Border of light Earth, at about a Foot aſunder or more, and require no other Care, but to keep them clear from Weeds; and if the Seaſon proves warm, they will perfect their Seeds very well in this Country.

The third Sort grows plentifully in ſeveral Parts of *America*, where the poorer Sort of Inhabitants make a kind of Flour of the Seeds, with which they make Cakes to ſerve them, inſtead of Bread. This Sort has been brought into *Europe*, but the Seeds have not come to Perfection in this Country; for it requires much Warmth, and a long Summer, to ripen it. The Roots of this Kind have remained in the open Air thro' the Winter, and have made freſh Shoots the following Spring; ſo that I believe it is a biennial Plant in its native Country. If this Sort is propagated in *England*, as a Curioſity, the ſureſt Method to bring it to Perfection is, to ſow the Seeds in ſmall Pots, filled with light Earth, and plunge them on a moderate Hot-bed, to bring up the Plants. As ſoon as theſe appear, they ſhould have a large Share of freſh Air admitted to them, to prevent their being drawn up weak; and when the Weather is warm, they ſhould be inured to bear the open Air by degrees, into which the Plants muſt be removed about the middle of *April*; at which Time it will be proper to ſhift them into larger Pots, and place them in a warm Situation, being careful to water them frequently in dry Weather. By this Management the Plants having their Roots confined in the Pots, will not grow ſo large, as thoſe in the full Ground, ſo will ſooner produce Seed. If the Seaſon proves favourable, you may hope to bring it to Perfection: but whenever it fails, the Pots may be removed into the Greenhouſe in Autumn, where the Plants may be preſerved thro' the Winter; and thereby good Seeds may be obtained the following Seaſon.

LACTIFEROUS PLANTS, are ſuch as abound with a milky Juice, as the *Tithymalus*, *Sonchus*, *Lactuca*, &c.

LACTUCA, [ſo call'd from *Lac*, Lat. *Milk*, becauſe the Leaves, Stalks, Flower, and Branch being broken, plentifully emit a Milk, or white milky Juice, quickly turning yellow and bitteriſh] Lettuce.

The *Characters* are;

It hath a fibroſe Root, which, is, for the moſt part, annual: the Leaves are ſmooth, and grow alternately upon the Branches: the Stalks are, for the moſt part, ſlender, and ſtiff, and do commonly terminate into a ſort of Umbel: the Cup of the Flower is oblong, ſlender, and ſcaly: the Seeds are oblong, depreſs'd, and generally terminate in a Point.

It would be beſide my Purpoſe to mention in this Place the ſeveral Sorts of *Lettuce* that are to be found in Botanick Writers, many of which are Plants of no Uſe, and are never cultivated but in Botanick Gardens for Variety, and ſome of them are found wild in many Parts of *England*. I ſhall therefore paſs over thoſe here, and only mention the ſeveral Sorts which are cultivated in the Kitchen-Garden for Uſe: 1. *Common* or *Garden Lettuce.* 2. *Cabbage Lettuce.* 3. *Sileſia Lettuce.* 4. *Dutch Brown Lettuce.* 5. *Aleppo Lettuce.* 6. *Imperial Lettuce.* 7. *Green Capuchin Lettuce.* 8. *Verſailles* or *Upright White Cos Lettuce.* 9. *Black Cos.* 10. *White Cos.* 11. *Red Capuchin Lettuce.* 12. *Roman Lettuce.* 13. *Prince Lettuce.* 14. *Royal Lettuce.*

The firſt of theſe Sorts is commonly ſown very young, for cutting, to mix with other ſmall Sallet Herbs, and is only different from the ſecond Sort, in being a Degeneracy therefrom, or otherwiſe the ſecond is an Improvement by frequent Cultivation from the firſt; for if the Seeds are ſaved from ſuch Plants of the ſecond Sort as did not cabbage cloſely, the Plants produced from that Seed will all degenerate to the firſt Sort, which is by the Gardeners call'd *Laped Lettuce*, to diſtinguiſh it from the other, which they call *Cabbage Lettuce.* The Seeds of the firſt, which are commonly ſaved from any of the Plants, without having regard to their Goodneſs, are generally ſold at a very cheap Rate, (eſpecially in dry Seaſons, when theſe Plants always produce the greateſt Quantity of Seeds) tho' ſometimes this Seed is ſold in the Seed-ſhops, and by Perſons who make a Trade of ſelling Seeds, for the *Cabbage Lettuce*, which is often the Occaſion of People's being diſappointed in their Crop: ſo that this Sort ſhould never be cultivated but to be cut up very young, for which Purpoſe this is the only good Sort, and may be ſown any Time of the Year, obſerving only in hot Weather to ſow it on ſhady Borders, and in the Spring and Autumn upon warm Borders; but in Winter it ſhould be ſown under Glaſſes, otherwiſe it is ſubject to be deſtroy'd by ſevere Froſts.

The *Cabbage Lettuce* may alſo be ſown at different Times of the Year, in order to have a Continuation of it thro' the whole Seaſon; the firſt Crop is generally ſown in *February*, which ſhould be upon an open warm Spot of Ground, and when the Plants are come up, they ſhould be thin'd out, to the Diſtance of ten Inches each Way, which may be done by houghing them out, as is practiſed for *Turnips*, *Carrots*, *Onions*, &c. provided you have no Occaſion for the ſuperfluous Plants, otherwiſe they may be drawn up, and tranſplanted into another Spot of good Ground at the ſame Diſtance, which if done before the Plants are too large, they will ſucceed very well, tho' they will not be ſo large as thoſe which were left upon the Spot where they were ſown; but they will come ſomewhat later, which will be of Service, where People do not continue ſowing every Month.

You muſt alſo obſerve in ſowing the ſucceeding Crops, as the Seaſon advances, to chuſe a ſhady moiſt Situation; but not under the Drip of Trees, otherwiſe, in the Heat of Summer, they will run up to Seed before they cabbage: In the Beginning of *Auguſt*, you ſhould ſow the laſt Crop, which is to ſtand over Winter, and ſhould be ſown thin upon a good light Soil, in a warm Situation, and when the Plants are come up, they muſt be hough'd out, ſo as to ſtand ſingly, and cut down all the Weeds to clear them; and the Beginning of *October* they ſhould be tranſplanted into warm Borders, where, if the Winter is not very ſevere, they will ſtand very well; but in order to be ſure of a Crop, it will be adviſeable to plant a few upon a Bed pretty cloſe, where they may be arched over with Hoops, and in ſevere Froſts they ſhould be covered with Mats and Straw, or Peaſe-haulm, to ſecure them from being deſtroy'd, and in the Spring of the Year they may be tranſplanted out into a warm rich Soil, at the Diſtance beforemention'd; but ſtill thoſe which grew under the Wall, if they eſcaped the Winter, and were ſuffer'd to remain, will cabbage ſooner than thoſe which are removed; but you muſt obſerve not to place them too cloſe to the Wall, which would occaſion their growing up tall, and prevent their being large or hard.

In order to ſave good Seeds of this Kind, you ſhould look over your *Lettuces* when they are in Perfection; and ſuch of them as are very hard, and grow low, ſhould have Sticks thruſt into the Ground, by the ſides of as many of them as you intend for Seed, to mark them from the reſt; and you ſhould carefully pull up all the reſt from amongſt them as ſoon as they begin to run up, if any happen to be left, leſt, by intermixing with the good ones, the Seeds may degenerate.

It may be, ſome Perſons may object, that ſuppoſe ſome bad ones ſhould happen to be left among them, (for Seeds to ſow for ſmall Sallets) yet the good ones being mark'd, the Seeds need not be mix'd, and ſo no Danger can enſue from thence: But notwithſtanding ever ſo much Care being taken to keep the Seeds ſeparate, yet, whether from the intermixing of the *Farina* during the Time of their being in Flower, or what other Cauſe, I can't ſay, but it hath been often obſerved, that where good and bad Plants have ſeeded upon the ſame Spot, the Seeds of the good Plants, which were carefully ſaved ſeparately, have very much degenerated, and proved worſe than ſuch as have ſeeded by themſelves. The Seeds ſhould always be ſaved either from thoſe which ſtood thro' the Winter, or thoſe which were ſown early in the Spring; for the late ones very ſeldom perfect their Seeds.

The *Sileſia*, *Imperial*, *Royal*, *Black*, *White*, and *Upright Cos Lettuces* may be ſown at the following Times: The firſt Seaſon for ſowing theſe Seeds, is at the latter End of *February*, or the Beginning of *March*, upon a warm light Soil, and an open Situation, *i. e.* not overſhadow'd with Trees; and when the Plants are come up, they ſhould be either hough'd out, or tranſplanted into another Spot of Ground, (as was directed for the *Cabbage Lettuce*) obſerving to leave theſe Sorts fifteen or ſixteen Inches apart each Way, which will be full near enough for theſe Plants, eſpecially if the Soil be good; and you muſt carefully keep them clear from Weeds, which is the only Culture they will require, except the *Black Cos Lettuce*, which ſhould be tied up when they are full grown, (in the Manner as was directed for blanching of *Endive*) to whiten their inner Leaves, and render them criſp, otherwiſe they are ſeldom good for much, rarely cabbaging without this Aſſiſtance.

When your *Lettuces* are in Perfection, you ſhould look over them, and mark as many of the beſt of them as you intend for Seed, (in the ſame Manner as was before directed for the common *Cabbage Lettuce*) being very careful not to ſuffer any ordinary ones to ſeed amongſt them, as was before obſerved, which would prove more injurious to theſe Sorts than to the common, as being more inclinable to degenerate with us, if they are not carefully preſerved.

You may alſo continue theſe Sorts thro' the Seaſon, by ſowing of them in *April*, *May*, and *June*, obſerving (as was before directed) to ſow the late Crops in a moiſt ſhady Situation, otherwiſe they will run up to Seed before they grow to any Size; but in *Auguſt*, toward the latter End, you may ſow of theſe ſorts, to abide the Winter, which Plants ſhould be tranſplanted either under Glaſſes, or into a Bed, which ſhould be arch'd over with Hoops, in order to be cover'd in the Winter, otherwiſe in hard Winters they are often deſtroy'd; but you muſt conſtantly let theſe Plants have as much open free Air as poſſible, when the Weather is mild, only covering them in hard Rains or froſty Weather; for if they are kept too cloſely cover'd in Winter, they will be ſubject to a Mouldineſs, which ſoon rots them.

In the Spring theſe Plants ſhould be planted out into a rich light Soil, allowing them at leaſt eighteen Inches diſtance each Way; for if they are planted too cloſe, they are very ſubject to grow tall, but ſeldom cabbage well: and from this Crop, if they ſucceed well, it will be proper to ſave your Seeds; tho' you ſhould alſo ſave from that Crop ſown in the Spring, becauſe ſometimes it happens that the firſt may fail by a wet Seaſon, when the Plants are full in Flower, and the ſecond Crop may ſucceed, by having a more favourable Seaſon; and if they ſhould both ſucceed, there will be no harm in that, ſince the Seeds will grow very well when two Years old, and if well ſaved, at three; but this will not always happen.

The moſt valuable of all the Sorts of *Lettuces* in *England* are the *Verſailles* or *White Cos*, the *Sileſia*, and *Black Cos*; tho' ſome People are very fond of the *Royal* and *Imperial Lettuces*; but they ſeldom ſell ſo well in the *London* Markets as the other, nor are ſo generally eſteem'd.

The *Brown Dutch* and *Green Capuchin Lettuces* are very hardy, and may be ſown at the ſame Seaſons as was directed for the common *Cabbage Lettuce*; and are very proper to plant under a Wall or Hedge to ſtand the Winter, where many times theſe will abide, when moſt of the other Sorts are deſtroy'd; and therefore they will prove very acceptable, at a Time when few other Sorts are to be had; they will alſo endure more Heat and Drought than moſt other Sorts of *Lettuce*, which renders them very proper for late ſowing; for it often happens, in very hot Weather, that the other Sorts of *Lettuce* will run up to Seed in a few Days after they are cabbaged, whereas theſe will abide a Fortnight or three Weeks in good Order, eſpecially if Care be taken to cut the forwardeſt firſt, leaving thoſe that are not ſo hard cabbaged to the laſt. In ſaving of theſe Seeds the ſame Care ſhould be taken to preſerve only ſuch as are very large, and well cabbaged, otherwiſe the Seeds will degenerate, and be good for little.

The *Red Capuchin*, *Roman* and *Prince Lettuces* are pretty Varieties, and are very early Cabbages, for which Reaſon a few of them may be preſerved; as may alſo ſome of the *Aleppo*, for the Beauty of its ſpotted Leaves; tho' very few People care for either of theſe Sorts at Table, when the other more valuable ones are to be obtain'd; but in a Scarcity, theſe may ſupply the Place pretty well. The Seeds of theſe muſt alſo be ſaved from ſuch as cabbage beſt, otherwiſe they will degenerate, and be good for little.

In ſaving Seeds of all theſe Sorts of *Lettuce*, you ſhould obſerve, when the Plants have run up, to fix a Stake down by the Sides of each, to which the Stem ſhould be faſten'd, to prevent their being broke, or blown out of the Ground by Wind, to which the *Sileſia* and the other large-growing *Lettuces* are very ſubject when they are in Flower. You muſt alſo obſerve to cut ſuch Branches of the large growing *Lettuces* as ripen firſt, and not wait to have the Seed of the whole Plant ripe together, which never happens; but on the contrary, ſome Branches will be ripe a Fortnight or three Weeks before others; and when you cut them, they muſt be ſpread upon a coarſe Cloth in a dry Place, that the Seeds may dry; after which, you ſhould beat them out, and dry them again, and then preſerve them for Uſe, being careful to hang them up where Mice and other Vermin can't come at them; for if they do, they will ſoon eat them up.

LACTUCA AGNINI. *Vide* Valerianella.

LADY's SLIPPER. *Vide* Helleborine.

LADY's SMOCK. *Vide* Cardamine.

LAGOPUS. *Vide* Trifolium.

LAMINATED, ſignifies *Plated*. Thoſe Things are ſaid to be *Laminated*, whoſe Contexture diſcovers ſuch a Diſpoſition as that of *Plates* lying over one another.

LAMIUM, [takes its Name of the Fiſh *Lamia*, becauſe it reſembles the frightful Countenance of this Fiſh, when it catches at any Thing. Some call it *Galeopſis*, of Γαλῆ, a *Cat*, becauſe the Flower of it reſembles the Countenance of a Cat when it offers to bite] Archangel *or* Dead-Nettle.

The *Characters* are;

It hath a labiated Flower conſiſting of one Leaf, whoſe upper Lip is hollow like a Spoon; but the under one is divided into two Segments, in the form of a Heart, and both end in Chaps, which are brimmed and edged; out of the Flower-cup, which is fiſtulous, and cut into five Segments, riſes the Pointal, fixed like a Nail in the hinder Part of the Flower; and attended, as it were, by four Embryos, which afterwards become ſo many triangular Seeds, ſhut up in a Huſk, which was before the Flower-cup.

The *Species* are;

1. LAMIUM *purpureum fœtidum, folio ſubrotundo, ſive Galeopſis Dioſcoridis. C. B. P.* Purple ſtinking Archangel or Dead-Nettle.

2. LAMIUM *purpureum fœtidum, folio ſubrotundo, minus. H. L.* Leſſer purple ſtinking Dead-Nettle.

3. LAMIUM *folio oblongo, flore rubro. Park. Theat.* Archangel with an oblong Leaf, and a red Flower.

4. LAMIUM *album, non fœtens, folio oblongo. C. B. P.* White Archangel or Dead-Nettle.

5. LAMIUM *parietariæ facie. Moriſſ. H. R. Bleſ.* Dead-Nettle, with the Face of Pellitory.

6. LAMIUM *folio caulem ambiente, minus. C. B. P.* Leſſer Dead-Nettle, with the Leaves encompaſſing the Stalk.

7. LAMIUM *rubrum minus, foliis profunde inciſis. Raii Syn.* Leſſer red Dead-Nettle, whoſe Leaves are deeply cut.

8. LAMIUM *album fœtidum, folio ſubrotundo, minus. C. B. P.* Leſſer ſtinking Dead-Nettle, with white Flowers and a roundiſh Leaf.

9. LAMIUM *foliis caulem ambientibus, majus. C. B. P.* Greater Dead-Nettle, with the Leaves encompaſſing the Stalk.

10. LAMIUM *orientale, nunc moſchatum, nunc fœtidum, magno flore. Tourn. Cor.* Eaſtern Dead-Nettle, ſometimes ſweet-ſcented, and ſometimes ſtinking, with a large Flower.

11. LAMIUM *orientale, foliis eleganter laciniatis. Tourn. Cor.* Eaſtern Dead-Nettle, with elegantly jagged Leaves.

12. LAMIUM *orientale incanum, flore albo, cum labio ſuperiori crenato. Tourn. Cor.* Hoary Eaſtern Dead-Nettle, with a white Flower, whoſe upper Lip is notched.

13. LAMIUM *orientale incanum, flore purpuraſcente, cum labio ſuperiori crenato. Tourn. Cor.* Hoary Eaſtern Dead-Nettle, with a purpliſh Flower, whoſe upper Lip is notched.

14. LAMIUM *orientale album latifolium altiſſimum. Tourn. Cor.* Talleſt Eaſtern Dead-Nettle, with a broad Leaf, and a white Flower.

The firſt, ſecond, ſixth, ſeventh, eighth, and ninth Sorts, are annual Plants, which grow wild on dry Banks in ſeveral Parts of *England*; ſo are rarely preſerved but in botanick

Gardens, for the ſake of Variety. All theſe Sorts flower in *March* and *April*, and their Seeds are ripe ſoon after, which if permitted to ſcatter, the Plants will come up in great Plenty, and become troubleſome Weeds. The firſt Sort is uſed in Medicine; but the Markets are ſupplied with it from the Fields.

The fourth Sort is alſo very common under Hedges, in divers Parts of *England*; this is alſo uſed in Medicine. The Roots of this Sort ſpread very far under Ground; ſo where it once fixes, it is very difficult to eradicate, eſpecially under Hedges or Trees, where the Roots of this Plant will intermix with thoſe of the Plants, ſo that they cannot be eaſily taken out, without diſturbing the Roots of the Plants. The third Sort is a Variety of the fourth, from which it differs in the Colour of the Flowers, which in this are of a bright red Colour. Theſe two are abiding Plants, which propagate themſelves very faſt by their creeping Roots.

The fifth, tenth, and eleventh Sorts, are annual Plants, which do not grow wild in *England*, but are equally hardy with thoſe before-mentioned. Theſe flower early in the Spring, and if their Seeds are permitted to ſcatter, the Plants will come up in the Autumn in great Plenty. The fifth Sort has no great Beauty, ſo is only preſerved for Variety, being very like our common Dead-Nettle, except in the Difference of the Leaf. But the tenth Sort deſerves a Place in ſome abject Part of the Garden, for the Beauty of its Leaves in Winter, which are variegated ſomewhat like the common *Cyclamen*, and make an Appearance very like that Plant in Winter. Theſe Leaves, in dry Weather, have a muſky Scent on their being gently rubbed; but if they are bruiſed, they become ſtinking and diſagreeable.

The twelfth, thirteenth, and fourteenth Sorts, are abiding Plants, which will trail on the Ground, and ſend forth Roots from the Joints of their Stalks, whereby they propagate themſelves very faſt; ſo where-ever they are permitted to have Room in a Garden, they ſhould be kept within Compaſs; otherwiſe they will ſpread, and become troubleſome.

LAMPSANA, [ſo call'd of Δαπάζω, to *evacuate*; becauſe this Plant being eaten, it purges the Belly. It is alſo call'd *Herba Papillaris*, becauſe it is very good for Chaps in Womens Nipples] Nipple-wort.

The *Characters* are;

It hath a ſemifloſculous Flower, conſiſting of many half Florets, upon which the Embryos ſit, and are included with them in a multifid Cup, conſiſting of one Leaf, which afterward becomes a ſtreaked Veſſel including many narrow-pointed Seeds.

The *Species* are;

1. Lampsana. *Dod. Pempt.* Common Nipplewort.
2. Lampsana *folio ampliſſimo criſpo. Petiver.* Nipplewort with a large curled Leaf.
3. Lampsana *orientalis elatior, foliis nigris maculis aſperſis. D. Sherard.* Taller Eaſtern Nipplewort, with Leaves ſpotted with black Marks.

The firſt Sort is a very common Weed on dry Banks, and on the Way-ſides, in moſt Parts of *England*; the other two Sorts were brought from abroad into the botanick Gardens, where they are preſerved for Variety, but they are not allowed a Place in any other Gardens.

Theſe are all annual Plants, which flower in *April*, and their Seeds ripen in *June*, which if permitted to ſcatter, will ſtock the Ground with Plants; ſo that where they are admitted, there ſhould be but few of the Plants ſuffered to ſeed, and thoſe ſhould be in ſome rude abject Part of the Garden, leſt by their ſcattering Seeds, they ſhould fill the Garden, and over-bear ſuch Plants, as better deſerve a Place.

But where the common Sort hath been ſuffered to ſhed its Seeds, and thereby become a troubleſome Weed, it may be deſtroyed by keeping it houghed down before it comes to flower, ſo that no Plants be permitted to ſcatter Seeds; for as it is an annual Plant, ſo where-ever Care is taken to prevent its Seeding, it will in two or three Years be abſolutely deſtroyed.

The firſt Sort was formerly uſed in Medicine in *England*, and is ſtill continued in Uſe in other Countries: But it is not mentioned by the College of Phyſicians in their Diſpenſatory.

LAND. Its Improvement.

1. By *Incloſing*.

Incloſing of Lands, and dividing the ſame into ſeveral Fields, for Paſture or Tillage, is one of the moſt principal Ways of Improvement, firſt, by aſcertaining to every Man his juſt Property, and thereby preventing an Infinity of Treſpaſſes and Injuries, that Lands in common are ſubject unto; and, ſecondly, it being of itſelf a very great Improvement; for where Land is properly incloſed, and the Hedge-rows planted with Timber-trees, *&c.* it preſerves the Land warm, and defends and ſhelters it from the violent cold nipping Winds, which in ſevere Winters frequently deſtroy much of the Corn, Pulſe, or whatſoever grows on the open Field or champain Grounds. And where it is laid down for Paſture, it yields much more Graſs than the open Fields, and the Graſs will begin to grow much ſooner in the Spring. The Hedges and Trees alſo afford Shelter for the Cattle, from the cold Winds in Winter, as alſo Shade for them in the great Heats of Summer. And theſe Hedges afford the diligent Huſbandman Plenty of Fuel, as alſo *Plough-boot*, *Cart-boot*, &c. And where they are carefully planted and preſerved, furniſh him with Timber, and Maſt for his Swine: Or where the Hedge-rows are planted with Fruit-trees, there will be a Supply of Fruit for *Cyder*, *Perry*, &c. which in moſt Parts of *England*, are of no ſmall Advantage to the Huſbandman.

By this Method of Incloſing, there is alſo much more Employment for the Poor, and is therefore a good Remedy againſt Beggary; for in thoſe open Countries, where there are great *Downs*, *Commons*, *Heaths*, and *Waſtes*, there is nothing but Poverty and Idleneſs to be ſeen amongſt the Generality of their Inhabitants. It is very obſervable of late Years, how much Advantage the Incloſing of the Land in *Worceſterſhire*, and ſome other Counties at a Diſtance from *London*, has been to the Inhabitants; for before this Method was introduced amongſt them, the Lands for the moſt Part lay in Commons, *&c.* upon which the poorer Sort of People built themſelves Cottages with Mud Walls, where they contented themſelves with a Cow or two, and ſome Swine: and thoſe of them who were more induſtrious than the reſt, travelled to the Neighbourhood of *London* every Spring, where they were employed in the Gardens and Fields for the Summer Seaſon, and in Autumn they returned to their native Countries, where they lived in Winter, upon what Money they had ſaved in Summer. But ſince they have converted their Waſtes and Commons into Incloſures, there are but few of the Inhabitants of thoſe Countries, who come to *London* for Work, in compariſon to the Numbers that formerly came; ſo that moſt of the Labourers, who come to *London* for Employment, are either *Welſh*, or Inhabitants of ſome diſtant Counties, where this Improvement hath not as yet been introduced.

The Advantages of incloſing Land are now ſo generally known, that there is no Occaſion for me to enumerate them here; ſince the Improvements which have been made of late Years, in ſeveral Parts of *England*, and the Increaſe of Rent, that is every-where made by thoſe who incloſe, are ſufficient Arguments, to enforce the Practice, and render it general; more eſpecially in the North, where it is moſt neglected; becauſe it would greatly ſhelter the Lands, and render them much warmer than they now are.

In incloſing of Land, there ſhould be regard had to the Nature of the Soil, and what it is intended for; becauſe Corn-Land ſhould not be divided into ſmall Parcels; for beſides the Loſs of Ground in Hedges, *&c.* the Corn doth ſeldom thrive ſo well in ſmall Incloſures, as in more open Fields; eſpecially where the Trees are large in the Hedge-rows. The Graſs alſo in Paſtures is not ſo ſweet near Hedges, or under the Drip of Trees, as in an open Expoſure; ſo that where the Incloſures are made too ſmall, or the Land over-planted with Trees, the Herbage will not be near ſo good, nor in ſo great Plenty, as in larger Fields. Therefore, before a Perſon begins to incloſe, he ſhould well conſider how he may do it to the greateſt Advantage: As for Inſtance, it is always neceſſary to have ſome ſmaller Incloſures near the Habitation, for the Shelter of Cattle, and the Conveniency of ſhifting them from one Field to another, as the Seaſon of the Year may require; and hereby the Habitation, Barns, Stables, and Out-houſes, will be better defended from ſtrong Winds, which often do great Damage to thoſe that are expoſed to their Fury. Theſe ſmall Incloſures may be of ſeveral Dimenſions; ſome of them three, four, ſix or eight Acres in Extent; but the larger Diviſions for Corn ſhould not contain leſs than twenty or thirty Acres, or more, according to the Size of the Farm.

The uſual Method of Incloſing Land, is with a Ditch and Bank ſet with *Quick*. But in Marſh Land, where there is plenty of Water, they content themſelves with only a Ditch, by the Sides of which they uſually plant *Sallows* or *Poplars*, which being quick of Growth, in a few Years afford Shade to the Cattle; and when they are lopped, produce a conſiderable Profit to their Owners. In ſome Counties, the Diviſion of their Lands is by dry Walls, made of flat Stones, laid regularly one upon another, and laying the Top Courſe of Stones in Clay, to keep them together, the Weight of which ſecures the under ones. But in ſome Parts of *Suſſex* and *Hampſhire* they often lay the Foundation of their Banks with flat Stones, which is of a conſiderable Breadth at Bottom: Upon which they raiſe the Bank of Earth, and plant the Hedge on the Top, which in a few Years makes a ſtrong durable Fence, eſpecially if they are planted with *Holly*, as ſome of thoſe in *Suſſex* are.

In Marſhes and open Paſtures, where there are no Hedges, the Ditches are generally made ſix Feet wide at the Top, eſpecially thoſe which are on the Side of high Ways or Commons; but the common Ditches about Incloſures, are ſeldom more than three Feet and a half wide at Top, and one Foot and a half at Bottom, and two Feet deep; that the Sides may have a good Slope, and not be too upright, as they are frequently made about *London*, ſo that they are continually waſhing down with great Rains. In theſe narrow-bottomed Ditches, the Cattle cannot ſtand to turn themſelves, ſo as to crop the *Quick*. But where the Ditches are made wider, they ſhould be proportionally deeper: As for inſtance, if the Ditch is made five Feet broad, it muſt be three Feet deep; and if ſix Feet broad, three and a half Feet deep, and ſo in proportion.

The Method of Incloſing Lands, by raiſing high Banks of Earth, on the Side of which the *Quick* is planted, (as it is too much practiſed in many Places near *London*) is intolerable; for it is not only unſightly, but very expenſive: for theſe Banks are continually waſhing down, ſo that they muſt be repaired every Year at leaſt, if not oftner; otherwiſe the Earth will be in few Years waſhed from the Roots of the *Quick*, that for want of proper Nouriſhment, the Hedge will ſoon decay: which is the Caſe with the greateſt Number of the Hedges about *London*. Beſide, it is a very uncertain Way of planting *Quick* on the Side of a ſteep Bank, where all the Moiſture runs off; ſo that, if the Spring ſhould prove dry, after it is planted, there is a great Hazard whether half the Plants will grow; and thoſe that take, ſeldom make much Progreſs; whereas thoſe planted on the plain Surface, where they enjoy the Advantages of Sun and Moiſture, will in four Years make a better Fence, than one of theſe Bank Hedges will in eight Years, and will continue good much longer than the other. Therefore I ſhould adviſe the Banks on which the Hedges are to be planted, not to be raiſed more than one Foot above the Surface of the Ground, where the Land is dry, and in wet Land not more than two Feet, which will be enough.

I ſhall now mention the moſt proper Plants for making of Fences for the different Soils and Situations, ſo as to anſwer the Expectation of the Planter: And firſt, the *white Thorn* is eſteemed the beſt for Fencing, and will grow upon almoſt any Soil, and in any Situation; but it ſucceeds beſt on a hazle Loam. Of this there are three or four Varieties, which differ in the Breadth of their Leaves, and the Size of their Haws; but that Sort with the ſmalleſt Leaves and Haws, will make the cloſeſt Fence. For it is very certain, that the Branches of all Sorts of Trees, are produced at a Diſtance in proportion to the Size of their Leaves; ſo that *Yews*, and other Ever-green Trees, with ſmall Leaves will always make a cloſer Hedge, than other Trees, whoſe Leaves are larger. Therefore for the cloſeſt Hedge, the ſmalleſt Haws ſhould be choſen; but where the moſt vigorous Shooters are required, for the Advantage of Lopping, there the largeſt Haws ſhould be preferred. But as theſe Hedges are uſually planted from a Nurſery, where the Haws are promiſcuouſly ſown, ſo it is very common to ſee two or three Sorts, planted in the ſame Hedge, which may be eaſily diſtinguiſhed, when they have obtained Strength, by the Difference of their Growth. Indeed, where a Perſon is curious in raiſing of his own *Quick*, it is worth while, to gather the Haws ſeparately, and ſow them apart, and each Sort ſhould be planted in a ſeparate Hedge, which will render the Hedges more equal in their Growth. If theſe Haws are ſown in the Places where they are deſigned to remain for a Fence, they will make a much greater Progreſs in a few Years, than thoſe which are tranſplanted; but as the Seeds remain a whole Year in the Ground, before the Plants appear, ſo few People care to practiſe this Method.

The next to the *white Thorn*, is the *black Thorn*, which tho' not ſo generally eſteemed as the white, yet it will make an excellent Fence, where proper Care is taken in the Planting and After-management of it; and the Loppings of this Hedge make much the beſt Buſhes, and are of longer Duration for Dead-hedges, than any other Sort; and are very proper to mend Gaps in Fences; for their Branches being beſet with ſharp long Thorns, the Cattle are not ſo apt to crop them as the white Thorn, and ſome other Sorts. Theſe Hedges are alſo better, if the Stones are ſown on the Spot where they are to remain, than where the Plants are taken from a Nurſery.

The *Crab* will alſo make a ſtrong durable Fence; this may be raiſed by ſowing of the Kernels in the Place where the Hedge is deſigned; but then there ſhould be great Care taken of the Plants while they are young, to keep them clear from Weeds, as alſo to guard them from Cattle. When theſe Stocks have obtained Strength, ſome of them may be grafted with Apples for Cyder, where the Fence is not expoſed to a publick Road: but theſe Grafts ſhould not be nearer than thirty-five or forty Feet, leſt they ſpoil the Hedge, by their Heads overgrowing and dripping on it.

The *Holly* is alſo an excellent Plant for Ever-green Hedges, and would claim the Preference to either of the former, were it not for the Slowneſs of its Growth while young, and the Difficulty of tranſplanting of the Plants, when grown to a moderate Size. This will grow beſt on cold ſtony Lands, where if it once takes well, the Hedge may be rendered ſo cloſe and thick, as to keep out all Sorts of Animals, and will grow to a great Height, and is of long Duration. Theſe Hedges may be raiſed by ſowing of the Berries, in the Place where they are deſigned to remain: But as they remain in the Ground an intire Year, before the Plants appear, ſo few Perſons care to wait ſo long; therefore the uſual Method is to plant the Hedges with Plants of three or four Years Growth; but where this is practiſed, they ſhould not be tranſplanted till toward the End of *March*; and the Surface of the Ground ſhould be covered with Mulch, near their Roots, after they are planted, to keep the Earth moiſt; and if the Seaſon ſhould prove dry, the Plants ſhould be watered at leaſt once a Week, until they have taken Root, otherwiſe they will be in Danger of miſcarrying.

The *Alder* will alſo make a good Hedge, when planted on a moiſt Soil, or on the Side of Rivers or large Ditches; and will preſerve the Bank from being waſhed away, where there are running Streams; for they ſpread pretty much at Bottom, and ſend forth Suckers from their Roots in great Plenty. But theſe Hedges ſhould be ſhear'd at leaſt once a Year, in order to make them thick. Theſe Alder-hedges are very ornamental, when they are well kept, in large Gardens; and as they will thrive beſt on wet ſwampy Lands, where many other Plants will not live, ſo they ſhould be ſelected for ſuch Situations.

Of late Years the *Furze* has been much propagated for Hedges in ſeveral Parts of *England*, and indeed will make a good Fence on poor ſandy or gravelly Soils, where few other Plants will grow. The beſt Method of raiſing theſe Hedges is, to ſow the Seed about the latter End of *March*, or the Beginning of *April*, in the Place where the Hedge is deſigned; for the Plants will not bear to be tranſplanted, unleſs it be done while they are young, and then there is great Hazard of their Taking. The Ground where the Seeds are to be ſown, ſhould be well cleanſed of Weeds, and the Surface made light; then there ſhould be two or three Drills made (according to the Width which the Hedge is intended) about half an Inch deep, into which the Seeds ſhould be ſcattered pretty thick; and then the Drills ſhould be filled up with the Head of a Rake, to cover the Seeds. This Work ſhould be performed in dry Weather; for if much Wet falls ſoon after the Seeds are ſown, it is apt to burſt them. When the Plants are come up, they ſhould be kept clear from Weeds, that the Plants may ſpread, and grow thick at Bottom; and if theſe Hedges are ſecured from Cattle browzing on them, and are cut every Spring, juſt before they begin to ſhoot, they will make an exceeding cloſe Fence: but where they are deſigned to be cut for Fuel, then the beſt Way is to let them ſpread in Width; and when they are two Years old, to cut them down in the Spring, juſt before they begin to ſhoot, within two or three Inches of the Ground, which will cauſe them to ſend forth a Number of Shoots from each Root, and thereby increaſe the Width of the Hedge; and by ſo doing the Plants will not run up tall and weak, and be in Danger of being weighed down by great Falls of Snow. Theſe Hedges, when they are well grown, may be cut down every third or fourth Year for Fuel, ſo if there is a treble Row of Furze ſown, at about three Feet apart, they may be cut down alternately, ſo that there will be a Fence always remaining. But this is only recommended for ſuch ſandy Lands as let for a ſmall Rent, and where Fuel is ſcarce. The beſt Sort of *Furze* for this Purpoſe is the greater Kind, commonly called the *French Furze*, which will grow to a great Height, and doth not ſpread ſo much as the ordinary ſmall Sort.

Elder is ſometimes planted for Hedges, being very quick of Growth; ſo that if Sticks or Truncheons, about four or five Feet long, be thruſt into a Bank ſlope-wiſe each Way, ſo as to croſs each other, and thereby form a ſort of Chequer-work, it will make a Fence for Shelter in one Year. But as this is a vigorous growing Plant, ſo it will never form a cloſe Fence; and the young Shoots, being very ſoft and pithy, are ſoon broken by Cattle, or unlucky Boys. Beſides, where they are ſuffered to bear Berries, and theſe are ſcattered over the neighbouring Land, they will come up the following Spring, and become very troubleſome. Where theſe Hedges are planted, they may be cut down every third Year, near the Ground; and theſe Stakes (when diveſted of their Bark, ſo as to prevent their Growing) will laſt longer in the Ground, to ſupport Vines, or any other Plants, which do not require tall Stakes, than any other Sort of Tree yet known. And where the Trees are ſuffered to grow to any conſiderable Size, the Wood is as hard as Box; ſo is very uſeful for Turners and Inſtrument-makers. The beſt Seaſon for planting of theſe Truncheons is ſoon after *Michaelmas*, becauſe theſe Plants ſhoot very early in the Spring. Of late Years, there have been many Hedges, and other Plantations, made of the white-berried *Elder*, for the ſake of their Fruit to make Wine; which if rightly made, hath the Flavour of *Frontiniac* Wine, and is by ſome Perſons vended for it.

There are ſome other Plants, which have been recommended for Fences; but thoſe here enumerated are the only uſeful Sorts for ſuch Purpoſes; ſo I ſhall paſs over the others, as not worthy of the Care of the Huſbandman. And as to the farther Direction for Planting, and preſerving of Hedges, with Inſtructions for plaſhing or laying them, the Reader is deſired to turn to the Articles of *Fences* and *Hedges*, where there are particular Directions for theſe Works exhibited; ſo I ſhall not repeat them here.

The Draining of Land, is alſo another great Improvement to it; for tho' Meadows and Paſtures, which are capable of being overflowed, produce a greater Quantity of Herbage than dry Land; yet where the Wet lies too long upon the Ground, the Graſs will be ſour, and extremely coarſe. And where there is not Care taken in Time to drain this Land, it will produce little Graſs, and ſoon be over-run with Ruſhes and Flags, ſo as to be of little Value. The Land which is moſt liable to this, is cold ſtiff Clays, where the Water cannot penetrate, but is contained as in a Diſh; ſo that the Wet which it receives in Winter, continues till the Heat of the Sun exhales the greateſt Part of it.

The beſt Method for Draining of theſe Lands, is, to cut ſeveral Drains acroſs the Land, in thoſe Places where the Water is ſubject to lodge; and from theſe croſs Drains to make a convenient Number of other Drains, to carry off the Water to either Ponds or Rivers, in the lower Parts of the Land. Theſe Drains need not be made very large, unleſs the Ground be very low, and ſo ſituated as not to be near any River, to which the Water may be conveyed: in which Caſe there ſhould be large Ditches dug at proper Diſtances, to contain the Water; and the Earth which comes out of the Ditches, ſhould be equally ſpread on the Land, to raiſe the Surface. But where the Water can be conveniently carried off, the beſt Method is to make under-ground Drains, at proper Diſtances, which may empty themſelves into large Ditches, which are deſigned to carry off the Water. Theſe ſort of Drains are the moſt convenient, and as they are hid from the Sight, do not incommode the Land, nor is there any Ground loſt, where theſe are made.

The uſual Method of making theſe Drains, is to dig Trenches, and fill their Bottoms with Stones, Bricks, Ruſhes or Buſhes, which are covered over with the Earth, which was dug out of the Trenches: but this is not the beſt Method, becauſe the Water has not a free Paſſage thro' the Drains, ſo that whenever there is a Flood, theſe Drains are often ſtopp'd by the Soil which the Water frequently brings down with it. The beſt Method I have yet obſerved to make theſe Drains, is, to dig Trenches to a proper Depth for carrying off the Water, which ſhould be three Feet wide at their Tops, and ſloped down to about a Foot wide at their Bottom; then having prepared a Quantity of good Bruſhwood, the larger Sticks ſhould be cut out to Pieces of about ſixteen or eighteen Inches in Length, which ſhould be laid acroſs the lower Part of the Drain, at about fourteen Inches Diſtance, ſo as to leave about a Foot of the lower Part of the Drain open, thro' which the Water is to paſs; then cover theſe Sticks with the ſmaller Bruſh-wood, Furze, Broom, or any other Kind of Bruſh, laying it lengthwiſe pretty cloſe; on the Top of theſe may be laid Ruſhes, Flags, *&c.* and then the Earth laid on to cover the Whole. Theſe ſort of Drains will continue good for a great Number of Years, and are never liable to the Inconveniencies of the other Drains; for the Water will find an eaſy Paſſage thro' them, and where there is Plenty of Bruſh-wood, they are made at an eaſy Expence; but in ſuch Places where Wood is ſcarce, it would be chargeable to make them. However in this Caſe it would be a great Advantage to theſe Lands, to plant a ſufficient Number of Cuttings of Willow, or the Black Poplar, on ſome of the moiſt Places, which would furniſh Bruſh-wood for theſe Purpoſes in four or five Years; and as the Expence of planting theſe Cuttings is trifling, ſo there cannot be a greater Advantage to an Eſtate which wants Draining, than to practiſe this Method, which is in every Perſon's Power, ſince there is little Expence attending of it.

The beſt Time of the Year for making of theſe Drains, is about *Michaelmas*, before the heavy Rains of Autumn fall; becauſe at this Seaſon, the Land is uſually dry, ſo that the Drains may be dug to a proper Depth. For when the Ground is wet, it will be very difficult to dig to any Depth, becauſe the Water will drain in, where-ever there is an Opening in the Ground.

When theſe Drains are made, and the Water carried off the Land, it will be proper to pare off all the Ruſhes, Flags, *&c.* Which may be laid in Heaps in proper Places to rot, and will afford a good Manure for the Land. The Ground muſt alſo be ploughed, to deſtroy the Roots of noxious Weeds; and if it be laid fallow for one Seaſon, and ploughed two or three times, it will greatly mend the Land. The Ruſhes and Flags, which were pared off the Ground, when rotten, ſhould be ſpread over the Surface, and the Graſs-ſeed ſown thereon, which will greatly forward the Graſs, ſo that it may ſoon be brought to a good Turf; which Land thus mended, has been let for four times the Rent, it was ſet at before.

There are ſome Perſons, who, after they have pared off the Flags, Ruſhes, *&c.* from their Land, lay them in ſmall Heaps, and burn them in dry Weather, then ſpread the Aſhes on the Land to improve it; which is a good Method, where a Perſon is in Haſte to have Graſs again: but where the Ground can be fallowed one Year, it will looſen the Soil, and more effectually deſtroy the Roots of all noxious Weeds; and the Ruſhes, *&c.* when rotted, will afford a much larger Quantity of Manure for the Land, than when it is burnt: beſides this can only be practiſed in the Summer Seaſon, when the Weather is very dry; for if there ſhould fall much Rain, the Fires will go out, and it will be impracticable to burn it. But where the Method of Burning is practiſed, the Heaps ſhould not be too great, and it ſhould burn very ſlowly; which will render the Aſhes a much better Manure, than where the Fire is too violent, or the Heaps too large; for in this Caſe, the Inner-part will be over-burnt, before the Fire reaches the Outſide of the Heap.

As the Draining of cold wet Lands is a great Improvement to them, ſo the Floating or Watering of dry looſe Lands is not a leſs Advantage to them. This may be effected eaſily, where there are Rivers, or Reſervoirs of Water, which are ſituated above the Level of the Ground deſigned to be floated, by under-ground Drains, (made after the Manner of thoſe before directed for Draining of Land) thro' which the Water may be conveyed at proper Seaſons, and let out on the Ground; in order to this, there muſt be good Sluices made at the Heads of the Drains, ſo that the Water may never get out, but at ſuch Times as it is required; for if this be not taken care of, the Water, inſtead of improving the Land, will greatly damage it.

But where the Land lies ſo high, as that there is no Water in the Neighbourhood lying above its Level, it will be more expenſive, becauſe in ſuch Caſe the Water muſt be raiſed by Machines, from Reſervoirs or Streams which lie below it. The moſt common Engine uſed for this Purpoſe, is the *Perſian* Wheel (which being well deſcribed, and figured in *Woolridge's* Art of Huſbandry, is needleſs for me to repeat here). Yet notwithſtanding the Expence of raiſing the Water, it has been found greatly advantageous in many Parts of *England*, to drown the Lands; for the Profit has many times more than doubled the Charge.

The Times for drowning of Land are after the Graſs is cloſe fed, from the Middle or latter End of *November*, till the End of *April*; but it is done to moſt Advantage in the Spring, eſpecially if the Seaſon proves dry. Where the Land is very hot and dry, and it lieth convenient to be watered at a ſmall Expence; it ſhould be repeated every Week in dry hot Weather, which will prove a great Advantage to the Land. But whenever this is done, there ſhould no Cattle be admitted while it is wet; for they will poach, and ſpoil the Turf.

Another great Improvement of Land is by Burning of it, which for ſour, heathy, and *Ruſhy-Land*, be it either hot or cold, wet or dry, is a very great Improvement; ſo that ſuch Lands will in two or three Years after Burning, yield more, excluſive of the Charges, than the Inheritance was worth before. But this is not to be practiſed on rich fertile Land; for as the Fire deſtroys the acid Juice, which occaſions Sterility in the poor Land, ſo it alſo will conſume the good Juices of the richer Land, and thereby impoveriſh it; ſo that it hath been with great Reaſon diſuſed in deep rich Countries.

The uſual Method of Burning Land, is to pare off the Turf with a Breaſt Plough, turning it over as it is cut, that it may dry the better. And if it prove hot dry Weather, when this Work is done, then it needs no more Turning; but if Rain ſhould fall, it muſt be turned, and the Turfs ſet a little hollow, that they may dry the better; and when they are thorough-dry, they may be laid on ſmall Heaps, about half a Cart-load on a Heap, or leſs; for the ſmaller the Heaps are, provided there is Quantity enough to make a good Fire, ſo as to conſume the Whole to Aſhes, it is the better: if the Turf be full of fibroſe Roots, or hath much Moſs or Fern on it, it will burn without any additional Fuel; but if it hath not, the Heaps ſhould be raiſed on ſmall Bundles of Heath, Fern, Gorze, *&c.* which will ſet the Whole on Fire; but there ſhould be no more of theſe Things applied, than what is neceſſary to kindle the Fire, becauſe the ſlower the Turf conſumes, the better will be the Aſhes. When the Turf is wholly conſumed, the Aſhes ſhould be equally ſcattered over the Ground in a calm Day, leſt the Wind ſhould drive it in Heaps. Then the Land ſhould be gently ploughed, and the Seeds ſown thereon; for if the Ground is plough'd too deep, the Aſhes will be buried too low for the Roots of the Graſs or Corn to reach them, for a conſiderable Time; nor ſhould the Aſhes lie too near the Surface, becauſe then the Roots will reach them too ſoon, and the Strength of the Aſhes will be ſpent to nouriſh only the Blade; ſo that the Corn will grow too rank in Winter, and when the Roots in the Spring ſtrike down lower, they will meet with a poorer Soil, ſo that the Stalks and Ears will not have ſo much Advantage from the Improvement, as the uſeleſs Blade. But where Care is taken in this Particular, it is wonderful what Succeſs it hath: for by this Method, the pooreſt Plains, and ſour heathy Lands, have been rendered as fertile, as almoſt any good cultivated Ground whatever.

It is alſo a very great Improvement, where Land is overgrown with *Broom*, *Furze*, &c. to ſtub them up by their Roots; and when they are dry, lay them on Heaps, and cover them with the Parings of the Earth, and burn them, and ſpread the Aſhes over the Ground. By this Method vaſt Tracts of Land, which at preſent produce little or nothing to their Owners, might be made good for a ſmall Expence, ſo as to become good Eſtates to the Proprietors.

The ſeveral other Improvements of Land by Dunging, will be exhibited under the Article *Manure*. And as to the Improvement of Land, by ſowing of Graſſes, *&c.* that is mentioned under the ſeveral Articles, where the Plants are treated of; as the different Kinds of *Clover* or *Trefoil* under *Trifolium*, the *St. Foyn* under *Onobrychis*, *Lucern* under *Medica*, *Ray Graſs* under *Gramen*, *Spurry* under *Spergula*, to which Articles the Reader is deſired to turn.

LANIGEROUS TREES, are ſuch as bear a Woolly or Downy Subſtance, as is commonly contain'd in the *Catkins* of the Willows, *&c.*

LANUGINOUS, ſignifies *Downy*, or to be *cover'd with a ſoft Down*, as a *Quince*.

LAPATHUM, [takes its Name of the *Greek* Word Λαπάζω, to *evacuate*, becauſe the Root of this Plant purges the Belly: One Species of it is call'd *Hippolapathum*, of ἵππος, an *Horſe*, and λάπαθον, as much as to ſay, *Great Lapathum*: and another is call'd *Patience*, of its gentle Virtue; and *Rhabarbarum Monachorum*, i. e. *Monks Rhubarb.*] The Dock.

The *Characters* are;

The Cup of the Flower conſiſts of ſix Leaves, three of which are large, and of a red Colour; the other three are leſſer, and green: in the Middle of the Cup are placed ſix Stamina: *the three outer ſmall Leaves of the Cup fall away when ripe; but the three inner large Leaves join together, and form a triangular Covering, in the Middle of which are contain'd ſhining three-corner'd Seeds.*

The *Species* are;

1. LAPATHUM *præſtantiſſimum, Rhabarbarum officinarum dictum. Mor. Hiſt.* The Pontick Rhubarb.

2. LAPATHUM *Alpinum, folio ſubrotundo. Mor. Hiſt.* Round-leav'd Alpine Dock, *by ſome call'd* Monks Rhubarb.

3. LAPATHUM *hortenſe, folio oblongo, ſive ſecundum Dioſcoridis. C. B. P.* Long-leav'd Garden-Dock or Patience.

4. LAPATHUM *folio acuto plano. C. B. P.* Sharp-pointed Dock.

5. LAPATHUM *folio acuto criſpo. C. B. P.* Curled ſharp-pointed Dock.

6. LAPATHUM *folio acuto rubente. C. B. P.* Bloodwort or ſharp-pointed Dock, with red Veins and Footſtalks to the Leaves.

7. LAPATHUM *folio acuto, flore aureo. C. B. P.* Sharp-pointed Dock, with golden Flowers.

8. LAPATHUM *acutum minimum. J. B.* The leaſt ſharp-pointed Dock.

9. LAPATHUM *vulgare, folio obtuſo. J. B.* Common broad-leav'd Dock, vulgarly called the Butter Dock.

10. LAPATHUM *ſylveſtre, folio ſubrotundo, ſeminis involucris dentatis nobis. Mor. Hiſt.* Common broad-leaved Dock, with indented Covers to the Seeds.

11. LAPATHUM *aquaticum, folio cubitali. C. B. P.* Great Water Dock.

12. LAPATHUM *aquaticum minus. C. B. P.* Leſſer Water Dock.

13. LAPATHUM *pulchrum Bononienſe ſinuatum. J. B.* The Fiddle Dock.

14. LAPATHUM *hortenſe latifolium. C. B. P.* The true Monks Rhubarb.

15. LAPATHUM *Chalepenſe, folio acuto, ſeminum involucris profunde dentatis. Mor. Hiſt.* Sharp-pointed *Aleppo* Dock, with the Seed-covers deeply indented.

16. LAPATHUM *Ægyptiacum annuum, parietariæ folio, capſula ſeminis longius barbata. Hort. Piſ.* Annual *Egyptian* Dock, with a pellitory Leaf, and long Beards to the Seed-veſſels.

17. LAPATHUM *Orientale, folio latiſſimo undulato & mucronato, ſive Rhabarbarum verum.* The true Rhubarb.

The firſt of theſe Plants is by ſome ſuppoſed to be the true *Rhubarb*: But that does not appear, from the Figure and Conſiſtence of the Roots, which in this Plant, however cultivated with us, is not of the ſame Colour; nor has it ſuch a Reſin as is found in the true; and the Shape of the Roots appears very different, as is alſo the Strength in Medicine: ſo that until the true Rhubarb is better known, there can little be ſaid with Certainty on this Head.

The ſecond Sort is ſometimes cultivated in Gardens, for Medicinal Uſe; tho' there is a Diſpute whether this be the true *Monks Hood*, or not: but there is no great Difference between the Roots of this Plant, and the other diſputed Sort; ſo that either may be indifferently uſed.

The third Sort was formerly cultivated in Gardens as a Pot-herb; but of late Years it has been wholly diſuſed for that Purpoſe, and now only preſerv'd in Gardens for Medicinal Uſe.

The Sorts from the fourth to the thirteenth grow wild in many Parts of *England*, and are ſeldom admitted into Gardens; but as ſeveral of theſe are uſed in Medicine, ſo I have put down the Names by which they are diſtinguiſhed amongſt the Botaniſts. The fourth and ſixth Sorts are directed by the College of Phyſicians, to be uſed in Medicine; but the People who ſupply the Markets, take the Roots of all the Sorts promiſcuouſly as they find them. Theſe two Sorts grow near Hedges, and in ſhady Lanes, which are not much frequented, in moſt Parts of *England*; but the ſixth Sort is leſs common than the fourth, from which it differs in nothing but the Stalks and the Veins of the Leaves being red.

The Roots of the eleventh Sort are alſo uſed in Medicine; this is the Plant which *Muntingius*, a curious Botaniſt of *Groningen* in *Holland*, ſuppoſes to be the *Herba Britannica* of the Ancients, which was found to be a ſovereign Remedy for the *Scurvy*. This Sort grows frequently in ſtanding Waters, where it produces Leaves two and a half or three Feet in Length. When this Sort is planted on dry Land, or the Water drained off the Ground, where it naturally grows, it will not riſe to near the Size of thoſe Plants which grow in deep Waters.

The fourteenth Sort, whoſe Roots are uſed in Medicine, and is the true *Monks Rhubarb*, is not common in *England*; ſo that thoſe who uſe Roots of *Engliſh* Growth, are ſupplied with the *Patience Dock*, or the *round-leaved Alpine Dock*, both which Sorts are cultivated in the *Engliſh* Gardens.

The fifteenth and ſixteenth Sorts are Foreigners, which have been introduced by the Curious in Botany for the ſake of Variety; but they are not uſed in Medicine, and as they are Plants of no great Beauty, ſo they do not merit a Place unleſs in Botanick Gardens for the ſake of Variety. The fifteenth Sort will continue two or three Years, but the ſixteenth Sort is an annual Plant.

The Seeds of the ſeventeenth Sort I received for the true *Rhubarb*: Theſe were gathered by a Gentleman who was on the Spot, where the Roots are taken up, and ſent to *Peterſburgh* in *Muſcovy*, for the Supply of *Europe*; ſo that there is no great Reaſon to doubt of its being the true Kind. This Sort is extremely hardy; for the Seeds were ſown in the full Ground, where the Plants came up, and have remained, without any other Care but to keep them clear from Weeds: ſo that, when we can obtain Seeds from theſe Plants, it may be ſown for Uſe, ſince it appears to be equally hardy with our common Docks, and there is little Reaſon to fear that it may be equal in Goodneſs to the Foreign Rhubarb.

All the Sorts of Dock are propagated by Seeds, which ſhould be ſown in Autumn, ſoon after they are ripe; for when the Seeds are kept out of the Ground until Spring, they will remain a whole Year in the Ground before the Plants appear; whereas thoſe ſown in Autumn, will come up the following Spring. Where the Seeds of the true Rhubarb (or any of the other Sorts, whoſe Roots are uſed in Medicine) are ſown to propagate the Plants, they ſhould have a Soil rather moiſt than dry, and of a pretty good Depth, that the Roots may have Room to run down. The Seeds ſhould be ſown thin; and in the Spring, when the Plants come up, they ſhould be hough'd out, after the manner directed for *Parſnips* and *Carrots*, leaving the large growing Kinds (as the true Rhubarb, *Rhapontic*, and *Alpine* round-leaved Dock) two Feet and a half aſunder at leaſt, becauſe theſe produce very large ſpreading Leaves, and if they have not ſufficient room to grow, the Roots will be ſmall. When this is done, the Plants will require no other Management, but to keep them clear from Weeds; and in two or three Years Time the Roots will be fit for Uſe, when they ſhould be taken up ſoon after their Leaves decay in Autumn, and dried in a ſhady Place, where the Air may paſs freely between them. But it will be well worth trying, whether thoſe Plants whoſe Flower-ſtems are pinched off, ſoon after they appear in Spring, (ſo are never ſuffered to flower or ſeed) do not produce better Roots, than thoſe which are permitted to ſeed, becauſe we find moſt other Roots grow ſticky and tough after they have ſeeded, and are not near ſo good for Uſe as before; and as theſe Plants frequently ſend out Flower-ſtems the ſecond Year, ſo it may be neceſſary to prevent their Growth in order to encourage their Roots.

LARIX, [ſo call'd of λάρος, *ſweet*, becauſe its Leaves ſend forth a ſweet Savour] The Larch-Tree.

The *Characters* are;

The Leaves (which are long and narrow) are produced out of little Tubercles, in Form of a Painter's Pencil, (as in the Cedar of Libanus) *but fall off in Winter: the Cones are ſmall and oblong, and (for the moſt part) have a ſmall Branch growing out of the Top; theſe are produced at remote Diſtances from the Male Flowers on the ſame Tree: the Male Flowers are (for the moſt part) produced on the under Side of the Branches, and, at their firſt Appearance, are very like ſmall Cones.*

The *Species* are;

1. LARIX *folio deciduo, conifera. J. B.* The Larch-Tree.
2. LARIX *folio deciduo, rudimentis conorum candidiſſimis. Pluk. Alm.* Larch-Tree, with white Rudiments, or rather, with white Male Flowers.

The firſt of theſe Trees is now pretty common in *Engliſh* Gardens: this is a Native of the *Alps* and *Pyrenæan* Mountains, but thrives exceeding well here, eſpecially if it be planted upon an elevated Situation: as may be obſerv'd by thoſe which were planted a few Years ſince at *Wimbleton* in *Surrey*, which are now grown to be large Trees, and produce annually a large Quantity of Cones.

The ſecond Sort ſeems to be only a ſeminal Variety from the firſt, from which it differs in the Colour of the Male Flowers, which in this is White, but in the other of a bright Red Colour; as alſo in the Colour of the Leaves, which in this Sort are a ſomewhat lighter Green than thoſe of the other; nor do the Trees of this Kind ſeem to be ſo vigorous: but whether the Seeds of this Kind will produce the ſame, I can't as yet ſay, having never ſeen any of the Plants which were raiſed from theſe Seeds produce any Flowers; but however, it may be obtain'd by inarching it into the common Sort.

Theſe Trees are propagated by Seeds, which ſhould be ſown in the Beginning of *March*, upon a Bed of light Soil, expoſed only to the Morning Sun: or otherwiſe, it may be ſown in Pots or Boxes of light Earth, and placed near a Hedge, where they may have the Morning Sun only. The Seeds ſhould be cover'd about half an Inch thick with fine light Earth, and in very dry Weather ſhould be gently refreſh'd with Water. In about ſix Weeks, if your Seeds were good, the Plants will come up, at which Time you ſhould carefully guard them againſt the rapacious Birds, who would otherwiſe pull off the Heads of the Plants, as they thruſt themſelves out of the Ground with their Covers on them; and obſerve to refreſh them with Water in dry Weather, eſpecially if they are ſown in Pots or Boxes, as alſo to keep them conſtantly clear from Weeds, which, if ſuffer'd to grow among the young Plants, will ſoon deſtroy them: nor ſhould they be too much expoſed to the Sun, or ſtrong Winds, both which are very injurious to theſe Plants while they are young: but in *October* you ſhould (if they are in Boxes or Pots) remove them into a Situation where they may be defended from ſharp Winds, which are ſometimes hurtful to them while young; but afterwards they will endure the ſevereſt Weather of our Climate.

The latter End of *March*, or Beginning of *April* following, you ſhould remove theſe Plants into Beds of light freſh Earth, at about ten Inches diſtance each Way, obſerving to water them, if the Seaſon ſhould prove dry, as alſo to lay a little Mulch upon the Surface of the Ground, to prevent the Sun and Winds from drying their Roots: in theſe Beds they may remain two Years, during which Time you ſhould carefully keep them clear from Weeds; as alſo obſerve if any of them incline their Heads downward, to thruſt a ſmall Stake into the Ground by ſuch of them, and faſten their Heads upright thereto; for if they are ſuffer'd to grow on one-ſide while young, they are rarely to be reduced to an upright Figure again.

When the Plants have remain'd in theſe Beds two Years, they will be fit to tranſplant into the Nurſery; in order to which, you ſhould make choice of a Piece of freſh light Earth, not over-dry, nor too wet: this Ground ſhould be well dug, and cleans'd from Weeds, and Roots of Plants or Trees; and, after having laid it level, you ſhould mark out the Rows at three Feet diſtance; then you ſhould take up the Plants carefully, preſerving a good Ball of Earth to their Roots, and plant them in the Lines at eighteen Inches aſunder, obſerving to mulch their Roots, and alſo to water them, to preſerve their Roots from drying. The beſt Seaſon for this Work is toward the latter End of *March*, or Beginning of *April*, juſt before the Plants begin to ſhoot; for if they are removed ſooner, they ſeldom ſucceed ſo well. During the Time they remain in this Nurſery, they muſt conſtantly be kept clean from Weeds; and the Ground between them ſhould be dug every Spring, that it may be looſe for the Fibres of their Roots to ſtrike into; and the Weeds will be hereby more effectually deſtroy'd than by any other Method: and the Roots of the Plants being annually cut round, will cauſe them to puſh out a greater Number of Fibres, whereby they will be much ſafer to remove than they would be if permitted to grow undiſturb'd for ſeveral Years.

You muſt alſo obſerve to train their Heads upright, and not ſuffer them to grow awry, which they are naturally too much inclin'd to: but I would by no means adviſe the ſheering them into Pyramids, (as is too often practiſed) but rather lead them up for Timber Trees; for they will grow to a conſiderable Size, provided they like the Soil they are planted in.

In removing theſe Trees from the Nurſery to the Places where they are deſign'd to be continued, you ſhould always obſerve to do it juſt before they ſhoot out in the Spring, as alſo to take them up with a large Ball of Earth to their Roots; and when planted, the Ground ſhould be mulch'd, and the Plants ſtak'd, to prevent the Wind from looſening them, or blowing them out of the Ground. Theſe Directions, if duly executed, will be ſufficient, and there will be no Danger of not ſucceeding. But the chief Cauſe why many of theſe Trees have fail'd, upon their being remov'd, was, the not doing it in a proper Seaſon, or elſe that they were not carefully taken up.

Theſe Trees are very proper for the Sides of barren Hills, where few other Sorts will thrive ſo well; and during the Summer they appear very beautiful; but in Autumn they caſt their Leaves, whereby ſome People have been deceiv'd, by ſuppoſing them dead, and have deſtroy'd them.

From the wounded Bark of this Tree exſudes the pureſt *Venice Turpentine*; and on the Body and Branches of it grows the *Agaric*, which is a Drug uſed in Medicine: and the Wood is very durable, and (by ſome) reported to be very difficult to burn. But I don't know how this ſhould be, to a Tree which abounds with Turpentine; tho' it is ſaid alſo to be ſo ponderous as to ſink in Water. It will poliſh exceeding well, and is by the Architects abroad much coveted, both for Houſes, and building of Ships. *Witſen*, a *Dutch* Writer upon *Naval Architecture*, mentions a Ship to be long ſince found in the *Numidian Sea*, 12 Fathoms under Water, being chiefly built of this *Timber*, and *Cypreſs*, both which Woods were reduced to that Hardneſs, as to reſiſt the ſharpeſt Tools; nor was any Part of it periſh'd, tho' it had lain above a Thouſand Years ſubmerg'd. And it was upon Tables of this Wood that *Raphael*, and ſeveral of the greateſt Artiſts, eterniz'd their Skill, before the Uſe of Canvas was introduced.

There is a particular Sort of this Tree, which was brought from *America*, which is growing in the Garden of Mr. *Peter Collinſon* at *Peckham* in *Surrey*, which differs from the *European* Kind, in having darker Shoots. This Kind I do not find mentioned by the Botaniſts, nor has it been long known in *Europe*, tho' it grows plentifully in ſome of the Northern Parts of *America*. This doth not promiſe to make ſo large Trees as the *European* Kind, ſo ſhould be planted with Trees of lower Growth to form Clumps and Amphitheatres, where it will make a Variety in Summer, when its green Leaves appear. It may be propagated by Seeds, after the ſame Manner as hath been directed for the *European* Kind, and being a Native of cold Countries, will endure the ſevereſt Cold of this Climate.

LARKSPUR. *Vide* Delphinium.

LASERPITIUM, [takes its Name of *Lacerare*, Lat. to *tear*; becauſe Inciſions being made in the Stalks and Roots of this Plant, a Juice diſtils, which is ſaid to be *Aſſa fœtida* and *Opoponax*. It is alſo call'd *Thus Libanotis*, becauſe the Root of this Plant has the Smell of Frankincenſe] Laſerwort.

This is a kind of Umbelliferous Plant, of which there are ſeveral Sorts preſerv'd in curious Botanick Gardens: but as they are Plants of little Beauty or Uſe in *England*, I ſhall omit mentioning them in this Place.

LATHYRUS, Chichling Vetch.

The *Characters* are;

It hath a papilionaceous Flower, out of whoſe Empalement riſes the Pointal, cover'd with a membranaceous Sheath, which afterwards becomes a Pod, ſometimes round, ſometimes cylindrical, and at other times angular: to which may be added, it hath a compreſs'd Stalk, with a raiſed Rib, and a leafy Border; and has only one Pair of Leaves, growing on the Nerves, which terminates in a Tendril.

The *Species* are;

1. LATHYRUS *latifolius*. *C. B.* Broad-leav'd *or* common Everlaſting Peas.
2. LATHYRUS *latifolius minor, flore majore. Boerh. Ind.* Leſſer Broad-leav'd Everlaſting Peas, with a larger Flower.
3. LATHYRUS *major Narbonenſis anguſtifolius. C. B.* Greater narrow-leav'd Everlaſting Peas.
4. LATHYRUS *arvenſis repens tuberoſus. C. B.* Creeping Chichling, *or* Peas Earth-Nut, with a tuberoſe Root.
5. LATHYRUS *Tingitanus, ſiliquis orobi, flore amplo ruberrimo. Mor. Hiſt.* Tangier Chichling, with a large deep-red Flower.
6. LATHYRUS *diſtoplatyphyllus hirſutus mollis, magno & peramœno flore odoro. Hort. Cath.* Broad-leav'd, hairy, ſoft Chichling, with a large and very beautiful purple ſweet-ſmelling Flower, *commonly call'd* Sweet-ſcented Peas.
7. LATHYRUS *ſativus, flore fructuque albo. C. B. P.* Garden Chichling Vetch, with white Flowers and Fruit.
8. LATHYRUS *ſativus, flore purpureo. C. B. P.* Garden Chichling Vetch, with a purple Flower.
9. LATHYRUS *ſylveſtris major. C. B. P.* Great wild Chichling Vetch.
10. LATHYRUS *ſylveſtris major, flore atro purpureo. Inſt. R. H.* Great wild Chichling Vetch, with a dark purple Flower.
11. LATHYRUS *latifolius, flore albo. Inſt. R. H.* Everlaſting Pea, with a white Flower.
12. LATHYRUS *anguſtifolius, ſemine maculoſo. C. B. P.* Narrow-leaved Chichling Vetch, with a ſpotted Seed.
13. LATHYRUS *anguſtiſſimo folio, Americanus variegatus. C. B. P.* The moſt narrow-leaved American Chichling Vetch, with a variegated Flower.
14. LATHYRUS *annuus, flore cœruleo, ochri ſiliqua. H. L. B.* Annual Chichling Vetch, with a blue Flower, and a Pod ſhaped like Ochrus.
15. LATHYRUS *Bæticus, flore luteo. Park. Theat.* Spaniſh Chichling Vetch, with a yellow Flower.
16. LATHYRUS *luteus latifolius. Bot. Monſp.* Broad-leaved yellow Chichling Vetch.
17. LATHYRUS *anguſtifolius, ſiliquâ hirſutâ. C. B. P.* Narrow-leaved Chichling Vetch, with a hairy Pod.
18. LATHYRUS *latifolius annuus, ſiliquâ articulatâ hirſutiore. H. R. Par.* Broad-leaved annual Chichling Vetch, with a very rough jointed Pod.
19. LATHYRUS *anguſtiſſimo folio, ſemine rotundo. H. R. Par.* Narrow-leaved Chichling Vetch, with a round Seed.
20. LATHYRUS *anguſtiſſimo folio, ſemine anguloſo. H. R. Par.* Narrow-leaved Chichling Vetch, with an angular Seed.

The three firſt Sorts are abiding Plants, which ſend forth ſtrong downright Roots very deep into the Earth; for which Reaſon they ſhould not be often remov'd, which would prevent their growing ſtrong, or producing many Flowers.

They are propagated by Seeds, which ſhould be ſown in the Beginning of *March*, upon a Bed of light freſh Earth, covering them about half an Inch deep. But the beſt Method is, to make a ſhallow Drill in the Ground, and then drop the Seeds therein, about ſix Inches diſtance: theſe Drills ſhould be a Foot aſunder, for the Conveniency of houghing and cleaning the Ground between them; which muſt conſtantly be done, otherwiſe the Weeds will over-bear and deſtroy them: but they will require no farther Care, being very hardy Plants, until the Spring following, at which Time, (*viz.* in *March*) juſt before they begin to ſhoot, the Roots ſhould be carefully taken up, and tranſplanted where they are to continue, placing them at leaſt two Feet aſunder, otherwiſe they will overrun each other, or whatever other Plants ſtand near them. If the Seaſon ſhould prove dry, you muſt give them ſome Water, to ſettle the Earth to their Roots; which ſhould be now and then repeated if it continue dry Weather, until the Plants have taken Root: after which, they will require no farther Culture but to keep them clear from Weeds, and in the Summer-time to ſupport them with ſtrong Stakes, otherwiſe they will trail upon the Ground, and rot the Branches, and deſtroy whatever Plants grow near them.

Theſe Plants are very proper to plant againſt a dead Hedge, where they will run over it, and if they be kept train'd up, will cover it in the Summer, and in ſuch Places they will produce great Quantities of Flowers; but if they are planted in a Flower-Garden, they muſt have a great deal of Room, and in Summer ſhould have very ſtrong Stakes placed down by them, to which they muſt be cloſely faſten'd, otherwiſe they will ramble and trail upon the Ground, and appear very unſightly; for if the Ground be good in which they are planted, and the Roots are very ſtrong, they will ſometime grow eight or ten Feet high in a Seaſon, and produce Abundance of Flowers, which are very ornamental in Baſons or Pots of Flowers, to place in Chimnies or other Parts of large Rooms. Theſe produce their Flowers in *June* and *July*, and their Seeds are perfected in *Auguſt*; their green Leaves decay in Autumn, and riſe again the ſucceeding Spring, their Roots continuing good for many Years: They delight moſt in a light Soil, not too dry nor over wet; but will grow in almoſt any Soil or Situation, but beſt in that which is expos'd to the Sun.

The firſt Sort is moſt commonly cultivated in the *Engliſh* Gardens, but the ſecond is much preferable to that, as being of humbler Growth, never riſing above five Feet high, and ſo is more proper for Flower-Gardens, and the Flowers are much larger, and of a deeper red Colour, and commonly are produced in larger Cluſters. The third Sort is ſeldom propagated in Flower-Gardens, tho' for Variety it ſhould have a Place amongſt other large Plants. The Flowers of this Kind are ſmaller, and of a purple Colour.

The tuberoſe-rooted Sort is preſerv'd as a Curioſity in many Gardens, tho' there is no great Beauty in its Flowers. This may be propagated either by Seeds, as the others, or by its Roots, which increaſe very faſt under Ground, and is an abiding Plant, but ſhould not be placed among other curious Flowers; for the Roots propagating under Ground, will come up and ſpread over whatever Plants grow near them.

The fifth and ſixth Sorts are annual Plants, which are propagated only by Seeds: Theſe may be ſown in *March*, in the Places where they are to remain for good, being Plants that ſeldom will grow, if tranſplanted, except it be done while they are very young: Theſe ſhould be either ſown near a Pale, Wall, or Eſpalier, to which they may be train'd; or if ſown in the open Borders, ſhould have Stakes placed by them, to which they ſhould be faſten'd, otherwiſe they will trail upon the Ground, and appear very unſightly, which is the only Culture theſe Plants require, except the clearing them from Weeds. They produce their Flowers in *July*, and their Seeds are perfected in *Auguſt* and *September*.

But the beſt Method to have them very ſtrong, is, to ſow their Seeds in *Auguſt*, under a warm Wall or Hedge, where they will come up in Autumn, and abide the Winter very well; and theſe will begin to flower in *May*, and continue to ſpread freſh Flowers until *July*, or later, according to the Heat of the Seaſon: And one of theſe Autumnal Plants will be as large as four or five of thoſe ſown in the Spring, and produce ten Times the Number of Flowers; and upon theſe

Plants you will always have good Seeds, when ſometimes the other will miſcarry: However, it is very proper to ſow their Seeds at two or three different Seaſons, in order to continue their Flowers the longer; for the late planted ones will continue blowing until the Froſt prevents them.

The ſweet-ſcented Sort is the moſt valuable, both for the Beauty and Fragrancy of its Flowers.

The ſeventh Sort is frequently cultivated for Uſe in ſeveral Parts of *Europe*; but in *England* it is rarely to be met with, unleſs it be in botanick Gardens, where it is preſerved for the ſake of Variety. This Plant may be cultivated in the ſame Manner as *Tares*, and may be uſed for the ſame Purpoſes; but the beſt Method is to ſow them in Drills about eighteen Inches aſunder, and ſo keep the Ground houghed with a Plough to deſtroy the Weeds between the Rows, in the ſame Manner as is practiſed for Peas; by which Method the Plants will thrive exceedingly, and become a great Improvement to poor ſandy Land.

The eighth Sort is a Variety of the ſeventh, from which it only differs in the Colour of the Flower, this having a fine purple Flower, and is by many Perſons ſowed in Gardens by Way of Ornament. If the Seeds of this Sort are ſowed in Autumn, the Plants will come up, and abide the Winter very well; ſo will flower the following *May*; but if the Seeds are ſown in the Spring, the Plants will not flower 'till *July* or *Auguſt*: So that by ſowing at the two different Seaſons, theſe may be continued in Beauty for ſeveral Months.

The ninth Sort has been by ſome Perſons ſown for Feed for Cattle; but it doth not anſwer near ſo well for this Purpoſe as the ſeventh Sort, ſo is not worth Cultivating. The tenth Sort is a Variety of the ſeventh, from which it differs in the Colour of the Flower; ſo is preſerved by the Curious in Botany, for the ſake of Variety.

The eleventh Sort is a Variety of the common *Everlaſting Pea*; the Flowers of this being white, are preſerved by ſeveral Perſons for the Variety; but it is not ſo beautiful as the common Sort. This may be propagated in the ſame Manner as is directed for the common Sort.

The nine following Sorts are preſerved in ſome curious Gardens, for the Variety of their Flowers. Theſe may all of them be propagated by ſowing of their Seeds, either in Spring or Autumn; but thoſe which are ſowed in Autumn, ſhould have a light Soil, and a warm Situation, where the Plants will abide the Winter, and come to flower early the following Spring, and their Seeds will ripen in *July*. But thoſe which are ſown in the Spring, ſhould have an open Expoſure, and may be planted upon almoſt any Soil; for they are not very tender Plants in their Culture. Theſe Sorts ſhould all of them be ſown where they are deſigned to remain, for they ſeldom ſucceed when they are tranſplanted; ſo that where they are ſown for Ornament, there ſhould be ſix or eight Seeds ſown in a ſmall Patch, in different Parts of the Borders of the Flower-Garden; and when the Plants come up, they ſhould be carefully kept clear from Weeds; and when they are grown two or three Inches high, there ſhould be ſome Sticks put down by them to ſupport them; otherwiſe they will trail on the Ground, and become unſightly; beſides, they will trail on whatever Plants grow near them.

The twelfth and the twentieth Sorts, I have ſeen cultivated in ſome Kitchen-Gardens for the Table, and are by the People in ſome Parts of *Germany* conſtantly eaten as Peas; but as they are not near ſo tender or well-taſted as Peas, ſo I believe few Perſons in *England* will ever cultivate them for that Purpoſe.

LATIFOLIOUS *Trees* and *Plants*, are ſuch as have broad Leaves.

LAVATERA, [takes its Name of the Phyſician *Helveticus Lavaterus*, the Friend of Monſ. *Tournefort*; upon which Account, *Tournefort* ſo intituled it. *Vaillantius* thought it to be the *Trimiſtrei Cluſii*: But then it ought rather to be referr'd to the Genus of *Alcea*.]

The *Characters* are;

The Leaf, Flower, Style, and Cup of the Flower have the Appearance of a Mallow: *The Stile becomes a Fruit, which is arm'd in Front with a hollow Shield; the Seeds, which are ſhaped like a Kidney, growing to the inner Part.*

The *Species* are;

1. LAVATERA *folio & facie althææ. Tourn.* Lavatera with the Leaf and Face of Marſhmallow.

2. LAVATERA *folio & facie althææ, flore albo.* Lavatera with the Leaf and Face of Marſhmallow, and a white Flower.

3. LAVATERA *Africana, flore pulcherrimo. Boerb. Ind.* *African* Lavatera, with a moſt beautiful Flower.

Theſe are all annual Plants, which are propagated by Seeds: The Seaſon for ſowing them is in *March*, upon a Bed of freſh light Earth; and when the Plants are come up, you muſt carefully clear them from Weeds; and in very dry Weather, they muſt be now and then refreſh'd with Water. When they are about two Inches high, you muſt tranſplant them into the Places where they are deſign'd to remain, which ſhould be in the Middle of the Borders in the Flower-Garden; for if the Soil be good, they will grow two or three Feet high: In tranſplanting them, you muſt take them up very carefully, preſerving a Ball of Earth to their Roots, otherwiſe they are apt to miſcarry: And alſo water and ſhade them until they have taken Root; after which they will require no other Care but to clear them from Weeds, and to faſten them to Stakes, to prevent their being injur'd by ſtrong Winds. You may alſo ſow their Seeds in Autumn; and when the Plants are come up, you ſhould tranſplant them into ſmall Pots, which towards the End of *October*, ſhould be placed into a common Hot-bed Frame, where the Plants being defended from ſevere Froſts, will abide the Winter very well; and in the Spring, you may ſhake them out of the Pots, and plant them into larger, or elſe into the full Ground, where they may remain to flower: The Plants thus manag'd, will be larger, and flower ſtronger and earlier than thoſe ſown in the Spring, and from theſe you will conſtantly have good Seeds; whereas thoſe ſown in the Spring do ſometimes miſcarry.

Theſe produce their Flowers in *June*, *July*, and *Auguſt*, and their Seeds ripen ſoon after.

They are very ornamental Plants in a fine Garden, when placed among other Annuals, either in Pots or Borders: Their Flowers are very like thoſe of the *Mallow*, but are larger, and of a more beautiful Colour.

LAVENDULA, [takes its Name of *Lavando*, Lat. *waſhing*, becauſe it was uſed to be thrown into Baths, for the Fragrancy of the Scent; or becauſe uſed in Lye, to give a Fragrancy to Linen; and becauſe it is very good to waſh the Face with, and give it both Beauty and a grateful Scent] Lavender.

The *Characters* are;

It is one of the verticillate Plants, whoſe Flower conſiſts of one Leaf, which is divided into two Lips; the upper Lip ſtanding upright, is roundiſh, and for the moſt part bifid; but the under Lip is cut into three Segments, which are almoſt equal: Theſe Flowers are diſpoſed in Whorles, and are collected into a ſlender Spike upon the Top of the Stalks.

The *Species* are;

1. LAVENDULA *latifolia. C. B.* Common broad-leav'd Lavender.

2. LAVENDULA *anguſtifolia. C. B.* Common narrow-leav'd Lavender, *commonly called* Spike Lavender.

3. LAVENDULA *latifolia ſterilis. Mor. Hiſt.* Broad-leav'd barren Lavender.

4. LAVENDULA *anguſtifolia, flore albo. C. B. P.* Narrow-leav'd Lavender, with white Flowers.

5. LAVENDULA *folio diſſecto. C. B.* Cut-leav'd Lavender.

6. LAVENDULA *folio diſſecto, flore albo. Boerb. Ind.* Cut-leav'd Lavender, with a white Flower.

7. LAVENDULA *folio longiori, tenuius & elegantius diſſecto. Tourn.* Lavender with a longer and more beautiful fine cut Leaf, *commonly called* Canary Lavender.

8. LAVENDULA *latifolia Indica ſubcinerea, ſpicâ breviore. H. R. Par.* Broad-leav'd *Indian* Lavender, with a ſhort Spike.

9. LAVENDULA *latifolia Hiſpanica tomentoſa. Inſt. R. H.* Broad-leav'd woolly *Spaniſh* Lavender.

10. LAVENDULA *latifolia, flore albo. C. B. P.* Broad-leav'd Lavender, with a white Flower.

The firſt of theſe Species, tho' very common in moſt Parts of *Europe*, yet in *England* is rarely to be found, notwithſtanding it is as eaſily propagated as any of the other Sorts.

The ſecond is the moſt common Sort in the *Engliſh* Gardens, being propagated for Medicinal Uſes, *&c.*

The third Sort is a Degeneracy from the ſecond, having much broader and greener Leaves, but rarely ever flowers while it continues with the Leaves broad; but whenever it flowers, the Leaves of that Part of the Plant become narrow again.

The fourth Sort is alſo a Variety of the ſecond, from which it differs in the Colour of the Flowers, which in this Sort are white, and thoſe of the ſecond are blue.

All the Sorts are propagated by Cuttings or Slips; the beſt Seaſon for which is in *April*, when you ſhould plant them in a ſhady Situation, or at leaſt ſhade them with Mats until they have taken Root; after which they may be expoſed to the Sun, and when they have obtain'd Strength, may be remov'd to the Places where they are deſign'd to remain. Theſe Plants will abide the longeſt in a dry, gravelly, or ſtony Soil, in which they will endure our ſevereſt Winters, tho' they will grow much faſter in the Summer, if they are planted upon a rich light moiſt Soil; but then they are generally deſtroy'd in Winter; nor are the Plants half ſo ſtrong ſcented, or fit for Medicinal Uſes, as thoſe which grow upon the moſt barren rocky Soil.

The firſt and ſecond Sorts may alſo be propagated from Seeds, which ſhould be ſown in *March*, upon a dry undung'd Soil; and when the Plants are come up, they muſt be carefully clear'd from Weeds, until they are about two Inches high, when they ſhould be tranſplanted into other Beds, allowing them a Foot diſtance each Way: In theſe Beds they may remain, to be cut for Uſe; or you may afterwards tranſplant them into dry Borders or Beds, in any other Place where you would have them ſtand, obſerving never to dung the Ground where they are planted, which would cauſe them to grow vigorouſly in Summer, but will haſten their Decay, as was before obſerv'd.

Theſe Plants were formerly in Uſe to make Edgings to Borders in Gardens; for which Purpoſe they are by no means proper, for they will grow too large for ſuch Deſigns; and if they are often cut in very dry Weather, they are ſubject to decay, and in hard Winters they are very often kill'd, ſo that the Edging will not be compleat; beſides, theſe Plants do greatly exhauſt the Goodneſs of the Soil, whereby the Plants in the Borders will be depriv'd of their Nouriſhment; ſo that they ſhould never be planted in a fine Garden, amongſt other choice Plants or Flowers, but rather be placed in Beds in the Phyſick-Garden. Theſe Plants produce their Flowers in *June* and *July*, at which Time they ſhould be gather'd and dry'd in a ſhady Place, and preſerv'd dry for Uſe.

The fifth, ſixth, and ſeventh Sorts are commonly ſown every Spring, on Borders or Beds of light freſh Earth; and when the Plants come up, they may be tranſplanted into other Borders of the Flower-Garden, or into Pots, to remain for good, where they will produce their Flowers in *July* and *Auguſt*, and their Seeds are ripe ſoon after. Theſe are pretty Plants to place in large Borders, amongſt other Plants, for Variety; but they are never uſed with us: they may alſo be preſerv'd over the Winter, if placed into a Green-houſe in Autumn, which is the ſureſt Method to obtain good Seeds from the ſeventh Sort, which rarely ripens Seeds the firſt Year; but they ſeldom continue longer than two Years with us, and many Times (if they have produced Seeds the firſt Year) they will not continue longer. Theſe Plants will ſometimes grow from Cuttings, but then the Cuttings muſt be ſtrong, and inclinable to be woody; for if they are very ſoft and ſpungy, they ſeldom ſucceed; and they ſhould alſo be placed upon a moderate Hot-bed, which will greatly promote their taking Root. This Method is ſometimes neceſſary to preſerve the Sorts, which might otherwiſe be in Danger of being loſt.

The eighth, ninth, and tenth Sorts are diſtinguiſhed by moſt Writers in Botany; but I believe the eighth Sort to be the ſame with the broad-leav'd barren Lavender, which is a Degeneracy from the common Sort; for by planting Slips or Cuttings of this Sort, they will often alter, and become narrow-leav'd, when the Plants will produce Flowers in as great Plenty as the common Sort, tho', while they continue to have broad Leaves, they do not produce any Flowers.

The ninth Sort is not common in *England*; this was found by Dr. *Tournefort* in *Spain*. The tenth Sort is a Variety of the common broad-leav'd Kind, from which it only differs in the Colour of the Flower.

LAUREOLA. *Vide* Thymelea.

LAUROCERASUS, [this Plant is thus call'd, becauſe it has the Appearance of the *Laurel*, and the Fruit of a *Cherry*] The Laurel *or* Cherry-Bay.

The *Characters* are;

It hath broad, thick, ſhining, ever-green Leaves, ſomewhat like thoſe of the Bay-tree: *The Cup of the Flower is hollow and Funnel-ſhaped, ſpreading open at the Top, and is divided into five Parts: The Flower conſiſts of five Leaves, which expand in form of a* Roſe, *having many* Stamina *in the Center: The Fruit (which are like thoſe of the* Cherry-tree) *are produced in Bunches, and the Stone is longer and narrower than that of the* Cherry.

The *Species* are;

1. LAUROCERASUS. *Cluſ. Hiſt.* The common Laurel *or* Cherry-Bay.
2. LAUROCERASUS *foliis ex albo variegatis. Cat. Plant. Angl.* The White-ſtrip'd Laurel.
3. LAUROCERASUS *foliis ex luteo variegatis. Cat. Plant. Angl.* The Yellow-ſtrip'd Laurel.
4. LAUROCERASUS *Luſitanica, minor. Tourn.* The Dwarf *Portugal* Laurel, *called* Aſarero.

The firſt Sort is very common in moſt *Engliſh* Gardens, and was formerly in greater Requeſt than it is at preſent, when theſe Trees were planted againſt North Walls, to cover them; as alſo in the Parterre-Garden, where they were frequently ſheer'd up, to form Pyramids and Globes; for which Purpoſe, this was one of the moſt improper Trees; for the Leaves being very large, they were cut in divers Places by the Sheers, which render'd them unſightly; but tho' this Plant is very improper for ſuch Uſes, yet it is valuable for planting upon the Sides of cold barren Hills, where it will grow to a large Magnitude, and make a fine Appearance thro' the whole Year, and in ſuch Situations it will riſe to a large Tree.

They are eaſily propagated by planting Cuttings in *September*, in a ſhady moiſt Border, where they will ſoon take Root; and in the Spring following may be remov'd into the Nurſery, planting them three Feet diſtance, Row from Row, and two Feet aſunder in the Rows, obſerving to clear them from Weeds, and to dig the Ground annually between the Rows, and prune off their under Branches, to make them aſpire in Height; and when they have remain'd in this Place three Years, they will be fit to tranſplant into the Places where they are to continue. The beſt Seaſon for tranſplanting theſe Trees is in *April*, juſt before they begin to ſhoot; but in taking them up, you muſt always obſerve to preſerve a Ball of Earth to their Roots: and when they are planted, you muſt mulch the Ground round their Stems, to preſerve it from drying, and refreſh them often with Water, (eſpecially if the Seaſon be dry) until they have taken Root; after which, they will require but very little Culture.

But if you deſign theſe Trees for large Standards, the beſt Method is, to propagate them from the Berries, which will eaſily riſe, and will ſooner grow to large Trees than thoſe propagated by Cuttings. The Manner of ſowing theſe Seeds is as follows: You ſhould dig and prepare a Bed or two, (according to the Quantity of Seeds you have to ſow) and level the Ground very even; then ſow the Berries thereon ſoon after they are ripe, covering them over about an Inch thick with light Earth: In the Spring the young Plants will appear; at which Time you muſt carefully clear them from Weeds, and in dry Weather often refreſh them with Water, which will greatly promote their Growth: Theſe Plants (if they have made a good Progreſs) will be fit to tranſplant the ſucceeding Spring; when you muſt prepare ſome freſh Beds, into which they ſhould be remov'd, planting them ten Inches or a Foot aſunder each Way, obſerving to water them, and lay a little Mulch about their Roots: In theſe Beds they may continue two Years; after which, they ſhould be remov'd either into the Places where they are to remain, or into a Nurſery, as was before directed.

There are ſome People, who adviſe the budding of this Tree upon the common *Black-Cherry-Stock*, in order to render it more vigorous; but as I have never yet ſeen any large Trees which were thus raiſed, ſo I can't ſay how well it will ſucceed; tho' I have often ſeen the *Cherry* grafted on this Tree, and this grafted upon the *Cherry*, both which have taken very well; but I much doubt whether they will join ſo well together, as to add to the Stature of the Tree, eſpecially ſince we find that moſt Sorts of Fruit-Trees grow much larger when they are ſuffer'd to remain ungrafted as they come from Seeds, than thoſe which are budded or grafted.

The Berries of this Tree are by ſome put into Brandy to make Ratafia, for which Purpoſe it is greatly preferr'd to *Apricock* Stones, giving the Brandy a much pleaſanter bitter Taſte, and by ſome the Leaves are uſed for the ſame Purpoſe; but this ſhould be cautiouſly done, ſince, by ſome late Accounts from *Ireland*, we are inform'd, that the diſtill'd Water of theſe Leaves is found to be poiſonous. Whether this Account be true or not, a few Experiments will ſoon make appear.

Theſe Berries are much coveted by divers Sorts of Birds, for which Reaſon ſome of the Trees ſhould be planted in the Clumps, where you intend a Shelter for Birds to harbour, and their Leaves remaining always green, will be of great Uſe to theſe Inhabitants in Winter; ſo that ſuch Plantations will be well ſtor'd with *Black-birds*, *Thruſhes*, and many other

Sorts of Singing-Birds, to the no ſmall Pleaſure of ſuch Places.

The two variegated Kinds may be propagated by Cuttings, or by budding or grafting them on the plain Sort; but theſe muſt conſtantly be planted on a poor Soil, otherwiſe they will become plain again. Theſe are pretty Varieties amongſt other variegated Plants.

The *Portugal* Dwarf Laurel is ſomewhat tenderer than the common Sort, and is ſubject to be injur'd by ſevere Froſts, but will endure our ordinary Winters abroad very well. This is propagated in the ſame Manner as the common Sort, but will not grow near ſo large; however, it is very proper to intermix with Ever-greens of middling Growth, where, if it be planted on a dry Soil, and has a warm Situation, it will ſtand the Teſt of our Winters very well.

LAURUS, The Bay-Tree.

The *Characters* are;

It hath a Flower conſiſting of one Leaf, which is ſhaped like a Tunnel, and divided into four or five Segments; the Male Flowers (which are produced on ſeparate Trees from the Female) have eight Stamina, *which are branched into Arms; the Ovary of the Female Flowers becomes a Berry, incloſing a ſingle Seed within a horny Shell, which is cover'd with a Skin.*

The *Species* are;

1. LAURUS *vulgaris. C. B.* The common Bay, with Male Flowers.
2. LAURUS *vulgaris, fœmina. Boerh. Ind.* The common Fruit-bearing Bay-tree.
3. LAURUS *vulgaris, folio elegantiſſime variegato aureo. Boerh. Ind.* The Gold ſtrip'd Bay-tree, *vulgo*.
4. LAURUS *vulgaris, folio undulato. H. R. Par.* The common Bay-tree, with waved Leaves, and Male Flowers.
5. LAURUS *vulgaris, folio undulato, fœmina. Boerh. Ind.* The Berry-bearing Bay-tree, with waved Leaves.
6. LAURUS *tenuifolia. Tab. Icon. Mas.* The narrow-leav'd Bay, with Male Flowers.
7. LAURUS *tenuifolia, fœmina. Boerh. Ind.* The narrow-leav'd Berry-bearing Bay-tree.
8. LAURUS *latiori folio. Lugd. Mas.* The broad-leav'd Bay-tree, with Male Flowers.
9. LAURUS *latifolia, fœmina. Boerh. Ind.* The broad-leav'd Berry-bearing Bay-tree.
10. LAURUS *Indica. Hort. Farneſ. Ald.* The broad-leav'd *Indian* Bay-tree, *commonly called* Wild Cinnamon.
11. LAURUS *Americana mas, foliis ſubrotundis, floribus in capitulum collectis. Houſt.* Male *American* Bay, with roundiſh Leaves, and Flowers collected in a Head.
12. LAURUS *Americana fœmina, foliis ſubrotundis, fructu albo umbellato. Houſt.* Female *American* Bay, with roundiſh Leaves, and white Fruit growing in an Umbel.

The firſt and ſecond Sorts are old Inhabitants of the *Engliſh* Gardens; and as they are Varieties obtain'd from the ſaid Seeds, ſo they are promiſcuouſly cultivated, and are not to be diſtinguiſh'd aſunder, until they have produced Flowers.

Theſe Plants are propagated either from Seeds, or by laying down the tender Branches, which will take Root in one Year's Time, and may then be taken off, and tranſplanted either into a Nurſery, or the Places where they are deſign'd to remain. But if you would propagate them from Seeds, you muſt gather from them the Trees in *January*, (at which Time they commonly are ripe) and preſerve them in Sand until the Beginning of *March*, when you muſt prepare a Bed of light dry Earth, which ſhould be ſituated in a warm Place, where the Plants may be defended from the North and Eaſt Winds: This Bed muſt be levell'd exactly even, and then draw ſome ſmall Furrows croſs it at about eight Inches Diſtance, and an Inch deep, into which you ſhould drop the Seeds, about two Inches aſunder, then cover them with Earth; and if the Seaſon ſhould prove very dry, you muſt often refreſh them with Water. In about two Months Time the young Plants will appear above Ground, when you muſt carefully clear them from Weeds; and in dry Weather if you refreſh them with Water, it will greatly promote their Growth. In theſe Beds they ſhould continue two Years, by which Time they will be large enough to tranſplant; you muſt therefore make choice of a warm dry Spot of Ground, which ſhould be well dug and cleans'd from Weeds and Roots of Trees, *&c.* and laid even; then mark out the Lines three Feet diſtant from each other; and having taken up the Plants carefully with a Ball of Earth to their Roots, you muſt plant them exactly ſtrait in the Rows, at eighteen Inches aſunder, obſerving to water them well, as alſo to lay ſome Mulch upon the Surface of the Ground, near the Stems, to preſerve the Ground from drying too faſt. The beſt Seaſon for removing theſe Trees is in *April*, juſt before they begin to ſhoot.

During the Time theſe Plants remain in the Nurſery, you muſt obſerve to keep them clear from Weeds, digging the Ground between the Rows every Spring; as alſo to faſten the Shoots of the Plants to ſtrait Stakes, to prevent their growing crooked and unſightly; and alſo obſerve to prune off the Under-ſhoots, to make them advance in Height: but I can by no means recommend the ſheering of theſe Plants into conical or pyramidal Figures, (as is the general Practice) for the ſame Reaſon as I gave for the *Laurel, viz.* that the Leaves being large, are cut in Pieces, whereby the Plants are render'd very unſightly; but rather, that they ſhould be improved, ſo as to make large Trees, to which they are naturally diſpos'd to grow, could we prevent the Sheers from continually gnawing them.

Theſe Trees are very proper to plant upon the warm Sides of dry Hills, where they may be protected from the ſevere Blaſts of the North and Eaſt Winds; in which Situations I have ſeen ſome of theſe Trees upward of thirty Feet in Height, which is a plain Indication of their large Growth.

But I know it will be objected, that theſe Trees are often deſtroy'd by hard Winters, and ſo are improper to make large Plantations of in *England*. That they have been ſometimes kill'd by ſevere Winters, I can't deny: but if they are brought up thus hardily, as has been directed, and not ſheer'd, I dare affirm, they will reſiſt the ſevereſt Cold of our Climate, when grown to a moderate Age, provided they are planted in a dry Soil, in which, tho' their Leaves ſhould be intirely ſhrivell'd by extreme Cold, yet, if permitted to remain undiſturb'd, they will ſhoot again in the ſucceeding Summer, as I have more than once experienced. And in the hard Winter, *Anno* 1728. when moſt of the *Bay-Trees* ſeem'd to be deſtroy'd which grew abroad, and many People were ſo inconſiderate as to dig them up, and throw them away, it was obſervable, that all thoſe which were permitted to ſtand, did ſhoot out again in the ſucceeding Summer, and recover'd their uſual Verdure. Which ſhould caution every Perſon, not to be over-haſty in condemning Trees to the Fire, but to wait for the Succeſs of a whole Seaſon, before they are pull'd up.

Bay-Leaves dry'd and reduced to Powder, as much as will cover an Half-Crown, being drank in a Glaſs of White-Wine, are ſaid ſeldom to fail of curing an Ague. Theſe Leaves are alſo uſed in divers Sauces in the Kitchen, and the Berries are often uſed in Medicine.

The Gold-ſtrip'd *Bay* is much more tender than the common Sort; for which Reaſon it muſt be planted in Pots, and houſed in Winter with *Oranges*, *Myrtles*, &c. and muſt be placed ſo as to have as much free Air in mild Weather as poſſible, and will require to be frequently water'd. This Plant may be propagated by Layers, or by budding it upon the common *Bay*: but you muſt not plant it into very rich Earth, which will cauſe it to grow vigorouſly, whereby it will become quite plain; but, on the contrary, let it have a freſh light ſandy Soil, in which it will very well preſerve its beautiful Stripe.

The fourth, fifth, ſixth, ſeventh, eighth, and ninth Sorts are commonly preſerv'd in Pots or Tubs, and placed in the Green-houſe with *Oranges*, *Myrtles*, &c. But I dare ſay; either of theſe Sorts will thrive in the open Air, if planted in a warm dry Soil, and defended from the North and Eaſt Winds; but eſpecially the broad-leav'd Sort, which, I have experienced, will endure more Cold than the common *Bay*: but as they are leſs common, ſo they are generally preſerv'd with more Care; tho' they may either of them be propagated in as great Plenty as the common Sort, either by Layers or Seeds; for they will bear great Plenty of Berries, provided they are not kept ſheer'd; and theſe Berries will riſe full as well, and, many times, out-grow the common *Bay*, as I have frequently obſerv'd: ſo that why we have not theſe Trees in as great Plenty as the common Sort, is only owing to their not being propagated and planted abroad; moſt People imagining, becauſe they have been hitherto treated with great Care, that therefore they will not endure the Cold. Which is a great Miſtake; for we have found, by repeated Trials which have been made within a few Years paſt, that many of thoſe Plants which have been nurs'd up in Green-houſes, with great Care, (whereby their Roots were confin'd, and the Plants circumſcrib'd and ſtarv'd in their Growth) when planted abroad, have made great Progreſs, and defy'd the moſt ſevere Cold of our Climate to injure them: Which is a great Encouragement to proceed in our Trials of this Kind; ſince, by this Method, we may naturalize a great Variety of valuable Trees and Plants to our Country, which may hereafter be found of great Benefit. Nor ſhould we be diſcouraged, if, in the firſt Attempt, we ſhould not ſucceed ſo well as we might wiſh; for, by ſeveral Eſſays, we may overcome the Difficulty; and then the Pleaſure of having denizen'd any Exotick Trees, will ſufficiently compenſate the Trouble, ſince hereby we eſtabliſh living Monuments of Praiſe.

The *Indian Bay* is too tender to endure our cold Winters abroad as yet: tho' I doubt not but that when theſe Plants are very ſtrong and woody, and ſome Care taken in their firſt Expoſure, they may be brought to thrive in the open Air; which, if once obtain'd, ſo as to have Seeds produced in *England*, the Offspring will be better inured to our Climate. And if this Plant can be once well naturalized, ſo as to grow as in the warmer Parts of *Europe*, it will be one of the nobleſt Ever-greens, for Shade and Beauty, we ever obtain'd; for it is naturally a very ſtrait-growing Tree, and the Leaves are very broad, and of a ſhining green Colour, which renders it very agreeable.

This Plant is propagated by Seeds, (which are eaſily procur'd from *Portugal*, where theſe Trees grow in great Plenty); they ſhould be put into Pots fill'd with freſh light Earth, and plung'd into a gentle Hot-bed, to facilitate their Growth; and when the Plants are come up, you ſhould remove the Pots into another moderate Hot-bed, to forward them, where they ſhould remain until the Beginning of *June*, when you muſt harden them by Degrees, to endure the open Air, into which they ſhould be remov'd about the Middle of that Month, obſerving to place the Pots in a well-ſhelter'd Situation; and in dry Weather you muſt often refreſh them with Water. The Beginning of *October* you muſt remove the Pots into the Green-houſe, placing them near the Windows, that the Plants may have as much free Air as poſſible in mild Weather; and obſerve that they do not ſuffer with Drought; for they will require to be frequently refreſh'd with Water. In *April* following, you muſt take the Plants out of the Pots, preſerving the Earth to their Roots, and put each into a ſeparate Pot, fill'd with the before mention'd light freſh Earth: then plunge them into a moderate Hot-bed for a Month or ſix Weeks, to haſten their taking Root; which done, you muſt harden them again, and expoſe them to the open Air, as before: and in Winter they muſt be houſed again, obſerving the Directions before given. After five or ſix Years thus managing them, (ſtill obſerving every Year to let them continue longer out of the Houſe in Autumn, than the preceding) you ſhould in *April* plant ſome of them into the full Ground, in a warm well-ſhelter'd Situation, that they may have good Rooting in the Ground before the Winter comes on: and in Autumn you muſt lay a little Mulch upon the Surface of the Ground, to prevent the Froſt from penetrating to their Roots. But if the Winter following ſhould prove ſevere, you ſhould twiſt a Band of Hay or Straw round their Stems, which will be of great Service to protect them from Cold: and after they have endured two or three Winters abroad, they will be pretty much out of Danger; for tho' a very hard Winter may afterwards kill ſome of their Branches, yet they will ſhoot again the following Summer.

The eleventh and twelfth Sorts were diſcovered by the late Doctor *William Houſtoun*, at *La Vera Cruz*; from whence he ſent the Seeds into *Europe*, which have furniſhed ſome curious Gardens with the Plants. Theſe being Natives of a warm Country, muſt be preſerved in Stoves; otherwiſe they will not live thro' the Winter in this Climate, eſpecially while they are young; but when they have been raiſed to have Strength, they may be kept in a warm Green-houſe, without any Fire. During the Summer Months, they may be placed in the open Air, in a warm ſheltered Situation; but they ſhould not remain too long abroad in Autumn, for if the Froſt ſhould pinch them, they will ſoon decay. In warm Weather, theſe Plants muſt be frequently watered; but in Winter they ſhould have it more ſparingly, unleſs they are kept warm, when they will require a greater Share. As theſe Plants retain their Leaves in Winter, ſo they make an agreeable Variety amongſt other Exotick Plants in the Stove. They may be propagated by Layers, when the Plants are ſtrong enough to ſend forth good Shoots; for as they do not produce Seeds in this Country, ſo it will be difficult to obtain them from abroad. The beſt Time to lay down the Shoots, is in *April*, when you ſhould give them a Hot-bed, which will greatly forward their making of Roots, eſpecially if they are duly watered. But they will not have Roots enough to tranſplant before the next Spring.

LAURUS ALEXANDRINA. *Vide* Ruſcus.

LAURUS TINUS. *Vide* Tinus.

LAWN, is a great Plain in a Park, or a ſpacious Plain adjoining to a noble Seat.

As to the Dimenſions of it, it ſhould be as large as the Ground will permit; but never leſs, if poſſible, than fifty Acres.

As to the Situation of a *Lawn*, it will be beſt to be in the Front of the Houſe, and to lie open to the neighbouring Country, and not pent up with Trees.

If the Houſe front the Eaſt, it will be moſt convenient, becauſe the Rooms will be ſhaded in the Afternoon, and ſo the Objects to be view'd from the Houſe will be much beautify'd by the Sun's ſhining upon them in the Afternoon: for if the beſt Room of the Houſe front the *Lawn*, as it always ſhould do, the Afternoon being the moſt uſual Time for People of Faſhion to ſolace themſelves in ſuch Rooms, then the Afternoon Sun will not be offenſive to thoſe Rooms; nor will the Proſpect be interrupted, but render'd more pleaſant; whereas, were it on the Weſt Side of the Houſe, the Sun, by ſhining from the Object, and directly againſt thoſe Rooms, would by both hinder the Proſpect; and the Generality of Proſpects are moſt pleaſant when the Sun ſhines upon them.

Beſides, there is another Inconveniency; if the *Lawn* be on the Weſt Side of the Houſe, it will give the more way to the Weſt Wind (which is commonly the greateſt) to injure the Houſe, by its having a free Paſſage to it.

If the *Lawn* be on the South Side of the Houſe, it may do well enough, for the Reaſons before mention'd; for the Sun's Rays being then darted obliquely, will not much interrupt the Proſpect; and the Sun ſhining moſt part of the Day on that Side of the Houſe, will ſtill add to the Beauty of that Front, which ought to be the beſt Front in the Houſe; therefore a *Lawn* on that Side will much help the Proſpect of the Houſe.

It will not be at all convenient to have the *Lawn* on the North Side of the Houſe, becauſe it will lay the Houſe too open to the cold North Winds, *&c.* therefore it will be more eligible to plant Wilderneſſes and Woods on the Weſt and North Sides of the Houſe.

If the Figure of the Houſe be built in this Form ⌶, or any other, the Front may be on both Sides of the Houſe alike, making an Angle at the Middle of the Front, or at ſome Court-Gate right before it, and breaking off at a convenient Diſtance from the Houſe.

As to the Figure of a *Lawn*, the Square is a very proper one, and if it be bounded with Walks, it may not be much amiſs; tho' I rather recommend an open *Lawn*; but if Perſons chuſe to have it bounded, a ſingle Row of Lime-Trees, ſet at a good Diſtance one from another, will not look amiſs, and being ſo placed, they will the better ſhew the Shape of their Heads; but however, the Front of the *Lawn* ſhould be left open, except the *Lawn* fall very much from the Houſe.

If Perſons will, there may be three Avenues breaking out at three Angles; or one at the Angle oppoſite to the Houſe; and if the *Lawn* be a riſing Ground to the Houſe, ſome Trees ſet thin upon it will not look unpleaſant. If the *Lawn* be a Circle, it may not be amiſs; but then it ought to break off before it comes againſt the Front.

Neither is a Triangle a very improper Figure for a *Lawn*, but if ſo, the Angle which leads to the Front muſt not be too acute; but it ſhould rather be obtuſe or right-angled, at the Angle that is next to the Front.

If the *Lawn* be bounded with Trees, Lime-Trees are very proper for that Purpoſe, becauſe they are Trees that will grow well in any Soil, if Care be taken in the Planting of them; and beſides that, all the Trees will grow in a very fine Shape, appearing as tho' they were cut, if they are not too thick planted, and you will have a Proſpect of the adjoining Country between their Stems, eſpecially if their Heads are pruned up to a reaſonable Height; but if that Part of the Country upon which you look is not agreeable, then you ſhould bound the View with a riſing Plantation of Trees, form'd into an Amphitheatre, which will be very agreeable.

The *Elm* is a very proper Tree for planting of *Lawns*, having a fine green Leaf, and if the Ground be natural to it, it will grow to a large Tree and ſtrait, if it be ſtill kept pruned as it ought to be.

The *Beech* makes a ſtately Tree, where it likes the Ground, alſo the *Cheſnut*, the *Walnut* and the *Black-Cherry* Tree; for where they like the Ground, they are not only quick Growers, but repreſent a very delightful Scene in the Spring, when cloath'd in their white Attire.

Firs and *Pines* do very well, if the Ground be ſuitable to them, and theſe being always green, afford a conſtant Pleaſure both in Winter and Summer.

LAYERS: Many Trees may be propagated by *Layers*, the Ever-greens about *Bartholomew-tide*, and other Trees about the Month of *February*.

This is to be perform'd by ſlitting the Branches a little way, and laying them under the Mould about half a Foot: the Ground ſhould firſt be made very light, and after they are laid, they ſhould have a little Water given them.

If they do not comply well in the laying of them down, they muſt be pegg'd down with a Hook or two, and if they have taken ſufficient Root by the next Winter, they muſt be cut off from the main Plants, and planted in the Seminary, as is directed about Seedlings.

Some twiſt the Branch or bare the Rind, and if it be out of the Reach of the Ground, the faſten a Tub or Baſket near the Branch, which they fill with good Mould, and lay the Branch in it.

Laying of Trees.

This Operation is thus perform'd.

1ſt, Take ſome of the Boughs and lay them into the Ground about half a Foot deep in fine freſh Mould, leaving them with the End of the *Layer* about a Foot, or a Foot and a half out of the Ground, and keep them moiſt during the Summer Seaſon; and they will probably have taken, and be fit to remove: and if they have not by that Time taken Root, they muſt lie longer.

2dly, Tie a Piece of Wire hard round the Bark of the Bough, at the Place you intend to lay in the Ground, and twiſt the Ends of the Wire, ſo that they may not untie, and prick the Place above the Wire thro' the Bark with an Awl in ſeveral Places, and then lay it into the Ground, as before directed.

3dly, Cut a Slit upwards at a Joint, as is practiſed in laying of *Carnations*, which by Gardeners is call'd *Tonguing the Layers*.

4thly, Twiſt the Place that you deſign to lay in the Ground like a Withy, and lay it into the Ground as directed in the firſt Way of Laying.

5thly, Cut a Place round about the Bough (that is deſign'd to be laid) an Inch or two, at the Place that is moſt convenient to lay into the Ground, and manage it as is directed in the firſt Method of Laying.

The Seaſon for laying Hardy Trees that ſhed their Leaves, is in *October*; but for ſuch as are tender, in *March*; for Evergreens, *June* or *Auguſt* are good Seaſons.

Tho' *Layers* may be laid at any Time in the Year, yet thoſe Seaſons before-mention'd are moſt proper, for the Reaſons following; becauſe they have the whole Winter and Summer to prepare and draw Root; for at theſe Times of the Year the Sun has ſufficient Power on the *Sap* of the Tree to feed the *Leaf* and *Bud*, but has not Power ſufficient to make a Shoot.

And if that ſmall Quantity of Sap that does ariſe be hinder'd, as it will by ſome of the preceding Ways of *Laying*, the *Leaves* and *Buds* will gently crave of the *Layer*, and by that means will prepare the *Layer* to take Root, or put forth Roots a little to maintain itſelf, finding it cannot have it from the Mother-Plant.

And therefore, becauſe it wants but little Nouriſhment at that Time of the Year, it is better to lay *Layers* of Trees, or to ſet *Cuttings*, than at other Times, either in the Winter, when the Sap ſtirs but little, or in the Summer, when the Sap abounds, or in the Spring, when it begins to riſe; becauſe it is then apt to come too ſuddenly to draw Sap from the *Layer* before the *Layer* has drawn or prepar'd for Root.

However, the Spring or Summer may do well for ſmall Plants; becauſe ſuch Plants being but ſhort-liv'd, draw Root the quicker.

If you would lay young Trees from an high Standard, the Boughs of which cannot be bent down to the Ground, then you muſt make uſe of Ozier-Baſkets, Boxes, or Pots, fill'd with fine ſifted Mould, mix'd with a little rotten Willow-Duſt, which will keep Moiſture to aſſiſt the *Layer* in taking Root: This Baſket, Pot, &c. muſt be ſet upon a Poſt or Treſſel, &c. and the Bough muſt be laid according to either of the four firſt Ways of Laying; but too much Head muſt not be left on, leſt that be injur'd by the Wind, or by its own Motion rub off the tender Root; and the ſmaller the Boughs are, the leſs Way they ſhould be ſet out of the Ground, and Care muſt be taken to keep them clear from Weeds.

The harder the Wood is, the better will the young Wood take Root; but if the Wood be ſoft, the older Boughs will take Root the beſt.

LEAVES, are defin'd to be a Part of a Plant extended into Length and Breadth, in ſuch a Manner as to have one Side diſtinguiſhable from the other; they are properly the moſt extreme Part of a Branch, and the Ornament of the Twigs, and conſiſt of a very glutinous Matter, being furniſh'd every where with Veins and Nerves; one of their Offices is, to ſubtilize and give more Spirit to the Abundance of nouriſhing Sap, and to convey it to the little Buds.

A *Simple Leaf* is that which is not divided to the Middle.

A *Compound Leaf*, is divided into ſeveral Parts, each reſembling a ſimple *Leaf*, as in *Liquorice*, &c.

A *Digitated Leaf*, is a compound *Leaf* divided into ſeveral Parts, all of which meet together at the Tail, as in the *Hemp*, *Black Hellebore*, &c.

A *Trifoliated Leaf*, is a digitated *Leaf*, conſiſting of three Fingers, as the *Trefoil*, &c.

A *Quinquefoliated Leaf*, is a digitated *Leaf*, conſiſting of five Fingers, as in the *Quinquefolium*.

A *Pennated Leaf*, is a compound *Leaf* divided into ſeveral Parts, (each of which is call'd a *Lobe*) placed along the middle Rib, either alternately, or by Pairs. When the middle Rib is terminated by an odd *Lobe*, it is ſaid to be *unequally Pennated*, as in the *Goats Rue*, &c. and *equally Pennated*, when it is not terminated by an *odd Lobe*, as in the *Caſſia*; when the Lobes are all nearly of the ſame Form and Bigneſs, it is call'd an *uniform pennated Leaf*, as in the *Liquorice*; when they are not ſo, it is ſaid to be *Diſform*, as in the *Agrimonia*.

A *Winged Leaf*, is, as it were, divided into ſeveral *pennated Leaves*, as in the *Orobus*, &c.

A *Ramoſe Leaf*, is that which is ſtill farther divided than the *winged Leaf*, as in the *Oſmund Royal*, *Female Fern*, &c.

An *Intire Leaf* or *Lobe*, is that which has no Diviſion on its Edges, as in the *Apple-tree*, &c.

A *Sinuated Leaf*, is that which is cut about the Edges into ſeveral long Segments, as in *common Mallow*.

A *Serrated Leaf*, is that which is cut about the Edges into ſeveral *acute Segments*, reſembling the Teeth of a *Saw*, as in the *Nettle*, &c.

A *Crenated Leaf*, is that which is cut about the Edges into ſeveral *obtuſe Segments*, as in the *Betony*, &c.

A *Laciniated* or *Jagged Leaf*, is that which is cut about the Edges into ſeveral pretty deep Portions, in an irregular Manner, as in the *Horned Poppy*, &c.

Leaves are a Part of a Plant that is ordinarily very thin and flat, growing in the Spring, and falling off at the Autumn; tho' there are ſome Plants without *Leaves*, as the *Truffles* and *Muſhrooms*.

As to the Structures of *Leaves*, Dr. *Grew* obſerves, That their Fibres never ſtand on the Stalk in an even Line, but always in an angular or circular Poſture; and the Vaſcular Fibres or Threads are three, five, or ſeven: the Reaſon of which Poſition, is for the more erect Growth and greater Strength of the *Leaf*.

Another Obſervable in the Fibres of *Leaves*, is, their orderly Poſition, ſo as to take in an Eighth Part of a Circle, as in *Mallows*; in ſome a Tenth, and in moſt a Twelfth Part.

Dr. *Grew* alſo obſerves ſix ſeveral Parts intended by Nature for the Preſervation of *Gems*, viz. *Leaves*, Sunfoils, Interfoils, Stalks of *Leaves*, Hoods, and Mantlings, that cover them.

The Skin or Coat of the *Leaves*, is no more than that of their Branches extended; as Gold, by beating, is reduced to Leaves: in the Gem they are folded, and ſometimes in ſeveral Plaits, ſomewhat after the Manner of a Fan. If the *Leaves* are too thick to plait commodiouſly in two, and to be rang'd againſt each other, or if they be in too ſmall a Number, and their Fibres too delicate; inſtead of being plaited, they are roll'd up, and form either a ſingle Roll, as the *Leaves* of the *Mountain Cowſlip*, which are thick, or two Rolls, which begin at each Extremity of the *Leaf*, and meet in the Middle.

There are ſome Plants whoſe *Leaves* form three Rolls, as *Fern*, &c. Several *Leaves* are cover'd with Hair of ſeveral Figures; thoſe of *Lavender* and the *Wild Olive-Tree* have Hairs reſembling Stars.

The Uſe of *Leaves*, is to cover the Flowers and Fruits with their Shade, and to keep them from other Inconveniences; and they ſerve alſo for Ornament, to make the Tree look pleaſant to the ſight, and are to Trees, as Hair is to Human Bodies.

Some compare the *Leaves* of Plants, that firſt explain themſelves, to the *Placenta* in Animals, and are as the Coats of the little Buds.

The Foot-ſtalks of the *Leaves*, by which the nouriſhing Sap is convey'd to them, and divides itſelf into the Sinuoſities or Circuits, which are found throughout the whole Structure; by means of which, the nouriſhing Juice is refin'd, and, in part, may receive the moſt ſpirituous Particles of the Air.

Some have obſerved, that if the *Leaves* that are adjoining to the Bud are deſtroy'd, it will ſhoot no more, till freſh *Leaves* come forth again to ſuccour it; for, in this Caſe, the *Leaves* do the ſame Office which the *Ear-leaves* do to the *Gem* in its firſt State of Vegetation.

Botaniſts conſider the *Leaves* of Plants, with regard to their Structure, to their Surface, Figure, Conſiſtence, their Edges, Situation, and Size.

With regard to their *Structure*; *Leaves* are either ſingle, as the *Apple-tree*, *Pear-tree*, &c. or double, as thoſe of *Angelica*, *Parſley*, &c.

With regard to their *Surface*; *Leaves* are either flat, as the *Nummularia*, *Aſarum*, *Origany*, *Androſæmum*, &c. or hollow, as thoſe of the *Onion* or *Aſphodelus*; or in Bunches, as ſeveral Kinds of *Kali* and *Houſeleeks*.

With regard to their *Conſiſtence*; *Leaves* are either thin and fine, as thoſe of *St. John's-wort*, &c. or thick and groſs, as thoſe of *Portulaca*; or fleſhy, as thoſe of ſeveral Kinds of *Houſeleeks*; or woolly, as thoſe of the *Gnaphalium*, &c.

With regard to their *Edges*; *Leaves* are either cut ſlightly, as ſome Species of *Geums*; or deep, as in ſome of the *Jacea's*.

With regard to their *Situation*; *Leaves* are either alternate, that is, ranged alternately, as the *Alaternus*; or oppoſite to each other, as the *Phillyrea*, and the *Mints*.

With regard to their *Size*; *Leaves* are either very big, as thoſe of the *Collocaſia* and *Sphondylium*; or moderate, as thoſe of *Biſtort*, the *Fig-tree*; or ſmall, as thoſe of the *Apple-tree* and *Pear-tree*; or very ſmall, as that of *St. John's-wort*.

Moſt Sorts of ſmall Plants, and alſo ſeveral Sorts of Trees, which put forth a Root at the ſmall End of the Seed, as ſoon as that Root has taken hold of the Ground, they put out two ſmall Leaves above Ground, which are not at all like to thoſe that grow on the Plant or Tree, which two falſe Leaves are the Seed, which divides itſelf into two Parts, and ſo remains ſome ſhort Time on the Top of the Ground, and afterwards between thoſe two *falſe Leaves* comes forth a Shoot, which produces *Leaves* like thoſe of the Plant or Tree from whence it came.

Of this Manner of Growth there is an infinite Number of Plants and Trees, as *Angelica*, *Carduus*, *Carrots*, *Melons*, *Parſnips*, *French-Beans*, and indeed moſt Sorts of Seeds: and as to Trees, the *Apple*, the *Aſh*, the *Elm*, the *Maple*, the *Pear*, the *Quince*, the *Sycamore*; and moſt Sorts of Seeds of Trees which are not inviron'd by Stones or Shells.

Leaves is a Term uſed to expreſs the moſt ſenſible and agreeable Parts of Flowers.

It is true, all Flowers have not *Leaves*; and it is difficult to determine, which is to be call'd *Leaves*, and which the *Calyx*, of the ſame Flower.

To prevent the confounding the *Leaves* of the Flowers with the reſt of the Plant, thoſe of the Flower are call'd *Petala*, from a *Greek* Word which the *Botaniſts* have adopted into their *Latin* Deſcriptions, when they ſpeak of the Leaves of Flowers; the *Leaves* of Flowers, they call *Petala*; and thoſe of Plants, *Folia*.

Dr. *Grew* obſerves, That the Fibres of *Leaves* are compoſed of the two general Kinds of Veſſels, *viz.* for *Sap* and *Air*, and are ramify'd out of greater into leſs, as Veins and Arteries are in Animals.

And ſome are ſaid to be of Opinion, that the Veſſels in the *Leaves* of Plants are muſculated, not Side to Side, but the Ends of ſome into the Sides of others. Yet this is not really done, the ſmaller Threads being ſo far deducted, as ſometimes to ſtand at Right Angles with the larger; ſo that they are muſculated only End to End, or Mouth to Mouth, after they are at laſt come to their final Diſſolution.

Dr. *Agricola* gives Directions for raiſing Trees from *Leaves*; to whoſe Treatiſe I ſhall refer thoſe who have a mind to try the Experiment. I ſhall only ſay, that I myſelf have had the *Leaves* of *Cabbages*, *Lauruſtins*, and ſome other Plants, ſtrike out Roots when laid in the Earth, and have alſo raiſed ſeveral Sorts of *Aloes*, by planting their *Leaves*, which have ſhot out young Plants from their under Parts.

Some have made this Obſervation, that thoſe Trees that hold their *Leaves*, have their Wood cloſe and compact between their annual Circles; and the Reaſon that they hold their *Leaves* all the Winter is, that their Sap is of a clammy and turpentine Subſtance: and the Sap of ſuch Trees as hold their *Leaves*, being once ſet by Cold, requires a great deal of Heat to make it thin, and put it into Motion; as, comparatively, a little Cold will ſet or ſtiffen Pitch or Turpentine, but it muſt be Froſt that ſets or ſtays the Motion of Water.

Thoſe Trees which hold their *Leaves*, will grow much better under the Dropping of other great Trees, than ſuch as ſhed their *Leaves*; becauſe their Turpentine Sap ſhoots off the Drops: and as for thoſe Trees that ſhed their *Leaves*, their Sap aſcends in a ſmall Quantity between the annual Circles in the porous Place: This, they ſay, may be obſerv'd in a Tree that is bark'd round; for that Tree will put forth *Leaves*, and increaſe in Body, but produce little or no Shoot; and the more porous the Tree is between thoſe annual Circles, the longer that Tree will live, as hath been experienced in *Walnut-trees*, *Aſh-trees*, &c.

Naturaliſts aſcribe to *Leaves* a four-fold Uſe:

1. Chiefly, that they do in the Spring-time receive the crude Humours into themſelves, divide them very minutely, and move them ſtrongly in the Utricles, and perhaps draw in from the Air what is neceſſary, tho' unknown to us, and carry back great Plenty of elaborated Juice to the Plant.

2. That there may be a Tranſpiration of what is unprofitable, anſwering to the Diſcharge made by Sweat; for ſometimes thoſe excretory Veſſels of the *Leaves* are ſo overcharged by the great Plenty of diſtending Humour [Juice] that they burſt in the Middle, and let go the more ſubtile Parts: nor is it ſeldom, that in a hot Seaſon great Plenty of Juices are this Way diſcharged and imbibed. Thus *Manna* is found to exſude [ſweat forth] as well from the *Leaves* as from the *Bark*, if a cold Night ſhall follow a hot Day: and the ſame thing frequently happens in divers other Plants and Trees; as we learn from the Bees flying to the *Lime-tree*, that they may gather hat gummous Subſtance from their Leaves: but if the Heat ſhall be leſs, all the ſuperfluous Humours (except thoſe which, perhaps, are tranſmitted by inſenſible Tranſpiration thro' the arterial Veſſels exhaling naturally) are ſeen to return into the Trunk.

3. That the bibulous Veſſels dried by the diurnal Heat, and for this Reaſon to be compared to Veins, may imbibe, in the Night-time eſpecially, thoſe watery Parts, which, among others, lie hid in the Air under the Form of a very thin Dew, and ſo make amends for the Loſs made by the Arteries, by the new Moiſtures receiv'd.

4. Laſtly, the *Leaf* ſerves chiefly for this Purpoſe, that it may keep and nouriſh the Eye or Gem, until the Gem by degrees growing out to a greater Bulk, preſſes together the Veſſels of the Foot-ſtalk, from whence the Humour is by little and little ſtopp'd in the *Leaf*, till it cannot any more return to the Foot-ſtalk; which, by the ceaſing of the Afflux and Reflux of the nutritious Juice, grows putrid, whence a Conſumption being cauſed, the *Leaf* dies and falls off, which is the chief Cauſe of the falling of the *Leaves* in Autumn.

The Rev. Dr. *Hales*, in his excellent Treatiſe of *Vegetable Staticks*, ſpeaking of the Perſpiration of *Plants*, gives an account of the following Experiments; *viz.*

That in *July* or *Auguſt* he cut off ſeveral Branches of *Apple-trees*, *Cherry-trees*, *Pear-trees*, and *Apricock-trees*, two of a Sort; they were of ſeveral Sizes, from three to ſix Feet long, with proportional lateral Branches; and the tranſverſe Cut of the largeſt Part of the Stems was about an Inch Diameter.

That he ſtripp'd off the *Leaves* of one Bough of each Sort, and then ſet their Stems in ſeveral Glaſſes, pouring in known Quantities of Water.

The *Boughs* with *Leaves* on them imbibed ſome fifteen Ounces, ſome twenty, twenty-five or thirty in twelve Hours Day, more or leſs, in Proportion to the Quantity of *Leaves* they had; and when he weigh'd them at Night, they were lighter than in the Morning.

While thoſe without *Leaves* imbibed but one Ounce, and were heavier in the Evening than in the Morning, they having perſpir'd little.

The Quantity imbib'd by thoſe with *Leaves* decreas'd very much every Day, the Sap-veſſels being probably ſhrunk at the tranſverſe Cut, and too much ſaturate with Water to let any more paſs; ſo that uſually in four or five Days the *Leaves* faded and wither'd much.

He adds, that he repeated the ſame Experiment with *Elm-branches*, *Oak*, *Oſier*, *Willow*, *Sallow*, *Aſpen*, *Curran*, *Gooſberry*, and *Philbert* Branches; but none of theſe imbib'd ſo much as the foregoing, and ſeveral Sorts of Ever-greens very much leſs.

He adds alſo another Experiment: That on the 15th of *Auguſt*, he cut off a large *Pippen* with two Inches Stem, and its twelve adjoining *Leaves*; that he ſet the Stem in a little Phial of Water, and it imbib'd and perſpir'd in three Days One-third of an Ounce.

And that at the ſame time he cut off from the ſame Tree another bearing Twig of the ſame Length, with twelve *Leaves*, no Apple on it, and it imbib'd in the ſame three Days near Three-fourths of an Ounce.

That about the ſame time, he ſet in a Phial of Water a ſhort Stem of the ſame Tree, with two large Apples on it, without *Leaves*, and they imbib'd near Three-fourths of an Ounce in two Days.

So in this Experiment, the *Apples* and *Leaves* imbibed Four-fifths of an Ounce; the *Leaves* alone near Three-fifths; but the two large *Apples* imbib'd and perſpir'd but One-third Part ſo much as the twelve *Leaves*; then the one *Apple* imbib'd the One-ſixth Part of what was imbib'd by the twelve Leaves: therefore two *Leaves* imbibe and perſpire as much as one *Apple*: whence their Perſpirations ſeem to be proportionable to their Surfaces; the Surface of the *Apple* being nearly equal to the Sum of the upper and under Surfaces of the two *Leaves*.

Whence it is probable, that the Uſe of theſe *Leaves* (which are placed juſt where the Fruit joins to the Tree) is to bring Nouriſhment to the Fruit.

And accordingly he obſerves, that the *Leaves* next adjoining to the Bloſſoms, are in the Spring very much expanded, when the other *Leaves* on barren Shoots are but beginning to ſhoot; and that all *Peach Leaves* are very large before the Bloſſom goes off.

And that in *Apples* and *Pears*, the *Leaves* are one third or half grown before the Bloſſom opens; ſo provident is Nature in making timely Proviſion for the nouriſhing the yet Embryo Fruit.

He alſo adds another Experiment: He ſtripp'd the *Leaves* of an *Apple-tree* Branch, and then fix'd the great End of the Stem in the Gage; it rais'd the Mercury $2 + \frac{1}{2}$ Inches, but it ſoon ſubſided, for want of the plentiful Perſpiration of the *Leaves*, ſo that the Air came in almoſt as faſt as the Branch imbib'd Water.

And as a farther Proof of the Influence of the *Leaves* in raiſing the Sap, he alſo made the following Experiment:

On the 6th of *Auguſt*, he cut off a large *Ruſſet Pippin*, with a Stalk $1 + \frac{1}{2}$ Inch long, and twelve adjoining *Leaves* growing to it.

He cemented the Stalk faſt in the upper End of a Tube; which Tube was ſix Inches long, and one fourth Diameter: as the Stalk imbib'd the Water, it rais'd the Mercury four Inches high.

That he fix'd another *Apple* of the ſame Size in the ſame Manner, but firſt pull'd off the *Leaves*, and it rais'd the *Mercury* but one Inch: That in the ſame Manner he fix'd a like-bearing Twig, with twelve *Leaves* on it, but no *Apple*, and it rais'd the *Mercury* three Inches.

He then took a like-bearing Twig, without either *Leaves* or *Apple*, and it rais'd the *Mercury* One-fourth of an Inch.

So a Twig, with an *Apple* and *Leaves*, rais'd the *Mercury* four Inches; one with *Leaves*, only three Inches; one with an *Apple* without *Leaves*, only one Inch.

A *Quince*, which had two *Leaves* juſt at the Twig's Inſertion, rais'd the *Mercury* $2 + \frac{1}{2}$ Inches, and held it up a conſiderable time.

A Sprig of *Mint* fix'd in the ſame Manner, rais'd the *Mercury* $3 + \frac{1}{2}$ Inches, = to four Feet five Inches Height of Water.

Theſe and many more Experiments of the Rev. Dr. *Hale*, that curious Inquirer into the Cauſes, State, and Progreſs of Vegetation, evidently ſhew the great Perſpiration of the *Leaves* of Plants, and their great Uſe in raiſing the Sap, and other Functions of Vegetable Nature: To whoſe excellent Treatiſe before-mention'd, I refer the curious Enquirer.

I ſhall add, that Nature has directed us as to the true Diſtance we ought to train the Branches of Trees againſt Walls or Eſpaliers, which ſhould always be in Proportion to their *Leaves*; for if we obſerve the Progreſs of Nature in the great Variety of Trees, we ſhall always find their Branches grow diſtant from each other in proportion to the Breadth of their *Leaves*: And it was upon this Account that the *Romans* ſo much admir'd the *Platanus*, becauſe the *Leaves* being large, afforded them a kindly Shade in Summer; but in Winter, when they are deſtitute of *Leaves*, their Branches growing at a great Diſtance, eaſily admitted the Beams of the Sun.

Some there are who aſſert, that by the *Leaves* of each aſpiring Plant, a Perſon may diſtinguiſh each Kind of Fruit, whether delicate or harſh, that the Hopefulneſs of the Fruit may be diſtinguiſh'd by the firſt *Leaves* of the yearling Plant; and for this they lay down the following Rules:

1ſt, That a ſhort and dark Green *Leaf* prognoſticates a crabbed Fruit.

2dly, That a Tree with a larger *Leaf*, thick, and of a dark Green, will bear a good Winter *Apple*; but the Stock hardy, to endure a ſtiff clayey Ground.

3dly, That a fady willowiſh *Leaf*, denotes a flat inſipid *Apple*, as the *Kentiſh Codlin*, which holds out againſt Blaſts.

4thly, That a paler Green, as the *Popinſay* or *Barbary Leaf*, eſpecially if the *Leaf* be limber, denotes a delicate Fruit; and the broader the *Leaf* is, the fairer the Fruit.

5thly, That a wrinkled *Leaf*, neither very dark, nor very bright, proves Red-ſtreak'd: *Crab-ſtocks* have reddiſh Tops.

But there is no great Certainty in theſe Rules, nor can a Perſon, tho' ever ſo curious in his Obſervations, exactly determine the various Sorts of Fruits by their *Leaves*, notwithſtanding what many People have aſſerted.

The before-mention'd Reverend Author, in his Treatiſe of *Vegetation*, ſays, It is plain from many Experiments and Obſervations before-mention'd, that *Leaves* are very ſerviceable in this Work of *Vegetation*, by being inſtrumental in bringing Nouriſhment from the lower Parts, within the Reach of the Attraction of the growing Fruit, which, like young Animals, is furniſh'd with proper Inſtruments to ſuck it thence; but the *Leaves* ſeem alſo deſign'd for many other noble and important Services: for Nature admirably adapts her Inſtruments, ſo as to be at the ſame Time ſerviceable to many good Purpoſes.

Thus the *Leaves*, in which are the many Excretory Ducts in Vegetables, ſeparate and carry off the redundant watery Fluid, which by being long detain'd, would turn rancid and prejudicial to the Plant, leaving the more nutritive Parts to coaleſce; Part of which Nouriſhment, we have good Reaſon to think, is convey'd into Vegetables thro' the *Leaves*, which do plentifully imbibe the Dew and Rain, which contain Salt, Sulphur, *&c.*

For the Air is full of acid and ſulphureous Particles; which, when they abound much, do, by the Action and Reaction between them and the elaſtick Air, cauſe that ſultry Heat which uſually ends in Lightning and Thunder; and theſe new Combinations of Air, Sulphur, and acid Spirit, which are conſtantly forming in the Air, are, doubtleſs, very ſerviceable in promoting the Work of Vegetation; when being imbib'd by the *Leaves*, they may not improbably be the Materials out of which the more ſubtile and refined Principles of Vegetables are form'd: For ſo fine a Fluid as the Air ſeems to be a more proper Medium, wherein to prepare and combine the more exalted Principles of Vegetables, than the groſſer watery Fluid of the Sap: And, for the ſame Reaſon, it is likely that the moſt refined and active Principles of Animals are alſo prepared in the Air, and thence convey'd thro' the Lungs into the Blood; and that there is Plenty of theſe ſulphureo-aërial Particles in the *Leaves*, is evident from the ſulphureous Exudations that are found in the Edges of *Leaves*, of which Bees are obſerv'd to make their waxen Cells, as well as of the Duſt of Flowers. And that Wax abounds with Sulphur, is plain, from its burning freely, *&c.*

We may therefore reaſonably conclude, that one great Uſe of *Leaves*, is what has been long ſuſpected by many, *viz.* to perform, in ſome meaſure, the ſame Office for the Support of the Vegetable Life, as the Lungs of Animals do for the Support of Animal Life; Plants, very probably, drawing thro' their Leaves ſome Part of their Nouriſhment thro' the Air.

LEEKS. *Vide* Porrum.

LEGUMES *or* LEGUMENS, are a Species of Plants which are call'd *Pulſe*, ſuch as *Peas*, *Beans*, &c. and are ſo call'd becauſe they may be gather'd by the Hand, without cutting. Mr. *Ray* reckons all thoſe Plants which have a papilionaceous Flower, among the *Legumes*.

LEGUMINOUS, of or belonging to *Pulſe*.

LEGUMINOUS PLANTS, are ſuch as bear *Pulſe*, with a papilionaceous Flower: Their Flower is difform, and ſomewhat like a *Butterfly*, with Wings expanded, (whence it is call'd Papilionaceous) conſiſting of four Parts, join'd together at the Bottom. *Vide* Papilionaceous.

LEMON-TREE. *Vide* Limon.

LENS, [ſo call'd of *Lenis*, Lat. *mild* or *gentle*, becauſe in old Times, thoſe who eat theſe Seeds, were ſaid to be of a gentle Temper] Lentils.

The *Characters* are;

It hath a papilionaceous Flower; the Pointal of which becomes a ſhort Pod, containing orbicular Seeds, which are, for the moſt part, convex: To which may be added, the Leaves are conjugated, growing to one Mid-rib, and are terminated by Tendrils.

The *Species* are;

1. Lens *vulgaris*. *C. B. P.* Common Lentils.
2. Lens *major*. *C. B. P.* Greater Lentils.
3. Lens *monanthos*. *H. L.* Lentils with a ſingle Flower.

There are ſeveral Varieties of the firſt and ſecond Sorts, which differ from each other in the Colour of their Flowers and Fruits; but theſe are accidental, and will often riſe from the ſame Seeds; for which Reaſon they are not worth obſerving in this Place.

Theſe Plants are very common in the warm Parts of *Europe*, and in the *Archipelago*, where they are the Food of the poorer Sort of People, which they loath when they meet with better Fare; from whence came the Proverb, *Dives factus jam deſiit gaudere Lente:* Which is apply'd to ſuch as ſpurn at thoſe Things in eaſy Circumſtances, which they were glad of in a low Condition.

Theſe Plants are one of the leaſt of the *Pulſe* Kind, and call'd in ſome Places *Tills:* They may be propagated in the ſame Manner as *Vetches*, &c. but muſt be ſown a great deal thinner. They will grow upon a dry barren Soil beſt, and are a very good Fodder for Cattle; but as they require an annual Culture, ſo they are not at preſent very much eſteem'd. Their Seeds are very good for Pigeons.

LENS PALUSTRIS, Duck-Meat. This is a very common Plant, growing upon ſtanding Waters in moſt Parts of *England*.

LENTISCUS, [takes its Name of *Lentor*, Lat. *i. e. Pliableneſs*] The Maſtick-Tree.

The *Characters* are;

The Leaves are pinnated; the Lobes growing oppoſite, and are faſten'd to one common Mid-rib; the Male Flowers, which are produced upon ſeparate Trees from the Fruit, have ſhort green quadrifid Cups, which expand in Form of Stars, having four or five ſhort Stamina, with large red Apices: Theſe Flowers are collected into a Bunch: The Ovary, in the Female Plants, which grows upon the Top of a long thick Foot-ſtalk, is commonly branched, and becomes a Fruit, which contains a Nut with a hard Shell.

The *Species* are;

1. Lentiscus *vulgaris*. *C. B. P.* Common Maſtick-Tree.
2. Lentiscus *vulgaris*, *foliis minoribus & pallidioribus*. *H. L.* The Male Maſtick-Tree, with leſſer and paler Leaves.

Theſe two Plants are promiſcuouſly preſerv'd in many curious Gardens in *England*, where they are commonly kept in Pots and Tubs, and houſed in the Winter, with *Oranges*, *Myrtles*, &c. but in ſome Places, which are well defended from cold Winds, I have obſerv'd them growing in the open Air, without ſuffering the leaſt Injury from our ordinary Winters; but in extreme hard Weather, they are ſometimes greatly damaged; however, as they are ſeldom quite deſtroy'd, eſpecially if the Plants are ſtrong, and have taken good Root in the Ground, ſo it is worth our Care to endeavour to naturalize them to our Climate; which may eaſily be effected, provided you keep them in Pots until they have acquired a ſufficient Strength, and then ſhake them out in the Spring of the Year, preſerving as much of the Earth to their Roots as you can, planting them on a dry warm Soil, and in a well-ſhelter'd Situation; and in Winter lay ſome Mulch upon the Surface of the Ground about their Roots, to prevent the Froſt from penetrating to them, as alſo in very ſevere Froſts you ſhould cover their Stems and Heads with ſome Straw or Peas-haulm, which will prevent their being deſtroy'd; and after they have been inured to the open Air for two or three Years, they will then be moſtly out of Danger, and will grow much better than thoſe Plants which are kept in Pots or Tubs.

Theſe Plants are propagated by laying down their young Branches in the Spring, which ſhould be ſlit at a Joint, (as is practiſed in laying *Carnations*) and in dry Weather they muſt be frequently water'd, to encourage their ſtriking Root, which they rarely do until the ſecond Year, before which they ſhould not be diſturb'd; but then if they have taken ſufficient Root, they ſhould be tranſplanted in *April*, placing them, as was before directed, into a warm Situation, obſerving to water them in dry Weather, as alſo to lay ſome Mulch about their Roots, to prevent the Ground from drying too faſt; and in Winter lay a little freſh Mulch about them, to keep out the Froſt; after two or three Years, they will be ſufficiently hardy, and will require no farther Care, but to dig the Ground about them every Spring, and keep them clean from Weeds, as alſo to trim up the lateral Branches, to make them aſpire in Height; but by no means ſhould you ſheer them into Balls and Pyramids, (as is the common Practice) but let them grow in their utmoſt Luxuriancy, in which Manner they will appear much more beautiful than in thoſe ſtudied Figures.

Theſe Plants may alſo be propagated from the Berries, which may be obtain'd from the ſouthern Parts of *France* or *Spain*, where they grow in great Plenty; they muſt be ſown in Pots or Tubs of light freſh Earth, and houſed in Winter; (for the Plants ſeldom come up until the ſecond Year) but in Summer they ſhould be expoſed in a warm Situation, and often refreſh'd with Water; when the Plants come up, they muſt be carefully clear'd from Weeds, and refreſh'd with Water in dry Weather; and in Winter the Pots or Tubs muſt be removed into Shelter, but ſhould have a great Share of free Air in mild Weather; and the Spring following, the Plants ſhould be taken up, and each of them planted into a ſeparate Pot; then plunge the Pots into a moderate Hot-bed, to facilitate their taking Root, after which they may be expoſed to the open Air, (as was directed for the older Plants) and continue to houſe them every Winter, until they are three or four Years old, after which they may be planted into the open Air, when they muſt be treated as the old Plants.

Theſe Trees are always green, which renders them more valuable, and their Leaves being of a beautiful Figure, and their Heads generally growing very regular, renders them worthy of a good Situation; they ſeldom riſe above twelve or fourteen Feet high with us, and ſhould therefore be intermix'd with other Ever-greens of the ſame Growth.

LEONTOPETALON, [Λεοντοπέταλον, of λέων, *a Lion*, and πέταλον, *a Leaf*, q. d. *Lion's-Leaf*; becauſe the Antients fancied the Leaves of this Plant reſembled a Lion's Paw] Lion-Leaf.

The *Characters* are;

It hath a thick tuberoſe perennial Root; the Flower is naked, and conſiſts of five or ſix Petals, which expand in form of a Roſe, garniſh'd with five Stamina; in the Middle of the Flower riſes the Pointal, which afterwards becomes a Bladder, containing many ſpherical Seeds.

We have but one *Species* of this Plant in the *Engliſh* Gardens, which is;

Leontopetalon *foliis coſtæ ramoſæ innaſcentibus*. *Flor.* Lion-leaf, with Leaves growing on a branched Rib.

This Plant is found in great Plenty in the Iſlands of the *Archipelago*, and alſo in ſome Parts of *Italy*, but at preſent is very rare in *England*; it may be propagated by ſowing the Seeds, or parting of the Roots; but the former is the beſt Method, if the Seeds could be obtain'd from Abroad; for they ſeldom produce good Seeds in *England*, nor do they increaſe very faſt by their Roots.

The Seed of this Plant ſhould be ſown ſoon after it is ripe, in Pots or Tubs fill'd with freſh light Earth, that the Plants may be removed into Shelter in the Winter; for if they are expoſed at that Seaſon, (which is the Time they do ariſe) the Cold will deſtroy them; but in the Summer they ſhould be ſet abroad, where they may have the Morning Sun until Ten of the Clock; and when the Plants are ſtrong enough to be tranſplanted, they ſhould be each of them put into a ſeparate Pot, and in Winter placed into a Hot-bed Frame, where they may be ſhelter'd in ſevere Froſts; but in mild Weather they ſhould be expoſed to the open Air.

When the Plants are two Years old, they may be taken out of the Pots, and planted into a warmer Border under a South Wall, where they will endure the Cold of our ordinary Winters very well, being ſeldom hurt by ſevere Froſts, or too much Wet; for which Reaſon they ſhould always be planted in a dry Soil.

The beſt Seaſon for tranſplanting theſe Roots is in *May*, when their Leaves are decay'd; for if you defer it till *July* or *Auguſt*, they will be ſtriking out new Roots, when they will not be ſo ſafely removed. They produce their Flowers in Winter, for which they are chiefly valued.

LEONTOPODIUM. *Vide* Plantago.

LEONURUS, [Λεώνουρος, of λέων, a *Lion*, and οὐρὰ, a *Tail*, becauſe the Creſt of this Flower ſeems to reſemble the Tail of a Lion] Lion's-tail.

The *Characters* are;

It is one of the verticillate Plants with a Lip Flower, which conſiſts of one Leaf, whoſe Galea or Creſt is imbricated, and much longer than the under Lip, which is divided into three Segments; out of the Flower-cup riſes the Pointal, fix'd like a Nail to the hinder Part of the Flower, ſurrounded by four Em-

bryo's, which afterwards turn to ſo many Seeds, which are oblong, and incloſed in a long fiſtulous Huſk, which before was the Flower-cup.

The *Species* are;

1. LEONURUS *perennis Africanus, ſideritidis folio, flore Phœnicio majore. Breyn. Prod.* Perennial *African* Lion's-tail, with an Iron-wort Leaf, and a large ſcarlet Flower.

2. LEONURUS *perennis Africanus, ſideritidis folio variegato, flore Phœnicio majore.* Perennial *African* Lion's-tail, with a variegated Iron-wort Leaf, and a large ſcarlet Flower.

3. LEONURUS *minor, Capitis Bonæ Spei, vulgo. Boerh. Ind.* Leſſer Lion's-tail from the *Cape of Good Hope*, with a Catmint Leaf.

Theſe Plants are very great Ornaments in a Green-houſe, producing large Tufts of beautiful ſcarlet Flowers in the Months of *October* and *November*, when few other Plants are in Perfection; for which Reaſon a good Green-houſe ſhould never be wanting of theſe Plants, eſpecially ſince they require no artificial Heat, but only to be preſerved from hard Froſts, ſo that they may be placed amongſt *Oranges*, *Myrtles*, *Oleanders*, &c. in ſuch a Manner, as not to be too much over-ſhaded with other Plants; but that they may enjoy as much free Air as poſſible in mild Weather.

They are eaſily propagated by planting Cuttings of any of the Sorts, in Pots fill'd with light Earth, any Time in *July* or *Auguſt*, obſerving to ſhade and water them until they have taken Root; after which they muſt be each of them planted into a ſeparate Pot fill'd with light rich Earth, and often refreſh'd with Water, (for it is an Aquatick Plant in its native Country) and in *October* they muſt be removed into the Green-houſe; but in *May*, they ſhould be expoſed again to the open Air, placing them where they may have the Morning Sun till Eleven of the Clock, obſerving never to let them want Water, which will encourage them to produce ſtrong Tufts of Flowers in Autumn.

Theſe Plants will grow to be eight or nine Feet high, and abide many Years; but are very ſubject to grow irregular; therefore their Branches ſhould be pruned early in the Spring, in order to reduce them to a tolerable Figure; but they will not bear to be often pruned or ſheer'd, nor can they ever be form'd into Balls or Pyramids; for if they are often ſhorten'd, it will prevent their flowering.

The ſtriped Sort is by many People valued for the Variety of its Leaves; but as that is occaſion'd by a Weakneſs in the Plant, ſo the Flowers of that Sort are never ſo large and fair, as are thoſe of the plain Sort, nor produced in ſo great a Quantity.

The third Sort is alſo preſerv'd for Variety more than its Beauty; the Flowers of this being much ſmaller, and not ſo well colour'd, as are thoſe of the common Sorts.

LEPIDIUM, Dittander or Pepperwort.

The *Characters* are;

The Flower conſiſts of four Leaves, which are placed in form of a Croſs, from whoſe Cup ariſes the Piſtillum, which afterward becomes a ſpear-ſhaped Fruit, which is divided in the Middle by a Partition into two Cells, which contain many oblong Seeds.

The *Species* are;

1. LEPIDIUM *latifolium. C. B. P.* Common broad-leav'd Dittander, or Poor-man's Pepper.

2. LEPIDIUM *humile incanum arvenſe. Inſt. R. H.* Low hoary Dittander, or Pepperwort.

3. LEPIDIUM *gramineo folio, ſive Iberis. Inſt. R. H.* Graſs-leav'd Dittander, or Sciatica Creſs.

4. LEPIDIUM *humile, minus incanum, Alepicum. Inſt. R. H.* Low greener Dittander of *Aleppo*.

5. LEPIDIUM *capillaceo folio, fruticoſum Hiſpanicum. Inſt. R. H.* Shrubby *Spaniſh* Dittander, with very narrow Leaves.

6. LEPIDIUM *Orientale, naſturtii criſpi folio. Tourn. Cor.* Eaſtern Dittander, with a curled creſs Leaf.

7. LEPIDIUM *Orientale, naſturtii folio, caule veſicario. Tourn. Cor.* Eaſtern Dittander, with a creſs Leaf, and a ſwelling Stalk.

8. LEPIDIUM *Orientale, caryophylli folio. Tourn. Cor.* Eaſtern Dittander, with a clove-gilly-flower Leaf.

The firſt and third Sorts are directed by the College of Phyſicians to be uſed in Medicine. The firſt grows wild in ſome Parts of *England*, but is generally cultivated in Gardens for Uſe. The Herb and Root of this Sort were formerly uſed in Sauce, to give a warm biting Taſte thereto; and ſome poor People have mixed a few of the Leaves in their Sallets, for the ſame Purpoſe. This Sort is eaſily propagated, by planting any ſmall Pieces of the Root, either in Spring or Autumn, after the Manner directed for *Horſe Radiſh*; but it ſhould be placed in ſome odd Corner of the Garden, and not near other Plants, becauſe the Roots will ſpread and ſhoot up at a great Diſtance, ſo as to over-run the Ground where it is planted.

The third Sort may be propagated by Seeds, which ſhould be ſown in the Spring; and when the Plants are come up, they ſhould be thinned, ſo as to leave them eight or ten Inches aſunder, and keep them clear from Weeds; which is all the Culture they require. The ſecond Year the Plants will produce Seeds, and the old Roots will remain ſeveral Years, provided they are not in too rich Ground. The Leaves and Seeds of this Plant are uſed in Medicine.

The ſecond and fourth Sorts are trailing Plants, which propagate very faſt by their creeping Roots: Theſe are preſerved in botanick Gardens for Variety, but there is little Beauty in them.

The fifth Sort was diſcovered by Doctor *Tournefort* in *Spain*. This grows ſhrubby, and will abide the Cold of our ordinary Winters in the open Air, provided it is planted on a poor dry Soil. It may be propagated either by Seeds or Cuttings.

The other three Sorts were diſcovered by Doctor *Tournefort* in the *Levant*, from whence he ſent their Seeds to the *Royal Garden* at *Paris*. Theſe are alſo preſerved in botanick Gardens for the ſake of Variety, and may be eaſily propagated by Seeds.

LEPIDOCARPODENDRON.

We have no *Engliſh* Name for this *Genus*.

The *Characters* are;

It hath a large ſcaly Flower-cup, in which are included many Florets, ſome of which are apetalous, and appear like Hairs, and other are hermaphrodite; from the Middle of the Flowers ariſes the Ovary, which is incloſed in a Sheath; the Seeds have long Plumes like Feathers adhering to them.

The *Species* are;

1. LEPIDOCARPODENDRON *folio ſaligno lato, caule purpuraſcente. Boerh.* Lepidocarpodendron with a broad Willow Leaf, and a purpliſh Stalk.

2. LEPIDOCARPODENDRON *foliis anguſtis longis ſalignis, nervo rubro, florum plumis violaceo-purpureis. Boerh.* Lepidocarpodendron with long narrow Willow Leaves, having a red Vein, and the Plumes of the Flowers of a violet-purple Colour.

3. LEPIDOCARPODENDRON *foliis anguſtiſſimis gramineis, fructu cancellato, ſemine coronato. Boerh.* Lepidocarpodendron with very narrow Graſs Leaves, a hooded Fruit, and a crowned Seed.

There are ſeveral other Sorts of theſe Trees, which naturally grow in the Country near the *Cape of Good Hope*, from whence thoſe here mentioned were brought into the *European* Gardens; where they are preſerved by the Curious to add to the Variety in the Green-houſe.

Theſe Plants may be propagated in the ſame Manner as hath been directed for *Conocarpodendron*, and the Plants may alſo be treated as thoſe; ſo it will be needleſs to repeat it in this Place.

LETTUCE. *Vide* Lactuca.

LEUCANTHEMUM, [Λευκάνθεμον, of λεύκος, *White*, and ἄνθεμος, a *Flower*] Ox-eye Daizy.

The *Characters* are;

It agrees in every reſpect with the Chryſanthemum, *except in the Colour of its Semi-florets, which in theſe are conſtantly White.*

The *Species* are;

1. LEUCANTHEMUM *vulgare. Tourn.* Common Ox-eye Daizy.

2. LEUCANTHEMUM *Alpinum majus, rigido folio. Tourn.* Greater Ox-eye Daizy of the *Alps*, with ſtiff Leaves.

3. LEUCANTHEMUM *radice repente, foliis latioribus ſerratis. Tourn.* Creeping-rooted Ox-eye Daizy, with broad ſerrated Leaves.

4. LEUCANTHEMUM *folio abſinthii, Alpinum. Ciaſſi.* Alpine Ox-eye Daizy, with a Wormwood Leaf.

5. LEUCANTHEMUM *tanaceti folio, flore majore. Boerh. Ind.* Ox-eye Daizy, with a Tanſy Leaf, and a large Flower.

6. LEUCANTHEMUM *Canarienſe, foliis chryſanthemi, ſapore pyrethri. Tourn.* Canary Ox-eye Daizy, with a Chryſanthemum Leaf, and a Taſte like Pellitory of *Spain*, vulgarly call'd *Pellitory of Spain.*

7. LEUCANTHEMUM *montanum, foliis chryſanthemi. Inſt. R. H.* Mountain Ox-eye Daizy, with Corn-marygold Leaves.

8. LEUCANTHEMUM *gramineo folio. Inſt. R. H.* Graſs-leav'd Ox-eye Daizy.

9. LEUCANTHEMUM *latiſſimo folio, flore maximo. Inſt. R. H.* Broadeſt-leav'd Ox-eye Daizy, with a large Flower.

10. LEUCANTHEMUM *Luſitanicum, argenteo laciniato folio. Inſt. R. H. Portugal* Ox-eye Daizy, with a ſilver jagged Leaf.

11. LEUCANTHEMUM *Americanum fruteſcens, foliis latis conjugatis & aſperis, flore albo, capitulis ſquamoſis. Houſt.* Shrubby *American* Ox-eye Daizy, with broad rough Leaves growing oppoſite, a white Flower, and a ſcaly Cup.

The firſt of theſe Plants is very common in the Meadows, in moſt Parts of *England*, from whence the Flowers are gather'd and brought into the Markets in *London* for Medicinal Uſes; but it is ſeldom cultivated in Gardens.

The ſecond and fifth Sorts are many Times planted in Gardens, for their Beauty; theſe produce large Tufts of white radiated Flowers upon the Summits of their Stalks, which continue a long Time in Beauty; they commonly grow two Feet high or more; for which Reaſon they ſhould always be placed in the Middle of large Borders, and require to be planted at a good Diſtance from other Plants, otherwiſe they will over-bear them: ſo that they are not very proper for ſmall Gardens, taking up too much Room.

Theſe are very hardy Plants, and may be propagated either by ſowing their Seeds, or parting their Roots: The beſt Time for ſowing of their Seeds, is in *March*, upon a Border of light freſh Earth; and when the Plants are come up pretty ſtrong, they muſt be tranſplanted into freſh Borders of the like Earth, placing them at eight Inches Diſtance each Way: In theſe Borders they may remain till *Michaelmas*, when they ſhould be removed into the Borders where they are to continue, and the Summer following they will produce Flowers and Seeds.

But if you would propagate them by parting their Roots, the beſt Seaſon for this Work is in *September* or *October*; for if it be done in the Spring, they ſeldom flower ſo ſtrong the ſucceeding Summer.

The third Sort multiplies too faſt by its creeping Roots, which will ſpread and come up at a great Diſtance from the old Plant, ſo that it is hardly to be kept within tolerable Bounds; but it is very apt to run over whatever Plants ſtand near; for which Reaſon it ſhould never be placed amongſt choice Flowers, but allow'd a Place in ſome abject Part of the Garden, in a Corner allotted to it, where it will grow to the Height of four Feet, and produce large radiated white Flowers in *Auguſt* and *September*.

The fourth Sort is ſeldom admitted into curious Flower-Gardens, it being a rambling Plant, and the Branches trailing upon the Ground, renders it unſightly, nor are the Flowers very beautiful; ſo that it is ſeldom preſerv'd but in botanick Gardens.

Theſe are all very hardy Plants, and will grow in almoſt any Soil or Situation, and there being very little Trouble in their Culture, they deſerve Room in all large Gardens.

The ſixth Sort is tenderer than any of the former, and muſt be preſerv'd in Pots and ſhelter'd in the Winter. This is propagated by planting Cuttings, in any of the Summer Months, into a Border of light Earth, obſerving to water and ſhade them from the great Heat of the Sun until they have taken Root; after which they muſt be planted into Pots fill'd with light freſh Earth, and expoſed to the open Air until the Middle or latter End of *October*, when they muſt be houſed; but ſhould be placed into the cooleſt Part of the Houſe, where they may have much free Air in mild Weather, and muſt be frequently refreſh'd with Water; but in Summer-time they may be expoſed to the open Air, in a ſhady Situation, where they will thrive much better than if expoſed to the Sun, which would dry the Earth too faſt, ſo that they would conſtantly require to be water'd.

This Plant is not apt to continue above two or three Years without renewing; therefore Cuttings ſhould be planted every other Year, to maintain the Kind, where People are curious to preſerve their Varieties. There is no great Beauty in this Plant; but it is preſerv'd in ſome Gardens, for the true *Pellitory of Spain*, which, in reality, is a different Plant; tho' this has a very ſharp acrid Taſte, much like that of the *Pellitory*.

The ſeventh, eighth, ninth, and tenth Sorts are hardy Plants, which will live in the open Air in *England*: They may be propagated by ſowing of their Seeds on a Bed of light freſh Earth, in the Beginning of *March*; and when the Plants begin to appear, they ſhould be carefully clear'd from Weeds, and in very dry Weather they ſhould be refreſhed with Water, which will greatly promote their Growth. When they are about two Inches high, they ſhould be tranſplanted into Beds, at about eight Inches Diſtance, obſerving to water them until they have taken new Root, after which Time they will require no other Care, but to keep them clear from Weeds, till the Autumn following, when they ſhould be tranſplanted into the large Borders of the Pleaſure-Garden, where they are deſigned to remain: In which Places they will afford an agreeable Variety, when intermixed with other hardy flowering Plants, and will abide a long Time.

The eleventh Sort was diſcovered by the late Doctor *William Houſtoun* at *Campechy*, from whence he ſent the Seeds into *Europe*, whereby many Gardens have been ſtored with this Plant. This Sort being a Native of a warm Country, will not live in this Climate, unleſs it is placed in a Stove in the Winter: But in the Middle of Summer, it will abide the open Air in a warm Situation, and will thrive better at that Seaſon abroad, than if it were kept in the Stove; becauſe the Leaves of this Plant are very ſubject to contract Filth, and Inſects lodge upon them, whereby the Plants are rendered unſightly, and ſeldom thrive. This Sort may be propagated by Cuttings during the Summer Months, which ſhould be planted in Pots filled with freſh Earth, and plunged into a moderate Hot-bed of Tanners-bark, obſerving to ſhade them until they have taken Root, and give them plenty of Water: And when the Cuttings are rooted, they ſhould be placed in the open Air in a warm Situation, where they may remain until the latter End of *September*, when they ſhould be removed into the Stove; obſerving to let them have a large Share of freſh Air in the Day-time, while the Weather continues moderate; but as the Cold increaſes, ſo they ſhould be ſecured therefrom. Theſe Plants require but a moderate Warmth in Winter, ſo ſhould be placed with the more hardy Stove-Plants, and will require to be often refreſhed with Water. With this Management, the Plants will grow eight or ten Feet high, and add to the Variety in the Stove.

LEUCOJUM, [Λευκόϊον, of λευκὸν, *White*, and ἴον, a *Violet*, i. e. *White Violet*] Stock-Gilliflower.

The *Characters* are;

The Flower is compoſed for the moſt part of four Leaves, which are placed in Form of a Croſs; out of the Flower-cup riſes the Pointal, which becomes a long flat Pod, divided into two Cells by an intermediate Partition, to which the Valves adhere on both Sides, and are furniſh'd with flat ſmooth Seeds, which are orbicular, and border'd round their Edges: to which may be added, the Flowers are ſpecious and ſweet-ſmelling.

The *Species* are;

1. LEUCOJUM *incanum majus. C. B. P.* Great hoary Stock-Gilliflower, with ſingle white Flowers.

2. LEUCOJUM *incanum majus, flore cinericeo. C. B. P.* The great hoary Stock-Gilliflower, with an Aſh-colour'd Flower.

3. LEUCOJUM *purpureum, vel rubrum. C. B. P.* Purple or Red Stock-Gilliflower.

4. LEUCOJUM *incanum majus, coccineum. Mor. Hiſt.* The greater hoary crimſon Stock-Gilliflower, *vulgarly call'd* the Brumpton Stock.

5. LEUCOJUM *violaceum. Tabern.* Violet-colour'd Stock-Gilliflower.

6. LEUCOJUM *incanum majus multiplex, flore purpureo. C. B. P.* Greater hoary Stock-Gilliflower, with a double purple Flower.

7. LEUCOJUM *incanum majus multiplex, flore rubro. C. B. P.* Greater hoary Stock-Gilliflower, with a double red Flower.

8. LEUCOJUM *incanum majus multiplex, flore albo. Tourn.* Greater hoary Stock-Gilliflower, with a double white Flower.

9. LEUCOJUM *incanum majus variegatum, pleno flore. C. B. P.* The greater hoary Stock-Gilliflower, with a double variegated Flower.

10. LEUCOJUM *majus incanum variegatum album, flore ſimplici, maculis in albo rubris. C. B. P.* The greater hoary Stock-Gilliflower, with a ſingle white Flower ſpotted and ſtrip'd with Red.

11. Leucojum *pleno flore, album, ſanguineis maculis ſignatum. Hort. Eyſt.* White Stock-Gilliflower, with a double Flower, mark'd with bloody Spots.

12. Leucojum *pleno flore, album, purpureis maculis ſignatum. Hort. Eyſt.* White Stock-Gilliflower, with a double Flower mark'd with purple Spots.

13. Leucojum *incanum majus variegatum, pleno flore, foliis in ambitu argenteis. H. L.* The greater hoary, variegated Stock-Gilliflower, with a double Flower, and Leaves edg'd with Silver.

14. Leucojum *minus & annuum. Dod.* Leſſer annual Stock-Gilliflower.

15. Leucojum *album odoratiſſimum, folio viridi. C. B. P.* The moſt ſweet-ſmelling Stock-Gilliflower, with a green Leaf, commonly call'd the *White Wall-flower*.

16. Leucojum *album odoratiſſimum, folio viridi, pleno flore.* The double white Wall-flower, *vulgo*.

17. Leucojum *luteum vulgare. C. B. P.* The common yellow Wall-flower.

18. Leucojum *luteum, flore pleno, minus. C. B. P.* The common double Wall-flower.

19. Leucojum *anguſtifolium Alpinum, flore ſulphureo. H. R. Par.* Narrow-leav'd *Alpine* Wall-flower, with a Brimſtone colour'd Flower.

20. Leucojum *anguſtifolium Alpinum, flore pleno ſulphureo.* Narrow-leav'd *Alpine* Wall-flower, with a double Brimſtone-colour'd Flower, commonly call'd the *Straw-colour'd Wall-flower*.

21. Leucojum *luteum, magno flore. C. B. P.* Wall-flower, with a large Flower.

22. Leucojum *luteum, flore pleno, majus. C. B. P.* The greater Wall-flower, with a double Flower.

23. Leucojum *majus, flore intus luteo, extus ferrugineo.* Greater Wall-flower, with larger Flowers, yellow within, and on the out-ſide of an Iron-colour, commonly call'd the *Ravenal Wall-flower*.

24. Leucojum *majus, flore majore pleno, intus luteo, extus ferrugineo.* The double Ravenal, *vulgo*.

25. Leucojum *majus, flore pleno ferrugineo. Tourn.* The old double bloody Wall-flower.

26. Leucojum *luteum, pleno flore, foliis ex luteo variegatis.* The yellow variegated Wall-flower, with a double Flower.

27. Leucojum *luteum, pleno flore, foliis ex albo eleganter variegatis.* The Silver-ſtrip'd Wall-flower, with a double Flower.

There are ſeveral other Varieties of theſe Flowers, which are preſerv'd in ſome curious Botanick Gardens; but thoſe here mentioned, are the moſt beautiful, and beſt worth propagating in all curious Flower-Gardens.

All the Sorts of *Stock-Gilliflowers* are propagated by Seeds: The beſt Time for ſowing 'em is in the Beginning of *April*, upon a Border of freſh light Earth, where they may be expos'd to the Morning Sun; for if they are too much expos'd to the Sun in the Heat of the Day, they are very ſubject to be eaten by a Sort of Fly, as they often are while young, upon a hot dry Soil: To remedy which, you ſhould always ſow a few *Radiſhes* amongſt them, which will ſecure 'em from this Miſchief: for the Flies will always prey upon the *Radiſhes*, whereby your *Gilliflower* Plants will be preſerved; but then you muſt not ſuffer the *Radiſhes* to be too thick amongſt them, for that would draw 'em up very weak, and cauſe 'em to be long-ſhank'd. When your Plants have gotten ſix Leaves, they muſt be tranſplanted into other Borders of the like freſh Earth, and expos'd to the Morning Sun at about four Inches Diſtance, obſerving to water and ſhade 'em until they have taken Root; after which, they will require no farther Care, than only to keep them clear from Weeds until the Latter-end of *Auguſt*, or the Beginning of *September*, when you muſt tranſplant them into the Borders of the *Pleaſure-Garden*; which ſhould be done, if poſſible, in moiſt Weather, that they may the ſooner ſtrike Root, whereby they will be ſecurely faſten'd in the Ground before the Froſt comes on, which would prevent their taking Root, and thereby either quite deſtroy them, or at leaſt cauſe 'em to flower very weak the ſucceeding Spring.

There are many People who make a great Stir about ſowing theſe Seeds, and tranſplanting the Plants always at the ſame Time when the Moon is at the Full, in order to obtain a greater Number of double Flowers: but from ſeveral Years Obſervation, I could never obſerve any thing in this Management, nor from the frequently removing the Plants, as is by ſome directed, which only weakens them, and cauſes 'em to produce ſmaller Bunches of Flowers; but I could not find any more of them come double by this Management, than if they had never been remov'd: But the beſt Method that I have obſerv'd, to have theſe Flowers in the greateſt Perfection, is to change the Seeds every Year, if you can procure a good Correſpondent at ſome Place at a great Diſtance from you, who will faithfully furniſh you with good Seeds: And in ſaving theſe Seeds, if you obſerve a greater Number of Petals than uſual in the ſingle Flowers, it is a good Sign that the Seeds of ſuch Plants will produce double Flowers.

As theſe Plants are commonly biennial, and ſeldom continue longer than the ſecond Year, ſo there will be a Neceſſity of ſowing Seeds every Year; for when they have flower'd and ſeeded, they commonly decay ſoon after, as alſo do the Double Flowers ſoon after they are out of Flower; or if ſome of them ſhould continue another Year, they are ſeldom ſo ſtrong, or produce ſo fair Flowers as the young ſeedling Plants: ſo that, upon the whole, they are ſcarcely worth ſtanding. And tho' ſome People recommend the propagating the Double Sorts from Slips and Cuttings, as the ſureſt Way to have Double Flowers, which indeed is very true; yet the Plants thus rais'd are always weaker than thoſe rais'd from Seeds, and never produce their Flowers near ſo large or fair: Wherefore, (as I ſaid before) it is better to have a Succeſſion of ſeedling Plants every Year, amongſt which you will always have a Quantity of Double Flowers, provided your Seed be good.

The *Brompton Stock-Gilliflower* is by many People moſt valu'd, for the Largeneſs of its Flowers, and the Brightneſs of their Colour: but this Sort ſeldom produces more than one Spike of Flowers upon a Plant; whereas the *Italian* and *Purple* Sorts produce ſeveral very fair Bunches upon each Plant, eſpecially if they have Strength: And there is a Sort commonly call'd the *Stock-major*, (which, probably, is the ſeventh Sort here mention'd) which branches out on every Side, and produces many fair Spikes of Flowers from one Root; theſe are of a beautiful red Colour: As doth another Sort, commonly (tho' falſely) call'd the *Annual Stock*, which will produce its Flowers the firſt Year from Seed; but then the Plants commonly continue the next Seaſon, and flower again very ſtrong, and theſe often produce ſome Variety in the Colour of their Flowers, ſome being of a beautiful Scarlet, and others of a pale red Colour, and ſome of them are finely variegated; and theſe all produc'd from Seeds taken from the ſame Plant: But this Sort is very apt to degenerate, if the Seeds are not frequently changed.

The ſmall Annual *Stock-Gilliflower* will produce Flowers in about ten Weeks after ſowing, (which has occaſion'd its being call'd the *Ten Weeks Stock)*; and if the Seaſon be tolerably cool and moiſt, theſe Flowers will be very large: And many times there are large Double Flowers produc'd among them, which renders them well worth propagating, eſpecially if you ſow them in *May*, which will cauſe them to flower in *Auguſt* and *September*, when Flowers are beginning to be ſcarce in the Gardens. Theſe Plants produce ripe Seeds the ſame Year, and rarely ſurvive thro' a Winter.

Theſe Plants ſhould all be planted in a freſh light Soil, which muſt not be dung'd; for they don't do ſo well upon a rich Soil, in which they are apt to grow very rank, and then their Roots canker and decay; ſo that they ſeldom abide the Winter in ſuch Soils; but in a freſh Soil they will ſtand our ordinary Winters extremely well, and will produce large fair Flowers.

The Common Single *Wall-flower* is very ſeldom cultivated in Gardens, but is often found growing upon old Walls and Buildings in divers Parts of *England*: This is the Sort which is directed in the College *Diſpenſatory* for medicinal Uſes. But the Double of this Kind is very common in moſt of the *Engliſh* Gardens, which is propagated by planting Slips or Cuttings in any of the Spring Months, obſerving to water and ſhade them until they have taken Root; after which they may be remov'd to the Places where they are to remain.

The Straw-colour'd *Wall-flower* with Double Flowers was formerly more common in the *Engliſh* Gardens than at preſent: This is a much finer Sort for Shew than the Common, the Plants generally growing more upright; and the Spikes of Flowers are much larger, and grow much cloſer together than thoſe: But the Flowers have very little Scent; which, I ſuppoſe, has occaſion'd its being leſs cultivated than it was formerly; tho' indeed, for Shew, it is inferior to none of the Sorts of *Wall-flowers*: This is alſo propagated by Slips, as the Common Sort.

The White *Wall-flower* is propagated by ſowing the Seeds in *April*, in the manner before directed for the *Stock-Gilliflowers*; and if the Seeds are good, there will be many Double Flowers produc'd amongſt them, which may be continu'd, by planting the Slips in the ſame manner as has been directed for the Common *Wall-flower*. But the Double of this Kind being ſomewhat tenderer than the other Sorts of *Wall-flowers*, ſhould be planted into Pots fill'd with light freſh Earth, and in the Winter Seaſon ſhould be plac'd under a Hot-bed Frame, where they may be ſhelter'd from ſevere Froſts; but in mild Weather they ſhould have as much free open Air as poſſible; in which Management they will endure two or three Years, and produce fair Flowers.

The large flowering *Wall-flower* is alſo propagated by Seeds, in the ſame manner as the *Stock-Gilliflowers*; for tho' it will grow from Slips, yet theſe ſeldom make ſo good Plants as thoſe produc'd from Seeds, nor will they flower ſo ſtrong. This Sort rarely produces many Double Flowers, but yet is well worth propagating, for the Largeneſs and Sweetneſs of its Flowers; and if they are planted in a very poor dry Soil, will continue two or three Years, and endure the Cold extremely well.

The *Ravenal Wall-flower* is at preſent in the greateſt Eſteem with the curious Floriſts, the Flowers of this Kind being full as large as the laſt-mention'd Sort, and are of a fine reddiſh or Iron Colour on the Outſide, as alſo of an extraordinary Sweetneſs; and this is more apt to produce Double Flowers than the former: It is propagated by Seeds, which ſhould be ſown in *March*, and manag'd as was directed for the *Stock-Gilliflower*, obſerving never to plant them in a rich Soil, which will cauſe them to grow very faſt during the Summer Seaſon; but they ſeldom endure the Winter in ſuch Soils. The Double-flower'd Plants of this Kind may alſo be propagated by Slips, in the ſame manner as the before-mention'd Sorts; but theſe ſhould be ſhelter'd in Winter, as was directed for the White *Wall-flower*, otherwiſe they are ſubject to be kill'd by very ſharp Froſts. The Seeds of this Kind ſhould be often chang'd, or elſe they will greatly degenerate.

The old Double Bloody *Wall-flower* was formerly more common in *England* than at preſent, it being at this Time rarely to be ſeen: This is a Variety of the Common Double *Wall-flower*, from which it only differs in having the Outſide of the Petals of a Bloody Colour: It may be propagated by Slips, as the Common Sort; but requires to be ſhelter'd from extreme Cold in the Winter, which often deſtroys theſe Plants if they are too much expos'd to it.

The Yellow-ſtrip'd *Wall-flower* is alſo a Variety of the Common Double Sort, having its Leaves beautifully variegated in the Spring and Winter Seaſon; but in the Summer, when the Plants are very free of Growth, they degenerate to be almoſt quite plain, ſo that at that Seaſon there is very little Beauty in them: This is alſo propagated by Slips, as the Common Sort; but ſhould be planted in a warm Situation, otherwiſe it will often ſuffer by great Colds in Winter.

The Silver-ſtrip'd *Wall-flower* is much more beautiful than the laſt, and generally retains its beautiful Variegation through the whole Year: This is propagated by Slips, as the former; but ſhould be ſhelter'd in Winter, being much tenderer than the laſt; for which Reaſon, the Plants ſhould be ſet into Pots, and treated as the Double White *Wall-flower*: But you ſhould obſerve, never to plant them in a rich Soil, which will cauſe them to become plain, (as I have often obſerv'd): nor ſhould they have too much Moiſture, which very often deſtroys 'em.

All the Sorts of *Wall-flowers* will abide the Cold much better if planted in a very gravelly and ſtony Soil, than when they are in a rich Earth, as may be obſerv'd by thoſe which grow upon the Tops of Walls, and other Buildings, where ſometimes they are very much expos'd to the cold Winds, and yet often endure the ſharpeſt Winters; when thoſe which were planted in a good Soil have been deſtroy'd, notwithſtanding they have a warm Situation.

LEVEL, a Mathematical Inſtrument, ſerving to draw a Line parallel to Horizon, not only for various Uſes in *Maſonry*, &c. but alſo to meaſure the Difference of Aſcent and Deſcent between ſeveral Places, for the Conveying of Water, Draining of Fens, *&c.*

A *Water Level* ſhews the horizontal Line, by means of a Surface of Water, or other Liquid, founded on this Principle, that Water always naturally places itſelf *level*.

The moſt ſimple Inſtrument for this Uſe, is made of a long wooden Trough or Canal whoſe Sides are parallel to its Baſe; ſo that being equally fill'd with Water, the Surface thereof ſhews the Line of *Level*.

This *Level* is alſo made with two Cups fill'd to the two Ends of a Pipe three or four Feet long, about an Inch in diameter; by means whereof, the Water communicates from the one to the other Cup; and this Pipe being moveable on its Stand, by means of a Ball and Socket, when the two Cups become equally full of Water, the two Surfaces mark the Line of *Level*.

Inſtead of Cups, this Inſtrument may be made with two ſhort Cylinders of Glaſs three or four Inches long, faſten'd to each End of the Pipe with Wax or Maſtick; then the Pipe being fill'd either with common or colour'd Water, will ſhew itſelf through the Cylinder, by means of which the *Line of Level* is determin'd; the Height of the Water, with reſpect to the Center of the Earth, being always the ſame in both Cylinders. This *Level* is very commodious in Levelling ſmall Diſtances.

If you would level any Piece of Ground that you can ſee from Side to Side, or from the Middle to any Side, ſet up your Inſtrument in the Middle of it, whether it be a *Water Level* or a *Ground Level* with Sights: Place it ſo high, that you may ſee over the higheſt Part of the Ground half a Foot, or a Foot; then ſet up a Stake in the Middle, ſo that the Top may be exactly level with the Sights, and another Stake on the higheſt Side, the Top of which muſt be level with the middle Stake: Then either turn the *Level* or Look-back Sight, and ſet up another Stake on the Lower Ground level with the two firſt; ſo then you will have three Stakes ſtanding in a *Level*.

Then keeping your *Level* true to the middle Stake, turn it till it makes right Angles with the three Stakes, and ſet up two Stakes on each Side one, *Level* with thoſe three: ſo that then you will have five Stakes in two Lines ſet true *Level*.

If the Ground be large, you may ſet up two Rows more by the *Level*; but five Stakes are enough in a ſmall Ground.

When this is done, you may lay your *Level* aſide, and look over the Head of one to the Head of another, and cauſe the Perſon who aſſiſts you to put down Stakes between two and two, till you have ſet as many Stakes *Level* in the Ground as you think convenient; or you may uſe a Rule, which being plac'd level with the Head of the Stake, you may look over that to the Head of the other, and put Stakes down between you and the other Stake to what Number you pleaſe.

The Ground being thus ſtaked out, with all the Stakes Heads level, and half a Foot higher than the higheſt Ground, in ſome Grounds the middle Stakes and the Stakes in the Croſs-Line will be the Level-Line the Ground muſt be brought to; that is, abating the Hill, and filling up the Low Side to the *Level* of the Mid-Line. But if the Ground be very uneven, then you muſt meaſure over all the Stakes, and take them middle high for their Mean-*Level*, and, by the *Rule of Three*, proportion your Ground to that.

As for Inſtance: If a Valley be ten Poles in Length, and two Feet in Depth from the ſtrait Line, and there be a Hill five Poles long; How many Feet deep muſt a Perſon ſink thoſe five Poles to fill up the Valley? This Queſtion may be reſolv'd by the Inverſe or Back *Rule of Three*, and will ſtand thus; As 5 is to 2, ſo is 10 to 4.

5 —— 2 —— 10
2
———
5)20(4

So that a Perſon muſt go four Feet deep in ſuch a Hill to make good ſuch a Valley.

If you are to abutt the Top of a Hill four Feet deep, and two Poles from the Top of that Hill, thoſe four Feet are to come out.

To perform this, ſet up a Stake on the Top of a Hill two or three Feet above Ground, and another of the ſame Height where the Depth comes out; ſet down a Stake three Rods from that, till the Head comes to be in a Line with theſe two, and at that Stake you muſt be one Foot deep.

At ſix Poles, ſtake down another, as before, and there you muſt be two Feet deep: Then ſtake down another at nine Poles, and there you muſt be three Feet deep; and you may ſet more Stakes at equal Diſtances, which will direct you ſo as that you cannot go amiſs.

LEVITY, is the Privation or Want of Weight in any Body, when compar'd with another that is heavier, in which Senſe it is oppos'd to *Gravity*.

The School-men maintain, that there is ſuch a Thing as Poſitive and abſolute *Levity*, and impute this to Riſe and Emergency of Bodies lighter in Specie than the Fluids wherein they riſe.

But beſides that the common Senſe of Mankind diſcovers that *Levity* is only a relative Term; we find that all Bodies tend towards the Earth, ſome ſlower, and ſome faſter, in all Fluids or Mediums, whether Water, Air, *&c.*

Thus Cork is ſaid to be lighter than Gold, becauſe under equal Dimenſions of Bulk the Gold will ſink in, and the Cork ſwim upon the Water.

Archimedes has demonſtrated, that a ſolid Body will float any where in a Fluid of the ſame ſpecifick Gravity, and that a lighter Body will keep above a heavier.

The Reaſon of this is, becauſe Bodies falling towards the Earth, thoſe which have a like Number of equal Parts, have equal Gravity; ſince the Gravity of the Whole is the Sum of the Gravity of all its Parts.

Now two Bodies have an equal Number of equal Parts, if under the ſame Dimenſions there are no Intervals deſtitute of Matter: Whence it follows, that as no Portion of Matter is ſo ſmall, but that Body wherein it is contain'd may be wholly divided into Parts equally ſmall, there can be no Reaſon for the Deſcent of theſe, which will not equally hold for the Deſcent of that.

Hence it may be concluded, that thoſe Bodies which do not equally gravitate under the ſame Dimenſions, do not contain the ſame equal Portions of Matter; and therefore when we ſee that a Cube of Gold ſubſides in Water at the ſame time that an equal Bulk of Cork ſwims upon it, it is evident that the Gold muſt have a greater Number of equal Parts of Matter under the ſame Bulk than the Cork; or the Cork muſt have a greater Number of Vacuities than the Gold; and that there are alſo in the Water a greater Number of Vacuities than in the Gold.

Hence we have a clear Idea both of *Denſity* or *Gravity*, and of *Levity*; and know, that in a ſtrict Senſe, the latter cannot be accounted any thing poſitive, but a mere Negation or Abſence of Body, which determines that Body to be lighter than another which contains mere Matter.

LICHEN, Liverwort.

There being two Sorts of this Plant, which are uſed in Medicine, and one of thoſe being accounted a ſovereign Remedy for the Bite of Mad-dogs, ſo I thought it would not be improper to mention them here, tho' they are Plants which cannot be propagated by any Method, except by paring up the Turf of Graſs whereon they grow, and laying it down in ſome moiſt ſhady Place, where, if the Turf takes Root and thrives, theſe Plants will ſpread and do well. The two Sorts are;

1. LICHEN *petræus latifolius, ſive Hepatica fontana. C. B. P.* Common broad-leav'd Liverwort.
2. LICHEN *terreſtris cinereus. Raii Syn.* Aſh-coloured ground Liverwort.

The firſt Sort grows on the Sides of *Wells*, and in moiſt ſhady Places, not only on the Ground, but on Stones, Bricks or Wood. Of this there are ſeveral Varieties, which are diſtinguiſhed by the Curious in Botany; but as they are Plants of no Uſe, ſo I ſhall not enumerate them here.

The ſecond Sort (which is uſed to cure the Bite of Mad-dogs) grows on Commons and open Heaths, where the Graſs is ſhort, in moſt Parts of *England*, eſpecially on Declivities, and on the Sides of Pits. This ſpreads on the Surface of the Ground, and when in Perfection, is of an Aſh-colour; but as it grows old, it alters, and becomes of a Dark-colour. This is often carried into Gardens with the Turf which is laid for Walks and Slopes; and where the Soil is moiſt and cool, it will ſpread, and be difficult to deſtroy; ſo that it renders the Graſs unſightly: but this is the only Method yet known to have it grow in Gardens, where it is deſired.

This is eſteemed a ſovereign Remedy for the Bite of Mad-dogs, and hath been for many Years uſed with great Succeſs. It was communicated to the Royal Society, by Mr. *George Dampier*, whoſe Uncle had long uſed this Plant, to cure the Bite of Mad-dogs, on *Men* and *Animals*, with infallible Succeſs; the Method of taking it he has delivered as followeth: Take of the Herb, and dry it either in an Oven, by the Fire, or in the Sun; then powder it, and paſs it thro' a fine Sieve; mix this with an equal Quantity of fine powdered *Pepper*; the common Doſe of this Mixture is four Scruples, which may be taken in warm *Milk*, *Beer*, *Ale*, or *Broth*. He alſo adviſeth the Part bitten to be well waſhed, as alſo the Cloaths of the Perſon who is bit, leſt any of the *Snivel* or *Drivel* of the Mad-dog, ſhould remain. If the Perſon bitten be full-grown, he adviſed that he be blooded, before the Medicine is taken; and to uſe the Remedy as ſoon after the Bite as poſſible, as alſo to repeat the Doſe two or three ſeveral Mornings faſting.

LIGHT is us'd in various Senſes: 1. Sometimes it ſignifies that Senſation which is occaſion'd in the Mind by the View of luminous Bodies.

2. For thoſe Properties in thoſe Bodies, whereby they are fitted to excite thoſe Senſations in us.

3. A certain Action of the luminous Body on the Medium between that and the Eye, by the Means of which the one is ſuppos'd to act on the other; and this is call'd *ſecondary Light*, or *deriv'd Light*, in Diſtinction to that of luminous Bodies, which is call'd *primary* or *innate Light*.

As to the *Phænomenon* of *Light*, Philoſophers have explain'd it ſeveral ways: *Ariſtotle*, by ſuppoſing ſome Bodies to be tranſparent, as Air, Water, Ice, *&c.* The *Carteſians* have conſiderably refin'd upon this Motion of *Light*, and own that *Light*, as it exiſts in the luminous Body, is nothing elſe but a Power or Faculty of exciting in us a very clear and vivid Senſation: And Father *Malbranch* explains the Nature of *Light* by a ſuppos'd Analogy between it and Sound; the latter of which is allow'd to be produc'd by the ſhaking or Vibration of the inſenſible Parts of the ſonorous Body.

But the greateſt Diſcoveries into this wonderful *Phænomenon* have been made by Sir *Iſaac Newton*; That the Primary *Light* conſiſts wholly in a certain Motion of the Particles of the lucid Body, whereby they do not propel any fictitious Matter ſuppos'd to be lodg'd in the hidden Pores of tranſparent Bodies, but throw off from the luminous Body certain very ſmall Particles, which are emitted every Way with great Force.

And the *ſecondary* or *deriv'd Light*, not in a *Conatus*, but in a real Motion of theſe Particles receding every Way from the luminous Body in right Lines, and with an incredible Velocity.

For it hath been demonſtrated by Mr. *Romer*, from the Obſervation on the Satellites of *Jupiter*, that the Progreſs of *Light* from the Sun to our Earth is not above ten Minutes, and therefore, ſince the Earth is at leaſt 10,000 of its own Diameters diſtant from the Sun, *Light* muſt run 10,000 of thoſe Diameters in a Minute, which is above 100,000 Miles in a Second.

And if a Bullet moving with the ſame Celerity, with which it leaves the Muzzle of Cannon, requires twenty-five Years to paſs from the Earth to the Sun, as Mr. *Huygens* has computed, then the Velocity of *Light* will be to that of a Cannon-Ball, as twenty-five Years is to ten Minutes, which is above 10,000 to 1; ſo that the Particles of *Light* do move above a Million of times ſwifter than a Cannon Bullet; from which Rapidity of Motion very ſtrange Effects may be produc'd: But Sir *Iſaac Newton* has ſhewn, paſt Contradiction, that the *Light* of the Sun is near ſeven Minutes in its Paſſage to the Earth, which is the Space of 50,000,000, a Velocity 10,000,000 times greater than that wherewith a Ball flies out of the Mouth of a Cannon.

Sir *Iſaac Newton* alſo obſerves, That *Bodies* and *Light* act mutually on one another: *Bodies* on *Light* in emitting, reflexing, refracting, and inflecting it; and *Light* on *Bodies* by heating them, and putting their Parts into a vibrating Motion, wherein Heat principally conſiſts: for he obſerves, that all fix'd Bodies, when heated beyond a certain Degree, do emit *Light*, and ſhine; which ſhining, *&c.* appears to be owing to the vibrating Motion of the Parts; and all Bodies abounding in earthy and ſulphureous Particles, if they be ſufficiently agitated, emit *Light*, which way ſoever the Agitation be effected.

The ſame great Author obſerves, That there are but three Affections of *Light* wherein the Rays differ, *viz. Refrangibility*, *Reflexibility*, and *Colour*; and thoſe Rays which agree in *Refrangibility*, agree alſo in the other two, whence they may be well defin'd homogeneal: Again, the Colours exhibited by homogeneal *Light*, he calls homogeneal Colours; and thoſe produc'd by heterogeneal *Light*, heterogeneal Colours. From which Definitions he advances ſeveral Propoſitions:

1. That the Sun's *Light* conſiſts of Rays differing by indefinite Degrees of *Refrangibility*.
2. That Rays, which differ in *Refrangibility*, when parted from one another, do proportionably differ in the Colours which they exhibit.
3. That there are as many ſimple and homogeneal Colours, as there are Degrees of *Refrangibility*; for to every Degree of *Refrangibility* belongs a different Colour.
4. *Whiteneſs*, in all reſpects, like that of the Sun's immediate *Light*, and of all the uſual Objects of our Senſes, cannot be compounded of ſimple Colours, without an indefinite Variety of them; for to ſuch a Compoſition there are requir'd Rays endu'd with all the indefinite Degrees of *Refrangibility*, which infer as many ſimple Colours.
5. The Rays of *Light* do not act one on another in paſſing through the ſame Medium.
6. The Rays of *Light* do not ſuffer any Alteration of their Qualities from Refraction, nor from the adjacent quieſcent Medium.

7. There can be no homogeneal Colours produc'd out of *Light* by Refraction, which are not commix'd in it before ; ſince Refraction changes not the Qualities of the Rays, but only ſeparates thoſe that have divers Qualities by means of their different *Refrangibility*.

8. The Sun's *Light* is an Aggregate of homogeneal Colours ; whence homogeneal Colours may be call'd Primitive or Original.

Hence proceeds the whole Theory of Colours in Plants and Flowers.

Thoſe Parts, *v. g.* which are the moſt refrangible, conſtitute Violet Colour, the dimmeſt and moſt languid of all Colours.

And, on the contrary, thoſe Particles that are the leaſt refrangible, conſtitute a Ray of a *red* Colour, which is the brighteſt and moſt vivid of all Colours: The other Particles being diſtinguiſh'd into little Rays, according to their reſpective Magnitudes and Degrees of *Refrangibility*, excite intermediate Vibrations, and ſo occaſion the Senſations of the intermediate Colours. See Sir *Iſaac Newton*'s *Doctrine of Colours*.

Perhaps theſe Obſervations on *Light* may to ſome Perſons ſeem foreign to the ſubject Matter of this Book, yet, if thoroughly underſtood, might probably be found very uſeful. That learned and curious Inquirer into the Buſineſs of *Vegetation*, the Reverend Dr. *Hales*, in his Treatiſe on that Head, does upon the Query put by Sir *Iſaac Newton* [" *Are not* " *groſs Bodies and* Light *convertible into one another* ? *And may* " *not Bodies receive much of their Activity from the Particles of* " Light *which enter their Compoſition* ? *The Change of Bodies* " *into* Light, *and of* Light *into Bodies, is very conformable to* " *to the Courſe of Nature, which ſeems delighted with Tranſ-* " *mutations*"] add this Query ; " *And may not* Light *alſo, by* " *freely entring the expanded Surfaces of Leaves and Flowers,* " *contribute much to the ennobling the Principles of Vegeta-* " *bles* ?

LIGUSTICUM, [takes it Name of *Liguria*, becauſe this Plant, in old time, grew in greateſt Plenty near a River of *Genoa*, call'd *Liguria*] Lovage.

The *Characters* are ;

The Lobes of the Leaves are cut about their Borders, like thoſe of Parſley ; *the Flowers conſiſt, for the moſt part, of five Leaves, which expand in form of a* Roſe ; *each of theſe Flowers are ſucceeded by two oblong, gibboſe, furrow'd Seeds, which on one Side have a leafy Border*.

The *Species* are ;

1. LIGUSTICUM *vulgare, foliis apii. J. B.* Common Lovage.

2. LIGUSTICUM *Scoticum, apii folio. Tourn.* Scotch Lovage, with a Parſley Leaf.

3. LIGUSTICUM *Græcum, apii folio. T. Cor.* Greek Lovage, with a Parſley Leaf.

The firſt of theſe Plants is often us'd in Medicine, and was formerly reckon'd amongſt the Kitchen Herbs, but is now almoſt intirely caſt out of the Kitchen-Garden, and only cultivated for Phyſical Uſes : This Plant may be eaſily propagated by ſowing the Seeds, ſoon after they are ripe, in a moiſt Spot of Ground ; and when the Plants come up the Spring following, they ſhould be tranſplanted out to the Diſtance of eighteen Inches or two Feet aſunder, in a moiſt Soil ; where, if they are kept clear from Weeds, they will thrive exceedingly, and the ſecond Summer will produce Seeds: But the Herb may be frequently cut for Uſe ; their Roots abiding ſeveral Years do ſhoot again continually after being cut ; ſo that a few Plants will be ſufficient for the Uſe of a Family.

The ſecond and third Sorts are only preſerv'd in Collections of Plants for Variety, but are not in any Uſe at preſent. Theſe may be propagated in the ſame Manner as the former.

LIGUSTRUM, the Privet.

The *Characters* are ;

The Leaves grow by Pairs oppoſite to each other ; *the Flower conſiſts of one Leaf, is tubulous, and divided at the Top into five Segments* ; *the Ovary in the Centre of the Flower-cup becomes a globular ſoft Fruit, full of Juice, in which are lodg'd four Seeds*.

The *Species* are ;

1. LIGUSTRUM *vulgare. Park. Theat.* The common Privet.

2. LIGUSTRUM *foliis majoribus & magis acuminatis, toto anno folia retinens. Pluk. Alm.* The Ever-green Privet.

3. LIGUSTRUM *foliis e luteo variegatis. H. R. Par.* The yellow blotch'd Privet.

4. LIGUSTRUM *foliis argentatis. Breyn. Prod.* The Silver-ſtrip'd Privet.

5. LIGUSTRUM *Capenſe ſempervirens, folio craſſo ſubrotundo. Hort. Elth.* Evergreen Privet of the *Cape of Good Hope*, with a thick roundiſh Leaf.

6. LIGUSTRUM *Ægyptiacum, Alhenna vel Alcanna Arabum. Jeſſ. Egyptian* Privet, called Alhenna or Alcanna by the Arabians.

7. LIGUSTROIDES, *quod Liguſtrum Americanum aculeatum, fructu teſticulato. Plum.* Prickly American Privet, with teſticulated Fruit.

The firſt of theſe Plants is very common in moſt Parts of *England*, and is ſeldom cultivated in Gardens, unleſs for Variety : It commonly grows about eight or ten Feet high, in form of a Shrub, but may, by Art, be train'd up to a much greater Height, and may be intermix'd amongſt other Trees of low Growth in Wilderneſſes.

The ſecond Sort will grow much larger than the firſt, and is equally hardy : The Leaves of this commonly remain upon the Tree until the Spring before they decay, unleſs in very hard Winters ; for which Reaſon, it is more eſteem'd than the common Sort.

Theſe Plants are eaſily propagated by laying down their tender Shoots in Autumn, which in one Year's time will be rooted enough to tranſplant ; when they may be remov'd to the Places where they are deſign'd to remain, or planted in a Nurſery for two or three Years ; where they may be train'd for the Purpoſes deſign'd.

Formerly theſe Plants were greatly in Uſe for Hedges, but ſince ſo many others of greater Beauty have been introduc'd, which are much preferable to theſe for ſuch Purpoſes, they have been intirely rejected, the Trouble in keeping them in Order being very great, nor are the Hedges made with them ever ſo thick and handſome, as thoſe made with divers other Plants.

The two variegated Kinds are pretty Varieties amongſt other ſtriped Shrubs: Theſe may be propagated by budding or inarching them upon the plain Sort, as alſo by laying down their Branches ; but as they ſeldom ſhoot ſo faſt, as to produce many Branches proper for Layers, ſo the other Method is chiefly us'd. The Silver-ſtrip'd Sort is ſomewhat tenderer than the Plain, but will endure the open Air, if planted in a dry Soil, and in a warm Situation ; but if either of the variegated Kinds be planted in a moiſt, rich Soil, they are ſubject to become plain from their vigorous Growth.

The fifth Sort is a Native of the *Cape of Good Hope*, from whence it was brought into the Gardens in *Holland*, where it hath been propagated and communicated to ſeveral Parts of *Europe*. This Plant is pretty hardy, ſo may be preſerved in a common Green-houſe, with *Oranges*, *Myrtles*, &c. Where it will make an agreeable Variety. It may be propagated by laying down the tender Shoots, which will take Root in one Year, and may then be tranſplanted into ſmall Pots filled with freſh light Earth, obſerving to water and ſhade them until they have taken new Root ; after which Time, they may be treated in the ſame Manner as *Myrtles*, or any other hardy Exotic Plant, which requires to be houſed in Winter.

The Sixth Sort grows plentifully in *Egypt*, and ſome other Places in the *Eaſt*, from whence the Seeds have been ſent to *Europe*, and many of the Plants have been raiſed, which proved ſo tender, that few of them have been preſerved : The Leaves of this Tree dried and powdered, are a great Merchandiſe throughout the *Turkiſh* Empire, and the neighbouring Countries, where it is uſed to dye the Hair and Nails of the Inhabitants of a yellow Colour.

This Sort may be propagated by Seeds, which ſhould be ſown early in the Spring on a Hot-bed ; and when the Plants are come up, they ſhould be tranſplanted into ſeparate ſmall Pots filled with freſh rich Earth, and plunged into a Hot-bed of Tanners-bark, where they muſt be treated after the ſame Manner as the young *Coffee-Trees*, and muſt be conſtantly preſerved in the Stove ; for they are too tender to thrive in the open Air in this Climate, even in the warmeſt Seaſon of the Year.

The ſeventh Sort was diſcovered by Father *Plumier* in *America* ; the Seeds of this Plant were ſent into *England* by the late Dr. *William Houſtoun*, who gathered them at *Campechy*. This Sort is tender, and requires to be preſerved in Stoves, during the winter Seaſon ; otherwiſe it will not live in this Country.

This Sort will grow to the Height of ten or twelve Feet in this Country, and is more hardy than the former; ſo will thrive in the open Air during the Summer-months, provided it is placed in a warm Situation; and in Winter it may be placed in a Stove with Plants, which require only a moderate Warmth to preſerve them. This Plant muſt be frequently watered; for it grows naturally on moiſt ſwampy Soils, near the Sea. Theſe may be both propagated by laying down their Branches in the Spring, which if duly watered, will be rooted by the next Spring, when they may be taken off, and tranſplanted into Pots filled with light freſh Earth, and then plunged into a moderate Hot-bed of Tanners-bark, which will greatly promote their taking new Root; but they muſt be watered and ſhaded, until they are rooted; then they may be treated in the ſame manner as the old Plants.

LILAC, [it is an *Arabick* Name, tho' ſome derive it from the *Lily*, becauſe its Flowers bear ſome Reſemblance to the *Lily*: It is alſo call'd by the *Greeks* Σύριγξ, and by the *Latins*, *Syringa*, becauſe when the Pith is taken out of its thick Branches, they are made into Pipes] The Pipe-Tree.

The *Characters* are;

The Flowers conſiſt of one Leaf, are Funnel-ſhap'd, but divided at Top into five Segments, and are collected into oblong ſpecious Spikes; the Flowers are ſucceeded by compreſs'd Pods, which are ſcarce an Inch long, and are divided into two Cells, in which are contain'd broad, flat Seeds, which are compreſs'd on their Edges.

The *Species* are;

1. LILAC *Matthioli*. The common Blue Lilac, or Pipe-Tree.
2. LILAC *flore albo. Tourn.* The white Lilac, or Pipe-Tree.
3. LILAC *flore ſaturate purpureo. Tourn.* The deep purple Lilac, or Pipe-Tree.
4. LILAC *flore albo, foliis ex luteo variegatis. Cat. Plant. Hort.* The Yellow-blotch'd Lilac.
5. LILAC *flore albo, foliis ex albo variegatis. Cat. Plant. Hort.* The White-blotch'd Lilac.
6. LILAC *folio liguſtri. Tourn.* Lilac with Privet Leaves, *falſely called*, The *Perſian* Jaſmine.
7. LILAC *laciniato folio. Tourn.* Lilac with cut Leaves, *falſely called*, The Cut-leav'd *Perſian* Jaſmine.

The three firſt Sorts do commonly grow eighteen or twenty Feet high, and are very great Ornaments to Quarters of flowering Trees in the Spring during their flowering Seaſon, if rightly diſpos'd amongſt Trees of the ſame Growth. The firſt and ſecond Sorts are more common than the third; but the third is much preferable to the ſecond: The Flowers of that growing much cloſer upon the Bunches, and are of a finer Purple Colour, and the Trees generally produce them in greater Quantities; ſo that this, and the white Sort, being regularly intermix'd, do afford an agreeable Variety, tho' the ſecond may be admitted to add a Luſtre to the other.

Theſe Plants are eaſily propagated by Suckers, which they ſend forth in great Plenty from the old Plants: Theſe ſhould be taken off in *October*, and planted into a Nurſery, where they may remain three or four Years; after which Time they will be fit to tranſplant into the Wilderneſs, where they are to continue: They will require no other Culture than to dig the Ground about them every Year, and take off the Suckers which are produc'd from their Roots; which, if ſuffer'd to remain, would ſtarve the old Plants, and grow up into an irregular Thicket.

They will grow in almoſt any Soil or Situation, but do commonly flower beſt in that which is dry; for tho' a ſtrong, moiſt Soil will cauſe them to grow more vigorouſly, yet they are ſeldom ſo productive of Flowers as in a dry Soil, which is generally the Caſe with moſt other Plants.

The two variegated Sorts are preſerv'd by ſome Perſons, who delight in ſtrip'd Plants, as Curioſities, but they have no great Beauty in them; for in the Summer-time, when theſe Plants are free of Growth, their white and yellow Blotches do not appear very plain: And when they do, it appears more like a Diſtemper in them, than any real Beauty. Theſe may be propagated by budding or inarching them upon the common Sort.

The Privet-leav'd Lilacs are of humbler Growth than thoſe before-mention'd, ſeldom riſing above ſix or ſeven Feet high, but are very great Ornaments in ſmall Wilderneſs-Quarters of flowering Shrubs, where being intermix'd with other Shrubs, of the ſame Growth, they afford an agreeable Proſpect. Theſe produce their Flowers in much longer and ſlenderer Bunches than the other Sorts, and have a more agreeable Scent.

They may be propagated from Suckers as the former; but as they ſeldom produce them in ſuch Plenty, ſo the moſt expeditious Method is, to propagate them by Layers, which will take Root in one Year fit to tranſplant; and the Plants thus rais'd, will be much better rooted than thoſe produc'd by Suckers, and are not ſo ſubject to ſend forth Suckers from their Roots.

The Cut-leav'd Sort differs from the other in no other reſpect but in having its older Leaves deeply cut in: They are both very hardy, and will grow in almoſt any Soil or Situation, and may be train'd up to regular Heads, if rightly manag'd while young.

LILIO-ASPHODELUS; [ſo call'd, becauſe this Plant partakes both of the *Lily* and *Daffodil*] The Aſphodel or Day Lily.

The *Characters* are;

It hath a Root like Aſphodel *(or* Kingſpear); *the Flower conſiſts of one Leaf, which is deeply cut into ſix Segments, and expands in Form of a* Lily; *the Flower is ſucceeded by an oval Fruit, which contains ſeveral roundiſh Seeds.*

The *Species* are;

1. LILIO-ASPHODELUS *luteus. Park. Par.* The Yellow Day Lily.
2. LILIO-ASPHODELUS *puniceus. Park. Par.* The Red Day Lily.
3. LILIO-ASPHODELUS *Americanus ſempervirens maximus polyanthos albus. Hort. Elth.* Greateſt ever-green *American* Aſphodel-Lily, with many white Flowers.
4. LILIO-ASPHODELUS *luteus minor. Inſt. R. H.* The leſſer yellow Aſphodel-Lily.
5. LILIO-ASPHODELUS *Phœniceus minor. Inſt. R. H.* The leſſer red Aſphodel-Lily.
6. LILIO-ASPHODELUS *Americanus, flore umbellato albo, coſtâ purpureâ notato. Plum. Cat. American* Aſphodel-Lily, with white Flowers growing in an Umbel, and a Stalk marked with Purple.
7. LILIO-ASPHODELUS *Americanus, foliis ſcillæ, flore umbellato maximo purpureo. Plum. Cat. American* Aſphodel-Lily, with Leaves like the Squill, and large purple Flowers growing in an Umbel.
8. LILIO-ASPHODELUS *Americanus bifolius, flore ſingulari purpureo. Plum. Cat. American* Lily-Aſphodel, with two Leaves, and a ſingle purple Flower.

The firſt two Plants are very common in moſt of the old *Engliſh* Gardens, the firſt is often call'd by the Gardeners, the *Yellow Tuberoſe*, from its having a very agreeable Scent; but the other is called the *Day Lily*, or the *Tuberoſe Orange Lily*, in moſt Places.

They are both very hardy Plants, and will multiply exceedingly, if ſuffered to remain two or three Years undiſturbed, eſpecially the red Sort, which ſends forth great Quantities of Off-ſets from the old Plants, by which they may be eaſily propagated: The beſt Time to tranſplant their Roots is in *September* or *October*, after their Leaves are decay'd, (tho' they may be removed at almoſt any Time, provided they are taken up with Care, and not kept too long above Ground): They are proper for large Borders in a Pleaſure-Garden, or to plant under Trees in Avenues, where they will thrive and flower very well; but they are too large for ſmall Flower Gardens, and afford Harbour for Snails and other Vermin, for which Reaſon they ſhould not be admitted too near choicer Plants.

They will grow in almoſt any Soil or Situation; the yellow Sort produces its Flowers in *May* and *June*, and the red Sort comes about a Month later; their Flowers are of a ſhort Duration, ſeldom continuing above two Days, but are ſucceeded by freſh Flowers for near a Month ſucceſſively; but the yellow Sort commonly continues longer in Flower than the other, and the Flowers are ſmaller, and of longer Duration.

The third, ſixth, ſeventh, and eighth Sorts are Natives of the warm Parts of *America*; ſo muſt be preſerved in Stoves, otherwiſe they will not live thro' the Winter in this Country. Theſe may be propagated very eaſily, for their Roots creep under Ground, and ſend forth many new Plants at a Diſtance from the old Root, which ſhould be taken off in the Spring, and each Plant put into a pretty large ſeparate Pot, filled with rich light Earth, and then plunged into a moderate Hot-bed of Tanners-bark, to forward their taking new Root: They muſt alſo be frequently refreſhed with Water, but it muſt not be given in large Quantities, eſpecially until they have taken good Root, leſt it ſhould rot the tender Fibres.

Theſe Plants thrive and produce their Flowers plentifully in *England*, when they are conſtantly kept plunged in the Bark-Stove,

ſtove; for the Fibres of the Roots will frequently creep thro' the Holes at the Bottom of the Pots, and ſtrike into the Bark, which is of great Service to the Plants. During the Winter Seaſon, when they are not very free in Growth, they ſhould not have too much Water; but in Summer they will require to have Plenty of Water in hot Weather. When the Pots are filled with the Roots, they ſhould be taken out and divided to propagate them; the beſt Time for this is, when the Leaves are in the leaſt vigorous State, which is generally in *March*. When theſe Roots are parted, it ſhould be done with Care, ſo as not to break or bruiſe the larger Roots; for thoſe bruiſed are very ſubject to rot. Theſe Plants ſhould not be ſhifted out of the Pots too often, for that will prevent their flowering; for where the Roots are confined, (provided it be not too much) they will always flower moſt freely; ſo that they need not be tranſplanted oftener than once every Year.

In Summer, when the Weather is hot, theſe Plants ſhould have a large Share of free Air, by opening of the Glaſſes of the Stove; but they ſhould never be placed abroad in the open Air, for they are too tender to thrive abroad in this Climate in the warmeſt Seaſons. Theſe Plants uſually flower in *June July*, and *Auguſt*, tho' ſometimes they will flower both earlier and later in the Year: And when they are in Flower, they afford an agreeable Scent, and make a fine Appearance.

The fourth and fifth Sorts are very hardy Plants, which will thrive in almoſt any Soil or Situation, and do greatly increaſe by their Roots. Theſe are to be managed in the ſame Manner as the two firſt Sorts.

LILIO-FRITILLARIA. *Vide* Fritillaria.

LILIO-HYACINTHUS, Lily-Hyacinth.

The *Characters* are;

It hath a Lily Flower, which is compoſed of ſix Leaves, and ſhaped like the Flower of Hyacinth; whoſe Pointal afterward becomes a globular pointed Fruit, for the moſt part three-corner'd, and divided into three Cells, in which are contain'd many Seeds, which are almoſt round. To theſe Notes muſt be added, the Roots, which are ſcaly, and ſhap'd like thoſe of the Lily.

The *Species* are;

1. LILIO-HYACINTHUS *vulgaris, flore cœruleo. Inſt. R. H.* Common Lily-Hyacinth, with a blue Flower.
2. LILIO-HYACINTHUS *vulgaris, flore niveo. Inſt. R. H.* Common Lily-Hyacinth, with a Snow-white Flower.
3. LILIO-HYACINTHUS *vulgaris, flore rubello. Inſt. R. H.* Common Lily-Hyacinth with a red Flower.

Theſe Plants are propagated by Off-ſets from their Roots, in the ſame Manner as *Lilies* and *Crown Imperials*; the beſt Time to take up their Roots is in *July*, ſoon after the Leaves are decayed. Theſe Roots may be dried in a ſhady Place, and kept out of the Ground till *Michaelmas*; when they ſhould be planted in the Borders of the Flower-Garden, amongſt other hardy bulbous and tuberoſe-rooted Flowers, where they will make a pretty Diverſity the following Spring, when they are in Flower.

They will thrive in almoſt any Soil, which is not over-moiſt, or too ſtrong Clay, and in almoſt any Situation which is open, and not ſhaded by Trees. The Roots ſhould be planted four or five Inches deep, and where they are planted in a Bed by themſelves, ſhould be placed about a Foot Diſtance from each other: But as they are very hardy, and do not require any Covering, ſo they are very proper for adorning the large Borders of the Flower-Garden.

The Roots may remain in the Ground undiſturbed two or three Years, which is the better Method to obtain a large Increaſe of their Roots, than if they are removed every Year. When the Roots are taken up and dried, the Off-ſets ſhould be intirely ſeparated from the old Roots; and thoſe which are ſmall, muſt be ſoon planted again in a Nurſery-bed at about five or ſix Inches Diſtance, where they may remain for a Year or two, until they have acquired Strength to flower; when they may be tranſplanted into the Boders of the Flower-Garden. The Off-ſets being ſmall, muſt never remain long out of the Ground, becauſe they are ſubject to ſhrivel, and then, if they are planted, and there ſhould happen much Rain ſoon after, they will periſh. Theſe Plants flower the latter End of *April*, or the Beginning of *May*, when they make a pretty Appearance, their Flowers being in Shape like the *Starry Hyacinth*.

Theſe Plants may alſo be propagated by Seeds, which ſhould be ſown in Pots or Caſes filled with freſh light Earth, ſoon after they are ripe; and muſt be treated in the ſame Manner as hath been directed for the *Lilies* and *Martagons*. The Plants raiſed from Seeds will not flower, until they are four or five Years old, which diſcourages moſt People attempting to propagate them by that Method; tho', if it was more practiſed, there might be a greater Variety of theſe Flowers, than are at preſent to be found, ſince it was by this Method that the great Variety of curious Flowers now in being were obtained.

LILIO-NARCISSUS, [is ſo call'd, becauſe it reſembles both theſe Plants] Lily-Daffodil.

The *Characters* are;

It hath a coated, bulbous Root; the Flower is ſhap'd like a Lily, conſiſting of ſix Leaves, and is cover'd with a membranaceous Sheath like the Narciſſus; *the Fruit ſucceeds the Flower in the ſame Form of the* Narciſſus, *is oblong or roundiſh, and divided into three Cells, which are fill'd with roundiſh Seeds.*

The *Species* are;

1. LILIO-NARCISSUS *Indicus, ſaturato colore, purpuraſcens. Mor. Hiſt.* The Lily-Daffodil, of a deep Purple-colour.
2. LILIO-NARCISSUS *Indicus, flore albo, exterius rubente. Tourn. Indian* Lily-Daffodil, with a white Flower, which is reddiſh on the Outſide.
3. LILIO-NARCISSUS *polyanthus, flore incarnato, fundo ex luteo albeſcente. Sloan. Cat.* Many-flower'd Lily-Daffodil, with a Carnation Flower, having a whitiſh yellow Bottom, commonly called in the *Weſt-Indies*, *Red Lily*.
4. LILIO-NARCISSUS *Japonicus, rutilo flore. Mor. Hiſt.* The *Japan* Lily-Daffodil, commonly called the *Guernſey* Lily.
5. LILIO-NARCISSUS *folio latiſſimo, floribus niveis inodoris. Tourn.* Lily-Daffodil, with a very broad Leaf and ſnowy Flowers without Scent.
6. LILIO-NARCISSUS *Indicus, Narciſſus Liliflorus, aureus, ſtriis argenteis pictus, floribus amplis, cernuis gemellis, caule magno cepæ fiſtuloſo. Pluk. Phyſ. Indian* Lily-Daffodil, with ample Gold-colour'd Flowers ſpotted with Silver, and a large hollow Stalk.
7. LILIO-NARCISSUS *Indicus, flore incarnato, lineis albis ſtriato, odorato. Indian* Lily-Daffodil, with a Carnation Flower ſtrip'd with white Lines, and of a ſweet Scent, commonly called the Bella-donna Lily.
8. LILIO-NARCISSUS *luteus autumnalis minor. Tourn.* The leſſer yellow Autumnal Lily-Daffodil, commonly called the Autumnal Narciſſus.
9. LILIO-NARCISSUS *Jacobæus latifolius Indicus, rubro flore. Mor. Hiſt.* Broad-leav'd *Indian* Lily-Daffodil, with a red Flower.
10. LILIO-NARCISSUS *Indicus maximus ſphæricus, floribus plurimis rubris liliaceis. Mor. Hiſt.* Greateſt *Indian* Lily-Daffodil, with many Lily-ſhap'd ſpherical Flowers.
11. LILIO-NARCISSUS *Indicus pumilus polyanthos. Mor. Hiſt.* Dwarf *Indian* Lily-Daffodil, with many Flowers.
12. LILIO-NARCISSUS *Zeylanicus latifolius, flore niveo externè lineâ purpureâ ſtriato.* Broad-leav'd Lily-Daffodil of *Ceylon*, with a ſnow-white Flower, ſtriped with purple Lines on the Out-ſide.
13. LILIO-NARCISSUS *Indicus pumilus monanthos albus. Mor. Hiſt.* Dwarf *Indian* Lily-Daffodil, with one white Flower.
14. LILIO-NARCISSUS *luteus vernus. Inſt. R. H.* Yellow Spring Lily-Daffodil.
15. LILIO-NARCISSUS *luteus autumnalis major. Inſt. R. H.* Greater yellow autumnal Lily-Daffodil, commonly called Autumnal Narciſſus.
16. LILIO-NARCISSUS *luteus multiplex autumnalis. Inſt. R. H.* Autumnal yellow Lily-Daffodil, with double Flowers.
17. LILIO-NARCISSUS *Bæticus, luteus minor odoratiſſimus. Inſt. R. H.* Leſſer yellow Lily-Daffodil of *Bætica*, with very ſweet Flowers.

The firſt of theſe Plants is very rare at preſent in *England*; but in *Italy* it is very common, eſpecially about *Florence*, where they bring large Bunches of the Flowers into the Market, and ſell them for Flower-Pots, by the Name of *Narciſſus Belladonna*; and is probably one of the firſt Sorts of this Flower which was brought into *Europe*. This Plant thrives ſo well in *Italy*, as to need no other Culture than the common *Lily*; and altho' it does not flower until *Auguſt*, yet it commonly produces good Seeds in that Countay, from which they propagate them in great Plenty; but with us they require to be planted in Pots fill'd with light freſh Earth, and in Winter they muſt be ſhelter'd to prevent their Leaves being deſtroy'd by the Froſt, which if it does not quite kill their Roots, will ſo weaken them, as that they will not recover Strength to flower in ſeveral Years after, tho' you ſhould attend them with ever ſo much Care. This Plant produces its Flowers in *September*, and the Green Leaves come up ſoon after, and abide all the Winter and Spring until *May*, at which Time they decay, ſoon after which the Roots ſhould be tranſplanted; for if they are let ſtand till *July*, they will have ſent forth new Fibres, when it will greatly injure the Roots if they are diſturb'd.

The ſecond Sort is leſs common in *England* than the firſt; this ſeldom produces more than one Flower upon each Stalk, which is ſmaller than thoſe of the former; but nearly of the ſame Figure; this is alſo cultivated as the former, and flowers about the ſame Seaſon.

The third Sort is very common in *Barbadoes*, St. *Chriſtopher's*, and the other warm Iſlands of the *Weſt-Indies*; but at preſent it is very rare in *England*: This Sort is much tenderer than either of the former, and will require to be kept in a Hot-bed of Tanners-bark, in order to produce Flowers. The Roots of this Plant may be very eaſily brought from the *Weſt-Indies*, if they are taken up immediately after their Leaves decay, and ſent over in a Box dry; for if they are planted in Tubs of Earth, they generally rot in their Paſſage, by receiving too great Quantities of Water.

The fourth Sort is ſuppos'd to come originally from *Japan*, but has been many Years cultivated in the Gardens of *Guernſey* and *Jerſey*; in both which Places they ſeem to thrive as well as if it was their native Country; and from thoſe Iſlands their Roots are ſent annually to the Curious in moſt Parts of *Europe*, and are commonly call'd *Guernſey Lilies*; the Roots of this Plant are generally brought over in *July* and *Auguſt*, but the ſooner they are taken out of the Ground after their Leaves decay, they are the better: For altho' the Roots which are taken up when their Flower-ſtems begin to appear, will flower, yet their Flowers will not be ſo large, nor will their Roots be near ſo good after, as thoſe which were removed before they had ſent out freſh Fibres.

When theſe Roots come over, they ſhould be planted in Pots filled with freſh, light, ſandy Earth, mix'd with a little very rotten Dung, and placed in a warm Situation, obſerving now and then to refreſh the Earth with Water; but by no means let them have too much Wet, which would rot their Roots, eſpecially before they come up: About the Middle of *Auguſt*, ſuch of the Roots as are ſtrong enough to flower, will begin to ſhew the Bud of their Flower-ſtem, (which is commonly of a red Colour); therefore you ſhould remove theſe Pots into a Situation where they may have the full Benefit of the Sun, and may ſhelter'd from ſtrong Winds; but by no means place them too near a Wall, nor under Glaſſes, which would draw them up weak, and render them leſs beautiful: At this Seaſon they ſhould be gently refreſh'd with Water, if the Weather be warm and dry; but if it ſhould prove very very wet, they ſhould be ſcreen'd from it.

When the Flowers begin to open, the Pots ſhould be removed under Shelter, to prevent the Flowers from being injured by too much Wet; but they muſt not be kept too cloſe, nor placed in a Situation too warm, which would occaſion their Colour to be leſs lively, and haſten their Decay. The Flowers of this Plant will continue in Beauty (if rightly manag'd) a full Month, and tho' they have no Scent, yet for the Richneſs of their Colour, they are juſtly eſteem'd in the firſt Rank of the flowery Race.

After the Flowers are decay'd, the Green Leaves will begin to ſhoot forth in Length, and if ſhelter'd from ſevere Cold, will continue growing all the Winter; but they muſt have as much free Air as poſſible in mild Weather, and be cover'd only in great Rains or Froſts, for which Purpoſe a common Hot-bed Frame is the propereſt Shelter for them, under which if they are placed, the Glaſſes may be taken off conſtantly every Day in dry open Weather, which will encourage the Leaves to grow ſtrong and broad; whereas when they are placed in a Green-houſe, or not expoſed to the open Air, they will grow long and ſlender, and have a pale, weak Aſpect, whereby the Roots will become weak, ſo that it ſeldom happens that they produce Flowers under ſuch Management.

Theſe Roots ſhould be tranſplanted every other Year toward the latter End of *June*, or the Beginning of *July*, and planted into freſh Earth (but they ſhould not be oftener removed, for that would retard their Flowering). The Off-ſets ſhould alſo be taken off and planted into ſeparate Pots, which in three Years Time will produce Flowers, ſo that after a Perſon is once ſtock'd with theſe Roots, they may increaſe them, ſo as to have a Supply of blowing Roots, without being at the Trouble or Expence of ſending to *Guernſey* every Year for freſh Roots; and the Roots preſerved here, will flower ſtronger than thoſe which are uſually brought from thence, for the Inhabitants of thoſe Iſlands are not very curious in cultivating theſe Roots: Their uſual Method is to plant them at a great Diſtance in a Bed of common Earth, where they let them remain for many Years, in which Time they produce ſuch a Number of Off-ſets, that many times one ſingle Cluſter has contain'd above a hundred Roots; by which means thoſe which grow on the Inſide, are ſo much compreſſed by the outer Roots, that they are perfectly flatted, and from the Number of Roots they are all rendered weak, and ſo unfit to produce ſuch large Stems of Flowers, as thoſe which have grown ſingle and are of a ſpherical Figure.

But when a Perſon has got a large Number of theſe Roots, it will be troubleſome to preſerve them in Pots; therefore you ſhould prepare a Bed of the following Earth, in ſome well-ſhelter'd Part of the Garden, *viz.* Take a third Part of freſh Virgin Earth upon a Paſture Ground, which is light; then put near an equal Part of Sea Sand, to which you ſhould add rotten Dung and ſifted Lime-rubbiſh of each an equal Quantity: With this Earth (when well mix'd and incorporated) you ſhould make your Bed about a Foot thick, raiſing it about four or five Inches above the Surface of the Ground, if the Situation be dry; but if the Ground be wet, you ſhould raiſe it eight or nine Inches higher: In this Bed about the Beginning of *July* (as was before directed) you ſhould plant the Roots about ſix Inches aſunder each Way; and in the Winter, when the Froſt begins, you ſhould either cover the Bed with a Frame, or arch it over and cover it with Mats and Straw, to prevent their Leaves from being pinch'd with Cold; but in the Summer the Covering may be intirely removed, and the Bed kept conſtantly clear from Weeds, obſerving to ſtir the Surface of the Earth now and then; and every Year when the Leaves are decay'd, you ſhould ſift a little freſh Earth over the Bed, to encourage the Roots. In this Bed the Roots may remain until they are ſtrong enough to produce Flowers, when they may be taken up and planted into Pots, as was before directed, or ſuffered to remain in the ſame Bed to flower.

The Roots of theſe Plants do not flower again the ſucceeding Year (as in many other Sorts of Bulbs); but if their Bulbs contain two Buds in their Center, as is often the Caſe, they very often flower twice within the Compaſs of three Years, after which the ſame individual Root does not flower again in ſeveral Years, but only the Off-ſets from it.

The fifth Sort is at preſent very rare in *England*, and only to be found in ſome very curious Garden; this is much tenderer than the laſt, and requires to be managed as was directed for the third Sort, with which Management it will thrive exceeding well; but you muſt obſerve never to water theſe Roots after their Leaves are decay'd (which is ſoon after *Chriſtmas*) until they ſhoot out again in *April*, for Moiſture at that Seaſon, while they are in an unactive State, is very ſubject to rot them: This Plant produces its Flowers commonly in *March*, and the green Leaves appear ſoon after.

The ſixth Sort is alſo tender, and requires to be kept in a warm Stove in Winter; but in the Summer-ſeaſon it will bear to be expos'd to the open Air, in warm, dry Weather; this Sort ſhould be treated in the ſame Manner as the laſt, with this Difference only, that it may be preſerved without being plung'd in Tanners Bark: This Plant produces its Flowers nearly about the ſame Time with the laſt; but the Flowers of this are much more beautiful.

The ſeventh Sort was brought from *Portugal*, where they are in great Plenty, and is by the Inhabitants call'd *Bella-donna*; but this is a very different Plant from that which the *Italians* call by that Name, the Flowers of this Kind being larger and paler colour'd than thoſe of the *Italian* Sort, and ſeldom have more than three or four upon one Stem, whereas the other has often ten or twelve. This Plant is propagated in the ſame manner as was directed for the *Guernſey* Lily (to which I refer the Reader, to avoid Repetition); the Flowers of this Plant are always produced about the ſame Time as the *Guernſey* Lily, but are not near ſo beautiful.

Theſe Plants do not increaſe very faſt in our Climate, for which Reaſon a curious Perſon ſhould be furniſhed with ſeveral Roots of each Kind from Abroad, in order to have ſome Flowers every Year, for they ſeldom blow two Years together, (as was before obſerved) nor does the ſame Root flower more than twice, which is commonly within three Years; ſo that where there are not ſix or eight Roots of each Sort, it can't be expected to have Flowers very often, notwithſtanding no Art or Care be wanting in their Culture; for in their native Countries they are not conſtant Flowerers.

The eighth Sort is a very hardy Plant, and increaſes very faſt from Off-ſets: The Seaſon for tranſplanting theſe Roots, is any Time from *May* to *July*, after which it will be too late to remove them, for they will begin to puſh out new Fibres by the Middle of that Month, if the Seaſon be moiſt, and many times they flower in *Auguſt*; ſo that if they are then tranſplanted it will ſpoil their flowering: This Plant will grow in almoſt any Soil or Situation, but it will thrive beſt in a freſh, light, dry Soil, or in an open Situation, *i. e.* not under the Dripping of Trees, nor too near to Walls. It is commonly called by the Gardeners the *Yellow Autumnal Narciſſus*, &c. and is uſually ſold by them with *Colchicums*, for Autumnal Ornaments to Gardens, for which Purpoſe this is a very pretty Plant.

The ninth, tenth, eleventh and twelfth Sorts are very tender Plants, ſo require to be placed in a warm Stove, otherwiſe they will not abide the Winter in this Climate; theſe are propagated by Off-ſets from their Roots, becauſe they rarely produce good Seeds in *Europe*. The beſt Time to tranſplant the Roots, and to take the Off-ſets from them, is in the Spring, before they put out new Leaves. Theſe Roots ſhould be planted in Pots filled with freſh light ſandy Earth, and then plunged into a moderate Hot-bed of Tanners Bark, obſerving to refreſh them gently in warm Weather; but they ſhould not have too much Moiſture, for that will rot the Roots, eſpecially when they are newly tranſplanted, or at a Seaſon when they are not in Action. The beſt Method to increaſe the Roots, and to have them flower ſtrong and conſtantly, is to keep the Pots conſtantly plunged in the Bark-bed in the Stove; for when they are placed on Benches in the Stove, the extreme Fibres of the Roots, which are at the Bottom and Sides of the Pots, are never well nouriſhed; ſo they do not produce their Flowers ſo conſtantly or ſtrong, as thoſe which are plunged. In hot Weather theſe Plants ſhould have a large Share of freſh Air, by opening of the Glaſſes of the Stove; but in cold Weather they muſt be kept warm, otherwiſe the Roots will decay. Theſe Plants do not flower regularly at any Seaſon of the Year; for ſometimes they will flower in the Spring, and at other Times late in the Summer, or in Autumn; ſo that the Time of tranſplanting of their Roots ſhould be varied according to the Time of their Flowering; for thoſe which flower in the Spring, commonly drop their Leaves about *Auguſt*, when it is a proper Time to tranſplant them; whereas thoſe which flower in Autumn, will not drop their Leaves until the Middle of Winter. Therefore theſe muſt not be removed until the Middle or latter End of *March*: ſo that, whenever their Leaves are decayed, and the Roots appear to be inactive, they may ſafely be tranſplanted, provided it be not in the Middle of Winter. Theſe Plants produce very beautiful Flowers, ſo are worthy of a Place in every good Stove, there being very few Exotick Plants, which make ſo fine an Appearance as theſe, when they are in Flower.

The thirteenth Sort is much more hardy than any of the former, but will not abide the Cold of our Winters in *England*, if planted in the open Air: ſo that this Sort ſhould be treated in the ſame Manner as hath been directed for the *Guernſey* and *Belladonna Lilies*. This Sort is alſo propagated by Off-ſets from the Roots, but it increaſes ſlowly in this Country.

The fourteenth, fifteenth, ſixteenth and ſeventeenth Sorts, will thrive in the open Air in this Country; but the fifteenth Sort is the only common Kind in *England*: The others are preſerved by ſome few People, who are curious in collecting uncommon Flowers. Theſe are all propagated by Off-ſets, for they ſeldom produce Seed in *England*. The beſt Time to tranſplant the Autumnal Kinds, is in *July*, when their Leaves are intirely decayed; but their Roots ſhould not be kept long out of the Ground; for they always begin to ſhoot out new Fibres in *Auguſt*, and in *September* they produce their Flowers; ſo that coming ſo late in the Seaſon, they are the more eſteemed, becauſe there are not a great Variety of more beautiful Flowers then in Perfection. Theſe Plants are of humble Growth, ſo are proper to intermix with *Colchicums*, *Autumnal Crocus's*, and *Cyclamens*, in ſome of the Borders of the Flower-Garden, where they will make a pretty Appearance for about a Month in the Autumn Seaſon.

They will thrive in almoſt any Soil or Situation, provided it be not too wet; for too great Moiſture in Winter, lying long near their Roots, will rot them, becauſe at that Seaſon they are in the greateſt Vigour; for after the Flowers are paſt, their green Leaves continue growing moſt Part of the Winter; and as the Warmth comes on in the Spring, ſo their Leaves decay.

The Sort which flowers in the Spring, ſhould not be tranſplanted ſo ſoon as the others; for the Leaves of this do not decay till toward the Middle of *July*, ſo that theſe Roots ſhould be tranſplanted in *Auguſt*. This requires an Eaſt or South-Eaſt Border; for if they are planted too much in the Shade, they will not flower ſo well, as when they have a more open or warm Situation. The Roots of all theſe Sorts ſhould remain untranſplanted two or three Years; for if they are removed every Year, they will not flower near ſo ſtrong, nor produce ſo great Increaſe, as when they remain undiſturbed: But then the Surface of the Borders in which they are planted, ſhould be cleaned from Weeds, and gently ſtirred, when the green Leaves are decayed, and a little freſh Earth ſpread over the Borders, which will greatly encourage the Roots, and cauſe them to flower ſtrong.

LILIUM, [takes its Name of λεῖος, *ſmooth, poliſhed*, becauſe its Leaves are, as it were, poliſhed; or of λείρον, which ſignifies the ſame Thing.] The Lily.

The *Characters* are;

It hath a bulbous Root, conſiſting of ſeveral fleſhy Scales adhering to an Axis; the Stalk is greatly furniſhed with Leaves; the Flower is compos'd of ſix Leaves, and is ſhap'd ſomewhat like a Bell; in ſome Species the Petals are greatly reflex'd, but in others but little; from the Centre of the Flower riſes the Pointal, which becomes an oblong Fruit, that is commonly triangular, divided into three Cells, and full of compreſs'd Seeds, which are border'd, lying upon each other in a double Row.

The *Species* are;

1. **Lilium** *album, flore erecto & vulgare. C. B. P.* Common white Lily.
2. **Lilium** *album inodorum, flore pleno. H. R. Par.* The double white Lily, without Smell.
3. **Lilium** *album, floribus dependentibus, ſive peregrinum. C. B. P.* The foreign white Lily, with hanging Flowers.
4. **Lilium** *album, lato caule, multiflorum. H. R. Par.* The white Lily, with broad flat Stalks, bearing many Flowers.
5. **Lilium** *album vulgare, foliis ad limbos flaveſcentibus. H. L.* Common white Lily, with ſtrip'd Leaves.
6. **Lilium** *album, flore lineis purpureis variegato. D. Marchant.* The white Lily, ſtrip'd with Purple.
7. **Lilium** *purpureo-croceum majus. C. B. P.* The common Orange Lily, *vulgo*.
8. **Lilium** *pumilum cruentum. Park. Par.* The dwarf red Lily.
9. **Lilium** *rubrum, multiplici flore. Park. Par.* The double red Lily.
10. **Lilium** *bulbiferum anguſtifolium. C. B. P.* Narrow-leav'd bulbiferous Lily, *commonly called* the Fiery Lily.
11. **Lilium** *floribus reflexis, montanum. C. B. P.* The Imperial Martagon.
12. **Lilium** *floribus reflexis albis punctatis. C. B. P.* The white ſpotted Martagon.
13. **Lilium** *floribus reflexis albis non punctatis. C. B. P.* The white Martagon, without Spots.
14. **Lilium** *floribus reflexis, montanum, flore pleno. H. R. Par.* The double flowering Martagon.
15. **Lilium** *flavum anguſtifolium, flore flavo, maculis nigris diſtincto. C. B. P.* The ſpotted *Canada* Martagon, *vulgo*.
16. **Lilium** *miniatum odorum anguſtifolium. C. B. P.* The ſcarlet Martagon of Pompony, *vulgo*.
17. **Lilium** *Byzantinum miniatum polyanthos. C. B. P.* The ſcarlet Martagon, with many Flowers.
18. **Lilium** *Byzantinum miniatum. C. B. P.* The common ſcarlet Martagon.
19. **Lilium** *Byzantinum, flore flavo. C. B. P.* The yellow Martagon of *Conſtantinople*.
20. **Lilium** *purpureo-croceum majus, foliis ex luteo eleganter variegatis.* The Orange Lily, with beautiful variegated Leaves.
21. **Lilium** *purpureum minus, flore pleno. C. B. P.* Leſſer red Lily, with a double Flower.
22. **Lilium** *cruentum polyanthos. Hort. Eyſt.* Fiery Lily with many Flowers.
23. **Lilium** *bulbiferum latifolium majus. C. B. P.* Greater broad-leaved Bulb-bearing Lily.
24. **Lilium** *bulbiferum minus. C. B. P.* Smaller Bulb-bearing Lily.
25. **Lilium** *floribus reflexis, montanum, flore albicante. C. B. P.* The Martagon, with a whitiſh Flower.
26. **Lilium** *floribus reflexis, montanum, flore maculis rubris inordinatis aſperſo.* The Martagon with Flowers ſpotted inordinately with red.
27. **Lilium** *floribus reflexis, montanum, flore carneo. H. R. Par.* The pale-red or fleſh-colour'd Martagon.
28. **Lilium** *floribus reflexis, montanum, longiore ſpica. C. B. P.* The Martagon, with a long Spike of Flowers.
29. **Lilium** *floribus reflexis variis, ſive tertium. C. B. P.* The ſtriped Martagon.

30. LILIUM *floribus reflexis, polyanthos album punctatum. C. B. P.* The white ſpotted Martagon, with many Flowers.

31. LILIUM *Byzantinum ſerotinum. Hort. Eyſt.* The late-flowering Martagon of *Conſtantinople.*

32. LILIUM *floribus reflexis, Americanum maximum, flore rubente, ſerotinum.* The greateſt *American* late-flowering Martagon, with red Flowers.

The common white *Lily* is ſo well known, that it will be needleſs to ſay any thing of it in this Place: The ſecond Sort with double Flowers, is by ſome Perſons preſerved by way of Curioſity; but there is no Beauty in it, for the Flowers ſeldom open, and have no Scent, ſo that it ſcarcely deſerves a Place in a good Garden: The third Sort with pendulous Flowers, is ſometimes called the *White Conſtantinople Lily*, from whence it was formerly brought, but is now become almoſt as plenty as the common white *Lily* in many Gardens; this differs from the common Sort, in having ſlenderer Stems which are of a purpliſh Colour, and the Petals of the Flowers are narrower, and the Flowers are ſomewhat leſs, and always hang down.

Theſe Plants are all very hardy, and require no other Culture, than to be taken up every other Year, (in *July* after the Flowers are decay'd) and pull off the Suckers from them, which if ſuffer'd to remain on, would ſtarve the old Roots, and cauſe them to flower very weak; but they ſhould not be kept long out of the Ground, nor removed after their Leaves appear above Ground, both which will weaken the Roots ſo much, that they will not flower the following Summer. They increaſe greatly from Off-ſets, whereby they are become ſo common as to be little eſteem'd.

The fourth Sort ſeems to be a Variety from the firſt: The Stalks of this are very broad, and have generally double the Number of Flowers upon each Stalk as the common, which are equally as large and fair: But whether it will conſtantly preſerve this Difference, I can't poſitively affirm, tho' for three Years paſt I have obſerv'd them to remain the ſame in two or three different Gardens. This is equally hardy as the common Sort, and is increas'd the ſame way.

The *Strip'd-leav'd Lily* is a great Ornament to Flower-Borders during the Winter Seaſon; their beautiful variegated Leaves always appearing in *September*, and are continued all the Winter, making a fine Appearance in the Depth of Winter, when few other Plants are in Beauty: For which Reaſon this Plant hath been greatly propagated of late Years. This is increas'd as the common Sort, but the Roots ſhould always be planted in a freſh, light Soil, in which they will thrive exceedingly: But if you make the Ground rich with Dung, it will certainly deſtroy them, as will alſo a very wet or ſtrong Soil. The Seaſon for tranſplanting theſe Roots, is the ſame with the common Sort.

The *White Lily ſtrip'd with Purple* has not been many Years brought into *England.* Of this Kind there are two Sorts; one of which is much more beautifully variegated than the other; both of which were obtain'd originally from Seed. Theſe are both propagated in the ſame manner as the common Sort, but ſhould be planted in a dry, ſandy Soil, mix'd with a little Lime-rubbiſh, and expos'd to the Morning Sun: In which Soil and Situation they will flower exceeding well, and their Stripes will be much deeper colour'd than when they are planted in a richer Soil, and their Roots will make a better Increaſe.

The *Orange Lily* is ſo well known, that it is needleſs to ſay any thing of it here. That Sort which is commonly call'd the *Double Orange Lily*, differs from the common only in having two or three more Petals in each Flower, which is not conſtant, but very apt to degenerate to the common Sort, ſo that it is ſcarcely worth preſerving, unleſs for Variety-ſake. Theſe are propagated by Off-ſets from the old Roots, which are commonly ſent forth in great Plenty, and therefore the Roots ſhould never remain more than two Years unremov'd, becauſe the Number of Off-ſets would greatly weaken them, and renner their Flowers ſmall, and fewer in Number. Theſe may be tranſplanted any Time from the Beginning of *Auguſt* to the End of *October*, for they do not ſhoot again ſoon after their Stems are decay'd, as do the *White Lilies*; but, on the contrary, remain till *February* before they appear above Ground. They will grow in almoſt any Soil or Situation, but beſt in a dry, light Soil, and an open Expoſore.

The *bulbous fiery Lily*, produces its Flowers three Weeks before the common Sort, and is much more beautiful. This Sort was formerly more common than at preſent, as were ſeveral other Sorts of *Lilies*: It is equally as hardy as the common Sort, and doth increaſe much faſter; for upon the Flower-ſtems, between the Wings of the Leaves and the Stalk, are produc'd ſmall Bulbs; which when taken off, and planted, do become ſtrong Roots in two Years, ſo that it may be render'd very plentiful in a ſhort Time, were People to plant all their Increaſe. This requires the ſame Soil and Culture as the *Orange Lily*; as doth alſo the *Dwarf Red Lily*, which is nearly allied to this. They will grow under Trees, which renders them proper to plant in Avenues; where, when intermix'd amongſt other hardy Flowers of the ſame Growth, they will make a beautiful Appearance, and are very uſeful to furniſh Baſons and Flower-pots for Halls, Chimnies, *&c.* during the Seaſon of Flowering.

The *Imperial Martagon* is very common in moſt old Gardens in *England.* This is equally as hardy as the common *Lily*, and requires no other Culture: The Flowers are produc'd at the latter End of *May*, and do make a very handſome Figure in the Middle of large Borders in a Flower-Garden, but the Scent is too ſtrong to be borne by many People; for which Reaſon they ſhould never be plac'd in Baſons of Flowers in a Room, nor be planted too near the Houſe.

The *White* and the *White-ſpotted Martagons*, do flower about the Middle of *June*, or ſometimes later: Theſe produce a greater Number of Flowers upon a Stalk than the former, but the Flowers are ſeldom ſo large, and commonly grow more ſparſedly on the Stalks. Theſe have a ſtrong Scent, but not quite ſo diſagreeable as the former. The Roots of theſe Plants ſhould be tranſplanted ſoon after their Stems decay; for if they are taken up late in the Autumn, they ſeldom produce their Flowers ſtrong the ſucceeding Summer. Theſe require a freſh, light Soil, and an open Situation; if they are ſuffer'd to remain three Years undiſturb'd, they will make a good Increaſe, and produce ſtrong Flowers.

The *Double Martagon* requires the ſame Soil and Culture with the two laſt: This produces a large Quantity of fair double Flowers upon each Stem, which renders it very valuable: The Flowers do commonly appear the Beginning of *July*, or ſomewhat later.

The *Spotted Canada Martagon*, is much tenderer than any of the former. The Roots of this Sort ſhould be planted in a warm Border, where they may be protected from ſevere hard Froſts, by covering the Surface of the Ground with Peas-haulm, *&c.* It muſt alſo have a freſh, light, dry Soil, and ſhould be planted at leaſt ſix Inches deep: for when the Roots lie near the Surface, they are often injur'd by Froſts in Winter.

This Plant was originally brought from *Canada* by the *French*, from whom we were firſt ſupply'd with it; but ſince we have receiv'd many Roots of it from *Virginia*, where it alſo grows in great Plenty in the Woods. The Flowers of this Kind are almoſt as large as thoſe of the *Orange Lily*, but are more reflex'd, and of a fine yellow Colour, ſpotted with Black: This flowers in *July*.

The *Red Martagon of Pompony*, is one of the moſt beautiful Sorts of all the *Martagons* which I have yet ſeen, and produces the greateſt Number of Flowers upon a Stem of any of the Kinds, (eſpecially when the Roots are ſtrong, and have remain'd undiſturb'd two or three Years) when they will many Times have upward of fourſcore Flowers upon a Stem: The Flowers are not ſo large, nor ſo deep-colour'd as the *Scarlet Martagon*, but rather of a yellowiſh-red Colour, and ſpotted with black: This flowers commonly the latter End of *May*, or the Beginning of *June.*

The Roots of this Plant are tender, and will not endure to be often tranſplanted, for that will deſtroy them: The beſt Seaſon to remove them, is ſoon after their Stems decay; when they ſhould never be kept long out of the Ground, but planted again as ſoon as poſſible. Theſe require a freſh, light, ſandy Soil, but will by no means thrive in a rich, moiſt Soil, which will cauſe 'em to rot; and they muſt have an open Expoſure, for if they are over-hung by Trees, they will not thrive. This ſhould alſo be planted as deep in the Ground as the *Canada Martagon*, for the ſame Reaſon as was before obſerv'd on that.

The *Scarlet Martagon*, with many Flowers, is in ſome curious Gardens very common, it being a very hardy Plant in reſpect to Cold, which it endures very well, and is eaſily propagated from Off-ſets, as the other Sorts; but muſt have a warm, light, dry Soil, which ſhould not be dung'd, nor overſhadow'd with Trees, either of which will cauſe the Roots to decay. This is a very beautiful Flower, and very proper to adorn the Borders of large Flower-Gardens. It produces its Flowers in *July*, after moſt of the other Sorts, which are of a deep-ſcarlet Colour, growing many upon a Stalk.

The other *Scarlet Martagon* is alſo common in ſome Gardens, but is not ſo much valu'd as the laſt; the Flowers are not ſo deep colour'd, and it ſeldom has more than ſix or eight upon a Stem. This flowers much about the ſame Time as the former, and requires the ſame Soil and Culture.

The *Yellow Martagon of Conſtantinople* is very rare in *England* at preſent, and only to be found in the Gardens of ſome curious Collectors of theſe Beauties: This requires much the ſame Culture as the two laſt mention'd, but muſt not be often remov'd, which will not only weaken the Root, but alſo prevent its flowering. When the Roots of this Kind have been ſtanding three Years upon a good freſh dry Soil, I have obſerv'd above forty Flowers upon a Stem, which have made a very beautiful Appearance. This flowers about the ſame Seaſon as the former.

The *ſtrip'd Orange Lily* is a very beautiful Plant, and was a few Years ſince ſold at a very great Price; but of late it hath been more common, as being eaſily propagated by Off-ſets; ſo that when it is once obtain'd, it may be ſoon increas'd to what Number you pleaſe, provided you plant it in a dry Soil, and a warm Situation. This beautiful Plant was, ſome Years ſince, accidentally produc'd from Seeds of the common *Orange Lily*, which were ſhed upon a Border, where they were ſuffer'd to grow, until this Plant appear'd with its fine variegated Leaves; which the Owner, upon Diſcovery, mark'd, and, at a proper Seaſon, remov'd into a better Situation, where it throve and increas'd ſo well, as in a few Years to be ſpread into divers Parts of the Kingdom. This Plant muſt never be planted in a rich Soil, which will greatly diminiſh its Beauty, and many times cauſe the Roots to decay.

All the Sorts of *Lilies* and *Martagons* may be propagated by ſowing their Seeds; by which Method ſome new Varieties may be obtain'd, provided the Seeds are ſav'd from the beſt Sorts, eſpecially the *Martagons*, which are more inclinable to vary than the other *Lilies*. The manner of ſowing them is as follows:

You muſt be provided with ſome ſquare Boxes about ſix Inches deep, which ſhould have Holes bored in their Bottoms, to let the Wet paſs off; theſe Boxes ſhould be fill'd with freſh light ſandy Earth, and in the Beginning of *Auguſt*, ſoon after the Seeds are ripe, you muſt ſow them thereon pretty thick, covering 'em over with light ſifted Earth about half an Inch; then place the Boxes where they may have the Morning Sun only, obſerving, if the Seaſon ſhould prove dry, to refreſh 'em often with Water as alſo to pull out all Weeds which may be produc'd: In this Situation the Boxes ſhould remain until *October*, when you muſt remove 'em where they may have as much Sun as poſſible, as alſo to be ſcreen'd from the cold North and Eaſt Winds during the Winter Seaſon: But in the Spring of the Year, about the Beginning of *April*, you muſt remove the Boxes into their former Poſition; for now the young Plants will appear above Ground, which are impatient of too much Heat: beſides, the Earth in the Boxes will dry too faſt at this Seaſon, if expos'd to the full Sun at Noon. You muſt alſo obſerve at this Seaſon to keep them intirely clear from Weeds, as alſo to refreſh them gently with Water if the Seaſon ſhould prove dry; in this Place you ſhould let the Boxes remain until the Beginning of *Auguſt*, at which Time you ſhould prepare ſome Beds of the above-mention'd freſh light Earth, which muſt be levell'd very even: Then take the Earth out of the Boxes, together with the ſmall Bulbs, and ſtrew it equally over the Beds, covering it over about half an Inch thick with fine-ſifted Earth: And if the Seaſon ſhould prove very hot and dry, you would do well to ſhade the Beds in the Middle of the Day from the great Heat of the Sun, and refreſh them now and then with Water.

You muſt alſo obſerve to keep them intirely clear from Weeds: And if the following Winter ſhould prove very cold, you muſt cover the Beds with Peas-haulm, or ſome other light Covering, to keep out the Froſt, which would prejudice the Roots, if ſuffer'd to enter deep into the Ground, (eſpecially while they are ſo young): but you muſt never let the Covering remain on in mild Weather, which would alſo be very injurious to them.

In *February*, when the hard Froſts are over, you ſhould gently clear off the Earth upon the Surface of the Beds, (which, during the Winter Seaſon, will often have contracted a Moſſineſs) and ſift a little freſh Earth equally over the Beds, which will greatly encourage the Roots: But in doing this, you muſt be very careful not to ſtir the Ground ſo deep as to injure the Roots: Nor ſhould you defer doing it too late, leſt the Shoots ſhould be coming up, which, by this Operation, might be broken, and greatly hurt. And as the Seaſon advances, ſo you muſt be careful to clear them from Weeds, and in dry Weather to water them; and in very hot Days, if you ſhade 'em from the Sun, it will be of great Service to them: but this need not be done 'till the Latter end of *April*, or the Beginning of *May*, when the Seaſon is ſometimes very hot and dry.

When their Leaves are quite decay'd, you ſhould ſtir the Surface of the Beds again, (but do not go too deep) which will prevent the Weeds from growing very faſt, and be of Service to the Roots; and in *September* you muſt ſift ſome more freſh Earth over the Beds about half an Inch thick: and in Winter and Spring you muſt manage them as was directed for the preceding Year.

In *September* following theſe Roots will require to be tranſplanted to a greater Diſtance, when you muſt prepare ſome Beds of the ſame freſh light Earth, as was before directed, making them level; then take up the Roots, and tranſplant them into the Beds, placing them about eight Inches aſunder, obſerving to put the Roots with their Buds uppermoſt, and about four Inches below the Surface.

This Work ſhould be done when the Weather is moiſt; for if the Roots are tranſplanted in a very dry Seaſon, and there doth not happen Rain ſoon after, they will take a Mouldineſs, which many times rots them.

You muſt alſo obſerve (as was before directed) to keep the Beds intirely clear from Weeds: And in Winter, if the Froſt ſhould be very ſevere, you muſt cover them with Peas-haulm, to prevent the Roots from being injured thereby: And in the Spring you ſhould take off the Earth from the Surface of the Beds, as before, laying ſome freſh thereon, and ſo continue the Summer and Winter's Work, as before.

The ſecond Year after being planted in theſe Beds the ſtrongeſt Roots will begin to flower; at which Time, if you obſerve any peculiar Varieties, you ſhould put down a Stick by each of thoſe Roots, to mark them; which may be taken up when their Leaves are decay'd, and remov'd into the Borders of the *FlowerGarden*, or tranſplanted into other Beds at greater Diſtance, to encourage them to flower ſtrong. But you can't be a Judge which of thoſe will be good by their firſt Flowers, therefore you ſhould never reject any of them until they have flower'd two or three Years; for, many Times, ſome of theſe Flowers will make but a mean Appearance the firſt Year, and afterwards become fair handſome Flowers, when they have obtain'd Strength; ſo that you ſhould ſuffer all ſuch, as you are not aſſured of their Worth, to remain undiſturb'd two or three Years, that you may be aſcertain'd which of them are worthy preſerving; which ſhould be remov'd into the *Flower-Garden* at a proper Seaſon: but the ordinary ones may be rejected, or planted in ſhady Outer Walks, where, tho' they are mean Flowers, yet they will appear well enough in ſuch Places.

The twenty-firſt, twenty-ſecond and twenty third Sorts of *Lily* are not very common in the *Engliſh* Gardens at preſent, but ſome Years ſince they were in greater Plenty; for as the Taſte for Gardening has greatly changed in *England* of late Years, ſo few People have been curious enough to preſerve many of the good old Flowers; but have been fond of introducing new Kinds, which are not ſo beautiful as many of the old ones, which they turned out to make room for the new ones. Theſe Sorts are ſometimes found in ſome old Country Gardens, which have not been torn to pieces, from whence ſome few Perſons have retrieved them. In *Holland* they are more curious in preſerving all the Kinds of bulbous and tuberoſe-rooted Flowers, than in moſt other Parts of *Europe*; ſo that they have a very great Variety of theſe old Flowers in their Gardens.

The twenty-fourth Sort is pretty common in ſeveral Gardens near *London*: this may be increaſed very faſt, by planting of the ſmall Bulbs, which come out upon the Stalks between the Leaves, which will ſoon become ſtrong Roots for Flowering; but theſe Bulbs ſhould not be taken off, until the Stalks are beginning to decay.

The twenty-fifth, twenty-ſixth, twenty-ſeventh, twenty-eighth, twenty-ninth, thirtieth and thirty-firſt Sorts of Martagon, deſerve a Place in every curious Flower-Garden, for the Variety of their Flowers. Theſe are all preſerved by the curious Floriſts in *Holland*, but are not very common in the *Engliſh* Gardens.

The thirty-ſecond Sort was ſent from *Penſylvania* (where it grows in the Woods) to Mr. *Peter Collinſon*, who has a great Variety of theſe curious Flowers in his Garden at *Peckham*.

LILIUM CONVALLIUM; Lily of the Valley, *or* May Lily.

The *Characters* are;

The Flower conſiſts of one Leaf, is ſhap'd like a Bell, and divided at the Top into ſix Segments: The Ovary becomes a ſoft globular Fruit, containing ſeveral round Seeds.

The *Species* are;

1. Lilium Convallium *album*. *C. B. P.* Common Lily of the Valley, with white Flowers.
2. Lilium Convallium *flore rubente*. *C. B. P.* Lily of the Valley, with reddiſh Flowers.

3. LILIUM CONVALLIUM *latifolium, flore pleno variegato. Tourn.* Broad-leav'd Lily of the Valley, with a double variegated Flower.

There are ſome other Varieties of this Plant, which are preſerv'd in ſome curious Botanick Gardens abroad, but theſe are all the Sorts I have obſerv'd in the *Engliſh* Gardens. The firſt Sort is very common in ſhady Woods in divers Parts of *England*. The ſecond is a Variety of the firſt, differing only in the Colour of the Flower; which Difference it conſtantly maintains when cultivated in Gardens.

They delight in a moiſt ſhady Situation, where they will thrive exceedingly, and produce a large Quantity of Flowers. The beſt Time for tranſplanting theſe Roots is early in the Spring, juſt before they begin to ſhoot.

The Double Sort was brought from *Holland* ſome Years ſince; but whether it was obtain'd from Seeds originally, or found by Accident, I can't ſay. This may be propagated by parting the Roots in the Spring, in the ſame manner as the former.

LILIUM PERSICUM. *Vide* Fritillaria.

LILIUM SUPERBUM. *Vide* Methonica.

LIME-TREE. *Vide* TILIA.

LIMON, [ſo call'd of Λειμὼν a *Meadow*, becauſe the Leaves of this Tree are of a green Colour, as is likewiſe the Fruit before it comes to Maturity] The Lemon-Tree.

The *Characters* are;

It hath large ſtiff Leaves like the Citron, *without any Appendage at the Bottom; the Flower conſiſts of many Leaves, which expand in Form of a* Roſe; *the Fruit is almoſt of an oval Figure, and divided into ſeveral Cells, in which are lodg'd hard Seeds ſurrounded by a thick fleſhy Subſtance, which, for the moſt part, is full of an acid Juice.*

The *Species* are;

1. LIMON *vulgaris. Ferr. Heſp.* The Common Lemon.
2. LIMON *dulcis. Ferr. Heſp.* The Sweet Lemon.
3. LIMON *acris. Ferr. Heſp.* The leſſer ſour Lemon.
4. LIMON *dulci medulla, vulgaris. Ferr. Heſp.* The Common ſweet Lemon.
5. LIMON *pyri effigie. Ferr. Heſp.* The Pear-ſhap'd Lemon.
6. LIMON *Imperialis. Ferr. Heſp.* The Imperial Lemon.
7. LIMON *Adami Pomum commune. Ferr. Heſp.* Lemon, *commonly call'd* Adam's Apple.
8. LIMON *ſpineolas. Ferr. Heſp.* The wild Lemon, *vulgo.*
9. LIMON *ſtriatus vulgatior. Ferr. Heſp.* The furrow'd Lemon.
10. LIMON *citratus altero fœtus. Tourn.* The Childing Lemon, *vulgo.*
11. LIMON, *qui lima acris dicitur. Ferr. Heſp.* The ſour Lime.
12. LIMON, *qui lima dulcis dicitur. Ferr. Heſp.* The ſweet Lime.
13. LIMON *vulgaris, foliis ex luteo eleganter ſtriatis.* The Gold-ſtrip'd Lemon.
14. LIMON *vulgaris, foliis ex albo variegatis.* The ſilver-ſtrip'd Lemon.

There are ſome other Varieties of theſe Trees in the curious Gardens abroad, from whence we may expect to be ſupply'd with them all, ſince there are every Year large Quantities of theſe Trees brought over from *Italy*, where the Gardeners are as fond of any new Kinds to ſupply their Cuſtomers with, as our Country-men are of new Sorts of Fruit. But ſince theſe Varieties are annually increas'd from Seeds, like other Fruits, ſo it would be needleſs to attempt an Account of them all, becauſe in a very ſhort Time many new Varieties may be produc'd.

The Fruit of the four firſt Sorts are generally brought over from *Liſbon* every Year in great Plenty, and are ſold promiſcuouſly in *London* in the Winter and Spring, as are great Numbers of the Trees, which are annually brought over from *Italy.*

The fifth, ſixth, and ſeventh Sorts are preſerv'd, for their Variety, in many curious Gardens; but the fifth is very uncommon in *England* at preſent.

The ſixth is a very large beautiful Sort, and of an agreeable Flavour: This has produc'd very good Fruit in divers Gardens in *England*, which has been as well-taſted as any of thoſe which are brought over from *Italy.*

The ſeventh Sort is ſomewhat tenderer than the other, and requires a warmer Situation in Winter; otherwiſe the Fruit is very ſubject to drop off at that Seaſon.

The eighth Sort is commonly call'd the *Wild Lemon*, (though improperly) becauſe it has many Thorns upon the Branches; but this will produce very fair Fruit in this Kingdom. The Flowers of this Kind are generally of a reddiſh or purpliſh Colour on the Outſide before they open, but afterwards fade, and change to a paler. The Leaves of this are alſo of a very deep Green, and gently ſerrated upon their Edges.

The *furrow'd Lemon* is in divers Gardens in *England*, where the Fruit very often ripens well, and is chiefly kept for Variety, as differing from the common Sort, in having deep Furrows in the Fruit; but it is not ſo good for Uſe, nor does the Fruit produce ſo much Juice as the Common Sort.

The *Childing Lemon* is alſo preſerv'd as a Curioſity, the old Fruit commonly producing a young one from its Centre.

The two Sorts of *Limes* are likewiſe in many Gardens in this Kingdom; but theſe require the ſame Degree of Warmth as the *Shaddock Orange*, in order to produce Fruit; for if they are placed among *Orange-Trees*, the Fruit will fall away in Winter, and come to nothing.

The two variegated Sorts are preſerv'd for their ſtrip'd Leaves (which are greatly eſteem'd by ſome Perſons who are curious in collecting variegated Plants): But theſe are tenderer than the plain Sorts, and, if not duly attended in Winter, will be very apt to caſt their Leaves, and appear very unſightly.

There is alſo another Sort, which produces double Flowers; but this ſeems not to be very conſtant; for I have obſerv'd upon the ſame Tree, ſome Flowers ſingle, and others double, at the ſame Time.

All theſe Sorts are propagated by budding or inarching them either on Stocks of *Lemons* or *Citrons* produc'd from Seeds; but they will not ſo readily unite on *Orange* Stocks; for which Reaſon the *Citrons* are preferable to either *Oranges* or *Lemons* for Stocks, as they do readily join with either Sort; and being of larger Growth, do cauſe the Buds of the other Sorts to ſhoot much ſtronger than if they were on Stocks of their own Kind. The Method for raiſing theſe Stocks, and the Manner of Budding them, being already exhibited under the Article of *Aurantium*, it wou'd be ſuperfluous to repeat it here.

The Culture of the *Lemon* being the ſame with that of the *Orange-Tree*, it wou'd be alſo needleſs to repeat it here; therefore I ſhall only obſerve, that the *common Lemons* are ſomewhat hardier than the *Oranges*, and will bring their Fruit to Maturity with us better than They will do, and require to have a greater Share of freſh Air in Winter; for which Reaſon they ſhould always be placed nearer to the Doors or Windows of the Green-houſe: And as they generally produce ſtronger Shoots, ſo they require more Water to be given them than the *Orange*; but as to the tender Sorts, they muſt be treated with a little more Care, otherwiſe their Fruit will fall off in Winter, and come to nothing. Theſe Things being fully exhibited before, I refer the Reader (as I hinted) to the Article *Aurantium*, where their Culture is fully ſet forth.

LIMONIUM, takes its Name of Λειμῶν, a *Marſh*, as growing in Marſhes] Sea-Lavender.

The *Characters* are;

It hath a fibroſe Root; the Stalks are naked, and branched; the Cup of the Flower is long and tubuloſe, but expanded at the Top; the Flower in ſome Species conſiſts of one Leaf, but in others of ſeveral, and is ſhap'd like a Clove-Gilliflower; *the Pointal, which ariſes out of the Flower-cup, becomes an oblong Fruit, wrapt up in the Flower-cup, as in an Huſk.*

The *Species* are;

1. LIMONIUM *maritimum majus. C. B. P.* Common Great Sea-Lavender.
2. LIMONIUM *maritimum majus alterum ſerotinum Narbonenſe. H. R. Par.* Another large late flowering Sea-Lavender of *Narbonne.*
3. LIMONIUM *maritimum minus, oleæ folio. C. B. P.* Small Sea-Lavender, with an Olive-Leaf.
4. LIMONIUM *Anglicum minus, caulibus ramoſioribus, floribus in ſpicis rarius ſitis. Raii Hiſt.* Leſſer *Engliſh* Sea-Lavender, with branch'd Stalks, and Flowers ſeldom growing in a Spike.

5. **Limonium** *Orientale, plantaginis folio, floribus umbellatis. T. Cor.* Oriental Sea-Lavender, with Plantain Leaves and Flowers growing in an Umbel.

6. **Limonium** *peregrinum, foliis aſplenii. C. B. P.* Foreign Sea-Lavender, with Spleenwort Leaves.

7. **Limonium** *Siculum lignoſum, gallas ferens & non ferens. Bocc. Rar.* Woody *Sicilian* Sea-Lavender.

There are ſeveral other Species of this Plant, which are found upon the Sea-coaſts of *Italy*, *Spain*, and the ſouthern Parts of *France*, but theſe here mention'd are all the Sorts I have obſerv'd in the *Engliſh* Gardens. The firſt and fourth Sorts are found upon the Sea-Coaſts in divers Parts of *England*, eſpecially the firſt, which is the moſt common; the other being only found in ſome particular Places. The ſecond and third Sorts are pretty common in the ſouthern Parts of *France*. The fifth Sort was found by Monſ. *Tournefort* in the *Levant*. The ſixth, which is the moſt beautiful of all the Sorts, was found by Mr. *Ray* in great Plenty in divers Parts of *Sicily*; and *Cluſius* obſerv'd it at *Malaga*, and about *Cadiz*. The ſeventh Sort, which grows to the Stature of a Shrub, was found in *Sicily* by *Pere Boccone*, and by him figur'd and deſcrib'd in his Book of *Rare Sicilian Plants*.

The five firſt mention'd Sorts are pretty hardy, and will endure the Cold of our ordinary Winters very well, provided they have a ſandy Soil, and a warm Situation: Theſe may be propagated by parting their Roots towards the latter End of *March*. When they are planted, which ſhould be in a light ſandy Soil, you muſt water and ſhade them until they have taken Root; after which, they will require no other Culture than to keep them clear from Weeds. In *July* theſe Plants will produce beautiful Spikes or Tufts of blue or Purple-colour'd Flowers, which will continue in Perfection a long Time; and if the Seaſon proves favourable in Autumn they will ripen their Seeds.

The ſixth Sort is ſomewhat tenderer than the others, and muſt be preſerv'd in Pots fill'd with freſh light Earth, and plac'd in the Green-houſe in hard Weather, otherwiſe the Cold of our Winters often deſtroys them: This Plant muſt be propagated by Seeds, for it ſeldom lives longer than two Years; for which Reaſon, the beſt Method is, to be furniſh'd with good Seeds from abroad, (for it ſeldom perfects its Seed in *England*), which, if ſown upon a warm Border of light freſh Earth, will come up very well; and in the Summer, when the Plants have acquir'd ſufficient Strength for Tranſplantation, they muſt be taken up and planted in Pots, placing them in the Shade until they have taken Root; after which, they may be expos'd to the open Air until *October*, when they muſt be remov'd into the Green-houſe, obſerving to place them where they may have as much free Air as poſſible in mild Weather: And during the Winter-ſeaſon they muſt be frequently water'd; but you muſt never give them too much at once, which is apt to rot their Roots, eſpecially in that Seaſon. You muſt alſo obſerve to pick off all decay'd Leaves, which, if ſuffer'd to remain on the Plants, very often infect them; and it being pretty nice in its Culture, it will often fail, upon a ſmall Neglect of this Kind. This Plant produces its Flowers in *July* and *Auguſt*, and, many Times, continues in Beauty the greateſt Part of *September*.

The ſeventh Sort riſes to be four or five Feet high, and hath ſlender woody Branches; from which, in *July* and *Auguſt*, are produc'd Spikes of ſmall blue Flowers, which make a very handſome Appearance, (eſpecially in a warm Seaſon, when their Flowers open kindly) and continue in Beauty a long Time.

This Plant is propagated by planting ſome of the tender Cuttings in any of the Summer Months, in Pots fill'd with light ſandy Earth, and placed in a moderate Hot-bed to facilitate their taking Root, and after they are rooted, they may be expos'd to the open Air until *October*; when they muſt be remov'd into a Green-houſe, placing them in a Situation where they may have as much free Air as poſſible in mild Weather: During the Winter-ſeaſon, they ſhould have frequent, but gentle Refreſhings with Water: You muſt alſo obſerve to keep them clear from decay'd Leaves and Branches, which will infect the whole Plants upon which they are ſuffer'd to remain; and in the Summer-ſeaſon they ſhould be expos'd in ſome well-ſhelter'd Place amongſt other exotick Plants.

LINARIA; [ſo call'd of *Linum*, Lat. *Flax*, becauſe its Leaves reſemble *Flax*] Toad-Flax.

The *Characters* are;

The Leaves are oblong, and produced alternately on the Branches; the Cup of the Flower conſiſts of one Leaf, which is divided into five long acute Segments; the Flower, which conſiſts of one Leaf, is of an anomalous, perſonated Figure, ending in a Tail behind, and in the Fore-part divided into two Lips, of which the Upper is cut into two or more Parts, and the Under into three; the Ovary, (which riſes from the Center of the Flower-cup) becomes a roundiſh Fruit or Huſk, divided into two Cells or Apartments, by an intermediate Partition, and full of Seeds, which are ſometimes flat and border'd, ſometimes corner'd and roundiſh, adhering to the Placenta.

The *Species* are;

1. **Linaria** *vulgaris lutea, flore majore. C. B. P.* Common Yellow Toad-flax, with a large Flower.

2. **Linaria** *purpurea major odorata. C. B. P.* Great Purple ſweet-ſmelling Toad-flax.

3. **Linaria** *latifolia Dalmatica, magno flore. C. B. P.* Broad-leav'd *Dalmatian* Toad-flax, with a large Flower.

4. **Linaria** *latiſſimo folio, Luſitanica. Tourn.* Broad-leav'd *Portugal* Toad-flax.

5. **Linaria** *Hiſpanica procumbens, foliis glaucis, flore luteo ſtriato, labiis nigro-purpureis. Spaniſh* trailing Toad-flax, with Sea-green Leaves, and yellow ſtriped Flowers with purple Lips.

6. **Linaria** *Sicula multicaulis, folio molluginis. Bocc. Rar. Sicilian* Toad-flax, with many Stalks, and a Leaf of the White Lady's Bed-ſtraw.

7. **Linaria** *tryphilla minor lutea. C. B. P.* Small three-leav'd yellow Toad-flax.

8. **Linaria** *tryphylla minor lutea, floris vexillo & calcari purpureo. Boerh. Ind.* Small three-leav'd yellow Toad-flax, with the Standard and Heel of a purple Colour.

9. **Linaria** *ſegetum, nummulariæ folio villoſo. Inſt. R. H.* Corn Toad-flax, with a hairy Money-wort Leaf, commonly called Fluellin or Female-ſpeedwel.

10. **Linaria** *ſegetum, nummulariæ folio aurito & villoſo, flore luteo. Inſt. R. H.* Corn Toad-flax, with a hairy-eared Money-wort Leaf, and a yellow Flower.

11. **Linaria** *pumila vulgatior arvenſis. Inſt. R. H.* Common low annual Toad-flax.

12. **Linaria** *hederaceo folio glabro, ſeu Cymbalaria vulgaris. Inſt. R. H.* Toad-flax with a ſmooth Ivy-leaf, commonly known by the Name of *Cymbalaria*.

13. **Linaria** *quadrifolia lutea. C. B. P.* Four-leaved yellow Toad-flax.

14. **Linaria** *annua anguſtifolia, floſculis albis longius caudatis. Triumphet.* Narrow-leav'd annual Toad-flax, with ſmall white Flowers, having long Tails or Spurs.

15. **Linaria** *quadrifolia ſupina. C. B. P.* Trailing four-leaved Toad-flax.

16. **Linaria** *capillaceo folio, odora. C. B. P.* Sweet-ſmelling Toad-flax, with a very narrow Leaf.

17. **Linaria** *Orientalis, flore luteo maximo. Tourn. Cor.* Eaſtern Toad-flax, with a very large yellow Flower.

18. **Linaria** *latifolia triphylla, flore purpureo magno, rictu aureo. Inſt. R. H.* Broad three-leav'd Toad-flax, with a large purple Flower having a golden Standard.

19. **Linaria** *annua anguſtifolia, flore majore luteo. Mor. Hiſt.* Narrow-leav'd annual Toad-flax, with a larger yellow Flower.

The firſt of theſe Plants grows in great Plenty upon the Sides of dry Banks in moſt Parts of *England*, and is ſeldom cultivated in Gardens, for it is a very troubleſome Plant to keep within Bounds, the Roots being very apt to ſpread underground, and riſe at a great Diſtance from the Mother-Plant, whereby it greatly injures whatever Plants ſtand near it. This is the Species mention'd in the Catalogue of Simples at the End of the College Diſpenſatory to be us'd in Medicine.

The ſecond is a perennial Plant, which is often cultivated in Gardens: This produces fine Spikes of purple Flowers in *June* and *July*, and it being a very hardy Plant, growing in almoſt any Soil or Situation, ſhould be admitted into every good Garden, where it may be planted in ſhady Situations, or upon the Middle of large Borders in the Pleaſure-Garden; in which Place it will make an handſome Appearance, and continues a long Time in Flower.

This Plant is propagated by ſowing the Seeds in the Spring, which will come up ſoon after; and the Plants muſt be tranſplanted out into Beds at the Diſtance of ſix or eight Inches; in which Beds they may remain until the *Michaelmas* following, (obſerving to keep them clear from Weeds): At which Time they ſhould be tranſplanted into the Places where they are to remain for good, and will require no other Culture than only to keep them clear from Weeds; and when the Flower-ſtems advance in the Spring, they ſhould be ſupported by Stakes, otherwiſe they are ſubject to be broken by ſtrong Winds: They may alſo be propagated by parting their Roots in Autumn; but as the Seed ripens very well, ſo it is the better Way to raiſe them from that.

The third and fourth Sorts are tenderer than the laſt, and ſhould be planted in a dry Soil and a warm Situation, otherwiſe they are often deſtroy'd in Winter. Theſe are propagated by Seeds in the ſame Manner as the former, as alſo by parting their Roots; but it is adviſeable always to keep ſome of theſe Plants in Pots, that they may be remov'd into Shelter in the Winter, otherwiſe in hard Froſts they will be kill'd.

The fourth is the moſt beautiful Sort of them all; this produces very large Spikes of purple Flowers, which make a fine Appearance; but it ſeldom produces ripe Seeds in this Country, ſo that the Seeds muſt be obtain'd from Abroad, and the Plants propagated from Off-ſets or Cuttings; which, if planted in the Spring, will take Root very well, whereby it may be maintain'd.

The fifth Sort was brought over from *Gibraltar* by Sir *Charles Wager*, *Anno* 1727, and hath ſince been communicated to ſeveral curious Perſons: This Plant is eaſily propagated by parting the Roots, or planting Cuttings in any of the Summer Months, which if water'd and ſhaded will ſoon take Root, and may afterwards be planted in Pots fill'd with freſh, light, undung'd Earth, in which they will ſucceed much better than in a richer Soil; for if they are planted in a fine rich Earth, it cauſes them to grow very faſt for a ſhort Time, but they ſeldom fail to rot ſoon after. Theſe muſt be remov'd into ſhelter in Winter, where they muſt have as much free Air as poſſible in mild Weather, and be only protected from ſevere Cold; ſo that if the Pots are placed under an Hot-bed Frame, it will be better than to place them in a Green-houſe; and I believe if ſome of the Plants were planted in a dry, rubbiſhy Soil under a warm Wall, they would endure abroad very well in our ordinary Winters.

The ſixth, ſeventh, and eighth Sorts are annual Plants, which ſhould be ſown early in the Spring upon a Bed of light, freſh Earth; and when the Plants are come up about two Inches high, they ſhould be tranſplanted into the Borders of the Flower-Garden, where they are to remain: Theſe produce their Flowers in *June* and *July*, and their Seeds are ripe in *September*. The Seeds of theſe Plants may alſo be ſown in Autumn, ſoon after they are ripe, under a warm Wall or Hedge, where they will endure the Cold of our ordinary Winters very well; and in the Spring they may be tranſplanted out into the Borders, where they are deſign'd to flower: And theſe autumnal Plants will grow much larger, and come to flower much ſooner than thoſe rais'd in the Spring, and from theſe you will always have good Seeds.

The ninth Sort is directed by the College of Phyſicians, to be uſed in Medicine; this ſtands in their Catalogue of *Simples* under the Title of *Elatine*. This and the tenth Sort grow wild amongſt the Corn, in divers Parts of *England*. They are both annual Plants, which ſcatter their Seeds, where-ever they are permitted to grow, and the young Plants generally come up in Autumn; ſo that they are more frequently to be met with amongſt *Wheat*, *Rye*, and other Crops which are ſown in Autumn, than in ſuch Lands as are ploughed in the Spring. The Flowers of theſe Plants are very ſmall, and come out at the Joints cloſe to the Footſtalks of the Leaves, and the whole Plant trails on the Ground; they uſually flower in *June*, and their Seeds are ripe in *Auguſt*.

The eleventh Sort is a low annual Plant, which is very common on arable Land in moſt Parts of *England*; ſo is ſeldom admitted into Gardens.

The twelfth Sort was originally brought from Abroad, but is now become ſo common in many Parts of *England*, as to be thought a Native by ſome Perſons. This has been eſteemed a Plant very efficacious in ſome Diſtempers, but is not uſed by any of the *Engliſh* Phyſicians at preſent. It grows not only on the Ground, but on Walls, Pales, or whatever Place the Seeds fall; ſo it becomes a very troubleſome Weed, where-ever it is ſuffered to ſeed.

The other Seeds are not Inhabitants of this Country; but are by the Curious preſerved in their Gardens, for the Variety of their Flowers. They are all of them Plants of ſhort Duration, ſeldom continuing after they have perfected their Seeds; ſo that where the Seeds are not permitted to ſcatter, they ſhould be ſown every Year, in order to preſerve the Kinds. The Seeds ſhould be ſown in the Places where they are deſigned to remain; for the Plants do not thrive ſo well, when they are tranſplanted. Some of theſe Seeds may be ſown in the Autumn, on a dry Soil, where the Plants will come up, and abide the Winter; and theſe will flower much ſooner the following Year, than thoſe which are ſown in the Spring; ſo that good Seeds may be certainly obtained from thoſe, whereas the Seeds of ſome Sorts do not ripen well in bad Seaſons on ſuch Plants which come up from the Spring-ſowing. But by ſowing at the two Seaſons, there will be a longer Continuance of the Plants in Flower.

As theſe Plants require no farther Care, when they come up, but to thin them where they grow too cloſe, and to keep them clear from Weeds; ſo they may be allowed Room in the Borders of large Gardens, where they will add to the Variety; for they are Plants which do not ſpread far, ſo may be kept in proper Compaſs, and the different Colours of their Flowers will make a pretty Appearance amongſt other hardy Plants.

LINGUA CERVINA; Hart's-Tongue.

Theſe Plants do commonly grow out from the Joints of old Walls and Buildings, where they are moiſt and ſhady, but are ſeldom cultivated in Gardens: There is a very great Variety of theſe Plants both in the *Eaſt* and *Weſt-Indies*, but there are very few of them in *Europe*: They may be propagated by parting their Roots, and ſhould have a moiſt Soil, and ſhady Situation.

LINUM; Flax.

The *Characters* are;

The Leaves, for the moſt part, grow alternately on the Branches; the Cup of the Flower conſiſts of one Leaf, is tubulous, and divided into five Parts at the Top; the Flower conſiſts of five Leaves, which expand in Form of a Clove-Gilliflower; the Ovary, which riſes from the Center of the Flower-cup, becomes an almoſt globular Fruit, which is generally pointed, and compos'd of many Cells, in which are lodg'd many plain, ſmooth Seeds, which are blunt at one End, and generally ſharp at the other.

The *Species* are;

1. LINUM *ſativum. C. B. P.* Manured Flax.
2. LINUM *ſativum latifolium Africanum, fructu majore. Tourn.* Broad-leav'd *African* manured Flax, with a large Fruit.
3. LINUM *maritimum luteum. C. B. P.* Yellow Maritime Flax.
4. LINUM *ſativum humilius, flore majore. Bobart.* Dwarf manured Flax, with a larger Flower.
5. LINUM *perenne majus cæruleum, capitulo majore. Mor. Hiſt.* Greater perennial blue Flax, with a large Head.
6. LINUM *perenne majus cæruleum, capitulo minore. Mor. Hiſt.* Greater perennial blue Flax, with a ſmaller Head.

There are ſeveral Sorts of this Plant which are preſerv'd in ſome curious Gardens of Plants for Variety ſake; but as they are of little Uſe or Beauty, ſo it would be needleſs to mention them in this Place.

The firſt Sort is that which is cultivated for Uſe in divers Parts of *Europe*, and is reckon'd an excellent Commodity; the right Tilling and Ordering of which is eſteem'd a good Piece of Huſbandry.

This ſhould be cultivated upon a rich Soil, that has not been plough'd for ſeveral Years, upon which Flax always makes the beſt Improvement; but as it draws greatly from the Soil, ſo it ſhould not be ſown two Years together upon the ſame Ground.

The Land muſt be well plough'd, laid flat and even, upon which the Seeds ſhould be ſown about the Middle of *March*, when the Weather is mild and warm: During the Spring you muſt carefully weed it; which if neglected, (eſpecially in a moiſt Seaſon) the Weeds will overgrow and deſtroy the Crop. There are ſome People who recommend the feeding of Sheep with *Flax*, when 'tis a good Height, and ſay, they will eat away the Weeds and Graſs, and do the *Flax* good; and if they ſhould lie in it, and beat it down, or flatten it, it will riſe again the next Rain: But this muſt not be practis'd but in a moiſt Seaſon, and upon a rich Soil, for if the Ground be poor, or the Spring dry, it will not riſe again to any conſiderable Height.

The beſt Seed is that which comes from the Eaſt Country, and is known by the Name of *Riga Flax*; for if the *Engliſh* Seed be ſown three or four Times, it is very apt to degenerate: If the Seed be good, two Buſhels will be enough to ſow an Acre; but if it be but middling, there ſhould be a greater Allowance: Toward the latter End of *July* the *Flax* will begin to ripen; when you muſt be careful that it grow not over-ripe, therefore you muſt pull it up as ſoon as the Heads begin to change brown and hang downwards, otherwiſe the Seeds will ſoon ſcatter and be loſt; ſo that the Pluckers muſt be nimble, and tie it up in Handfuls, ſetting them upright till they be perfectly dry, and then houſe them: If the *Flax* be pull'd when it firſt begins to flower, it will be whiter and ſtronger than if it ſtand till the Seed is ripe, but then the Seed will be loſt.

The Method of Watering, Piling, Braking, *&c.* being a particular Buſineſs, and foreign to my Deſign, I ſhall not pretend to give any Directions about it in this Place.

All the other Sorts of *Flax* may be cultivated (by ſuch who have a Curioſity) by ſowing their Seeds upon a Bed of freſh, rich, light Earth, in *March*, or the Beginning of *April*; and when the Plants come up, they muſt be carefully weeded, which is all the Culture they require, and they will produce their Flowers, and perfect their Seeds very well.

LINUM UMBILICATUM. *Vide* Omphalodes.

LIPPIA.

This Plant was ſo named by the late Dr. *William Houſtoun*, who diſcovered it at *La Vera Cruz*, in Honour to Dr. *Auguſtus Lippi*, a famous Botaniſt, who travelled to *Egypt*, and diſcovered many new Plants.

The *Characters* are;

It hath an anomalous Flower, conſiſting of one Leaf, which is divided into four Parts, and reſts on the Embryo, which afterwards becomes the Fruit, having two Seeds, which are incloſed in a ſmall Covering.

We know but one *Species* of this Plant at preſent, *viz.*

Lippia *arboreſcens, foliis conjugatis oblongis, capitulis ſquamoſis & rotundis. Houſt.* Tree Lippia, with oblong Leaves growing by Pairs, and having round ſcaly Heads.

This Plant, in the Country of its Native Growth, commonly riſes to the Height of eighteen or twenty Feet, and hath a rough Bark: The Branches come out by Pairs oppoſite, as alſo the Leaves, which are oblong, pointed, and a little ſawed on their Edges. From the Wings of the Leaves come out the Footſtalks, which ſuſtain many round ſcaly Heads, about the Size of a large *Grey Pea*, in which are many ſmall yellow Flowers appearing between the Scales, which are ſucceeded by the Seed-veſſels.

The Seeds of this Plant were ſent to ſeveral curious Gardens in *Europe*, where ſome of the Plants have been raiſed; but as the Country where it came from, is very warm, ſo the Plants will not thrive in this Country, unleſs they are preſerved in a warm Stove. Theſe may be treated in the ſame Manner as the other ſhrubby Plants, which are Natives of warm Countries; which is, to keep them always in the Stove, plunged in the Bark-bed, obſerving to give them a large Share of Air in warm Weather, and frequently refreſh them with Water; but in Winter they muſt be watered more ſparingly, and be kept in a moderate Degree of Warmth; otherwiſe they will not live thro' the Winter, eſpecially while they are young; but when they have acquired Strength, they may endure a leſs ſhare of Warmth.

As the Plants advance in their Growth, ſo they ſhould be ſhifted into larger Pots; but this ſhould not be too often repeated, for if they are removed into new Pots every Spring, it will be as often as they require; ſo that when theſe, and many other exotick Plants, are too often removed, they do not thrive ſo well as when they are permitted to fill the Pots with their Roots. The beſt Time to ſhift theſe Plants is in *April*, at which Time the Tan of the Hot-bed ſhould be ſtirred, and freſh Tan mixed with it, to increaſe the Heat. The Earth in which theſe Plants are planted, ſhould be freſh and light, but not too rich.

LIQUID AMBER. *Vide* Styrax.

LITHOSPERMUM; [of λίθος, a *Stone*, and σπέρμα, *Seed*, q. d. *Stone-ſeed*, becauſe the Seed of this Plant is hard, and is good againſt the Stone of the Reins and Bladder] Gromwell, Gromill, or Graymill.

The *Characters* are;

The Cup of the Flower conſiſts of one Leaf, which is cut almoſt to the Baſe into five long narrow Segments; the Flower, which is, for the moſt part, ſmall, conſiſts of one Leaf, is Funnel-ſhap'd, and ſpread open at the Top; the Pointal is encompaſs'd by four Embryo's, which become ſo many roundiſh hard poliſh'd Seeds.

The *Species* are;

1. Lithospermum *majus erectum. C. B. P.* Greater Upright Gromill.
2. Lithospermum *perenne procumbens, flore purpureo-cæruleo majore. Mor. Hiſt.* Trailing perennial Gromill, with a purple-blue Flower.

There are ſeveral other Sorts of this Plant, which are mention'd in Botanick Authors, but as they are rarely cultivated in Gardens, I ſhall omit taking Notice of them in this Place. The firſt Sort here mention'd, is that which is order'd for medicinal Uſes: This grows in ſhady Lanes and uncultivated Places in divers Parts of *England*, and is ſeldom cultivated in Gardens. The ſecond Sort is found wild in ſome Parts of *Wales*, but is leſs common than the former. Theſe may be cultivated by ſowing their Seeds ſoon after they are ripe, in a Bed of freſh Earth, allowing them at leaſt a Foot Diſtance from each other, obſerving to keep them clear from Weeds, and they will thrive in almoſt any Soil or Situation.

LOAM is a common ſuperficial Earth, that is a Mixture of Sand and Clay, commonly of a yellowiſh Colour, tho' there is ſome *Loam* that is blackiſh: Some call *Loam* the moſt common ſuperficial Earth met with in *England*, without any Regard to the Proportion it bears to Sand or Clay.

It is found, by Experience, that Plants of all Sorts will grow in it; and where-ever it is found, it appears to be a more beneficial Soil to Plants than any other. A Clay us'd in Grafting is alſo call'd *Loam*.

LOBELIA.

The *Characters* are;

It hath a tubulous anomalous Flower, conſiſting of one Leaf, which is divided into many Parts, each being ſhaped ſomewhat like a Tongue, and are ſpread open like a Hand; this is incloſed in the Cup, which afterward becomes a ſoft oval Fruit, which is full of Juice, and ſurrounds a Nut of the ſame Shape, which has a hard Shell.

We know but one Sort of this Plant, *(viz.)*

Lobelia *fruteſcens, portulacæ folio. Plum. Nov. Gen.* Shrubby Lobelia, with a purſlane Leaf.

This Plant was named by Father *Plumier*, who diſcovered it in *America*, in Honour to Dr. *Lobel*, a learned Botaniſt, who publiſhed the Figures of a great Number of Plants at *Antwerp* in 1581. and two or three other Books of Botany before that Time.

The Seeds of this Plant were ſent to *England*, by Mr. *Cateſby* in the Year 1724. who gathered them in the *Bahama Iſlands*, where the Plants grow in Plenty, near the Shore of the Sea; and ſince that Time the Seeds have been ſent to *England* by Dr. *William Houſtoun*, who gathered them at *La Vera Cruz*, ſo that I believe the Plant is common in moſt of the warm Parts of *America*.

It is propagated by Seed, which muſt be procured from the Countries of its natural Growth, for the Plants will not produce them in *Europe*. The Seeds ſhould be ſown in Pots, filled with light ſandy Earth, and then plunged into a Hot-bed of Tanners Bark, where the Plants will come up in about three Weeks, provided the Bed is kept warm, and the Earth often watered. When the Plants are up, they ſhould have freſh Air admitted to them in very warm Weather; but if the Nights ſhould prove cold, the Glaſſes of the Hot-bed ſhould be covered every Night with Mats, to keep the Bed in a proper Temperature of Heat; the Plants ſhould alſo be frequently refreſhed with Water, but it muſt not be given in large Quantities to them; for they are very ſucculent, and ſubject to periſh with much Moiſture, eſpecially while they are young. When the Plants are about two Inches high, they ſhould be carefully taken out of the Pots in which they were ſown, and each planted in a ſeparate ſmall Pot, filled with freſh light ſandy Earth, and then plunged into the Hot-bed again, obſerving to ſhade them in the Heat of the Day, until they have taken new Root; after which Time, the Glaſſes of the Hot-bed ſhould be raiſed every Day to admit freſh Air to the Plants, in proportion to the Warmth of the Seaſon. They muſt alſo be frequently refreſhed with Water. In this Hot-bed the Plants may remain, until the middle or latter End of *September*, when they muſt be removed into the Stove, and plunged into the Tan-bed, in the warmeſt Part of the Stove; for they are very tender Plants while young, ſo muſt be kept very warm, otherwiſe they will not live thro' the Winter in this Country. They muſt alſo be frequently refreſhed with Water, but it muſt be given to them ſparingly during the Winter Seaſon; for a little too much Moiſture will rot them at that Seaſon. In the Spring following, the Plants may be ſhifted into a little larger Pots, and then plunged into a freſh Hot-bed to forward their Growth; for if they are not puſhed on while they are young, they ſeldom grow to any Size, nor will they ever flower; ſo that in order to have theſe Plants in any Beauty, they muſt be carefully managed. The Height to which theſe Plants uſually grow, is five or ſix Feet, and they divide into ſeveral Branches, which are ſucculent, as are alſo the Leaves, which are as thick and full of Moiſture, as thoſe of *Purſlane*, and being ever-green, the Plants make an agreeable Diverſity amongſt other tender Exotick Plants in the Stove; for they are too tender to be removed into the open Air in this Country, even in the warmeſt Seaſon of the Year. The Leaves of this Plant are very ſubject to contract Filth, by being kept conſtantly in the Stove; therefore they ſhould be waſhed with a Sponge every Month, to keep them clean, otherwiſe they will appear unſightly.

LOBUS ECHINATUS; Bonduc or Nicker-Tree.

The *Characters* are;

The Leaves are equally pinnated; the Flower conſiſts of one Leaf, which is cut into many deep Segments, and is almoſt of an anomalous Figure; from the Cup ariſes the Piſtillum, which becomes a rough, prickly Pod, in which are contain'd one or two hard roundiſh Seeds.

The *Species* are;

1. Lobus Echinatus *fructu flavo, foliis rotundioribus. H. L.* The yellow Nicker-Tree.
2. Lobus Echinatus *fructu cæſio, foliis longioribus. H. L.* The Aſh-colour'd Nicker, *vulgo.*

Theſe two Plants are very common in *Jamaica*, *Barbadoes*, and all the *Caribbee Iſlands*, where they climb upon the Shrubs and Trees which grow near them: The Leaves, Branches, Stems, and every Part of them are greatly beſet with Prickles, which renders it very troubleſome to paſs between them where they grow pretty cloſe.

They are preſerv'd in the warmeſt Stoves, by way of Curioſity, in *England*, but have not as yet produc'd any Flowers with us, that I have ſeen. The Seeds of this Plant are often brought over from the *Weſt-Indies*, but their Shells or Coverings are ſo very hard, as not to be eaſily broken; nor do they ever come up when ſown upon a Hot-bed as other Seeds: The only Method by which I have been capable of raiſing theſe Plants, is, to put the freſh Seeds into a freſh Hot-bed of Tanners Bark, under the Bottom of a Pot, (in which there is a Plant growing) where, from the Heat of the Bark, and the Moiſture which will gently paſs thro' the Hole at the Bottom of the Pot, and being by the Bark there detain'd, the Shell of the Fruit will ſplit, and the Seeds germinate in a ſhort Time; then they may be taken up, and planted into Pots fill'd with light freſh Earth, and plung'd into the Tanners Bark, where they will come on apace, if conſtantly ſupply'd with Water: During the Winter Seaſon they muſt be kept very warm, and often refreſhed with Water; but it muſt be given them by ſmall Quantities at a Time, for if they have too much Moiſture given them at that Seaſon, it is very apt to deſtroy them: In the Summer-time, when the Weather is warm, they will require a greater Share of Air, but they muſt never be ſet abroad even in the hotteſt Seaſon, for they are too tender to bear the open Air in our Climate, ſo that they muſt be conſtantly preſerv'd in the Stoves with *Papaws*, and other free-growing Plants which come from the ſame Country.

LOCULAMENTS, are little diſtinct Cells, or Partitions, within the Seed-Veſſels of Plants.

LONCHITIS, [ſo call'd of λόγχη, a *Lance* or *Spear*, becauſe the Leaves are ſo ſharp-pointed as to reſemble the Point of a Spear.] Rough Spleenwort.

The *Characters* are;

The Leaves are like thoſe of the Fern, *but the Pinnulæ are ear'd at their Baſe: The Fruit alſo is like that of the* Fern.

The *Species* are;

1. Lonchitis *aſpera. Ger.* Rough Spleenwort.
2. Lonchitis *aſpera major. Ger. Emac.* Greater rough Spleenwort.

The firſt of theſe Plants is very common in ſhady Woods, by the Sides of ſmall Rivulets in divers Parts of *England*: But the ſecond Sort is not quite ſo common, and has been brought into ſeveral curious Botanick Gardens from the Mountains in *Wales*. There are alſo great Variety of theſe Plants in *America*, which at preſent are Strangers in the *European* Gardens. They are ſeldom cultivated but in Botanick Gardens, for the fake of Variety, where they muſt have a moiſt Soil, and a ſhady Situation.

LONGITUDINAL VESSELS in Plants, are ſuch as are extended in Length through the woody Parts of Trees and Plants, into which the Air is ſuppos'd to enter and mix with the Juices of the Plants, and thereby augment its Bulk.

LOPPING: It is very obſervable, that moſt old Trees are hollow within; which does not proceed from the Nature of the Trees, but is the Fault of thoſe who have the Management of them, who ſuffer the Tops to grow large before they lop them, as the *Aſh*, *Elm*, *Horn-beam*, &c. and perſuade themſelves that they may have the more great Wood; but, in the mean time, don't conſider that the cutting off great Tops do endanger the Life of a Tree, or, at beſt, wound it ſo that many Trees decay more yearly in their Bodies, than the yearly Tops come to; and at the ſame Time that they furniſh themſelves with more great Wood, they do it at the Loſs of the Owner. And, indeed, tho' the *Horn-beam* and *Elm* will bear great Tops when the Body is little more than a Shell, yet the *Aſh*, if it comes to take Wet at the Head, very rarely bears more Top after the Body of the Tree decays: Therefore, if once theſe Trees decay much in the Middle, they will be worth little but for the Fire; ſo that if you find a Timber Tree decay, it ſhould be cut down in Time, that the Timber be not loſt.

The *Lopping* of young Trees, that is, at ten or twelve Years old at moſt, will preſerve them much longer, and will occaſion the Shoots to grow more into Wood in one Year, than they do in old Tops at two or three. Great Boughs ill taken off, often ſpoil many a Tree; for which Reaſon they ſhould always be taken off cloſe and ſmooth, and not parallel to the Horizon; and cover the Wound with Loam and Horſe-dung mix'd, to prevent the Wet from entring the Body of the Tree.

When Trees are at their full Growth, there are ſeveral Signs of their Decay; as, the withering or dying of many of their Top Branches; or if the Wet enters at any Knot; or they are anywiſe hollow, or diſcolour'd; if they make but poor Shoots; or if Wood-Peckers make any Holes in them.

All Sorts of reſinous Trees, or ſuch as abound with a milky Juice, ſhould be lop'd very ſparingly; for they are ſubject to decay when often cut. The beſt Seaſon for Lopping theſe Trees is ſoon after *Bartholomew-tide*, at which Time they ſeldom bleed much, and the Wound is commonly heal'd over before the cold Weather comes on.

LOTUS: Birds-foot Trefoil.

The *Characters* are;

It hath a papilionaceous Flower; the Ovary, which riſes out of the Flower-cup, afterwards becomes a Pod, ſometimes diſtinguiſh'd as it were into Cells, by tranſverſe Partitions, which are full of Seeds, for the moſt part roundiſh; to which may be added, the Leaves grow by Threes, but have two Wings or little Leaves at the Origin of their Foot-ſtalks.

The *Species* are;

1. Lotus *villoſus altiſſimus, flore glomerato. Tourn.* The talleſt hairy Birds-foot Trefoil, with a glomerated Flower.
2. Lotus *pentaphyllus ſiliquoſus villoſus. C. B. P.* Upright hoary Birds-foot Trefoil.
3. Lotus, πολυκέρατος *fruteſcens Cretica argentea, ſiliquis longiſſimis propendentibus rectis. Mor. Hiſt.* Shrubby Silver Birds-foot Trefoil of *Crete*, with long ſtrait hanging Pods.
4. Lotus *hæmorrhoidalis humilior & candidior. Tourn.* Lower and whiter Hæmorrhoidale Birds-foot Trefoil.
5. Lotus *anguſtifolius, flore luteo purpureo, ex inſula ſancti Jacobi. Hort. Amſt.* Narrow-leav'd Birds-foot Trefoil from the Iſland of St. *James*, with a purple yellow Flower.
6. Lotus *ruber, ſiliqua anguloſa. C. B. P.* Red ſquare-codded Birds-foot Trefoil, *commonly call'd* Winged Peas.
7. Lotus *ruber, ſiliqua anguloſa, folio variegato. Boerh. Ind.* Red ſquare-codded Birds-foot Trefoil, with a variegated Leaf.
8. Lotus *ſiliquis ornithopodii. C. B. P.* Birds-foot Trefoil, with Pods like a Birds-foot.

The firſt of theſe Plants is by ſome ſuppoſed to be the *Cytiſus* of *Virgil*; but with how much Juſtneſs I will not pretend to determine, ſince it is very difficult to aſcertain many of his Plants; for the greateſt Part of them are only tranſlated from *Theocritus*'s *Greek* into *Latin*, ſo that it may juſtly be ſuppoſed that *Virgil* himſelf did not know the Plants of which he wrote; and whoever has the Curioſity to know what the Plants there mention'd are, ſhould diligently ſearch for them in *Sicily* where *Theocritus* lived, and it is very probable many of them are ſtill to be found.

This Plant dies to the Ground with us every Winter, and riſes again the ſucceeding Spring; and when the Roots are ſtrong, the Shoots will be four or five Feet high, and produce in great Plenty: If it be cut while young, the *Cows* are very fond of it; but *Horſes* will not eat it unleſs they are very hungry. The Roots when ſtrong, will admit of the Shoots being cut three or four Times in a Summer, for they put out again ſoon after they are cut, and grow very ſtrong in a ſhort time; but this Plant does not come up before *April* in our Country, and commonly dies down in *October*, ſo that if it were the beſt Fodder for Cattle, it would only be obtained in Summer; for I am afraid it will hardly be of any uſe when dried.

It may be propagated from the Seeds, which are generally produced in great Plenty, and muſt be ſown very thin in Rows, at about eighteen Inches aſunder, the Beginning of *April*; and in *May*, when the Plants will be come up, the Ground ſhould be hough'd between the Rows, in order to deſtroy the Weeds, and the Plants cut up, where they are too thick (for they ſhould be eight or ten Inches apart in the Rows at leaſt); for though they will appear but weak at their firſt coming up, yet when their Roots have taken faſt hold of the Ground, they will increaſe their Strength greatly; for I have had a ſingle Root of this Plant which has been a Foot diameter over the Crown, and hath produced above a Hundred Shoots at one time.

You muſt alſo continue houghing the Ground from time to time as the Weeds are produced, which if permitted to overgrow the Plants while they are young, will certainly deſtroy them; ſo that the firſt Seaſon they muſt be managed with great Care, but afterwards when the Plants have obtain'd more Strength, they will be capable of encountering the Weeds; though then the Ground between the Rows ſhould be ſtirr'd with a Breaſt-plough after the Crop is cut down, which will greatly promote its Growth.

This Plant delights in a dry, barren, gravelly Soil, on which it will reſiſt the ſevereſt Cold of our Climate, and abide many Years.

It may alſo be propagated by planting Cuttings or Slips taken from the old Plants in *July*, when they have acquired a Hardneſs, which ſhould be planted in a moiſt, cloudy Seaſon, or water'd and ſhaded, and in a ſhort time they will take Root; but as this is difficult to perform when a Quantity is deſign'd, ſo the better way is to propagate it by Seeds.

The ſecond, third, fourth and fifth Sorts are preſerved in Gardens as Curioſities; theſe are impatient of much Cold, and muſt therefore be planted in Pots, and houſed in Winter, otherwiſe they are often deſtroy'd in our Country, eſpecially the fifth, which is much the tendereſt Plant of all the Sorts: Theſe may be all propagated by ſowing their Seeds upon a moderate Hot-bed in the Spring; and when the Plants are come up, they muſt be tranſplanted either upon another moderate Hot-bed, or into Pots, and plung'd into a Hot-bed, to promote their taking Root; after which in *May* they ſhould be remov'd into the open Air, where they muſt be placed in ſome well-ſhelter'd Situation, amongſt other exotick Plants, in which Place they may remain until the Middle or End of *October* following, when they muſt be removed into the Greenhouſe, obſerving to place them where they may have as much free Air as poſſible in mild Weather, for if they are kept too cloſely ſhut up, or ſtand under the Branches of other Trees or Plants, they are very apt to draw very weak, and decay ſoon after; they muſt alſo be often refreſh'd with Water, but it ſhould not be given them in Winter in too great Quantities, for that will rot their Roots, eſpecially of the fifth Sort, which, as I before ſaid, is the tendereſt: In the Spring they ſhould be inured very early to the open Air, into which they ſhould always be remov'd at the Beginning of *May*, or earlier, according as the Seaſon proves favourable.

Theſe may alſo be propagated by planting Cuttings, in any of the Summer Months, into a Bed of light Earth, obſerving to water and ſhade them until they have taken Root; after which they may be planted into Pots filled with light freſh Earth, and muſt be managed as was directed for the Seedling Plants. They all produce their Flowers in *June*, *July*, and *Auguſt*, and moſt of them ripen their Seeds very well in *England*: But the fifth Sort, which is the moſt rare, and produces the handſomeſt Flowers, ſeldom perfects Seeds with us, ſo that it muſt be always propagated from Cuttings; and in Winter muſt be placed ſomewhat warmer than the other Sorts, tho' not too near other Plants; and ſhould be every Year renew'd from Cuttings; for the old Plants are very ſubject to decay in Winter. The ſixth Sort is an annual Plant, which, by many People, is ſown here and there, upon the Borders of the Flower-Garden, with other ſmall Annuals, amongſt which it makes a pretty Variety.

The Flowers of this Plant (which are in Form of a *Pea-bloſſom*) are of a deep-red Colour, and are ſucceeded by Pods with four Angles or Wings (which occaſion'd their being call'd *Wing'd Peas*) containing ſeveral hard round Seeds.

It is eaſily propagated by ſowing the Seeds in *March* or *April* upon the Borders where they are to remain; for they do not thrive ſo well when tranſplanted: And they will require no farther Care than only to keep them clear from Weeds. In *June* they will begin to flower, and continue 'till *Auguſt*, when their Seeds will ripen ſoon after.

The ſeventh Sort is only a Variety of the ſixth, from which it differs in having a variegated Leaf; this Difference it commonly retains from Seeds, which is what few other Plants will do. This may be propagated as the former.

The eighth Sort is only preſerv'd in ſome Gardens, more for the Oddneſs of its Pods, (which very much reſembles a Bird's Foot) than for any particular Beauty of the Plant: But in a large Garden it may be admitted, for the ſake of Variety. This may be propagated in the ſame manner as the two former, and is alſo annual, as they are.

LOTUS ARBOR. *Vide* Celtis.

LOVE APPLE. *Vide* Lycoperſicon.

LUFFA, *Egyptian* Cucumber.

The *Characters* are;

It hath a bell-ſhaped Flower, conſiſting of one Leaf, which is divided into five Parts to the Centre: there are Male and Female Flowers on the ſame Plant; the Male Flowers are produced on ſhort Foot-ſtalks, having no Embryo's: but the Female Flowers reſt on the Top of the Embryo's, which afterwards becomes a Fruit like a Cucumber to outward Appearance, but is not fleſhy, the Inner-part conſiſting of many fibres, which are elegantly netted; and there are three Cells, which are filled with Seeds, which are almoſt of an oval Shape.

We have but one Sort of this Plant, (*viz.*)

LUFFA *Arabum*. *Tourn.* The Luffa of the Arabians.

This Plant may be propagated after the ſame Manner as *Cucumbers* and *Melons*, by ſowing of the Seeds on a Hot-bed the Beginning of *March*; and when the Plants are come up, they muſt be pricked into a freſh Hot-bed to ſtrengthen the Plants, obſerving to let them have freſh Air every Day in warm Weather, and to refreſh them frequently with Water; but it muſt not be given to them in large Quantities while they are young, or in cold Weather, leſt it deſtroy the Plants. When the Plants have four or five Leaves, they ſhould be planted out on a Hot-bed, where they are deſigned to remain, which ſhould be under Frames, and but one Plant put into each Hole; for as theſe Plants ſend forth a great Number of Side-ſhoots, ſo where they are planted too cloſe, they will entangle one into the other, and become ſo thick, as to cauſe the Fruit to drop. In the Management of theſe Plants after they are planted out for good, there muſt be the ſame Care taken as for *Melons* and *Cucumbers*, with this Difference only, that theſe require a larger Share of Air in warm Weather; otherwiſe the Vines will grow weak, and will not produce Fruit.

When the Plants have ſpread, ſo as to fill the Frames on every Side, the Frames ſhould be raiſed on Bricks, and the Ends of the Plants drawn out, that they may have room to grow; for when theſe Plants are in a vigorous State, they will ſpread eight or ten Feet; ſo that if they are confined, they will become ſo thick, as to rot the tender Branches which are covered from the Air, and there will be no Fruit produced.

The Fruit, when it is young, is by ſome People eaten, and made into Mango's, and preſerved in Pickle; but it hath a very diſagreeable Taſte, and is not accounted very wholeſome: ſo theſe Plants are ſeldom cultivated in *Europe*, except by ſuch Perſons as are curious in Botany, for Variety.

LUNARIA, [ſo call'd, of *Luna*, Lat. the *Moon*, becauſe the Seed-veſſels reſemble the Form of the Moon] Moon-wort, Satten-Flower, *or* Honeſty.

The *Characters* are;

The Flower conſiſts of four Leaves, which expand in Form of a Croſs; the Ovary (which riſes in the Centre of the Flower) becomes a compreſs'd perfectly ſmooth Fruit, divided, as it were, into two Cells by an intermediate Partition, to which adhere the parallel and membranous Valves, and fill'd with Seeds, which have commonly a broad Border, and are ſhap'd like a Kidney.

The *Species* are;

1. **Lunaria** *major, ſiliqua rotundiore. J. B.* Greater Moon-wort, with round Pods, *commonly call'd* Honeſty, *or* White Sattin.

2. **Lunaria** *major, ſiliqua longiore. J. B.* Greater Moon-wort, with a longer Pod.

3. **Lunaria** *major perennis, ſiliqua rotundiori, flore albo. Tourn.* Greater perennial Moon-wort, with a rounder Pod, and a white Flower.

4. **Lunaria**, *leucoji folio, ſiliqua oblonga majori. Tourn.* Moon-wort, with a Stock-Gilliflower Leaf, and a large oblong Pod.

5. **Lunaria** *fruticoſa perennis incana, leucoji folio. Tourn.* Shrubby perennial Moon-wort, with a Stock-Gilliflower Leaf.

6. **Lunaria** *Orientalis, leucoji folio incano, lutea patula. Jeſſieu.* Yellow ſpreading Eaſtern Moon-wort, with a Stock-Gilliflower Leaf.

7. **Lunaria** *perennis lutea, folio leucoji, ramis expanſis. Vail.* Branching yellow perennial Moon-wort, with a Stock-Gilliflower Leaf.

There are ſome other Varieties of this Plant, which are preſerv'd in curious Botanick Gardens: But thoſe here mention'd are the beſt worth cultivating, for their Beauty.

The firſt of theſe Plants is very common in moſt old Gardens in *England*, and is commonly known by the Name of *Honeſty*, or *White Sattin:* It requires very little Culture, and ſhould be ſown ſoon after the Seeds are ripe in Autumn, upon a Bed or Border of common Earth, in almoſt any Situation, (provided it be not under the Dripping of Trees) in which Place they ſhould be ſuffer'd to remain; for they ſeldom thrive well if tranſplanted; and in *May* following they will produce Flowers, and the Seeds will ripen in *Auguſt*. The Seed-veſſels of this Plant, when they are full ripe, become very tranſparent, and of the Appearance of White Satten, at which time the Branches are cut off and dry'd; after which, they are preſerv'd to place in the Chimnies of Halls and large Rooms, where they appear very agreeable.

The other Sorts may be all propagated in the ſame manner as the former, with this Difference, *viz.* That as they are ſomewhat tenderer, ſo they ſhould have a warmer Situation, otherwiſe they are ſubject to be deſtroy'd in very cold Winters: They ſhould alſo have a dry Soil, which ſhould be freſh, but not dung'd; for if the Soil be too rank, they often canker and decay, eſpecially in wet Seaſons.

Theſe Plants are all of them pretty Varieties in large Gardens where there is Room: But they are ſeldom cultivated in ſmall Places, eſpecially the two firſt Sorts, which grow pretty large, and take up too much Room. Their Flowers are not very beautiful: But for the Oddneſs of their Seed-veſſels, as alſo the different Appearances of the Plants, they may be admitted.

The third, fifth, and ſixth Sorts are perennial Plants, which may be propagated by planting Cuttings of any of them in the Summer Months, in a ſhady Border of light freſh Earth, obſerving to water them until they have taken Root; after which, they may be remov'd into the Places where they are to remain, and muſt be treated as thoſe Plants which were rais'd from Seeds.

LUPINUS: Lupine.

The *Characters* are;

It hath a papilionaceous Flower, out of whoſe Empalement riſes the Pointal, which afterwards turns into a Pod, that is fill'd with either plain or ſpherical Seeds. To which may be added, The Leaves grow like Fingers upon the Footſtalks.

The *Species* are;

1. **Lupinus** *ſylveſtris, purpureo flore, ſemine rotundo vario. J. B.* Wild Lupine, with a purple Flower, and round variegated Seed, *commonly call'd* The Leſſer blue Lupine.

2. **Lupinus** *anguſtifolius cœruleus elatior. Raii Hiſt.* Narrow-leav'd taller blue Lupine.

3. **Lupinus** *ſylveſtris, flore luteo. C. B. P.* The common yellow Lupine.

4. **Lupinus** *peregrinus major, vel villoſus cœruleus major. C. B. P.* Foreign greater hairy Lupine, with a large blue Flower, *commonly call'd* The great blue Lupine.

5. **Lupinus** *peregrinus major, flore incarnato. H. L.* Foreign greater Lupine, with a Fleſh-colour'd Flower, *commonly call'd* The Roſe Lupine.

6. **Lupinus** *ſativus, flore albo. C. B. P.* Garden *or* Manured Lupine, with a white Flower.

7. **Lupinus** *cœruleus minor perennis Virginianus repens. Mor. Hiſt.* Smaller perennial creeping blue Lupine of *Virginia*.

There are ſeveral other Varieties of this Plant, which are preſerv'd in ſome curious Botanick Gardens, that differ chiefly in the Colour and Size of their Flowers and Fruit; but thoſe here mention'd are ſuch as generally are preferr'd, for the Beauty of their Flowers, for which alone they are propagated in the *Engliſh* Gardens.

The firſt Sort is very common in every Garden, being ſown in the Borders of the Flower-Garden, with other hardy Kinds of annual Plants, which do not require the Aſſiſtance of a Hot-bed to bring them forward. The Seeds of this, and the common *Yellow* and *White Lupines* are very common at every Seed-ſhop, where they are ſold at a very reaſonable Price. Theſe Seeds may be ſown in *April*, *May*, and *June*, in order to continue a Succeſſion of their Flowers thro' the Summer. They muſt be ſown where they are to remain; for they ſeldom do well if tranſplanted. They love a light Soil, not too rich or moiſt; in both which they are very ſubject to rot before they perfect their Seeds.

Theſe produce their Flowers ſucceſſively in *June*, *July*, and *Auguſt*, according to the Time of their being ſown, and do commonly grow about two Feet high; ſo that if they are rightly diſpoſed amongſt other annual Plants of the ſame Growth in Borders, they make an agreeable Variety. The Seeds of theſe Plants ſhould always be ſown in dry Weather; for if there ſhould happen to be much Wet ſoon after they are put into the Ground, it commonly rots them. The blue and white Sorts have no Scent, but the yellow has a very agreeable Odour, for which it is commonly preferr'd by moſt People to the others.

The narrow leav'd tall blue *Lupine* is not ſo common in *England* as the other Sorts, tho' in *Italy* and *Spain* it is one of the moſt common: in the former of which Places it is ſown to improve the Ground which is deſign'd for Vineyards; where, when the *Lupines* are in Flower, they cut them down, and plough them into the Ground as Manure: or, if they have not Time enough to do this, they parboil the Seeds, to prevent their growing, and ſow them upon the Ground, (allowing ſixteen Buſhels to an Acre) and plough them in: ſo that in theſe Countries it is a valuable Plant.

The fourth and fifth Sorts are ſtill more rare than any of the former, and only to be found in ſome curious Gardens, eſpecially the fourth, which was formerly very common, but is now almoſt loſt amongſt us:) Theſe Plants do grow three Feet high, and ſpread out into many Branches, which are furniſh'd with fine Spikes of large Flowers, which make a handſome Appearance, and continue a long Time in Beauty. The Seeds of theſe Plants ſhould be ſown very early in the Spring, upon a warm dry Border, where they muſt remain to flower; for if they are ſown late, they ſeldom perfect their Seeds with us; therefore the better way is to ſow them in *Auguſt*, under a warm Wall or Hedge, where the Plants will come up, and endure the Cold of our ordinary Winters very well: and theſe Plants will flower early the ſucceeding Summer, and never fail to produce ripe Seeds; whereas thoſe ſown in the Spring do very often miſcarry.

The ſeventh Sort is an abiding Plant, which grows in great Plenty in *America*; from whence the Seeds have been brought into *England*, where it thrives very well, provided it be ſuffer'd to remain in the Place where it was ſown; for the Roots of this Plant commonly run very deep into the Ground, which by removing are commonly broken, after which the Plant ſeldom does well. This ſhould be ſown on a light dry Soil, in which it will thrive very well, and continue ſeveral Years, producing fine Spikes of blue Flowers: but this Sort rarely perfects its Seeds in this Country.

LUPULUS, [this Plant takes its Name of *Lupus*, Lat. a *Wolf*, becauſe the Antients had a Notion, that *Wolves* were wont to hide themſelves under this Plant] The Hop.

The *Characters* are;

It hath a creeping Root; the Leaves are rough, angular, and conjugated; the Stalks do climb and twiſt about whatever is near them; the Flowers are Male and Female on different Plants; the Male Flowers conſiſt of a Calyx, divided into five Parts, which ſurrounds the Stamina, but has no Petals to the Flower; the Female Plants have their Flowers collected into ſquamoſe Heads, which grow in Bunches; from each of the leafy Scales is produced an horned Ovary, which becomes a ſingle roundiſh Seed.

The *Species* are;

1. LUPULUS *mas. C. B. P.* The Male Hop, *commonly call'd* the Wild Hop.
2. LUPULUS *fœmina. C. B. P.* The Female *or* manur'd Hop.

Of this laſt Sort, the People who cultivate them, reckon three different Varieties; as, firſt, the long and ſquare Garlick *Hop*; the long White *Hop*; and the Oval *Hop*; all which are indifferently cultivated in *England*: But of the Male *Hop* there has been no Notice taken of any different Varieties. This Sort grows wild in Hedges in divers Parts of *England*, but is never cultivated, as being of no Uſe.

There being the greateſt Plantation of *Hops* in *Kent*, that are in any County in *England*, it is very probable, that their Method of planting and ordering them ſhould be the beſt.

As for the Choice of their *Hop-Grounds*, they eſteem the richeſt and ſtrongeſt Grounds as the moſt proper; they chuſe a warm dry Soil, that has a good Depth of hazel Mould, and if it be rocky within two or three Feet of the Surface, the *Hops* will proſper well; but they will by no means thrive on a ſtiff Clay, or ſpungy wet Land.

If it may be, chuſe a Piece of Meadow or Lay-Ground to plant *Hops* on, ſuch as has not been till'd or ſown for many Years, or an old decay'd Orchard; for Land that is worn out by long bearing of Corn, will require Abundance of Dung, to bring it into any tolerable Condition to bear a Crop of *Hops*.

They accounting new Land beſt for *Hops*, the *Kentiſh* Planters plant their *Hop-Gardens* with *Apple-trees* at a large Diſtance, and with *Cherry-trees* between; that when the Land hath done its beſt for *Hops*, which they reckon it will in about ten Years, the Trees may begin to bear. The *Cherry-trees* laſt about thirty Years; and by that Time the *Apple-trees* are large, they cut down the *Cherry-trees*.

The *Eſſex* Planters account a moory Land the propereſt for *Hops*; tho' there are ſeveral other Sorts of Soil that are eſteemed very good.

Some account that Land that has a roſſelly Top, and a brick-earthy Bottom, the beſt: A true Roſſel, or light Land, is what they generally plant in, whether it be white or black.

Moory Land is of different Sorts; ſome being fix'd and heavy, ſo as to crack in Summer; and ſome ſo light, that in dry Seaſons it will blow away with the Wind; and ſome are of a middle Conſiſtence, being compoſed of both.

Theſe Moors, for Goodneſs and Value, are according to the Nature and Goodneſs of the Soil that is underneath them; which being flung upon the Surface, will make a very good Mixture, it being beſt to fling the under Soil downward for *Hops*; becauſe they naturally root downwards, ſometimes four or five Yards deep; and therefore the deepeſt and richeſt Soil is for them.

Few are acquainted with the Value of Moors, becauſe they do not ſearch into the Bottom of them, by reaſon of the Expenſiveneſs of doing it, and the Difficulty of carrying off the Water.

If the Land be moiſt, it ought be laid up in high Ridges, and to be well drain'd, and the Drain kept clear and open, eſpecially in Winter, that the Water do not rot, or too much chill the Roots.

If the Land be ſour, or cold, it will be very much help'd by burning it; and if the Haulm and Strings of the *Hops* be burnt every Year, and ſome of the Paring or Sides of the Garden or other Earth be laid on them as they burn, and then more Haulm be laid over that, and ſo continu'd Layer upon Layer, it will make an excellent Compoſt to make the Hills with.

As to the Situation of a *Hop-Ground*, one that inclines to the South or Weſt is the moſt eligible; but if it be expoſed to the North-Eaſt or South-Weſt Winds, there ſhould be a Shelter of ſome tall Trees at a Diſtance; becauſe the North-Eaſt are apt to nip the tender Shoots in the Spring, and the South-Weſt frequently break and blow the Poles at the latter End of the Summer, and very much endanger the *Hops*.

Hops require to be planted in an open Situation, that the Air may freely paſs round and between them, to dry up and diſſipate the Moiſture, whereby they would not be ſo ſubject to Fire-blaſts, which often deſtroy the Middles of large Plantations, while the Outſides remain unhurt.

As for the Preparation of the Ground for Planting, it ſhould, the Winter before, be plough'd and harrow'd even; and then lay upon it in Heaps a good Quantity of freſh rich Earth, or well-rotted Dung and Earth mix'd together, ſufficient to put half a Buſhel in every Hole to plant the *Hops* in, unleſs the natural Ground be very freſh.

Then lay a Line acroſs it, from the Hedge, in which Knots have been tied, at the Diſtance you deſign your *Hop-hills* to be at, about eight or nine Feet Diſtance the whole Length of the Ground, and place a ſharp-pointed Stick at every Knot; then lay aſide the Line, and with two forked Sticks of about eight or nine Feet long, you may from that firſt Row ſet out the whole Ground, by applying the two Forks to two of the Sticks which were firſt ſet up, and placing another Row at the Ends where the forked Sticks meet triangular-wiſe; then you ſhould dig a Hole at every Stick about a Foot and an half wide, and fill it full of the good Earth you brought in.

If you plough the Ground with Horſes between the Hills, it will be beſt to plant them in Squares Checquer-wiſe; but the *Quincunx* Form is the moſt beautiful, and it will alſo be better for the *Hop*: But if the Ground be ſmall, that it may be done with the Breaſt-Plough or Spade, it will do very well; but which Way ſoever you make uſe of, a Stake ſhould be ſtuck down at all the Places where the Hills are to be made.

Perſons ought to be very curious in the Choice of the Plants and Sets, as to the Kind of *Hop*; for if the *Hop-Garden* be planted with a Mixture of ſeveral Sorts of *Hops*, that ripen at ſeveral Times, it will cauſe a great deal of Trouble, and be a great Detriment to the Owner.

The two beſt Sorts are the white and the grey Bind; the latter is a large ſquare *Hop*, more hardy, and is the more plentiful Bearer, and ripens later than the former.

There is alſo another Sort of the white Bind, which ripens a Week or ten Days before the common; but this is tenderer, and a leſs plentiful Bearer: but it has this Advantage, it comes firſt to Market.

But if three Grounds, or if three diſtant Parts of one Ground be planted with theſe three Sorts, there will be this Conveniency, that they may be pick'd ſucceſſively as they become ripe.

The Sets ought to be procur'd out of Grounds that are intirely of the ſame Sort you would have; they ſhould be five or ſix Inches long, with three or more Joints or Buds on them, all the old Bind and hollow Part of the Set being cut off.

If there be a Sort of *Hop* you value, and would increaſe Plants and Sets from, the ſuperfluous Binds may be laid down when the *Hops* are tied, cutting off the Tops, and burying them in the Hill; or when the *Hops* are dreſs'd, all the Cuttings may be ſaved, and laid in Rows in a Bed of good Earth; for almoſt every Part will grow, and become a good Set the next Spring.

Some have tried to raiſe a *Hop-Ground* by ſowing Seeds; but that turns to no Account, becauſe that Way is not only tedious, but the *Hops* ſo produced are commonly of different Kinds, and many of them wild and barren.

As to the Seaſons of planting *Hops*, the *Kentiſh* Planters beſt approve the Months of *October* and *March*, both which ſucceed very well; but the common Sets are not to be had in *October*, unleſs from ſome Ground that is to be digg'd up and deſtroy'd; and likewiſe there is ſome Danger that the Sets may be rotted, if the Winter prove very wet: But the moſt uſual Time of procuring them is in *March*, when the *Hops* are cut and dreſs'd.

As to the Manner of planting the Sets, you ſhould put five good Sets in every Hole with a Setting-ſtick; one is to be placed in the Middle, and the reſt round about, ſloping, the Tops meeting at the Center: They muſt ſtand even with the Surface of the Ground: Let them be preſs'd cloſe with the Hand, and cover'd with fine Earth; and a Stick ſhould be placed on each Side the Hill, to ſecure it.

The Ground being thus planted, all that is to be done more that Summer, is to keep the Hills clear from Weeds, and to dig up the Ground about the Month of *May*, and to gather up the Stones, if more are turn'd up by digging, to raiſe a ſmall Hill round about the Plants: And in *June*, you muſt twiſt the young Binds or Branches together into a Bunch or Knot; for if they are tied up to ſmall Poles the firſt Year, in order to have a few *Hops* from them, it will not countervail the weakening of the Plants.

A Mixture of Compoſt or Dung being prepared for your *Hop-Ground*, the beſt Time for laying it on, if the Weather prove dry, is about *Michaelmas*, that the Wheels of the Dung-cart may not injure the *Hops*, nor furrow the Ground: If this be not done then, you muſt be obliged to wait till the Froſt has harden'd the Ground, ſo that it will bear the Dung-cart: And this is alſo the Time to carry on your new Poles, to recruit thoſe that are decay'd, and to be caſt out every Year.

If you have good Store of Dung, the beſt Way will be to ſpread it in the Alleys, all over the Ground, and to dig it in the Winter following. The Quantity they will require, will be forty Loads to an Acre, reckoning about thirty Buſhels to the Load.

If you have not Dung enough to cover all the Ground in one Year, you may lay it on one Part one Year, and on the reſt in another, or a third; for there is no Occaſion to dung the Ground after this Manner oftener than once in three Years.

Thoſe who have but a ſmall Quantity of Dung, uſually content themſelves with laying on about twenty Loads upon an Acre every Year; this they lay only on the Hills, either about *November*, or in the Spring; which laſt ſome account the beſt Time, when the *Hops* are dreſs'd, to cover them after they are cut; but if it be done at this Time, the Compoſt or Dung ought to be very well rotted and fine.

As to the dreſſing of the *Hops*; when the *Hop-Ground* is dug in *January* or *February*, the Earth about the Hills, and very near them, ought to be taken away with a Spade, that you may come the more conveniently at the Stock to cut it.

About the End of *February*, if the *Hops* were planted the Spring before, or if the Ground be weak, they ought to be dreſs'd in dry Weather; but elſe, if the Ground be ſtrong, and in Perfection, the Middle of *March* will be a good Time; and the latter End of *March*, if it be apt to produce over-rank Binds, or the Beginning of *April*, may be ſoon enough.

Then having, with a Iron Picker, clear'd away all the Earth out of the Hills, ſo as to make the Stock bare to the principal Roots, with a ſharp Knife you muſt cut off all the Shoots which grew up with the Binds the laſt Year; and alſo all the young Suckers, that none be left to run in the Alley, and weaken the Hill. It will be proper to cut one Part of the Stock lower than the other, and alſo to cut that Part low that was left higheſt the preceding Year. By purſuing this Method, you may expect to have ſtronger Binds, and alſo keep the Hill in good Order.

In dreſſing thoſe *Hops* that have been planted the Year before, you ought to cut off both the dead Tops and the young Suckers, which have ſprung up from the Sets, and alſo to cover the Stocks with a Hive with fine Earth a Finger's Length in Thickneſs.

About the Middle of *April* the *Hops* are to be Poled, when the Shoots begin to ſprout up; the Poles muſt be ſet to the Hills deep into the Ground, with a ſquare Iron Picker or Crow, that they may the better endure the Winds: Three Poles are ſufficient for one Hill. Theſe ſhould be placed as near the Hill as may be, with their bending Tops turn'd outwards from the Hill, to prevent the Binds from intangling; and a Space between two Poles ought to be left open to the South, to admit the Sun-beams.

The Poles ought to be in Length ſixteen or twenty Feet more or leſs, according as the Ground is in Strength; and great Care is to be taken not to over-pole a young or weak Ground; for that will draw the Stock too much, and weaken it. If a Ground be over-poled, you are not to expect a good Crop from it; for the Branches which bear the *Hops* will grow very little, till the Binds have over-reach'd the Poles, which they cannot do when the Poles are too long. Two ſmall Poles are ſufficient for a Ground that is young.

If you wait till the Sprouts or young Binds are grown to the Length of a Foot, you will be able to make a better Judgment where to place the largeſt Poles; but if you ſtay till they are ſo young as to fall into the Allies, it will be injurious to them, becauſe they will intangle one with another, and will not claſp about the Pole ſo readily.

Maple or *Aſpen* Poles are accounted the beſt for *Hops*, on which they are thought to proſper beſt, becauſe of their Warmth; or elſe, becauſe the climbing of the *Hop* is furthered by Means of the Roughneſs of the Bark. But for Laſtingneſs, *Aſhen* or *Willow* Poles are preferable: But *Cheſnut* Poles are the moſt durable of all.

If after the *Hops* are grown up, you find any of them have been under-poled, taller Poles may be placed near thoſe that are too ſhort, to receive the Binds from them.

As to the Tying of *Hops*, the Buds that do not claſp of themſelves to the neareſt Pole when they are grown to three or four Feet high, muſt be guided to it by the Hand, turning them to the Sun, whoſe Courſe they will always follow. They muſt be bound with wither'd Ruſhes, but not ſo cloſe as to hinder them from climbing up the Pole.

This you muſt continue to do till all the Poles are furniſh'd with Binds, of which two or three are enough for a Pole; and all the Sprouts and Binds that you have no Occaſion for, are to be pluck'd up: But if the Ground be young, then none of theſe uſeleſs Binds ſhould be pluck'd up, but ſhould be wrapt up together in the Middle of the Hill.

When the Binds are grown beyond the Reach of your Hands, if they forſake the Poles, you ſhould make uſe of a Stand-Ladder in tying them up.

Some adviſe, that if the Binds be very ſtrong, and overgrow the Poles very much, to ſtrike off their Heads with a long Switch, to increaſe their branching below.

Towards the Latter-end of *May*, when you have made an End of tying them, the Ground muſt have the Summer Digging: this is done by caſting up with the Spade ſome fine Earth into every Hill; and a Month after this is done, you muſt pare the Alleys with a Shovel, and make the Hills up to a convenient Bigneſs.

It is not at all to be doubted but that a thorough Watering would be of very great Advantage to *Hops* in a hot dry Summer: But it is ſo much Charge and Trouble to do this, that unleſs you have a Stream at hand, to flow the Ground, it is ſcarce practicable.

When the *Hops* blow, you ſhould obſerve if there be any wild barren Hills among them, and mark them, by driving a ſharpen'd Stick into every ſuch Hill, that they may be digged up, and replanted.

Hops, as well as other Vegetables, are liable to Diſtempers and Diſaſters, and, among the reſt, to the Fen.

The Reverend Dr. *Hales*, in his excellent Treatiſe of *Vegetable Staticks*, treating of *Hops*, gives us the following Account of the State of *Hops* in *Kent*, in the Year 1725, that he receiv'd from Mr. *Auſtin* of *Canterbury*, which is as follows:

In Mid-*April* not half the Shoots appear'd above Ground; ſo that the Planters knew not how to pole them to the beſt Advantage.

This Defect of the Shoot, upon opening the Hills, was found to be owing to the Multitude and Variety of Vermin that lay preying upon the Roots; the Increaſe of which, was imputed to the long and almoſt uninterrupted Series of dry Weather for three Months before. Towards the End of *April* many of the *Hop-Vines* were infeſted with Flies.

About the 20th of *May* there was a very unequal Appearance, ſome Vines being run ſeven Feet, others not above three or four; ſome juſt tied to the Poles, and ſome not viſible: and this diſproportionate Inequality in their Size, continued thro' the whole Time of their Growth.

The Flies now appear'd upon the Leaves of the forwardeſt Vines, but not in ſuch Numbers here, as they did in moſt other Places. About the Middle of *June* the Flies increaſed, yet not ſo as to endanger the Crop; but in diſtant Plantations they were exceedingly multiplied, ſo as to ſwarm towards the End of the Month.

June the 27th ſome Specks of Fen appear'd. From this Day to the 9th of *July* was very dry Weather. At this Time, when it was ſaid that the *Hops* in moſt Parts of the Kingdom look'd black and ſickly, and ſeem'd paſt Recovery, ours held it out pretty well, in the Opinion of the moſt ſkilful Planters.

The great Leaves were indeed diſcolour'd, and a little wither'd, and the Fen was ſomewhat increaſed. From the 9th of *July* to the 23d, the Fen increaſed a great deal; but the Flies and Lice decreaſed, it raining much daily. In a Week more, the Fen, which ſeem'd to be almoſt at a Stand, was conſiderably increaſed, eſpecially in thoſe Grounds where it firſt appear'd.

About the Middle of *Auguſt* the Vines had done growing both in Stem and Branch; and the forwardeſt began to be in the Hop, the reſt in Bloom: the Fen continued ſpreading where it was not before perceiv'd; and not only the Leaves, but many of the Burrs were alſo tainted with it.

About the 20th of *Auguſt* ſome of the *Hops* were infected with the Fen, and whole Branches corrupted by it. Half the Plantations had pretty well eſcaped hitherto, and from this Time the Fen increaſed but little: But ſeveral Days Wind and Rain in the following Week, ſo diſtorted them, that many of them began to dwindle, and at laſt came to nothing; and of thoſe that then remain'd in Bloom, ſome never turn'd to *Hops*; and of the reſt which did, many of them were ſo ſmall, that they very little exceeded the Bigneſs of a good thriving Burr.

We did not begin to pick till the 8th of *September*, which is eighteen Days later than we began the Year before: The Crop was little above two hundred on an Acre round, and not good. The beſt *Hops* ſold this Year at *Way-hill* for ſixteen Pounds the Hundred.

The Rev. Dr. *Hales*, in his aforeſaid Treatiſe, gives us an Account of the following Experiment that he made on *Hop-Vines*: He tells us, That in *July* he cut off two thriving *Hop-Vines* near the Ground, in a thick ſhady Part of the Garden, the Pole ſtill ſtanding; he ſtript the Leaves off from one of theſe Vines, and ſet their Stems in known Quantities of Water in little Bottles; that with Leaves imbibed in a twelve Hours Day, four Ounces; and that without Leaves three-fourths of an Ounce.

He took another *Hop-pole* with its Vines on it, and carried it out of the *Hop-Ground* into a free and open Expoſure; theſe imbibed and perſpired as much more as the former in the *Hop-Ground*: which is, doubtleſs, the Reaſon why the *Hop-Vines* on the Outſides of the Gardens, where they are moſt expoſed to the Air, are ſhort and poor, in Compariſon of thoſe in the Middle of the Ground; *viz.* becauſe being much dried, their Fibres harden ſooner, and therefore they cannot grow ſo kindly as thoſe in the Middle of the Ground, which, by Shade, are always kept moiſter, and more ductile.

The ſame curious Author proceeds as followeth: Now there being 1000 Hills in an Acre of Hop-Ground, and each Hill having three Poles, and each Pole three Vines, the Number of Vines will be 9000, each of which perſpiring four Ounces, the Sum of all the Ounces perſpired by an Acre in a 12 Hours Day will be 36000 Ounces = 15750000 Grains = 62007 Cube Inches, or 220 Gallons which divided by 6272640, the Number of ſquare Inches in an Acre, it will be found that the Quantity of Liquor perſpired by all the Hop Vines will be equal to an Area of Liquor as broad as an Acre, and $\frac{1}{101}$ Part of an Inch deep, beſides what evaporated from the Earth.

And this Quantity of Moiſture in a kindly State of the Air, if daily carried off, is a ſufficient Quantity to keep the *Hops* in an healthy State: But in a rainy moiſt State of Air, without a due Mixture of dry Weather, too much Moiſture hovers about the *Hops*, ſo as to hinder, in ſome meaſure, the kindly Perſpiration of the Leaves, whereby the ſtagnating Sap corrupts, and breeds mouldy Fen, which often ſpoils vaſt Quantities of flouriſhing Hop-Grounds.

This was the Caſe in the Year 1723, when for ten or fourteen Days almoſt continual Rains fell, about the latter half of *July*, after four Months dry Weather; upon which the moſt flouriſhing and promiſing *Hops* were all infected with Mould or Fen in their Leaves and Fruit, while the then poor and unpromiſing *Hops* eſcaped, and produced Plenty; becauſe they being ſmall, did not perſpire ſo great a Quantity as others; nor did they confine the perſpired Vapour, ſo much as the large thriving Vines did in their ſhady Thickets.

This Rain on the then warm Earth made the Graſs ſhoot out as faſt as if it were in a Hot-bed; and the Apples grew ſo precipitantly, that they were of a very flaſhy Conſtitution, ſo as to rot more remarkably than had ever been remember'd.

The Planters obſerve, that when a Mould or Fen has once ſeiz'd any Part of the Ground, it ſoon runs over the whole, and that the Graſs and other Herbs under the *Hops* are infected with it; probably, becauſe the ſmall Seeds of this quick-growing Mould, which ſoon come to Maturity, are blown over the whole Ground; which ſpreading of the Seed, may be the Reaſon why ſome Grounds are infected with Fen for ſeveral Years ſucceſſively, *viz.* from the Seeds of the laſt Year's Fen. Might it not then be adviſeable to burn the Fenny *Hop-Vines*, as ſoon as the *Hops* are pick'd, in hopes thereby to deſtroy ſome of the Seed of the Mould?

Mr. *Auſten* of *Canterbury* obſerves Fen to be more fatal to thoſe Grounds that are low and ſhelter'd, than to the high and open Grounds; to thoſe that are ſhelving to the North, than to thoſe ſhelving to the South; to the Middle of Grounds, than to the Outſides; to the dry and gentle Grounds, than to the moiſt and ſtiff Grounds.

This was very apparent throughout the Plantations where the Land had the ſame Workmanſhip and Help beſtow'd upon it, and was wrought at the ſame Time. But if in either of theſe Caſes there was a Difference, it had a different Effect; and the low and gentle Grounds, that lay neglected, were then ſeen leſs diſtemper'd than the open and moiſt, which were carefully managed and look'd after.

The Honey-Dews are obſerv'd to come about the 11th of *June*, which by the Middle of *July* turn the Leaves black, and make them ſtink.

The ſaid Dr. *Hales* relates, that in the Month of *July* (the Seaſon for *Fire-blaſts*, as the Planters call them) he has ſeen the Vines in the Middle of the *Hop-Ground* ſcorch'd up almoſt from one End of a large Ground to the other, when a hot Gleam of Sunſhine has come immediately after a Shower of Rain, at which Time the Vapours are all ſeen with the naked Eye, but eſpecially with reflecting Teleſcopes, to aſcend ſo plentifully as to make a clear and diſtinct Object become immediately very dim and tremulous: nor was there any dry gravelly Vein in the Ground along the Courſe of this Scorch: it was therefore, probably, owing to the much greater Quantity of ſcorching Vapours in the Middle, than the Outſides of the Ground; and that being a denſer Medium, it was much hotter than a more rare Medium.

And, perhaps, the great Volume of aſcending Vapours might make the Sun-beams converge a little towards the Middle of the Ground, that being a denſer Medium, and thereby increaſe the Heat conſiderably: for he obſerved, that the Courſe of the ſcorched *Hops* was in Lines at right Angles to the Sun-beams about Eleven o'Clock, at which Time the hot Gleam was.

The *Hop-Ground* was in a Valley which ran from South-Weſt to North-Eaſt; and, to the beſt of his Remembrance, there was but little Wind, and that in the Courſe of the Scorch: But had there been ſome other gentle Wind, either North or South, it is not improbable but that the North Wind gently blowing the Volume of riſing Wreak on the South Side of the Ground, that Side might have been moſt ſcorch'd; and ſo *vice verſa*.

As to particular Fire-blaſts which ſcorch here and there a few *Hop-Vines*, or one or two Branches of a Tree without damaging the next adjoining; what Aſtronomers obſerve, may hint to us no very improbable Cauſe of it, *viz.* They frequently obſerve, (eſpecially with reflecting Teleſcopes) ſmall ſeparate Portions of pellucid Vapours floating in the Air, which, tho' not viſible to the naked Eye, are yet conſiderably denſer than the circumambient Air: and Vapours of ſuch a Degree of Denſity, may very probably either acquire ſuch a ſcalding Heat from the Sun, as will ſcorch what Plants they touch, eſpecially the more tender.

An Effect, which the Gardeners about *London* have too often found, to their Coſt, when they have incautiouſly put Bell-glaſſes over their *Cauliflowers* early in a froſty Morning, before the Dew was evaporated off them; which Dew being raiſed by the Sun's Warmth, and confined within the Glaſs, did there form a denſe, tranſparent, ſcalding Vapour, which burnt and kill'd the Plants.

Or perhaps the upper or lower Surface of theſe tranſparent, ſeparate, flying Volumes of Vapours may, among the many Forms they revolve into, ſometimes approach ſo near to an Hemiſphere, or Hemi-cylinder, as thereby to make the Sun-beams converge, ſo as often to ſcorch the more tender Plants they ſhall fall on:

And ſometimes alſo Parts of the more hardy Plants and Trees, in proportion to the greater or leſſer Convergency of the Sun's Rays.

The Learned *Boerhaave*, in his *Theory of Chymiſtry*, p. 245, obſerves, That thoſe Clouds which appear in Summer-time, are, as it were, ſo many Mirrours, and occaſion exceſſive Heat. Theſe cloudy Mirrours are ſometimes round, ſometime concave, polygonous, *&c.* When the Face of Heaven is cover'd with ſuch white Clouds, the Sun ſhining among them, muſt of Neceſſity produce a vehement Heat; ſince many of his Rays, which would otherwiſe, perhaps, never touch our Earth, are hereby reflected to us. Thus, if the Sun be on one ſide, and the Clouds on the oppoſite one, they will be perfect Burning-glaſſes. And hence the Phænomena of Thunder.

I have ſometimes (continues he) obſerved a kind of hollow Clouds full of Hail and Snow, during the Continuance of which the Heat was extreme; ſince, by ſuch Condenſation, they were enabled to reflect more ſtrongly. After this, came a ſharp Cold, and then the Clouds diſcharged their Hail in great Quantity, to which ſucceeded a moderate Warmth. Frozen concave Clouds therefore, by their great Reflexions, produce a vigorous Heat; and the ſame, when reſolved, exceſſive Cold.

From which the Rev. Dr. *Hales* obſerves as follows:

Hence we ſee that Blaſts may be occaſion'd by the Reflexions of the Clouds, as well as by the above-mention'd Refraction of denſe tranſparent Vapours.

But to return to the Management of *Hops*:

About the Middle of *July* Hops begin to blow, and will be ready to gather about *Bartholomew-tide*. A Judgment may be made of their Ripeneſs, by their ſtrong Scent, their Hardneſs, and the Browniſh Colour of their Seed.

When by theſe Tokens they appear to be ripe, they muſt be pick'd with all the Expedition poſſible; for if at this Time a Storm of Wind ſhould come, it would do them great Damage, by breaking the Branches, and bruiſing and diſcolouring the *Hops*. And it is very well known, that *Hops* being pick'd green and bright, will ſell for a third Part more than thoſe which are diſcolour'd and brown.

The moſt convenient Way of picking them, is into a long ſquare Frame of Wood call'd a *Binn*, with a Cloth hanging on Tenter-hooks within it, to receive the *Hops* as they are pick'd.

This Frame is compoſed of four Pieces of Wood join'd together, ſupported by four Legs, with a Prop at each End to bear up another long Piece of Wood, placed at a convenient Height over the Middle of the Binn; this ſerves to lay the Poles upon, which are to be pick'd.

This Binn is commonly eight Feet long, and three Feet broad: two Poles may be laid on it at a time, and ſix or eight Perſons may work at it, three or four on each Side.

It will be beſt to begin to pick the *Hops* on the Eaſt or North Side of your Ground, if you can do it conveniently; this will prevent the South-Weſt Wind from breaking into the Garden.

Having made choice of a Plot of the Ground containing eleven Hills ſquare, place the Binn upon the Hill which is in the Centre, having five Hills on each Side; and when theſe Hills are pick'd, remove the Binn into another Piece of Ground of the ſame Extent, and ſo proceed till the whole *Hop-Ground* is finiſh'd.

When the Poles are drawn up to be pick'd, you muſt take great Care not to cut the Binds too near the Hills, eſpecially when the *Hops* are green, becauſe it will make the Sap to flow exceſſively.

And if the Poles do not come up without Difficulty, they ſhould be raiſed by a Piece of Wood in the nature of a Lever, having a forked Piece of Iron with Teeth on the Inſide, faſten'd within two Feet of the End.

The *Hops* muſt be pick'd very clean, *i. e.* free from Leaves and Stalks; and, as there ſhall be Occaſion, two or three times in a Day the Binn muſt be emptied into a *Hop-bag* made of coarſe Linen Cloth, and carried immediately to the Oaſt or Kiln, in order to be dried: for if they ſhould be long in the Binn or Bag, they will be apt to heat, and be diſcolour'd.

If the Weather be hot, there ſhould no more Poles be drawn than can be pick'd in an Hour; and they ſhould be gather'd in fair Weather, if it can be, and when the *Hops* are dry: this will ſave ſome Expence in Firing, and preſerve their Colour better when they are dried.

The beſt Method of Drying *Hops*, is with Charcoal on an Oaſt or Kiln cover'd with Hair-cloth, of the ſame Form and Faſhion that is uſed for drying of *Malt*. There is no need to give any particular Directions for the Making it; ſince every Carpenter or Bricklayer, in thoſe Countries where *Hops* grow, or *Malt* is made, knows how to build them.

The Kiln ought to be ſquare, and may be of ten, twelve, fourteen, or ſixteen Feet over at the Top, where the *Hops* are laid, as your Plantation requires, and your Room will allow. There ought to be a due Proportion between the Height and the Breadth of the Kiln and the Beguels of the Steddle where the Fire is kept; *viz.* if the Kiln be twelve Feet ſquare on the Top, it ought to be nine Feet high from the Fire, and the Steddle ought to be ſix Feet and an half ſquare, and ſo proportionable in other Dimenſions.

The *Hops* muſt be ſpread even upon the Oaſt a Foot thick, or more, if the Depth of the Curb will allow it; but Care is to be taken not to over-load the Oaſt, if the *Hops* be green or wet.

The Oaſt ought to be firſt warm'd with a Fire before the *Hops* are laid on; and then an even ſteady Fire muſt be kept under them: it muſt not be too fierce at firſt, leſt it ſcorch the *Hops*; nor muſt it be ſuffer'd to ſink or ſlacken, but rather be increaſed till the *Hops* be nearer dried, leſt the Moiſture or Sweat which the Fire has raiſed, fall back or diſcolour them. When they have lain about nine Hours, they muſt be turn'd, and in two or three Hours more they may be taken off the Oaſt. It may be known when they are well dried, by the Brittleneſs of the Stalks, and the eaſy falling off of the *Hop-Leaves*.

The *Dutch* and *Flemings* have another Method of drying their *Hops*: They make a ſquare Kiln or Room about eight or ten Feet wide, built of Brick or Stone, having a Door at one Side, and a Fire-place in the Middle of the Room, on the Floor, about thirteen Inches wide within, and thirteen Inches high, in Length from the Mouth of it almoſt to the Back-part of the Kiln, a Paſſage being left juſt enough for a Man to go round the End of it. This they call a Horſe, ſuch as is commonly made in Malt-kilns, the Fire paſſing out at Holes at each Side, and at the End of it.

The Bed or Floor, on which the *Hops* lie to be dried, is placed about five Feet high above; about that is a Wall, near four Feet high, to keep the *Hops* from falling.

A Window is made at one Side of the upper Bed, to ſhove off the dry *Hops* down into a Room prepared to receive them. The Beds are made of Laths or Rails ſawn very even, lying a quarter of an Inch diſtant from one another, with a Croſs-beam in the Middle, to ſupport them; the Laths are let in even with the Top of the Beam, and this keeps them even in their Places. This they call an Oaſt.

The *Hops* are laid on this Bed by Baſkets full, without any Oaſt-cloth, beginning at one End, and ſo going on till all is cover'd half a Yard thick, without treading them; then they even them with a Rake, that they may lie of an equal Thickneſs.

This being done, they kindle the Fire below, either of Wood or Charcoal; but the latter is accounted the better Fewel for *Hops*: The Fire is kept as much as may be at an equal or conſtant Heat, and only at the Mouth of the Furnace; for the Air will ſufficiently diſperſe it.

They do not ſtir them till they are throughly dried, *i. e.* till the Top is as fully dried as the Bottom; but if they find any Place not to be ſo dry as the reſt, (which may be known by reaching over them with a Stick or Wand, and touching them in ſeveral Places,) they obſerve where they do not rattle, and where they do; and where they do not rattle, they abate them there, and diſpoſe of them where the Places were firſt dry.

They know when they are throughly dry, by the Brittleneſs of the inner Stalk, if it be ſhort when it is rubb'd; which when they find, they take out the Fire, and ſhove out the *Hops* at the Window, that is made for that Purpoſe, into the Room made to receive them, with a Coal-rake made with a Board at the End of a Pole; and then go in at the Door below and ſweep up the *Hops* and *Seeds* that fall thro', and put them to the other *Hops*; then they lay another Bed of green *Hops*, and renew the Fire, and proceed as before.

This Method is diſapproved by ſome, becauſe (they ſay) the *Hops* lying ſo thick, and not being turn'd, the under Part of them muſt needs dry before the upper, and the Fire paſſing thro' the whole Bed to dry the uppermoſt, muſt neceſſarily over-dry and much prejudice the greateſt Part of the *Hops* both in Strength and Weight, beſides the unneceſſary Expence of Firing, which muſt be long continued to dry throughly ſo many together.

Therefore ſome have improved on this Method, and adviſed to make the Kiln much as is before directed as to the *Dutch* Way.

Firſt, To make a Bed of flat Ledges about an Inch thick, and two or three Inches broad, ſawn and laid acroſs one another the flat Way, Chequer-wiſe, at about three or four Inches Diſtance one from the other, the Edges being ſo enter'd one into the other, that the Floor may be even and ſmooth: This Bed may be made to reſt on two or three Joiſts, ſet Edgewiſe, to ſupport it from ſinking.

This Bed is to be cover'd with large double Tin, ſolder'd together at each Joint; and the Ledges muſt be ſo order'd, before they are laid, that the Joints of the Tin may always lie over the Middle of the Ledge, the Bed being wholly cover'd over with Tin, Boards muſt be fitted about the Edges of the Kiln, to keep up the *Hops*; but one Side muſt be made to remove, that the *Hops* may be ſhoved off as before.

On this Bed or Floor of Tin, the *Hops* may be turn'd without ſuch Hazard or Loſs, as upon the Hair-cloth, and alſo it will require a leſs Expence of Fewel; and beſides, any Sort of Fewel will ſerve in this Kiln, as well as Charcoal, becauſe the Smoak does not paſs thro' the *Hops*, as it does the former Ways: But then Care is to be taken, that there be Paſſages made for it at the ſeveral Corners and Sides of the Kiln.

It is found by Experience, that the turning of the *Hops*, tho' it be after the moſt eaſy and beſt Manner, is not only an Injury and Waſte to the *Hops*, but alſo an Expence of Fewel and Time; becauſe they require as much Fewel, and as long a Time to dry a ſmall Quantity, by turning them, as a large one.

Now this may be prevented, by having a Cover (to be let down and raiſed at Pleaſure) to the upper Bed whereon the *Hops* lie.

This Cover may alſo be Tinn'd, by nailing ſingle Tin Plates over the Face of it, ſo that when the *Hops* begin to dry, and are ready to burn, *i. e.* when the greateſt Part of their Moiſture is evaporated, then the Cover may be let down within a Foot or leſs of the *Hops*, (like a Reverberatory) and will reflect the Heat upon them, ſo that the Top will ſoon be as dry as the Lowermoſt, and every *Hop* be equally dried.

As ſoon as the *Hops* are taken off the Kiln, lay them in a Room for three Weeks or Month, to cool, give, and toughen; for if they are Bagg'd immediately, they will powder; but if they lie a while, (and the longer they lie the better, provided they be cover'd cloſe with Blankets to ſecure them from the Air) they may be Bagg'd with more Safety, as not being liable to be broken to Powder in treading, and this will make them bear treading the better; and the harder they are trodden, the better they will keep.

The common Method of Bagging is as follows: They have an Hole made in an upper Floor, either round or ſquare, large enough to receive a Hop-bag, (which conſiſts of four Ells and an half of Ell-wide Cloth, and alſo contains ordinarily Two hundred and an half of *Hops*;) they tie a Handful of *Hops* in each lower Corner of the Bag, to ſerve as Handles to it; and they faſten the Mouth of the Hole, ſo placed that the Hoop may reſt upon the Edges of the Hole.

Then he that is to tread the *Hops* down into the Bag, treads the *Hops* on every Side, another Perſon continually putting of them in as he treads them, till the Bag is full; which being well fill'd and trodden, they unrip the Faſtening of the Bag to the Hoops, and let it down, and cloſe up the Mouth of the Bag, tying up a Handful of *Hops* in each Corner of the Mouth, as was done in the lower Part.

Hops being thus pack'd, if they have been well dried, and laid up in a dry Place, they will keep good ſeveral Years: But Care muſt be taken that they be neither deſtroy'd nor ſpoil'd by the Mice making their Neſts in them.

The Crop of *Hops* being thus beſtow'd, you are to provide for another; firſt by taking care of the Poles againſt another Year, which are beſt to be laid up in a Shed, having firſt ſtripp'd off the Haulm from them: But if you have not that Conveniency, ſet up three Poles in the Form of a Triangle, or ſix Poles (as you pleaſe) wide at Bottom; and having ſet them into the Ground, with an Iron Picker, and bound them together at Top, ſet the reſt of your Poles about them: and being thus diſpoſed, none but thoſe on the Outſide will be ſubject to the Injuries of the Weather; for all the inner Poles will be kept dry, unleſs at the Top; whereas if they were on the Ground, they would receive more Damage in a Fortnight, than by their ſtanding all the reſt of the Year.

In the Winter-time, provide your Soil and Manure for the *Hop-Ground* againſt the following Spring.

If the Dung be rotten, mix it with two or three Parts of common Earth, and let it incorporate together till you have Occaſion to make uſe of it in making your *Hop-hills*; but if it be new Dung, then let it be mix'd as before, till the Spring come Twelve-months; for new Dung is very injurious to *Hops*.

Dung of all Sorts was formerly more commonly made uſe of than now it is, eſpecially when rotted and turn'd to Mould; and they who have no other Manure muſt uſe it: Which if they do, Cows or Hogs Dung, or human Ordure mix'd with Mud may be a proper Compoſt; becauſe *Hops* delight moſt in a Manure that is cool and moiſt.

Some recommend Chalk or Lime as the beſt Manure, except in cold Lands; and in ſuch, Pigeons Dung will do beſt; a little of which laid to a Hill, and ſo mix'd that it may not be too hot in a Place, is of great Advantage.

LUTEOLA, [ſo call'd of *Luteus*, Lat. *Yellow*, becauſe it is uſed in dying a yellow Colour] Weld, Would, Yellow-weed, *or* Dyers-weed.

The *Characters* are;

The Leaves are oblong and intire; it hath an anomalous Flower, conſiſting of many diſſimilar Leaves; the Fruit is globular, hollow, and divided into three Parts.

The *Species* are;

1. LUTEOLA *herba, ſalicis folio. C. B. P.* Common Weld.
2. LUTEOLA *minima, polygalæ folio. D. du Bois. Raii Syn.* Smalleſt Weld, with a Milkwort Leaf.

The firſt of theſe Plants is very common in *England*, growing upon dry Banks and the Tops of Walls and Buildings, almoſt every-where; but the ſecond Sort is very rare: This was found near *Tunbridge-Wells* by *Charles Du Bois*, Eſq; ſeveral Years ſince.

The common *Weld* is accounted a rich Dyers Commodity, and is of great Advantage, conſidering the ſmall Expence of its Culture: It will grow upon the pooreſt Sort of Land, provided it be dry; tho' upon a middling Soil it will grow much larger. The Seeds of this Plant ſhould be ſown the Beginning of *Auguſt*, ſoon after ripe; when it will come up with the firſt moiſt Weather, and will grow very ſtrong the ſame Autumn, provided it be ſown by itſelf; for moſt People ſow it with Corn, which is very wrong; for that hinders its Progreſs greatly, and occaſions the Loſs of one whole Year. When the Plants are come up pretty ſtrong, you ſhould hough them, (as is practiſed with *Turnips*) in order to deſtroy the Weeds, as alſo to cut up the Plants where they grow too thick, which will greatly improve them; and the ſucceeding Spring, if the Ground produces many Weeds, you ſhould give it a ſecond Houghing in *April*, which will preſerve it clean from Weeds; for after that the *Weld* will grow, and prevent the Weeds from coming to a Head afterwards.

You muſt be very cautious in the gathering of it, that the Seed be not over-ripe, ſo as to fall out, and that neither the Stalk or Seed be under-ripe; becauſe if it be, both will be ſpoil'd. It muſt be pull'd up and bound in little Handfuls, and ſet to dry, as you do *Flax*, and then houſe it carefully, that you ſhake not out the Seed, which is eaſily beat out, and ſhould be ſown (as was before directed) ſoon after it is ripe.

This Seed is commonly ſold for about Ten Shillings *per* Buſhel, or more; a Gallon of which will ſow an Acre; for it is very ſmall.

There are ſome who recommend the ſowing this Seed in the Spring, mixing it with a Crop of *Barley* or *Oats*, and only harrow'd in with a Buſh, or roll'd with a Roller. But this is not a good Method; for the *Barley* or *Oats* will ſtarve the *Weld*, and make it very poor: and, many Times, the Seeds which are ſown in the Spring do not grow, or not come up, till the Autumn following; whereas that ſown in the Beginning of *Auguſt*, rarely fails to come up ſoon after, and will be much ſtronger, and fit to pull the ſucceeding Summer, when the other is always two Years before it is pull'd. The *Dyers* uſe it for dying of bright Yellows and Lemon Colours. It is much ſown in *Kent*, eſpecially about *Canterbury*, and often yields from Forty Shillings to Ten or Twelve Pounds an Acre.

LYCHNIS, [ſo call'd of λύχνος, a *Candle* or *Light*, becauſe the Flowers of this Plant imitate the Flame or Rays of Light] Campion.

The *Characters* are;

The Leaves are whole, and grow oppoſite by Pairs upon the Stalks: The Cup of the Flower is whole, and either tubulous or ſwelling, and for the moſt part furrow'd: The Flower conſiſts of five Leaves, which expand in form of a Clove-Gilliflower, *and are generally Heart-ſhaped: The Ovary, which riſes in the Center of the Calyx, becomes a conical Fruit, which is wrapt up in the Flower-cup, and has commonly one Cell, which is fill'd with Seeds, which are roundiſh, angular, and Kidney-ſhaped.*

The *Species* are;

1. LYCHNIS *coronaria Dioſcoridis, ſativa, flore dilute rubente. C. B. P.* Garden *or* Roſe Campion, with a pale-red Flower.
2. LYCHNIS *coronaria Dioſcoridis, ſativa, flore rubro, velut flammeo fulgens. C. B. P.* Roſe Campion, with a flaming red-colour'd Flower.
3. LYCHNIS *coronaria ſativa multiplex. C. B. P.* The double Roſe Campion.
4. LYCHNIS *coronaria ſativa Dioſcoridis, flore albo. C.B.P.* The ſingle White Roſe Campion.
5. LYCHNIS *umbellifera montana Helvetica. Zan.* Umbelliferous Mountain Campion of *Helvetia*.
6. LYCHNIS *alba multiplex. C. B. P.* Double White Campion, *commonly called*, The Double Batchelor's Button.
7. LYCHNIS *purpurea multiplex. C. B. P.* Double Red Campion, *commonly called*, The Double Red Batchelor's Button.
8. LYCHNIS *pratenſis, flore laciniato pleno. Mor. Hiſt.* The Double Meadow Campion, with a jagged Flower, *commonly called*, The Double Ragged Robin.
9. LYCHNIS *hirſuta, flore coccineo, major. C. B. P.* The ſcarlet *Lychnis*, Nonſuch, Jeruſalem Croſs, *or* Flower of Conſtantinople.
10. LYCHNIS *hirſuta, flore incarnato, major. C. B. P.* Great Hairy Campion, with a Fleſh-colour'd Flower, *commonly called*, The pale *Lychnis* of Conſtantinople.
11. LYCHNIS *Chalcedonica, flore pleno miniato, ſeu aurantiaco. Mor. Hiſt.* The Double Scarlet *Lychnis*, or Flower of Conſtantinople.
12. LYCHNIS, *ſeu ſaponaria, flore pleno. Tourn.* Double Soapwort, *vulgo*.
13. LYCHNIS *ſylveſtris, quæ Been album, vulgo. C. B. P.* Wild Campion Spatling Poppy, *or* White Behen of the Shops.
14. LYCHNIS *ſylveſtris viſcoſa anguſtifolia rubra. C. B. P.* Red German Catchfly.
15. LYCHNIS *ſylveſtris viſcoſa anguſtifolia rubra, flore pleno.* Red German Catchfly, with a double Flower.
16. LYCHNIS *orientalis, bupleuri folio. T. Cor.* Eaſtern Campion, with a Hare's-ear Leaf.
17. LYCHNIS *facie Auriculæ urſi. C. B. P.* Campion with the Face of an Auricula.
18. LYCHNIS *maritima ſaxatilis, folio anacampſerotis. T. Cor.* Maritime Rocky Campion, with an Orpine Leaf.

19. Lychnis *noctiflora anguſtifolia odorata. Tourn.* Night-flower'd ſweet-ſcented Campion, with a narrow Leaf.

20. Lychnis *fruteſcens myrtifolia, Beën albo ſimilis. C. B. P.* Shrubby Myrtle-leaved Campion, like the White Behen.

21. Lychnis *ſegetum rubra, foliis perfoliatæ. C. B. P.* Red Corn-Campion, with thorough Wax Leaves.

22. Lychnis *ſupina Sicula, calyce ampliſſimo ſtriato. Tourn.* Low Sicilian Campion, with a large ſtreak'd Flower-cup.

23. Lychnis *ſylveſtris viſcoſa anguſtifolia rubra altera. C. B. P.* Another narrow-leav'd wild Campion, with a viſcous Stalk, and red Flowers.

24. Lychnis *viſcoſa purpurea latifolia lævis. C. B. P.* Purple viſcous Campion, with a broad ſmooth Leaf, *commonly called*, Lobel's Catchfly.

25. Lychnis *viſcoſa alba latifolia lævis. C. B. P.* White flowering broad-leav'd Catchfly.

26. Lychnis *hirſuta minor, flore variegato. Tourn.* Small hairy Campion, with a variegated Flower, *commonly called*, Dwarf Lychnis.

27. Lychnis *Hiſpanica, folio kali, multiflora. Tourn.* Spaniſh many-flower'd Campion, with a Glaſs-wort Leaf.

28. Lychnis *Hiſpanica, valerianæ rubræ folio, purpuraſcente flore. Tourn.* Spaniſh Campion, with a red Valerian Leaf, and a purpliſh Flower.

29. Lychnis *ſegetum meridionalium annua, hirſuta, floribus rubris, uno verſu diſpoſitis. Mor. Hiſt.* Corn annual hairy Campion, with red Flowers diſpoſed on one Side of the Stalk.

30. Lychnis *ſylveſtris alba, ſpica reflexa. Bot. Monſp.* White wild Campion, with a reflex'd Spike.

The firſt, ſecond, and fourth Sorts are very common in moſt *Engliſh* Gardens: Theſe are very hardy Plants, and eaſily propagated either by parting of their Roots, or from Seed; if by parting the Roots, it ſhould be done about the latter End of *Auguſt*, or the Beginning of *September*, that they may take Root before the cold Weather comes on: They may be planted in any Situation, provided they have a light dry Soil. If you would propagate them from Seeds, they ſhould be ſown in *March*, upon a Bed of freſh light Earth; and in *May* the Plants ſhould be tranſplanted into another Bed of the like freſh Earth, at about ſix Inches Diſtance from each other; obſerving to water and ſhade them until they have taken Root; after which, they will require no farther Culture than to keep them clear from Weeds.

At *Michaelmas* following, theſe Plants may be placed into the large Borders of the Pleaſure-Garden; where, the Summer following, they will produce their Flowers in *June* and *July*; and ſoon after, their Seeds will ripen, which, if permitted to ſhed on the Ground, will riſe the ſucceeding Spring, without any Care.

Theſe Plants, when intermix'd with others of the like Size, do make an agreeable Variety during the Seaſon of Flowering.

The *Double Roſe Campion* is ſomewhat nicer, and requires more Care in its Culture than any of the former: This never produces any Seeds, and is therefore only to be propagated by parting the Roots; the beſt Time for which is in *Auguſt*, when the Heads taken off ſhould be planted on a Bed of light freſh Earth; and if the Seaſon ſhould prove dry, they muſt be water'd and ſhaded until they have taken Root: After which, they muſt be kept clear from Weeds; and during the Winter Seaſons, they ſhould be ſkreen'd from exceſſive Rains; for too much Moiſture at that Seaſon, very often rots them. In *March* they may be taken up with a Ball of Earth to their Roots, and tranſplanted either into the Borders of the Flower-Garden, or in Pots fill'd with light freſh Earth, and placed where they may have the Morning Sun till Eleven o' Clock, in which Situation they will thrive better than when they have more of the Sun. In dry Weather they muſt be frequently water'd: But you ſhould never let them have too much Wet; for that will canker and rot them, as will alſo a very rich Soil. This Plant commonly grows about two Feet high, and produces a great Number of beautiful red Flowers in *June* and *July*, which continue a long Time, for which they are greatly eſteemed.

The *Umbelliferous Mountain Campion* is nearly akin to the before-mention'd Sorts, but produces its Flowers in an Umbel upon the Top of the Stalks, which are of a bright red Colour, and make a very pretty Variety in a Garden: This ſeldom grows above eight or nine Inches high, therefore it ſhould be placed amongſt Flowers of the ſame Growth; it delights in a light freſh undung'd Soil, and ſhady Situation, and may be propagated either from Seeds, which it commonly affords in great Plenty, or from Slips, as the before-mentioned Sorts.

The *Red* and *White Batchelor's Button* are very hardy Plants, in reſpect to Cold: But if they are ſuffer'd to remain long in a Place unremoved, they are very ſubject to rot and decay. They never produce Seeds, ſo are propagated only by parting of their Roots, which may be done either in *September*, or in the Beginning of *March*: But the former Seaſon is preferable; for they will then be well rooted in the Ground before the dry Weather of the Spring comes on, whereby they will be out of Danger from that; whereas thoſe planted in the Spring, if the Weather ſhould prove dry ſoon after, will ſtarve, and be very weak, unleſs frequently water'd: Theſe commonly grow above two Feet high, and produce their Flowers in *June* and *July*: They love a freſh loamy Soil, which ſhould not be dung'd, and to have a Situation to the Morning Sun, in which they will thrive better than in a more open Expoſure.

The *Double Ragged Robin* is alſo increaſed by parting the Roots in Autumn: This Plant muſt have a moiſt Soil, and ſhady Situation, where it will thrive exceedingly: But in a hot dry Soil it ſeldom does well. It produces its Flowers about the ſame Time as the former, and is very proper for ſhady cold Borders, where few other Plants will thrive.

The *Single Scarlet Lychnis* may be either propagated by ſowing the Seeds, or parting the Roots: if from Seeds, it ſhould be ſown on a Bed of light Earth in the Beginning of *March*; and when the Plants are come up pretty ſtrong, (which is commonly in *May*) they ſhould be tranſplanted out into Nurſery-beds at about ſix Inches Diſtance each Way, obſerving to water and ſhade them until they have taken Root; after which they will require no farther Care, but only to keep them clear from Weeds until *Michaelmas*; at which time they may be removed into the Borders of the Flower-Garden, where the next Summer they will produce very ſtrong Stems of Flowers: but if you would propagate them by parting the Roots, it ſhould be done in *September*, (as was directed for the fore-mention'd Sorts.) This Plant will grow in almoſt any Soil or Situation, but does beſt in a middling loamy Soil, and an open Expoſure.

The *Double Lychnis* or *Nonſuch* is only propagated by parting the Roots, or planting the Cuttings of its Flower-ſtems, which, if water'd and ſhaded, will take Root very well, and make good Plants. The beſt Seaſon for parting the Roots is in *September*: but for planting the Cuttings, *July* is the moſt proper Seaſon: in doing of this, you ſhould take only the lower Parts of the Flower-ſtems, which generally ſucceed much better than the extreme Parts: the Cuttings ſhould have three Joints, two of which ſhould be placed in the Ground, and the third only left above Ground, from which the Shoot will be produced, and make a good Plant; by which Method this beautiful Flower may be propagated much faſter than from the Root alone.

This Plant delights in a freſh light Soil, which is not too dry, where it will produce very ſtrong Stems, and riſe about three Feet high. This flowers in *July*, and if the Seaſon does not prove very hot, will continue in Beauty a whole Month, for which it is greatly eſteem'd.

The *Double Sopewort* is a Plant of no great Beauty; and being a very great Runner in Gardens, has been almoſt excluded from all curious Gardens: but as it is a Plant which requires very little Culture, ſo it may be admitted to have a Place in ſome abject Part of the Garden. This is propagated by its running Roots, which ſhould be tranſplanted in *October*, and may be placed in any Soil and Situation; but ſhould never ſtand near any other Plants, for it will over-run and deſtroy them. It may be planted under Trees in large Avenues, *&c.* where it will thrive very well, and in *Auguſt* will produce large Bunches of double Flowers, which are very proper to place in Chimnies, *&c.* or in Baſons among other Flowers, where it will make a fine Appearance; and were it leſs common, it would be more eſteem'd than it is at preſent.

The *Spattling Poppy* or *White Behen* is a very common Plant in the Fields, in moſt Parts of *England*, and is rarely cultivated in Gardens; but thoſe who have a mind to preſerve it for Medicinal Uſes, may propagate it by ſowing the Seeds in *March*, on a Bed of common Earth, where the Plants will eaſily riſe, and if kept clear from Weeds, will ſoon overſpread the Ground, and will continue for ſeveral Years.

The *Red German Catchflies*, both ſingle and double, are eaſily propagated by parting the Roots, which ſhould be done in Autumn; for if it be perform'd in the Spring, the dry Weather, which uſually happens at that Seaſon, greatly retards their Growth, whereby their Flowers are never ſo ſtrong, nor produced in ſuch Plenty, as when they are removed in Autumn. Theſe produce their Flowers in Spikes upon clammy Stalks, which grow about a Foot high, and flower in *April* and *May*: that with ſingle Flowers always is the earlieſt, but the double Sort continues longeſt in Flower.

The ſingle Sort may be propagated by Seeds, which ſhould be ſown in *March*, upon a Bed of light Earth; and when the Plants come up, they ſhould be tranſplanted into Nurſery-beds about ſix Inches aſunder, where they will require no farther Care than to keep them clear from Weeds, and in very dry Weather to give them a little Water, and at *Michaelmas* they may be removed where they are deſigned to remain.

The ſingle flower'd Sort is not near ſo beautiful as the double, and therefore hardly worth propagating, ſince the double is very eaſily multiplied, eſpecially if planted in a moiſt light Soil, in which it will thrive exceedingly, and produce ſtrong Flowers. This Sort is very proper to Plant in Pots, to adorn ſmall Court-yards at the Time of its Flowering.

The ſixteenth and nineteenth Sorts are pretty Varieties in a Garden; and as they take up but little Room, and are not very nice in their Culture, they may have a Place amongſt other Flowers of the ſame Growth. Theſe are propagated by ſowing their Seeds in *March*, upon a Bed of light freſh Earth; and when the Plants are come up, they ſhould be tranſplanted into a Nurſery-bed, as the former, and at *Michaelmas* may be removed into the Borders of the Flower-Garden, where they are to remain. Theſe Plants commonly grow about two Feet high; but as their Leaves are narrow, and the Flower-ſtems ſtand erect, ſo they take up very little Room, and their Roots will continue ſeveral Years, and annually produce large Quantities of Flowers: theſe delight in a freſh light dry Soil.

The ſeventeenth is a biennial Plant, and is only propagated by Seeds, which ſhould be ſown on a Border of freſh light Earth in *March*; and when the Plants are come up, they ſhould be tranſplanted: ſome of which ſhould be planted in Pots fill'd with the ſame freſh Earth, that they may be removed under ſhelter in Winter; for it often happens, in ſevere Winters, that thoſe Plants which are placed in the open Air are deſtroy'd; for which Reaſon it is adviſeable to have ſome of the Plants in ſhelter to ſecure the Kind.

The other Plants may be planted in a Nurſery-bed, as was directed for the former Kinds, where they may remain until *Michaelmas*; at which time they ſhould be tranſplanted into warm Borders, and in a light dry Soil, where they will endure the Cold of our ordinary Winters very well, and flower very ſtrong the ſucceeding Summer. This Plant commonly grows three Feet high, and is apt to branch out pretty much, therefore ſhould be ſupported by Stakes, otherwiſe the Wind often breaks down the Flower-ſtems before the Seeds are perfected.

The eighteenth Sort is alſo tender: this may be propagated by ſowing the Seeds in the ſame Manner as the former; and when the Plants come up, ſome of them ſhould be planted into Pots fill'd with light freſh undung'd Earth, that they may be ſhelter'd in Winter; and the reſt planted into a Nurſery-bed, which ſhould be prepared of freſh light Earth that has not been dung'd; for Moiſture and Richneſs in the Soil will deſtroy them: in this Place they may remain till *Michaelmas*, when they ſhould be removed into very warm Borders; and if they are placed quite cloſe to the Wall, where it is commonly very dry, they will ſucceed the better; as alſo planted on a dry rubbiſhy Soil; for the Leaves of this Plant are very thick and ſucculent, as are all the Stems, ſo that it is as impatient of Wet as the *Sedum* or *Houſeleek*; and I do not certainly know whether this Plant would not bear a greater Share of Cold, if it was planted upon an old Wall or Building, where it might be always dry, and not have too much Nouriſhment from the Ground. The following Summer this Plant will produce its Flowers, (which, tho' they are not very beautiful, yet for the Oddneſs of the Plant it may have a Place in a good Garden) and the Seeds generally ripen in *Auguſt*: it may alſo be propagated by planting Cuttings in any of the Summer Months, which will take Root, and may be afterwards managed as the Seedling Plants.

The *Myrtle-leav'd ſhrubby Campion* may be propagated by Seeds as the former, or increaſed by planting Cuttings in any of the Summer Months, which will ſoon after take Root, and become ſtrong Plants; ſome of which ſhould be planted in Pots, that they may be ſhelter'd in Winter, for fear of being loſt; tho' they will endure the Cold of our Climate very well, if planted on a dry Soil. There is no great Beauty in this Plant; but it is preſerved for Variety-ſake in ſeveral curious Gardens.

The twenty-ſeventh and twenty-eighth Sorts are abiding Plants, and may be propagated either by Seeds or parting their Roots, in the Manner which has been directed for the *Roſe Campion*, and other Sorts before mention'd: they are very hardy, and will grow upon almoſt any Soil or Situation: they produce their Flowers in *June* and *July*, and their Seeds ripen ſoon after.

The other Sorts are all of them annual Plants, which may be eaſily propagated by ſowing their Seeds either in *March* or *Auguſt*, when the Plants will ſoon come up, and may be tranſplanted, while young, into the Places where they are deſign'd to remain; or the Seeds may be ſcatter'd in Patches upon the large Borders of the Flower-Garden; and when the Plants are come up, they may be thinn'd, leaving ſome of the ſtrongeſt to flower in the ſame Places, and the other Plants may be removed into other Parts of the Garden.

Thoſe Plants which come up in Autumn will be much larger, and flower earlier and ſtronger than thoſe ſown in the Spring, and will produce good Seeds; whereas it ſometimes happens, in bad Seaſons, that thoſe ſown in the Spring do often decay before their Seeds are perfected; tho' it is a good Method to ſow at both Seaſons, becauſe hereby there will be a Succeſſion of their Flowers, and two Chances for good Seeds.

The *Dwarf Lychnis* has been by ſome recommended to be ſown for Edgings in large Gardens; but I think it by no means proper for that Purpoſe; for when the Plants grow very cloſe together, they draw up weak, ſo that in hard Rains they are beaten down flat to the Ground, and the Flowers ſeldom continue long in Beauty, ſo that it does not afford any Pleaſure above a Fortnight or three Weeks at moſt, after which it appears very unſightly; for when it is in Seed, the Weight of that forces it down upon the Ground; but when the Plants grow ſingly, they will be much larger and ſtronger, and continue longer in Flower.

The two Sorts of *Lobel's Catchfly* have been long cultivated in Gardens, and the Seeds are commonly ſold at the Seed-ſhops in *London*: theſe grow upright to the Height of ſixteen or eighteen Inches, (if ſown in the Autumn, but thoſe which are ſown in the Spring ſeldom grow ſo large) and produce pretty Tufts of Flowers upon the Tops of the Branches in Form of an Umbel, which continue a long time in Perfection, and are pretty Ornaments in a large Garden.

The twenty-ſecond Sort ſpreads upon the Ground, and therefore muſt be allow'd more Room than the former: theſe Plants ſhould be planted two Feet aſunder, otherwiſe they will run into each other, (eſpecially ſuch as are ſown in the Autumn) ſo that in wet Weather they are ſubject to rot and decay. This produces a great Number of beautiful red Flowers, which make a very agreeable Appearance during their Seaſon of Flowering.

There are a great number of Sorts more than I have here mention'd, which are preſerv'd in curious Botanick Gardens for Variety-ſake; but as moſt of them are Plants of little Beauty, ſo I thought it needleſs to enumerate them in this Place, ſince thoſe here mention'd are the beſt worth propagating in a Flower-Garden.

But before I quit this Article, I ſhall beg Leave to add two Plants to this Genus by Way of Appendix, tho', according to their Characters, they do not, in Strictneſs, belong to it, differing in their Flowers from the *Lychnis's*, which have their Flowers cut to the Bottom into five Parts; whereas the Flowers of theſe Kinds are intire, conſiſting of one Leaf: which Diſtinction being not very great, the modern Botaniſts have thought proper to diſtinguiſh them by the Name of *Lychnidea*, which ſignifies ſomething like a *Lychnis*. Of this Genus we have, at preſent, but two Species which are common in *England*, *viz.*

1. Lychnidea *Virginiana, holoſtei ampliore folio, floribus umbellatis purpureis. Rand.* Virginian Lychnidea, with a broad Stitchwort Leaf, and purple Flowers growing in an Umbel.

2. Lychnidea *Caroliniana, floribus quaſi umbellatim diſpoſitis, foliis lucidis craſſis acutis. Martyn. Hiſt. Plant. Rar.* Carolina Lychnidea, with Flowers growing almoſt in an Umbel, and thick ſhining ſharp-pointed Leaves.

Theſe two Plants are propagated either by Cuttings, or parting of their Roots; for they do not produce Seed in this Country. The beſt Time to part their Roots is in the Beginning of *April*, juſt before they begin to ſhoot; when you ſhould take up the Roots, and after having pared off the outer Part of the Ball of Earth, ſo as to ſee where the Heads divide diſtinctly, you muſt with a Knife ſeparate them, ſo as to preſerve ſome Buds upon the Top of each Diviſion; then you may plant them either into Borders of freſh Earth, or Pots fill'd with good freſh loamy Earth, obſerving to water them, if the Seaſon ſhould prove dry, until they have taken Root; after which, thoſe in the Borders will require no farther Care, but only to clear them from Weeds, and when the Flower-ſtems advance, to ſupport them with Sticks; but thoſe in the Pots muſt be frequently water'd in dry Weather, otherwiſe they will ſoon decay.

The firſt of theſe Plants produces its Flowers in *May*; but the ſecond ſeldom flowers till the Middle of *June*, ſo that they ſucceed each other. During their Seaſon of flowering, they make a very handſome Appearance, and are very proper to cut for Baſons and Flower-pots to adorn Chimnies and Halls at that Seaſon: but the ſecond Sort is a much fairer Plant than the firſt; the Stems of this Sort riſe higher, and are ſtronger: the Flowers are larger, and of a deeper Colour; but it is not quite ſo hardy as the firſt, which will endure the ſevereſt Cold of our Climate in the open Air, whereas this muſt be ſhelter'd in hard Winters, otherwiſe it will be in Danger of ſuffering by the Cold; tho' in our common Winters it will endure abroad very well.

Theſe Plants may alſo be propagated by Cuttings, which ſhould be taken from the old Plants in *May* or *June*, and planted on a Border of freſh light Earth, obſerving to water and ſhade them, until they have taken Root; after which, you muſt obſerve to keep them clear from Weeds, and in very dry Weather repeat watering them as often as they ſhall want it; and when they have obtain'd ſufficient Strength to remove, they may be tranſplanted either into Pots or Borders, where they are to remain. By this Method you may greatly increaſe theſe Plants, which will ſupply the Defect of Seeds.

LYCOPERSICON, [of λύκος, a *Wolf*, and *Perſica*, Lat. a *Peach*] Love-Apples.

The *Characters* are;

It hath a Flower conſiſting of one Leaf, which expands in a circular Order, as doth that of the Nightſhade; *the Style afterwards becomes a roundiſh ſoft fleſhy Fruit, which is divided into ſeveral Cells, wherein are contain'd many flat Seeds.*

The *Species* are;

1. Lycopersicon *Galeni. Ang.* Yellow Love-Apple.
2. Lycopersicon *Galeni, fructu rubro. Boerh. Ind.* Love-Apple, with a red Fruit.
3. Lycopersicon *fructu ceraſi rubro. Tourn.* Love-Apple, with a red Cherry-ſhaped Fruit.
4. Lycopersicon *fructu ceraſi luteo. Tourn.* Love-Apple, with a yellow Cherry-ſhaped Fruit.
5. Lycopersicon *fructu ſtriato duro. Tourn.* Love-Apple, with a hard channell'd Fruit.
6. Lycopersicon *fructu rubro non ſtriato. Inſt. R. H.* Love-Apple with a ſmooth red Fruit.
7. Lycopesicon *fructu albo. Inſt. R. H.* Love-Apple with a white Fruit.
8. Lycopersicon *Americanum arboreſcens, ampliſſimis foliis angulatis. Plum. Cat.* American tree-like Love-Apple, with large angular Leaves.

Theſe Plants are propagated by ſowing their Seeds on a moderate Hot-bed in *March*; and when come up, they ſhould be tranſplanted into another moderate Hot-bed, at about three Inches Diſtance from each other, obſerving to ſhade them until they have taken Root; after which they muſt have frequent Waterings, and a large Share of freſh Air; for if they are too much drawn while young, they ſeldom do well afterwards.

In *May* theſe Plants ſhould be tranſplanted either into Pots fill'd with rich light Earth, or into the Borders of the Flower-Garden, obſerving to water and ſhade them until they have taken Root; and as the Branches are extended, they ſhould be ſupported with Sticks; otherwiſe, when the Fruit begins to grow, it will preſs them down, and break them.

Thoſe Plants which are placed in Pots, ſhould be often water'd, otherwiſe they will come to little, (for they are very droughty Plants) but when they are planted in a rich moiſt Soil, they will grow to a prodigious Size, and produce large Quantities of Fruit; which in Autumn, when they are ripe, make an odd Figure, but the Plants emit ſo ſtrong an Effluvium, as render them unfit to ſtand near a Habitation, or any Place that is much frequented; for upon their being bruſh'd by the Cloaths, they ſend forth a very ſtrong diſagreeable Scent.

The *Italians* and *Spaniards* eat theſe Apples, as we do Cucumbers, with Pepper, Oil, and Salt, and ſome eat them ſtew'd in Sauces, *&c.* but conſidering their great Moiſture and Coldneſs, the Nouriſhment they afford muſt be bad. They are call'd by the *Portugueſe* and *Spaniards* Tomato's. The firſt of theſe Plants is the Sort directed for Medicinal Uſe, by the *College* in their *Diſpenſatory*.

The ſixth and ſeventh Sorts are annual Plants, which periſh ſoon after they have perfected their Fruit. Theſe muſt be ſown in the Spring on a moderate Hot-bed to bring them forward, and afterward treated in the ſame Manner as thoſe Sorts above mentioned.

The eighth Sort will riſe to the Height of ſix or eight Feet, and become woody. This Sort is propagated by Seeds, which ſhould be ſown on a Hot-bed in the Spring; and when the Plants are come up about two Inches high, they muſt be tranſplanted into a moderate Hot-bed, obſerving to water and ſhade them until they have taken new Root; after which Time they ſhould have a large Share of free Air in warm Weather, to prevent their drawing up weak. When the Plants have obtain'd a good Share of Strength, they ſhould be carefully taken up with Earth to their Roots, and planted into Pots filled with light rich Earth, and placed in a ſhady Situation until they have taken Root; when they may be removed into a warm Situation, where they may remain Abroad in the open Air, until the Middle or End of *September*, when they muſt be removed into the Conſervatory, and placed where they may have a moderate Share of Warmth in cold Weather; by which Method the Plants may be preſerved thro' the Winter, and the following Summer they will produce Fruit.

LYCOPUS, [λυκόπȣς, of λύκος, a *Wolf*, and πȣ̃ς, a *Foot*, q. d. *Wolf's-foot*; becauſe the Ancients fancied, that the Leaves of this Plant reſembled the Foot of a Wolf] *commonly call'd* Water-Horehound.

This Plant grows in great Plenty on moiſt Soils by the Sides of Ditches, in moſt Parts of *England*, but is never cultivated in Gardens; ſo that it would be needleſs to ſay any thing more of it in this Place.

LYSIMACHIA, [this Plant was ſo call'd of *Lyſimachus*, the Son of a King of *Sicily*, who is ſaid to have firſt found it] Loſe-ſtrife.

The *Characters* are;

The Leaves (which are intire and oblong) are produced ſometimes by Pairs, or three or four at each Joint of the Stalk; the Flower conſiſts of one Leaf, which expands in a circular Order, and is cut into ſeveral Segments at the Top; the Fruit is globular, and opens at the Top, incloſing many Seeds fix'd to the Placenta.

The *Species* are;

1. Lysimachia *lutea major, quæ Dioſcoridis. C. B. P.* Common yellow Loſe-ſtrife *or* Willow-herb.
2. Lysimachia *lutea major, quæ Dioſcoridis, foliis quaternis. C. B. P.* Greater yellow Loſe-ſtrife *or* Willow-herb, with four Leaves at each Joint.
3. Lysimachia *bifolia, flore luteo globoſo. C. B. P.* Loſe-ſtrife, with two Leaves growing at each Joint, and yellow Flowers growing in round Heads.
4. Lysimachia *Orientalis anguſtifolia, flore purpureo. T. Cor.* Narrow-leav'd Eaſtern Loſe-ſtrife, with a purple Flower.
5. Lysimachia *Hiſpanica ſpicata, ſalicis folio, flore albo. Jeſſ.* Spaniſh Loſe-ſtrife, with white Flowers growing in Spikes.

The firſt of theſe Plants is pretty common by Ditch-ſides, in many Parts of *England*, and is ſeldom cultivated in Gardens, tho' it is not a very deſpicable Plant; for it produces large Spikes of fine yellow Flowers in *July*; for which Reaſon it may be admitted into a cold wet Part of the Garden, where few others will thrive, whereby many a Spot of Ground may be render'd agreeable, which often produces little but groſs Weeds. This Plant may be taken up in the Spring, from the native Places of its Growth, and tranſplanted where you intend it ſhould grow, and it will ſoon increaſe, by its creeping Roots, to what Quantity you pleaſe. This Plant is order'd in the *College Diſpenſatory* for Medicinal Uſe.

The ſecond Sort is not a Native of our Country; but when tranſplanted hither, thrives equally with the former. This loves a moiſt rich Soil; and for Variety may be admitted into a Garden.

The third Sort is found in the North of *England* in great Plenty. This Plant is not very proper for a Garden; for the Roots ſpreading very far under Ground, will over-run whatever Plants ſtand near it; nor are the Flowers of any Beauty.

The fourth Sort is a biennial Plant, which produces fine Spikes of ſmall purple Flowers in *June*, and the Seeds are ripe in *Auguſt*.

This Plant may be propagated by ſowing the Seeds ſoon after they are ripe, (for if they are kept until the Spring, they ſeldom grow) upon a warm Border of light Earth; and when the Plants are come up, they ſhould be tranſplanted into a Border of ſtrong Earth, where they may have the Morning Sun; in which Place they ſhould remain to flower; for it is a Plant that does not care to be often removed.

The fifth Sort is an abiding Plant, which may be propagated by parting its Roots. The beſt Seaſon for this Work is at *Michaelmas*, when the Leaves begin to decay. It ſhould be planted in a moiſt Soil, and a ſhady Situation, or muſt be often water'd, otherwiſe it will not produce Flowers. It may alſo be propagated by ſowing the Seeds in the ſame Manner as the former: but thoſe Plants which riſe from Seeds ſeldom flower until the ſecond Year; whereas thoſe propagated from Offſets will flower the ſucceeding Year. Theſe produce their Flowers in *July*; and their Seeds ripen in *September*.

LYSIMACHIA GALERICULATA. *Vide* Caſſida.

LYSIMACHIA NON PAPPOSA. *Vide* Onagra.

LYSIMACHIA SILIQUOSA. *Vide* Chamænerion.

M A

MACALEB. *Vide* Ceraſus.

MADDER. *Vide* Rubia Tinctorum.

MAGNOLIA, The Laurel-leaved Tulip-Tree, *vulgo*.

The *Characters* are;

It hath a roſaceous Flower, conſiſting of ſeveral Leaves, which are placed in a circular Order, from out of the Cup ariſes the Pointal, which afterwards becomes a hard conical Fruit with many Tubers or Riſings; in each of which is contained one hard Nut, which, when emitted, hangs by a long String.

The *Species* are;

1. **Magnolia** *lauri folio ſubtus albicante. Cateſb.* The leſſer Laurel-leaved Tulip-Tree, or ſweet-flowering Bay.
2. **Magnolia** *altiſſima, lauro-ceraſi folio ampliſſimo, flore ingenti candido. Cateſb. Hiſt. Nat. Car.* Commonly called the Laurel-leaved Tulip-Tree, or Carolina Laurel.
3. **Magnolia** *ampliſſimo flore albo, fructu cæruleo. Plum. Nov. Gen.* Magnolia, or American Laurel, with very large Leaves, a white Flower, and blue Fruit.

The firſt of theſe Plants is common in *Virginia* and *Carolina*, where it uſually riſes to the Height of fifteen or ſixteen Feet; but in *England* it is very rare at preſent. The largeſt Plant of this Kind which I have obſerved in *England*, is in the Garden of Mr. *Peter Colinſon*, at *Peckham* in *Surrey*; which, altho' not above five Feet high, hath produced Flowers for ſeveral Years paſt. The Wood of this Tree is white and ſpongy, covered over with a white Bark; the Leaves are in Shape like thoſe of the common *Bay*, of a pale green Colour, and white on their Backſides. In *May* they begin to produce their Flowers, which are white and very fragrant; theſe are continued two Months or more, during which Time the Woods are perfumed with their Odour. When the Petals of the Flowers are decayed, the Pointal becomes a conical Fruit, about the Size of a large Walnut, thick-ſet with Knobs or Riſings, from each of which, when the Fruit is ripe, are diſcharged flat Seeds, of the Size of Kidney-Beans, having a Kernel within a thin Shell, covered with a red Skin. Theſe red Seeds, when diſcharged from their Cells, fall not to the Ground; but are ſupported by ſmall white Threads of about two Inches in Length, which make a very beautiful Appearance. The Fruit is at firſt green; when ripe, red; and when declining, turns brown. This Tree grows naturally in moiſt Places, and often in ſhallow Water; and, what is very extraordinary, they being removed on high dry Ground, become more regular and handſome, and are more prolific of Flowers and Fruit. They uſually loſe their Leaves in Winter, unleſs it be very moderate.

The ſecond Sort is eſteemed the moſt beautiful Tree in *America*, where they uſually grow in moiſt ſwampy Woods, and often riſe to the Height of ſixty or ſeventy Feet; the Leaves are much larger than thoſe of our common Laurel, and are of a bright green Colour; the Flowers are very large, of a white Colour, and very fragrant. The Fruit is ſhaped like that of the former Sort, but are much larger, of a purple Colour when ripe, and emit the Seeds in like manner; ſo that in Autumn they make a moſt beautiful Appearance, and in *May* or *June*, when they are in Flower, the circumambient Air is perfumed with their Odour: The Leaves of theſe Trees, remaining green all the Winter, afford an agreeable Proſpect in that Seaſon. They are of quick Growth, and generally riſe with ſtrait Stems, which is a conſiderable Addition to their Beauty; and ſince they are hardy enough to reſiſt the Cold of our Climate in the open Air, I doubt not but we ſhall have the Pleaſure of ſeeing many of theſe Trees growing in the *Engliſh* Gardens in a few Years, where we may hope to have them annually produce their beautiful Flowers: for in the Garden of Sir *John Colleton* in *Devonſhire*, there is a Tree which has flowered ſeveral Years; and laſt Year, *i. e.* Anno 1737. there was a ſmall Tree in the Garden of Sir *Charles Wager* at *Parſons-Green* near *Fulham*, which produced Flowers.

The third Sort was diſcovered by Father *Plumier* in ſome of the *French* Settlements in *America*. The Fruit of this Sort (as it is repreſented in the Plate of Father *Plumier*'s *Nova Genera*) is very different from that of the ſecond Sort, and the Flowers appear much ſmaller; ſo that, if his Figure is true, it muſt be a different Sort from either of the former; but there are no Plants of his Kind in *England* as yet, ſo far as I can learn, tho' it is very probable, there are Trees enough of it to be met with in ſome Parts of *America*, which belong to the *Engliſh*, were they ſought for by ſkilful Perſons, who could diſtinguiſh them.

Theſe Plants are all of them propagated from Seeds, for they do not take Root well by Laying; nor do thoſe few Plants which have been obtained from Layers thrive, nor are they ever like to make handſome Plants: But as there are no Plants in *England* which are likely to produce Seeds in many Years, ſo there is no way to obtain them, but by procuring their Seeds from *America*. Theſe Seeds ſhould be ſown in Tubs of Earth ſo ſoon as they are ripe (for if they are kept out of the Ground any Time, they will not grow): Theſe Tubs ſhould be ſent over to *England* as ſoon as poſſible, and when they arrive, they ſhould be placed on a gentle Hot-bed, obſerving to ſhade them from the Sun, and often refreſh them with Water. In this Situation the Plants will appear above Ground in a Month or five Weeks; and if they are kept moiſt, and ſhaded from the Sun, will make conſiderable Progreſs. In *July* you ſhould begin to inure them to the open Air, but they ſhould not be expoſed to the Sun; for while they are young, the great Heat of the Sun is very injurious to them. In *October* the Tubs ſhould be placed under a Hot-bed Frame, where they may be covered in froſty Weather with the Glaſſes; but in mild Weather they ſhould be expoſed to the open Air; for if they are kept too cloſe, they will caſt their Leaves. In *March* following theſe Plants may be tranſplanted out of the Tubs; in doing of which you ſhould be careful to take them up with as much Earth to their Roots as poſſible; then place each Plant into a Pot, which ſhould be filled with light freſh Earth, giving them ſome Water to ſettle the Earth to their Roots; and place the Pots into a Frame again, where they ſhould be covered with the Glaſſes in cold Weather, or drying Winds; but they muſt be expoſed when the Weather is mild, and ſhould be frequently watered. In this Frame they may remain about a Month, after which they ſhould be placed abroad in a ſhady Situation, obſerving to water them often in dry Weather. Theſe Plants may remain two Years in the Pots, that they may be removed into Shelter in Winter, becauſe they are ſomewhat tender while young; but afterwards they may be turned out of the Pots into the full Ground, obſerving to plant them in a pretty moiſt Soil, where they will make conſiderable Progreſs in a few Years.

There have been ſeveral of theſe Plants deſtroyed, by the Over-care ſome Perſons have taken to cover them in Winter: for where this hath been done, the Plants uſually loſe their leading Bud, or die down to the Ground, ſo that it is by much the better Method, to plant them abroad in a well-ſheltered Situation, and to let them remain always uncovered: But when theſe Plants are planted abroad, it ſhould always be done in the Spring, that they may have Time to get good Roots in the Ground before Winter; and in very hard Froſt, if there is ſome Mulch laid on the Surface of the Ground about their Roots to prevent the Froſt from penetrating of the Ground, it will be of great Service in preſerving of the Plants; but this Mulch ſhould not remain long round the Trees, after the Froſt is gone off, leſt it ſhould injure the Bark of their Stems, by detaining the Moiſture about them.

MAHALEB. *Vide* Ceraſus.

MAJORANA, [ſo call'd, as tho' *Major ad Vitam*, Lat. becauſe it is ſaid to prolong Life, or becauſe it reſembles *Marum*; it is probably the *Marum* of the Ancients: it ſeems alſo to be the *Sampſuchus* of the Ancients; or it may be call'd *Ma-*

jorana and *Amarachus*, of α, Privative, and μαραίνω, *to wither*; becauſe this Plant does not eaſily rot nor wither: for it is a very dry one.] Marjoram.

The *Characters* are;

It is a verticillate Plant, whoſe Flower is compoſed of one Leaf: the Galea (or Creſt) is upright, roundiſh, and divided into two Parts: the Barba (or Beard) is cut into three Segments, ſo as to appear almoſt like a quinquifid Flower: the Flowers are collected into a ſhort, thick, round Head, and come out of a four-fold Order of Leaves, which are placed like Scales or Plates.

The *Species* are;

1. MAJORANA *vulgaris. C. B. P.* Common ſweet Marjoram.
2. MAJORANA *rotundifolia ſcutellata exotica. H. R. Par.* Round-leav'd exotick Marjoram, with a Leaf ſhaped like a Saucer.
3. MAJORANA *Cretica, origani folio villoſo, ſaturejæ odore, corymbis majoribus albis.* Hairy *Candia* Marjoram, with an Orange Leaf, a ſavoury Smell, and large, round, tufted white Heads.

The firſt of theſe Plants is an Annual, and muſt be ſown every Year: The Seeds of this are annually brought from *Marſeilles*, and other Places in the South of *France*, where it grows ſpontaneouſly; for it never ripens Seeds in this Country. The Seeds of this Plant ſhould be ſown the latter End of *March*, or the Beginning of *April*, upon a dry warm Spot of Ground; and when the Plants come up, they muſt be carefully clear'd from Weeds, (which, if permitted to grow, will ſoon over-run and deſtroy them) and in very dry Weather, the Beds ſhould be often water'd, which will greatly promote the Growth of them.

In *June* theſe Plants will be pretty ſtrong; at which Time you ſhould prepare ſome Beds of rich light Earth, into which you ſhould tranſplant ſuch of the Plants as require to be drawn out, where they come up too thick, at about four Inches Diſtance from each other, obſerving to water them, until they have taken Root; after which they will require no farther Care, but only to clear them from Weeds, and theſe Plants will grow ſtrong, and produce a greater Number of Heads (or Knots, as they are commonly call'd) than thoſe which remain'd in the Seed-beds unremoved; for which it is much preferr'd to it in the Markets, where it is call'd *Knotted Marjoram*, to diſtinguiſh it from that which is not ſo. Towards the latter End of *July* theſe Plants will flower, which is the proper Seaſon to pull them up for medicinal Uſe, when they ſhould be hung up in a ſhady Place to dry.

The ſecond Sort is a perennial Plant, which is preſerved by ſome curious Perſons in Pots, and placed in the Green-houſe in Winter. This Sort never produces Seeds with us, but is eaſily propagated by planting Cuttings or Slips, during any of the Summer Months, in a Bed of rich light Earth, obſerving to water and ſhade them until they have taken Root: At *Michaelmas* theſe Plants ſhould be taken up, and planted in Pots fill'd with rich light Earth; and when they are ſettled, they ſhould be removed into the Green-houſe, placing them near to the Windows, that they may have a good Share of free Air when the Weather is mild: You muſt often refreſh them with Water, but never give them too much at once, for that will rot them. With this Management the Plants may be preſerved freſh thro' the whole Year, and will be in a Condition to gather for Noſegays any Part of the Winter, and have as good a Scent as the *Sweet Marjoram*.

The third Sort was ſent into *England* by Sir *George Wheeler* from *Smyrna*, where it grows in great Plenty. This Plant riſes to the Height of two or three Feet, and becomes woody, but never produces any Seeds with us; tho' it is eaſily propagated by planting Slips or Cuttings in any of the Summer Months, after the Manner as was directed for the former Sort, and muſt be houſed in Winter, tho' it muſt not be kept too cloſe; for it only requires to be protected from great Rains and Froſt; but ſhould have as much free Air as poſſible in mild Weather, otherwiſe it is ſubject to draw, and grow very weak.

MALABAR-NUT. *Vide* Adhatoda.

MALA ÆTHIOPICA. *Vide* Lycoperſicon.

MALA ARMENIACA. *Vide* Armeniaca.

MALA COTONEA. *Vide* Cydonia.

MALA INSANA. *Vide* Melongena.

MALACOIDES, [Μαλακοειδὴς, of μαλακὴ, a *Mallow*, and εἶδος, the *Face*.]

The *Characters* are;

It hath the Flower and Appearance of a Mallow; *and hath a Fruit like that of a* Bramble, *but dry, which is compoſed of ſeveral Cells, collected into a ſort of little Head or Button, in which are contain'd many Kidney-ſhaped Seeds.*

There is but one *Species* of this Plant, at preſent, in the *Engliſh* Gardens, which is;

MALACOIDES *Betonicæ folio. Tourn.* Malacoides with a Betony Leaf.

This Plant is propagated by ſowing the Seeds in *March*, upon a Bed of freſh light Earth; and when the Plants are come up, they ſhould be tranſplanted into a warm dry Border, where they are to remain, (for this Plant does not care for being often removed) and ſome of them may be planted in Pots, that they may be ſhelter'd in Winter; for in very ſevere Froſts they are often deſtroy'd: The Summer following, they will produce their Flowers in *June*, and if the Seaſon be favourable, they will ſometimes ripen Seeds; but this does not often happen in our Country. There is no great Beauty in this Plant; but it is preſerved by ſuch as are curious in Variety.

MALLOW. *Vide* MALVA.

MALLOW-TREE. *Vide* Althæa.

MALPIGHIA, Barbadoes Cherry, *vulgo*.

The *Characters* are;

It hath a ſmall quinquifid Calyx, which conſiſts of one Leaf, having bifid Segments: the Flower conſiſts of five Leaves, which expand in form of a Roſe, *having ſeveral* Stamina *collected in form of a Tube: the Ovary in the Bottom of the Flower-cup becomes a globular fleſhy ſoft Fruit, in which is a ſingle Capſule, containing three ſtony winged Nuts.*

We have but one *Species* of this Plant in *England* at preſent; which is,

MALPIGHIA *mali punici facie. Plum. N. G.* Malpighia, with the Face of Pomegranate, *commonly call'd* in the *Weſt-Indies*, Barbadoes Cherry.

This Tree in the *Weſt-Indies* riſes to be fifteen or ſixteen Feet high, where it produces great Quantities of a pleaſant tart Fruit, for which Reaſon it is propagated in moſt of the Gardens of thoſe Countries; but in *Europe* it is only preſerved as a Curioſity by ſuch Perſons as delight in Variety. It is eaſily propagated by Seeds, (which ſhould be procured from the *Weſt-Indies*) and muſt be ſown upon a Hot-bed in *February*; when the Plants are come up, they muſt be tranſplanted each into a ſeparate ſmall Pot fill'd with freſh light Earth, and plunged into a Hot-bed of Tanners Bark, obſerving to ſhade them from the Violence of the Sun until they have taken Root, as alſo to water them from Time to Time as they may require; and when the Plants begin to acquire Strength, and the Seaſon is warm, they ſhould have a good Share of Air, eſpecially in the Middle of the Day) by raiſing the Glaſſes with a Stone or Brick: and if the Glaſſes are wet, it will be proper to turn them, that thoſe rancid Vapours may be dried up.

In *June* theſe Plants will have grown ſo as to fill the ſmall Pots with their Roots; at which Time they ſhould be ſhaken out, (preſerving the Earth intire about their Roots) and placed into larger Pots, which ſhould be fill'd up with the ſame light freſh Earth, and plunged again into the Hot-bed, obſerving to water them as before, as alſo to give them Plenty of Air in hot Weather; and in the Heat of the Day, when the Sun is very hot, it will be proper to ſhade the Glaſſes with Mats.

By thus managing them, they will grow to be eighteen Inches high before Winter, and have pretty ſtrong Stems, (provided they have had a ſufficient Quantity of Air;) but in *October*, when the Nights are cold, they ſhould be removed into the Stove, where they ſhould be plunged in the Tanners Bark with the *Papaws*, and other *Weſt-Indian* Plants, which Stove ſhould be kept up to *Anana's* Heat, as mark'd on Mr. *Fowler's Thermometers*, obſerving to water them in the Winter with Water that has ſtood twenty-four Hours in the Stove, ſo as to have acquired a Warmth proportional to the Air of the Houſe.

The Spring following they muſt be ſhifted into larger Pots, and again plunged into Tanners Bark, in which they ſhould conſtantly be kept, if you would have them vigorous; tho' they will live in a warm Stove without the Bark; but then they will not make near the Progreſs, nor appear ſo beautiful, as if kept in the Tanners Bark; and it is probable they may be brought to produce Fruit in Time, where the Stoves are good, and proper Care is taken of their Management.

MALT-DUST, is accounted a great Enricher of barren Ground: It contains in it a natural Heat and Sweetneſs, which gives the Earth whereon it is laid a proper Fermentation, as thoſe who live in Malting Countries have found by Experience.

Some are of Opinion, that there is not a greater Sweetener than *Malt-Duſt*, where the Grounds are natural Clay, and have contracted a Sourneſs and Auſterity, whether by reaſon of having lain long untill'd, and unexpoſed to the Air, or by reaſon of Water having ſtood long thereon.

MALVA, [ſo call'd of Μαλακίζω, or μαλάσσω, to *ſoften*, becauſe it is good to ſoften the Belly] Mallows.

The *Characters* are;

It hath a fibroſe Root; the Leaves are round, or angular; the Flower conſiſts of one Leaf, is of the expanded Bell-ſhaped Kind, and cut into five Segments almoſt to the Bottom: From the Center riſes a pyramidal Tube, for the moſt Part loaded with many ſmall Threads or Filaments: From the Center of the Flower-cup riſes the Pointal in the Tube, which becomes the Fruit, which is flat, round, and ſometimes pointed, wrapt up, for the moſt part, within the Flower-cup, and divided into ſeveral Cells ſo diſpoſed round the Axle, that each little Lodge appears moſt artificially jointed within the correſponding Striæ *or Channels: The Seed is, many Times, ſhaped like a Kidney.*

The *Species* are;

1. MALVA *vulgaris, flore majore, folio ſinuato. J. B.* Common Mallow, with a large Flower.
2. MALVA *ſylveſtris, folio ſinuato, flore albo. Sutherl.* Common Mallow, with a large white Flower.
3. MALVA *Sinenſis erecta, floſculis albis minimis.* China upright Mallow, with ſmall white Flowers.
4. MALVA *foliis criſpis. C. B. P.* The curl'd or furbeloe'd Mallow.
5. MALVA *folio vario. C. B. P.* Mallow with a variable Leaf.
6. MALVA *Orientalis erectior, flore magno ſuave-rubente. T. Cor.* Upright Oriental Mallow, with a large beautiful red Flower.

The firſt of theſe Plants is found wild in moſt Parts of *England*, but is rarely cultivated in Gardens. This is the Sort commonly uſed in Medicine, with which the Markets are ſupplied by the Herb-folks, who gather it in the Fields.

The ſecond Sort is a Variety of the firſt, from which it differs in the Colour of the Flower. This is preſerved by ſuch as are curious in preſerving great Varieties of Plants, but is rarely cultivated in other Gardens.

The third Sort was formerly ſent from *China* as a Pot-herb, and hath been cultivated in ſome curious Gardens in *England*; tho' it is not likely to obtain here as an eſculent Plant, ſince we have many others which are preferable to it for that Purpoſe. This is an annual Plant, which will propagate itſelf faſt enough, provided it be permitted to ſcatter its Seeds, when they ſeldom fail to grow, and are often very troubleſome when they have got Poſſeſſion of the Ground.

The fourth Sort is preſerv'd by ſome curious Perſons, for the Beauty of its Leaves, which are naturally furbeloe'd round their Edges. This is alſo an annual Plant, which will riſe four or five Feet high, and propagate itſelf in the ſame Manner as the former.

The fifth Sort is more rare than any of the former: It grows wild in *Spain* and *Italy*, from whence the Seeds were brought into *England*, and is preſerved by the Lovers of Variety, but there is no great Beauty in the Plant.

The ſixth Sort is alſo an annual Plant, which commonly grows upright to the Height of three or four Feet, and produces great Numbers of beautiful red Flowers; which renders it the beſt worth propagating in large Flower-Gardens, where being placed in the middle of large Borders, it makes a beautiful Appearance.

The Seeds of theſe Plants ſhould be ſown in *March* upon a Bed of freſh light Earth; and when they are come up four Inches high, they ſhould be tranſplanted where they are deſign'd to be continu'd, allowing 'em a large Diſtance, for if they are planted too cloſe, they do not appear ſo well: But they are beſt when intermix'd with other Flowers of the ſame Growth, where they afford an agreeable Variety.

Theſe Seeds may alſo be ſown in *Auguſt*; and the Plants will endure the greateſt Cold of our Climate, if placed on a dry Soil, and grow larger, and flower ſooner than thoſe ſown in the Spring: or if the Seeds are permitted to ſcatter, they will come up as the two former Sorts, and thrive equally as well.

There are ſeveral other Sorts of *Mallows*, ſome of which are Natives of this Country: But as they are Plants of no great Beauty or Uſe, ſo it would be ſuperfluous to mention them in this Place.

MALVA ARBOREA. *Vide* Althæa.

MALVA ROSEA; Roſe Mallow, or Hollyhock.

The *Characters* are;

It hath a larger and more expanded Flower than the Mallow; *which cloſely adheres to the Stalk, and, in many Species, the Flowers are double, where the Petals occupy the Place of the Style: It is in every reſpect larger than the Common* Mallow; *the Leaves are rougher, and the Plant grows almoſt ſhrubby.*

The *Species* are;

1. MALVA ROSEA *ſive hortenſis, flore albo. J. B.* Single White Hollyhock.
2. MALVA ROSEA *hortenſis, flore ſimplici rubro. H. Eyſt.* Single Red Hollyhock.
3. MALVA ROSEA, *folio rotundo, flore ex rubro nigricante. C. B. P.* Hollyhock, with a blackiſh-red Flower.
4. MALVA ROSEA, *folio ſubrotundo, flore ſimplici luteo. H. R. Par.* Hollyhock, with a ſingle Yellow Flower.
5. MALVA ROSEA, *folio ſubrotundo, flore pleno albo. C. B. P.* Double White Hollyhock.
6. MALVA ROSEA *hortenſis, flore pleno rubro. H. Eyſt.* Double Red Hollyhock.
7. MALVA ROSEA *multiplex, flore incarnato. H. Eyſt.* Hollyhock, with a Double Fleſh-colour'd Flower.
8. MALVA ROSEA *hortenſis, flore pleno, atro-rubente. H. Eyſt.* Double Hollyhock, with a Dark-red Flower.
9. MALVA ROSEA, *folio ſubrotundo, flore pleno puniceo. C. B. P.* Hollyhock, with a double ſcarlet Flower.
10. MALVA ROSEA, *folio ſubrotundo, flore pleno ſubluteo. H. R. Par.* Hollyhock, with a Double Yellowiſh Flower.

There are ſome other Varieties of theſe Plants, which differ in the Colour of their Flowers: But as they are near to one or other of theſe Colours, and are either paler or deeper (none of the Sorts yet known being intirely different in Colour from thoſe here mention'd); ſo it would be needleſs in this Place to inſert all their minute Diſtinctions, eſpecially as they are ſeminal Variations, and ſeldom produce the ſame exact Colours again from Seeds.

Theſe Plants are all propagated from Seeds, which ſhould be ſown upon a Bed of freſh Earth, in *March*; and when the Plants are come up pretty ſtrong, they muſt be tranſplanted out into Nurſery-beds at about eight Inches Diſtance from each other, obſerving to water them until they have taken Root: After which they will require no farther Care until the *Michaelmas* following, but only to keep them clear from Weeds; at which Time they ſhould be tranſplanted into Rows two Feet aſunder, and a Foot Diſtance in the Rows; in which Place they may continue until they flower, when you ſhould mark all thoſe with Double Flowers, which have good Colours, with Sticks, that they may be tranſplanted into the Borders of large Gardens at *Michaelmas*, where they will remain four or five Years, and produce their Flowers very ſtrong: But when the Roots are much older, they begin to decay, and do not produce their Stems ſo ſtrong, nor are their Flowers ſo large; wherefore there ſhould always be a Supply of young Plants rais'd from Seeds every third or fourth Year, in order to have the Flowers in Perfection: But it is the better Way to change the Seeds every three or four Years, with ſome Perſon of Integrity who lives at a conſiderable Diſtance, and is exact to ſave Seeds from none but Double Flowers, and ſuch as are well-colour'd, by which means you may preſerve the Sorts well from degenerating: But if you conſtantly ſave the Seeds in the ſame Place, they will in a few Years become little worth.

The ſeveral Varieties of theſe Plants, when carefully intermix'd in large Wilderneſs Borders, or Avenues, afford an agreeable Proſpect during their Seaſon of flowering (which is commonly in *July*); but as they grow to a conſiderable Height, and ſpread pretty wide, ſo they take up too much Room, and appear unſightly in ſmall Flower-Gardens: They ſhould alſo be ſupported with Stakes, otherwiſe they are ſubject to be broken down by ſtrong Winds.

When the Stalks of theſe Plants begin to decay, they ſhould be cut down pretty cloſe to the Ground, to encourage them to ſhoot out freſh Heads for the ſucceeding Year, otherwiſe they ſometimes rot and deſtroy the Roots.

MALUS; The Apple-Tree.

The *Characters* are;

The Tree groweth very large; the Branches ſpread (and are more depreſſed than thoſe of the Pear Tree); the Flower conſiſts of five Leaves, which expand in form of a Roſe; the Fruit is hollowed about the Footſtalk, is for the moſt part roundiſh, and umbilicated at the Top, is fleſhy, and divided into five Cells or Partitions, in each of which is lodg'd one oblong Seed.

The *Species* are;

1. MALUS *ſylveſtris, acido fructu albo. Tourn.* The Crab Tree.
2. MALUS *ſylveſtris, foliis ex albo eleganter variegatis. Cat. Plant. Hort.* The Crab Tree, with ſtrip'd Leaves.
3. MALUS *ſylveſtris Virginiana, floribus odoratis. Cat. Plant. Hort. Virginian* Crab Tree, with ſweet Flowers.
4. MALUS *fructifera, flore fugaci. H. R. Par.* The Fig Apple.
5. MALUS *pumila, quæ potius frutex, quam arbor, fructu rubente & candido. C. B. P.* The Paradiſe Apple.
6. MALUS *ſativa, foliis eleganter variegatis. Cat. Plant. Hort.* Apple Tree, with ſtrip'd Leaves.

The ſeveral Sorts of *Apples* which are at preſent eſteem'd for their Fruit in the curious Gardens near *London*, may be ſeen under the Article of *Apple*, where a particular Account of their Planting, Pruning, *&c.* is fully laid down; to which I refer the Reader; and in this Place ſhall only take notice of the above-mention'd Sorts, which are only preſerv'd as Curioſities, or for Stocks to graft the more generous Kinds of Fruit upon; the *Crab Tree* is generally preferr'd to moſt other Sorts for this Purpoſe, it being the moſt durable of them, and not ſo liable to canker as thoſe which are produc'd from Kernels of better *Apples*: But theſe ſhould be obtain'd from Kernels, and not Suckers taken from the Woods, which are generally ill-rooted, and ſeldom make a handſome Stock; nor will they ſo readily join with the Cyon, for which Reaſon they ſhould not be planted.

The *Paradiſe Apple* hath, of late Years, greatly obtained for Stocks to graft or bud upon; but theſe are not of long Duration; nor will the Trees grafted upon them ever grow to any Size, unleſs they are planted ſo low as that the Cyon may ſtrike Root into the Ground, when it will be equal to no Stock, for the Graft will draw its Nouriſhment from the Ground; ſo that it is only by way of Curioſity, or for very ſmall Gardens, that theſe Stocks are proper, ſince there can never be expected any conſiderable Quantity of Fruit from ſuch Trees.

The *Virginian Crab Tree* with ſweet Flowers, is preſerv'd by ſuch Perſons as are curious in collecting great Variety of Trees: It may be propagated by Budding or Grafting it upon the common *Crab* or *Apple Tree*; but it is ſomewhat tender while young, wherefore it ſhould be planted in a warm Situation, otherwiſe it will be ſubject to ſuffer by an extreme hard Winter. The Flowers of this Tree are ſaid to be exceeding ſweet in *Virginia*, where it grows in the Woods in great Plenty; but I could not obſerve much Scent in ſome of them which flower'd in *England* the laſt Year; ſo that I am in doubt whether the Sort at preſent in the Gardens is the very ſame with that of *Virginia*, or perhaps it may have degenerated by ſowing the Seeds, which, I ſuppoſe, is the Way it was firſt obtain'd in *England*.

The *Fig Apple* is ſuppos'd, by many Perſons, to be produc'd without a previous Flower. But this Opinion is rejected by ſome curious Obſervers, who affirm, there is a ſmall Flower precedes the Fruit, which is very fugacious, ſeldom continuing above a Day or two. Now, which of theſe Opinions is the right, I have not, as yet, had an Opportunity to determine, not having a Tree in my own Poſſeſſion which is arriv'd at Maturity to produce Fruit; tho' it might reaſonably be expected, that ſuch who have had Trees of this Kind ſeveral Years, might have determin'd this Point long ere this Time.

I remember an Account of a large Tree of this Kind, mention'd in a Letter from *New-England*, written by *Paul Dudley*, Eſq; to the *Royal Society*, and publiſh'd in the *Philoſophical Tranſactions*, Numb. 385. which was exceeding large, and produc'd great Quantities of Fruit, without any previous Flowers; but it grew at ſome Diſtance from his Habitation, and he having no other Opportunity to obſerve it ſtrictly himſelf, but by viſiting the Place two or three Times about the Seaſon of flowering, and not being appriz'd of the ſudden Decay of the Flowers, they might eaſily be ſuppos'd to have appear'd, and dropt off between the Times of his viſiting the Place.

The two Sorts with ſtriped Leaves are preſerv'd by ſuch as are curious in collecting ſuch Varieties: Theſe may be propagated by grafting or budding them upon the common *Apple* or *Crab Tree*; but they ſhould not be planted in a very rich Soil, which would cauſe them to grow very free, whereby their Leaves would become entirely green again.

MALUS ARMENIACA. *Vide* Armeniaca.

MALUS AURANTIA. *Vide* Aurantia.

MALUS LIMONIA. *Vide* Limonia.

MALUS MEDICA. *Vide* Citreum.

MALUS PERSICA. *Vide* Perſica.

MALUS PUNICA. *Vide* Punica.

MAMEI, The Mammee-Tree.

The *Characters* are;

It hath a roſaceous Flower, which conſiſts of ſeveral Leaves placed in a circular Order, from whoſe Cup ariſes the Pointal, which afterward becomes an almoſt ſpherical fleſhy Fruit, containing two or three Seeds incloſed in hard rough Shells.

There is but one *Species* of this Tree known; *viz.*

MAMEI *magno fructu, perſicæ ſapore. Plum. Nov. Gen.* 44. The Mammee, with a large Fruit taſting like a Peach.

This Tree, in the *Weſt-Indies*, grows to the Height of ſixty or ſeventy Feet; the Leaves are large and ſtiff, and continue green all the Year; the Fruit is as large as a Man's Fiſt; when ripe, is of a yellowiſh green Colour, and is very grateful to the Taſte. It grows in great Plenty in the *Spaniſh Weſt-Indies*, where the Fruit is generally ſold in their Markets, and is eſteemed one of the beſt Fruits of the Country. It alſo grows on the Hills in *Jamaica*, and has been tranſplanted into moſt of the *Caribbee* Iſlands, where it thrives exceeding well.

In *England* there are ſome few of theſe Plants, which are preſerved with great Care by ſuch as are curious in cultivating exotic Plants; but there are none of any conſiderable Size; ſo that we cannot expect to ſee either Fruit or Flowers for ſome Years. Theſe Plants may be propagated by planting the Stones which are often brought from the *Weſt-Indies*; (but theſe Stones ſhould be very freſh, otherwiſe they will not grow) into Pots filled with light freſh Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to water the Earth, whenever it appears dry. In about a Month the Plants will begin to appear above Ground; after which they muſt be frequently refreſhed with Water; and in hot Weather the Glaſſes of the Hot-bed ſhould be raiſed, to let in freſh Air. In two Months the Roots of the Plants will have filled the Pots, when you ſhould provide ſome Pots of a little larger Size, into which you ſhould tranſplant the Plants, being careful to preſerve as much Earth to their Roots as poſſible; then you ſhould fill up the Pots with freſh light Earth, and plunge them into the Bark-bed again, obſerving to water and ſhade them, until they have taken Root; after which they ſhould be conſtantly refreſhed with Water, (as you ſhall find they want it) and muſt have Air in hot Weather. In this Bed they may remain till *Michaelmas*, when they muſt be removed into the Bark-ſtove, where they muſt be conſtantly kept, obſerving to refreſh them with Water frequently, as alſo to clean their Leaves from the Filth they are apt to contract in the Stove; and the Spring following they ſhould be ſhifted into freſh Earth, and, if they require it, into larger Pots; and the Bark-bed muſt be freſh ſtirred, and ſome new Tan mixed therewith, to renew the Heat. This ſtirring of the Tan ſhould be repeated as often as there may be a Neceſſity for it, which is at leaſt three Times a Year; and when it begins to rot, ſome new Tan muſt be added to renew the Heat. In all other reſpects this Tree may be treated after the Manner directed for the Coffee-Tree.

MANCANILLA, The Manchineel-Tree.

The *Characters* are;

It hath Male Flowers, (or Katkins) which are produced at remote Diſtances from the Embryo's on the ſame Tree; the Em-

bryo becomes a round fleſhy Fruit, in which is contained a rough woody Nut, incloſing four or five flat Seeds.

The *Species* are;

1. MANCANILLA *pyri facie. Plum. Nov. Gen.* 50. The Manchineel with the Face of a Pear-Tree.
2. MANCANILLA *aquifolii foliis. Plum. Nov. Gen.* 50. The Manchineel with Leaves like Holly.
3. MANCANILLA *lauri foliis oblongis. Plum. Nov. Gen.* 50. The Manchineel with oblong laurel Leaves.

The Manchineel is a Native of the *Weſt-Indies*, where it grows on low ſandy Land, or near Gullies, where Water runs. The three Sorts here mentioned are diſtinguiſhed by Botaniſts, but I believe their Difference is not remarked by the Natives. They grow to be very large Trees, equal to the Size of an Oak, and are much eſteemed for their Wood, which is ſawn out into Planks, and brought over to *England*: It is uſed for Cabinets, Book-Caſes, *&c.* and will poliſh very well, is of a beautiful Grain, and will laſt a long Time. In cutting down of theſe Trees, they are very careful to burn out the Juice of the Bark, before they begin; otherwiſe the Perſons are in Danger of loſing their Eyes by ſome of the Sap getting into them, which is of a milky Colour, and ſo very cauſtic, that it will raiſe Bliſters on the Skin, and burn Holes in Linen. The Fruit of this Tree, when ripe, is of the Colour and Size of a Golden Pippen; for which many of the *Europeans* have taken it, and ſome by eating thereof loſt their Lives, and others have greatly ſuffered; the Fleſh is not much thicker than a Crown-piece, and not very diſagreeable to the Taſte, but will corrode the Mouth and Throat. The Leaves of theſe Trees alſo abound with a milky Juice, which is of the ſame Nature; ſo that it is dangerous being under their Drip: The Cattle in *America* never ſhelter themſelves under them, nor will any Vegetable ſcarcely grow under their Shade; yet the Goats eat this Fruit, without any manifeſt Injury to themſelves, or their Milk, which is not altered by this Food.

In *England* there are ſome of theſe Trees preſerved by Perſons who are curious in propagating exotic Plants. They may be raiſed from Seeds, by putting the whole Apple or Nut into a Pot of freſh Earth, and then plunge it into a Hot-bed of Tanners-bark, obſerving to refreſh the Earth often with Water. From one of theſe Nuts will ariſe four or five Plants, which, when grown about three Inches high, may be ſeparated, and placed each into a ſmall Pot filled with light rich Earth, and plunged again into the Hot-bed, obſerving to water and ſhade them, until they have taken Root; after which they muſt be managed as was before directed for the *Mammee*, to which I refer the Reader to avoid Repetition; in ſhifting of theſe Plants from one Pot into another, great Care ſhould be had, not to break their Leaves; for then they will bleed greatly, and thereby the Plants will be weakened; and it is very dangerous to let any of the Juice fall on any tender Part of the Body, for it will raiſe a Bliſter: And if it fall on Cloth, it will make Holes therein, as bad as if *Aqua fortis* were dropp'd on it.

MANDRAGORA: Mandrake.

The *Characters* are;

The Flower conſiſts of one Leaf, in the Shape of a Bell, and is divided at the Top into ſeveral Parts; the Pointal afterwards becomes a globular ſoft Fruit, in which are contain'd many Kidney-ſhap'd Seeds.

The *Species* are;

1. MANDRAGORA *fructu rotundo. C. B. P.* Common Mandrake, with a round Fruit.
2. MANDRAGORA *flore ſubcœruleo purpuraſcente. C. B. P.* Mandrake, with a purpliſh blue Flower.

Theſe Plants are propagated by Seeds, which ſhould be ſown upon a Bed of light Earth ſoon after they are ripe; for, if they are kept until the Spring, they ſeldom ſucceed well; and, in the Spring, the Plants will appear above-ground, when they ſhould be carefully clear'd from Weeds; and, in very dry Weather, they muſt be refreſh'd with Water, which will greatly promote their Growth: In this Bed they ſhould remain till the latter End of *Auguſt* (obſerving always to keep them clear from Weeds); at which Time they ſhould be taken up very carefully, and tranſplanted into the Places where they are to remain, which ſhould be a light deep Soil, for their Roots do always run downward very deep; ſo that, if the Soil be wet, they are often rotted in Winter; and, if it be too near the Gravel or Chalk, they ſeldom thrive well; but, if the Soil be good, and they are not diſturb'd, the Plants will grow to a large Size in a few Years, and will produce great Quantities of Flowers and Fruit, and they will abide a great many Years.

I have been inform'd, by ſome Perſons of Credit, that one of theſe Roots will remain ſound above fifty Years, and be as vigorous as a young Plant; but they ſhould never be remov'd after their Roots have arriv'd to any conſiderable Size, which would break their lower Fibres, and ſo ſtunt the Plants, as that they will not recover their former Strength in two or three Years.

As to the feigned Reſemblance of a Human Form, which the Roots of this Plant are ſaid to carry, 'tis all Impoſture, owing to the Cunning of Quacks and Mountebanks, who deceive the Populace and the Ignorant with fictitious Images ſhaped from the freſh Roots of *Briony* and other Plants: And what is reported as to the Manner of rooting up this Plant, by tying a Dog thereto, to prevent the certain Death of the Perſon who ſhould dare to attempt it, and the Groans it emits upon the Force offer'd, *&c.* 'tis all a fulſome Fable; for I have taken up ſeveral large Roots of this Plant, ſome of which have been tranſplanted into other Places, but could never obſerve any particular Difference in this from any other deep-rooting Plant.

MANIHOT, Caſſavi or Caſſada.

The *Characters* are;

It hath a ſhort ſpreading bell-ſhaped Flower, conſiſting of one Leaf, which is cut into ſeveral Parts, whoſe Pointal afterwards becomes a roundiſh Fruit, compoſed of three Cells, which are joined together, in each of which is contained one oblong Seed. To theſe Notes ſhould be added; Male Flowers, which have no Pointal, growing round the Female, which fall off, and are never fruitful.

The *Species* are;

1. MANIHOT *Theveti juca & Caſſavi. J. B. Inſt. R. H.* The common Caſſavi or Caſſada.
2. MANIHOT *ſpinoſiſſima, folio vitigineo. Plum. Cat.* The moſt prickly Caſſavi, with a chaſte-tree Leaf.
3. MANIHOT *arboreſcens minus ſpinoſa, floribus albis umbellatis, foliis aconiti urentibus. Houſt.* Tree-like leſs prickly Caſſavi, with white Flowers growing in Umbels, and a ſtinging Wolfsbane Leaf.
4. MANIHOT *fruteſcens non ſpinoſa, foliis glabris & minus laciniatis. Houſt.* Shrubby Caſſavi without Prickles, and ſmooth Leaves, which are leſs divided.
5. MANIHOT *ulmi folio ampliore. Plum. Cat.* Caſſavi with an ample Elm-leaf.
6. MAHINOT *ulmi folio anguſtiore. Plum. Cat.* Caſſavi with a narrow Elm-leaf.

The firſt Sort is cultivated in all the warm Parts of *America*, where the Root is ground to Flour, after being diveſted of its Juice; and then is made into Cakes, which are uſed for Bread. Of this there are two Sorts, which are not diſtinguiſhed by the Botaniſts, one of which, (*viz.*) the moſt common, hath purpliſh Stalks, and the Veins of the Leaves are alſo of a purpliſh Colour; but the Stalks of the other are green, and the Leaves are of a lighter green Colour. The laſt of theſe Sorts is not venomous, even while the Roots are freſh, and full of Juice; for the Negroes frequently dig up the Roots, and after roaſting of them, they eat them in the ſame Manner as Potatoes, without any ill Effects. This Sort is known by the *Spaniards*, who call it *Camanioc*; but this being more light and ſpongy than the common Sort, and requiring a longer Time to grow to Maturity, ſo it is planted by few People in *America*.

The *Caſſada* is propagated by Cuttings, which the Inhabitants of *America* plant, at their rainy Seaſons; theſe Cuttings are taken from thoſe Plants, whoſe Roots are grown to Maturity, for Uſe. The Cuttings are generally about fifteen or ſixteen Inches in Length, and are planted a Foot or fourteen Inches deep in the Ground, leaving about two or three Inches of the Cutting above the Surface. The Land in which this is planted, muſt be well wrought, and cleanſed from the Roots of noxious Weeds; then there ſhould be a Trench opened croſs the Ground about a Foot deep, in which the Cuttings ſhould be placed at about a Foot Diſtance from each other, leaving a ſmall Part of each Cutting above the Surface: Then the Earth ſhould be filled into the Trench again, and gently preſſed with the Feet about each Cutting, to prevent the Sun and Air from penetrating of the Ground, which would dry the Cuttings too much, and ſo prevent their taking Root. Theſe Trenches ſhould be made about three Feet aſunder, that there may be Room to hough between the Rows to deſtroy the Weeds, which, if permitted to grow, will ſoon overbear the Plants, and deſtroy them. The Cuttings ſhould not be planted immediately after they are taken from the old Plants, but ſhould be laid to dry in a ſhady Place for two Days; for as they abound with a milky Juice, ſo, if the Part where they are cut, be not healed over, they will be ſubject to rot, as is the Caſe with moſt milky Plants.

When the Cuttings have taken Root, they require no farther Care, but to keep them clear from Weeds; and in about eight or nine Months Time, the Roots will have grown to Maturity, which in good Ground will be as large as the Calf of a Man's Leg, but commonly as large as good *Parſnips*, if the Ground be tolerably good. Then the Ground muſt be opened about each Plant to take up the Roots intire, and pare off their Skins; then they throw them into a Tub of Water, and waſh them well; after which they raſp them on a coarſe Raſp, to reduce them to a rough Flour like Saw-duſt; then they preſs out all the Juice with a Preſs, and afterwards it is fit for Uſe.

In *Europe* theſe Plants are preſerved by many Perſons, who are curious in collecting of rare Plants; but they will not thrive, unleſs they are kept in Stoves; for they are all of them very tender Plants. The ſecond Sort is only propagated by Seeds, which muſt be procured from the Places of its natural Growth, for it never produces good Seeds in this Country.

The Seeds of this Sort were ſent into *England* by the late Dr. *William Houſtoun*, who gathered them on the Sands near *Vera Cruz* in the *Spaniſh Weſt-Indies*, where it grows in great Plenty; it was alſo found at *Campechy* by Mr. *Robert Millar*, Surgeon. This Kind ſeldom riſes above eighteen Inches or two Feet high, and the Stalks, Leaves, and every Part of the Plant, is cloſely beſet with ſtrong Prickles, ſo that it is difficult to touch them, without receiving an Injury from the Spines. At the Top of the Shoots, there are ſome white Flowers, which are produced in an Umbel, ſome of which are *Male*, having many Stamina or Threads in each; but the *Female* Flowers reſt on the Embryos, which afterward become the Fruit.

The third Sort was alſo diſcovered by the late Dr. *William Houſtoun* near *La Vera Cruz*: This grows to the Height of twelve or fourteen Feet; the Trunk of this becomes woody, and divides at the Top into the Branches, which are beſet with Leaves, in Shape like thoſe of *Wolfsbane*; theſe are armed with ſmall Spines, which ſting like thoſe of the Nettle. The Flowers of this Kind are white, and grow in an Umbel on the Top of the Branches, and are produced throughout the whole Year. This Sort may be propagated by Cuttings in the ſame Manner as the firſt.

The fourth Sort is ſomewhat like the wholeſome Kind, but is not found in any of our Settlements: This was found in the *Iſland of Cuba*, by the late Dr. *Houſtoun*. All theſe Sorts have large tuberoſe Roots, which abide ſome Years, ſo may be preſerved by the Curious. When the Kinds are obtained from Abroad, they muſt be planted in Pots filled with freſh light Earth, which is not over-rich, and they ſhould be plunged in the Bark-bed in the Stove; where, during the Summer-ſeaſon, they ſhould have a large Share of freſh Air admitted to them, by opening of the Glaſſes in warm Weather, and they muſt be frequently refreſhed with Water; but in Winter they muſt be kept very warm, and ſhould be water'd more ſparingly, eſpecially if the Plants die down to the Root, which the ſecond Sort is very apt to do in Winter in this Country; at which Time Moiſture will rot the Roots, while they are in an unactive State.

When the Seeds of theſe Plants are procured from Abroad, they ſhould be ſown in Pots filled with freſh light Earth, and plunged into a Hot-bed of Tanners-bark, obſerving frequently to water the Earth, in order to promote the Vegetation of the Seeds; and when the Plants are come up two Inches high, they ſhould be tranſplanted each into a ſeparate Pot filled with freſh light Earth, and plunged into the Hot-bed again, being careful to ſhade them from the Sun, until they have taken freſh Root: after which Time they ſhould have freſh Air admitted to them every Day, in proportion to the Warmth of the Seaſon, and they muſt be frequently refreſhed with Water. In this Hot-bed the Plants may remain during the Summer-ſeaſon, but at *Michaelmas* they muſt be removed into the Stove, and treated after the Manner as was before directed.

The Seeds of theſe Plants very often prove abortive, having a fair outer Covering; but when broken have no Germ within, ſo that very few of them grow; therefore it is proper to put them into Water, and take only ſuch for ſowing, as ſink to the Bottom of the Veſſel; for all thoſe which ſwim on the Surface of the Water, are bad Seeds.

MANURE.

There are many different Kinds of Manure, which are now commonly uſed in different Parts of *England*, for enriching of the ſeveral Soils: but theſe having been treated of under the Head of Dung, &c. and being pretty generally known, I ſhall not repeat them in this Place; but proceed to take Notice of ſome other Kinds of Manure, which are at preſent neglected by moſt People, tho' they might be uſed with equal Succeſs on many Lands, as moſt of thoſe now commonly in Uſe.

Oak-bark, after the Tanners have uſed it for Tanning of Leather, when laid in a Heap, and rotted, is an excellent Manure, eſpecially for ſtiff cold Land, in which one Load of this Manure will improve the Ground more, and laſt longer, than two Loads of the richeſt Dungs; and yet it is very common to ſee large Heaps of this remaining in the Tanners Yards for Years, in ſeveral Parts of *England*, where Manure of other Kinds is very ſcarce. Of late Years this Tan has been greatly uſed for Hot-beds in ſeveral Parts of *England*, and is found to exceed Horſe-dung greatly for that Purpoſe, the Fermentation being moderate, and of long Continuance; ſo that a Bed of Tan, when rightly made, will continue in a moderate Temperature of Heat for five or ſix Months; and when the Heat begins to decay, if it be ſtirred up with a Dung-fork, and ſome freſh Tan added to it, the Heat will renew again, and laſt for ſome Months; ſo that theſe Beds are by far the moſt kindly for exotic Plants; and whatever Plants are plunged into theſe Beds, if they are permitted to root thro' the Bottom of the Pots, and ſtrike into the Tan, they will thrive more in one Month, than they did in four Months, while they were confined to the Pots. I have frequently obſerved many Kinds of Plants, which have rooted thro' the Pot into the Tan, and have ſent forth Roots upward of twelve Feet each way, in leſs than three Months, and the Plants have advanced in Proportion, which is a plain Indication, that Plants are greatly nouriſhed by the rotten Tan. After the Tan hath been uſed for a Hot-bed, I have ſpread it on the Ground for Manure, and have found it has greatly enriched the Ground; but it is much better for cold ſtrong Land, than for light hot Ground, becauſe it is of a warm Nature, and will looſen and ſeparate the Earth; ſo that where this Manure hath been uſed three or four times, it hath made the Land very looſe, which before was ſtrong, and not eaſy to be wrought. When this Manure is laid on Graſs, it ſhould be done ſoon after *Michaelmas*, that the Winter Rains may waſh it into the Ground; for if it is laid on in the Spring, it will burn the Graſs, and inſtead of improving it, will greatly injure it for that Seaſon. Where it is uſed for Corn-land, it ſhould be ſpread on the Surface, before the laſt Ploughing, that it may be turned down for the Fibres of the Corn to reach it in the Spring; for if it lies too near the Surface, it will forward the Growth of the Corn in Winter; but in the Spring, when the Nouriſhment is chiefly wanted to encourage the Stems, it will be nearly conſumed, and the Corn will receive little Advantage from it. But it is not proper to have this Manure lie too near the Plants; for when this has happened, I have frequently obſerved it prejudicial to moſt Plants, but eſpecially to *bulbous* and *tuberoſe* rooted Flowers, which are very ſubject to rot, where it lies near their Roots; yet when it is buried juſt deep enough for the Fibres of their Roots to reach it in the Spring, the Flowers have been exceedingly improved by it. And in ſome Places, where this Manure hath been uſed in Kitchen-Gardens, it hath greatly improved the Vegetables; ſo that it is to be wondered, that this ſhould not be employ'd on the Land in every Country where it can be obtained.

Rotten Vegetables of moſt Sorts do alſo greatly enrich Land, ſo that where other Manure is ſcarce, theſe may be uſed with great Succeſs. The Weeds of Ponds, Lakes or Ditches, being dragged out before they ſeed, and laid in Heaps to rot, will make excellent Manure, as will moſt other Sorts of Weeds; but where-ever any of theſe are employed, they ſhould be cut down as ſoon as they begin to flower; for if they are ſuffered to ſtand until their Seeds are ripe, the Land will be ſtored with Weeds, which cannot be deſtroyed in two or three Years; nay, ſome Kinds of Weeds, if they are permitted to ſtand ſo long as to form their Seed, they will perfect them after they are cut down, ſo may be equally prejudicial to the Land: therefore the ſureſt Method is to cut them down juſt as they begin to flower, at which Time moſt Sorts of Vegetables are in their greateſt Vigour, being then ſtronger, and fuller of Juice, than when their Seeds are farther advanced; ſo that at that Time they abound moſt with Salts, and therefore are more proper for the intended Purpoſe. In rotting of theſe Vegetables, it will be proper to mix ſome freſh Earth, Mud or any other ſuch-like Subſtance, with them, to prevent their taking Fire in their Fermentation, which they are very ſubject to, where they are laid in large Heaps without any other Mixture to prevent it; and it will be proper to cover the Heaps over with Earth, Mud or Dung, to detain the Salts, otherwiſe many of the finer Particles will evaporate in fermenting.

When theſe Vegetables are thoroughly rotted, they will form a ſolid Maſs, which will cut like Butter, and be very full of Oil, which will greatly enrich Land.

In ſuch Places where there are neither Ponds, Lakes or Ditches, to ſupply theſe Weeds, and the Situation being far from the Sea, (from whence alſo may be obtained many Sorts of Weeds for this Purpoſe) there may be many Sorts of Vegetables ſown, in order to plough them into the Grounds, when they are full-grown, to enrich the Land: at preſent thoſe chiefly uſed for this Purpoſe are ***Buck-wheat***, ***Vetches*** and *Spurrey*. And in ſome Countries abroad, they commonly ſow *Lupines* upon ſuch Land as they want to improve; and when they are full-grown, they mow them down, and plough them into the Ground, which they eſteem to be a good Manure. This is chiefly uſed in the South of *France* and in *Italy*, where ſome of the Sorts of *Lupines* grow naturally; but theſe are not proper for this Climate, becauſe if the Seaſon ſhould prove cold or wet, after the *Lupines* are ſown, they will rot in the Ground; ſo that it is very hazardous ſowing of them in this Country; and there being many other Sorts of Plants, which are hardy, and grow to a much larger Size with us than *Lupines*, ſhould be preferred to them for this Purpoſe. I have known ſome Land ſown pretty thick with *Horſe-beans*, which have been mow'd down when they were in Bloſſom, and ploughed in for a Crop of Wheat, and it hath largely repayed the Owner. Almoſt any of the pulſe Kind which grow large, are very proper to be ſown for this Purpoſe; and, next to theſe, may be ſown *Muſtard*, *Cole-ſeed*, or any of theſe large growing Plants, which, if cut before they form their Seeds, and ploughed in, will greatly enrich the Ground.

The Refuſe of Kitchen-Gardens, when laid in Heaps and rotted, will alſo afford a good Sort of Manure for Corn-land; but as this is not to be obtained in any Quantity, excepting near great Cities, ſo in ſuch Places Dung being alſo to be had pretty reaſonable, the other will not be ſo much ſought after.

I have lately been informed of another Improvement, which may be of great Uſe in ſeveral Parts of the Kingdom; which is the mowing down of *Fern*, while it is green and tender, and laying it in Heaps to rot, which will make an excellent Manure for Land; and as this is a moſt troubleſome Plant in many Parts of *England*, ſo by frequently mowing of it, it may be deſtroyed; and when rotted, a good Quantity of Manure may be obtained, which will more than defray the Charges of cutting it down. In ſome Places, where no Tan or Horſe-dung can be obtained, they have cut down Fern, and chopped it pretty ſmall, and laid it in a Heap to ferment; then have uſed it for Hot-beds, for which Purpoſe it has anſwered extremely well. This firſt Perſon who informed me of this, was Mr. *Samuel Brewer*, a very curious Perſon in Gardening, who made ſeveral Hot-beds of *Fern*, which, he ſays, continued their Heat for many Months; ſo that he prefers it to Tan, or any ſort of Dung, where a moderate laſting Heat is required.

There are many other Kinds of Weeds, which infeſt the Land in many Parts of *England*, which, if cut down at a proper Time, and laid to rot, might be uſed to great Advantage for Manuring of Land; and hereby the Weeds would in time be deſtroyed, and the Manure would more than pay the Expence of doing it; but few Perſons who are employed in Huſbandry, care to go out of their old beaten Road to try Experiments, even where they are attended with little Expence, and nothing hazarded; otherwiſe there is great Room to make many Improvements of this Kind, eſpecially in Countries where Dung or other common Manure is very ſcarce, in which Places if ſome Experiments were properly made of rotting whatever Vegetables could be procured in the Neighbourhood, a great Improvement might be made of the Land.

The Aſhes of all Kinds of Vegetables are alſo an excellent Manure for Land, ſo that where the Ground is over-run with *Buſhes*, *Brambles*, &c. which are woody, if they are grubbed up in Summer, and ſpread abroad to dry for a little Time, then gently conſumed to Aſhes, and theſe ſpread on the Land, it will greatly improve it. The Method for doing this is already explained under the Article of Land.

Rotten Wood, and Saw-duſt when rotted, is a very good Manure for ſtrong Land, becauſe it looſens the Parts of the Earth, and renders it light.

Bones, Horns, and other Parts of Animals, do alſo enrich Land greatly, as do decayed Fiſh, ſo that in ſome Places where theſe can be eaſily obtained, a great Improvement may be made of them.

Sea-ſand and Shells are in ſeveral Parts of ***England*** uſed to great Advantage, eſpecially in ***Devonſhire***, where they are at the Expence of fetching the Sand and Shells on Horſes Backs, twelve or fourteen Miles. The Land on which they lay this Manure, is a ſtrong Loam, inclining to Clay; ſo that this ſeparates the Parts and the Salts which are contained in the Manure, and is a very great Improvement of their Land. Coral and ſuch Kinds of ſtony Plants which grow on the Rocks, are filled with Salts which are very beneficial to Land; but as theſe Bodies are hard, ſo the Improvement is not the firſt or ſecond Year after they are laid on the Ground; becauſe they require Time to pulveriſe them before their Salts can mix with the Earth to impregnate it. Therefore Dreſſings of this Kind are ſeldom uſed by Tenants, who want to reap the Fruit of their Labour as ſoon as poſſible. But theſe Manures are much better for cold ſtrong Land, than for that which is light and ſandy. In ſome Countries, at a great Diſtance from the Sea, have been diſcovered great Quantities of Foſſil Shells, which have been dug out of the Earth, and uſed as Manure, which have improved the Ground; but theſe are not near ſo full of Salts, as thoſe Shells which are taken from the Shore; therefore where the latter can be obtained, they are to be preferred to the former.

Where the Land lies near the Sea, ſo that either Sand, Shells, Corals, Wrecks or Sea Weeds can be obtained at an eaſy Expence, they are by far the beſt Kinds of Manure, becauſe they enrich the Land for ſeveral Years; for as their Salts are cloſely locked up, ſo they are communicated by degrees to the Land, as the Heat and Cold cauſes the Bodies to pulveriſe, and fall into ſmall Parts. So that where Sand and the ſmaller Kinds of Sea Weeds are uſed, if they are laid on the Land in proper Quantities, it will enrich it for ſix or ſeven Years; but Shells, Corals, and other hard Bodies, will continue many Years longer.

In Dunging of Land, I have frequently obſerved in ſeveral Parts of *England*, but eſpecially in *Cambridgeſhire*, a very wrong Practice; for the Dung is laid on the Land before Midſummer, and ſpread abroad perhaps a Month or ſix Weeks before the Ground is ploughed; in which Time the Sun exhales all the Goodneſs of the Dung, ſo that what remains is of little Service to the Land. Therefore when Dung or any other ſoft Manure is uſed, it ſhould not be laid on the Ground until the laſt Time of ploughing, when it ſhould be buried as ſoon as poſſible, to prevent the Evaporation of the Salts. Indeed where Shells, Corals, or any other hard Subſtances, are uſed for Manure, if theſe are ſpread abroad ſome Months before the Ground is ploughed, the Sun, Rain, or Froſt will cauſe them to pulveriſe, much ſooner than when they are buried and excluded from the Air.

MAPLE. *Vide* Acer.

MARACOCK. *Vide* Granadilla.

MARANTA, *Indian* Arrow-root.

The *Characters* are;

It hath a Flower conſiſting of one Leaf, which is almoſt funnel-ſhaped, opening in ſix Parts, three of which are alternately larger than the other. The lower Part of the Flower-cup afterwards becomes an oval-ſhaped Fruit, conſiſting of one Cell, in which is one hard rough Seed.

The *Species* are;

1. MARANTA *arundinacea, cannacori folio. Plum. Nov. Gen.* Reed-like *Indian* Arrow-root, with a Leaf like the flowering Reed.
2. MARANTA *cannacori folio, flore minimo albo. Houſt. Indian* Arrow-root, with a Leaf like the flowering Reed, and the leaſt white Flower.

The firſt Sort was diſcovered by Father *Plumier* in ſome of the *French* Settlements in *America*, who gave it the Name, in Honour to one *Bartholomew Maranta* an ancient Botaniſt. The Seeds of this Kind were ſent to *Europe* by the late Dr. *William Houſtoun*, who found the Plant growing in Plenty near *La Vera Cruz* in *New Spain*.

The other Sort was brought from ſome of the *Spaniſh* Settlements in *America*, into the Iſlands of *Barbadoes* and *Jamaica*, where it is cultivated in their Gardens as a medicinal Plant, it being a ſovereign Remedy to cure the Bite of Waſps, and to expel the Poiſon of the Machineel Tree. The *Indians* apply the Root to expel the Poiſon of their Arrows, which they uſe with great Succeſs. They take up the Roots, and after cleanſing them from Dirt, they maſh them, and apply it as a Poulteſs to the wounded Part, which draws out the Poiſon, and heals the Wound. It will alſo ſtop a Gangreen, if it be applied before it is gone too far, ſo that it is a very valuable Plant.

Theſe Plants being Natives of a warm Country, are very tender, ſo will not live in this Country, unleſs they are preſerved in Stoves. They may be propagated by their creeping

Roots, which ſhould be parted in the Middle of *March*, juſt before they begin to puſh out new Leaves. Theſe Roots ſhould be planted in Pots filled with light rich Earth, and plunged into a moderate Hot-bed of Tanners Bark, obſerving now and then to refreſh them with Water; but it muſt not be given to them in large Quantities; for too much Moiſture will ſoon rot the Roots, when they are in an unactive State. When the green Leaves appear above Ground, the Plants will require more frequently to be watered, and they ſhould have free Air admitted to them every Day, in proportion to the Warmth of the Seaſon, and the Heat of the Bed in which they are placed. As the Plants advance in Strength, ſo they ſhould have a greater Share of Air, but they muſt conſtantly remain in the Stove plunged in the Tan, otherwiſe they will not thrive; for when the Pots are placed on Shelves in the Stove, the Moiſture paſſes too ſoon from the Fibres, which generally are ſpread to the Sides and Bottoms of the Pots, ſo that the Plants do not receive much Nouriſhment from the Water. But where they are conſtantly kept in the Tanners Bark, and have proper Air and Moiſture, they will thrive, ſo as from a ſmall Root to fill the Pot in which it was planted, in one Summer. About *Michaelmas* the firſt Sort will begin to decay, and in a ſhort Time after, the Leaves will die to the Ground; but the Pots muſt be continued all the Winter in the Bark-bed, otherwiſe the Roots will periſh; for altho' they are in an unactive State, yet they will not keep good very long, when taken out of the Ground; and if the Pots are taken out of the Tan, and placed in any dry Part of the Stove, the Roots often ſhrivel and decay; but when they are continued in the Tan, they ſhould have but little Water given to them, when their Leaves are decayed, leſt it rot them. This firſt Sort doth flower conſtantly in *July* and *Auguſt*, and many times will produce ripe Seeds in *England*; but the ſecond Sort doth not flower ſo conſtant, nor do the Flowers appear ſo conſpicuous, being very ſmall, and of a ſhort Duration. This Sort never produced any Seeds in *England*, nor could I ever obſerve any Rudiment of a Seed-veſſel ſucceeding the Flower. The green Leaves abide on this Sort moſt Part of the Winter, ſeldom decaying till *February*, and ſometimes will continue green, until freſh Leaves come up, and thruſt the old ones off; in which Particular there is a more remarkable Difference between the two Sorts, than can be obſerved in the Face of the Plants.

MARCH.

Work to be done in the KITCHEN GARDEN.

The Weather in this Month is generally more unſettled than in any other Month of the Year; ſometimes it proves dry and froſty; at other Times cold and wet, with Storms of Hail and ſtrong Winds, which makes a diligent Attendance upon the Hot-beds of Cucumbers and Melons abſolutely neceſſary; otherwiſe they often miſcarry, or at leaſt loſe all their firſt Crop of Fruit: To avoid which, if your Beds have very much declin'd their Heat, you ſhould add a Lining of new Horſe-dung round the Sides, which will renew the Heat of the Beds; and alſo obſerve to cover the Glaſſes cloſe with Mats every Night; but in the Day-time they muſt have freſh Air, in proportion to the Heat of the Beds, whenever the Weather will permit, without which the Fruit will drop off, and come to nothing.

Sow Cabbages, Savoys, and Red Cabbages for Winter Uſe, (if it were not done the laſt Month) and plant out all your Cauliflower Plants which are remaining in the Winter-beds; and thoſe Cauliflower Plants which were rais'd the laſt Month, to ſucceed thoſe rais'd in Autumn, ſhould now be prick'd out upon freſh Hot-beds, to bring them forward; but they ſhould not be too cloſely cover'd, becauſe it will draw them up weak, and ſpoil them.

Continue to put in Beans and Peaſe every Fortnight, that there may be a Succeſſion of them thro' the Seaſon; and ſow Radiſhes, Spinach, and young Sallet Herbs to ſucceed thoſe before ſown; and ſow ſome Celery Seed for a latter Crop.

You may yet ſow Parſnips, Carrots, Onions, Leeks, Beets, Borage, Bugloſs, Burnet, Dill, *&c.* But theſe ſhould be ſown early in the Month, eſpecially if the Soil is dry, otherwiſe they ſeldom grow large; but upon a moiſt Soil, the Middle or latter End of the Month is Time enough.

Slip and plant Mint, Tarragon, Penny-Royal, Camomile, Balm, Savory, Sage, Roſemary, Hyſſop, Lavender Cotton, Spike Lavender, Wormwood, Southernwood, and moſt other Aromatick Plants, which are now beginning to ſhoot, and will take Root better than at any other Time of the Year.

You may now ſlip the Off-ſets from the old Roots of Skirrets, and plant them in Rows ten Inches aſunder, and ſix Inches Diſtance in the Rows, obſerving in dry Weather to water them until they have taken Root.

Your large Kind of Lettuce Plants, which have ſtood the Winter in warm Borders, muſt now be planted out into a more open Expoſure, otherwiſe they will draw up weak and come to little. You muſt alſo ſow ſome Seeds of the Sileſia, Cos, Imperial, and other Lettuces in an open rich Spot of Ground, to ſucceed thoſe of the laſt Month's Sowing; and ſow ſome Endive to come early in Summer.

About the Middle of this Month you muſt fork the Aſparagus Beds, being very careful not to hurt the Crown of the Roots; but you may defer raking them ſmooth till the Beginning of next Month, whereby you will retard the Growth of Weeds; and that will be early enough, provided it be done before the Buds appear above-ground; for the only Danger attending this late Dreſſing, is, the deſtroying of the Buds.

Toward the latter End of this Month, you may plant new Aſparagus Beds, if the Ground be dry; but if it be wet, it will be better to defer it till the Beginning of next Month.

Continue to make Hot-beds for Cucumbers, Melons, Purſlain, *&c.* and the Beginning of the Month ſow Cucumber and Melon Seeds, to ridge out under Bell or Hand-glaſſes, for the principal Crop.

Dreſs your Artichokes, obſerving to leave only two or three of the cleareſt and beſt ſituated Plants upon each Root to bear, and ſlip the reſt clean off; the beſt of which may be now planted to make a new Plantation; and theſe will produce Heads in Autumn, after thoſe upon the old Roots are gone.

Sow Chardoons upon a Bed of rich light Earth, pretty thin, obſerving to keep them clear from Weeds; and in dry Weather they muſt be water'd until they are big enough to tranſplant.

Toward the latter End of this Month you may put in ſome Kidney-Beans in warm Borders, where they may be defended from Cold; but this muſt not be done in wet Weather, becauſe too much Moiſture at this Seaſon will rot them.

You ſhould alſo ſow Sweet-Marjoram, Thyme, Hyſſop, and other tender Aromatick Plants, upon a dry warm Soil; for they will not do well on a wet Ground.

Continue to ſow all Sorts of young Sallet-Herbs, as Creſſes, Muſtard, Rape, Radiſh, *&c.* upon warm Borders until the latter End of the Month, when they will do better in a more open Expoſure.

At the End of this Month you may ſow Purſlain upon warm Borders, in the common Ground, where it will at that Time do well without any artificial Heat. You may alſo at this Time ſow Turnips, upon an open Spot of Ground to come in *May*.

You muſt now ſow the Seeds of Finnochia in Drills made about a Foot aſunder, into which the Seeds ſhould be thinly ſcatter'd, and cover'd over about half an Inch thick with light Earth. This ſhould have a rich light Soil, otherwiſe it will not ſucceed well.

Products of the KITCHEN GARDEN.

Winter Spinach in great Plenty, ſome Cabbages and Savoys are yet remaining; Sprouts from the Stalks of Cabbages and Savoys in great Plenty, and very good; Broccoli, Coleworts, Borecole, Red Beets, Chard Beets, Carrots, Parſnips, Turnips, Potatoes, Jeruſalem Artichokes, Celery, Endive, and all Sorts of young Sallet Herbs; and upon the Hot-beds, Cucumbers, Aſparagus, Peaſe, Kidney-Beans, Purſlain, *&c.* You have alſo on warm Borders, Mint, Tarragon, Tanſey and Clary, with Sage, Parſley, Marygolds, and other Kinds of Pot-herbs.

Work to be done in the FRUIT GARDEN.

You muſt now finiſh Pruning all your tender Sorts of Fruit-trees, as Peaches, Apricots, Nectarines, *&c.* for their Buds by this Time (if the Spring has been mild) will be very turgid, and in Danger of being rubb'd off, in nailing the Branches. When you have finiſh'd the pruning and nailing of the Trees, the Ground ſhould be dug about their Roots to looſen it and deſtroy the Weeds. And when the Trees are in Bloſſom, if the Weather ſhould prove very ſharp, and the Nights froſty, it will be proper to cover them with Mats, Canvas, or Reeds, to guard them from Injury; but theſe Coverings ſhould be taken off at all Times when the Weather is mild, otherwiſe they will force out the Shoots too ſoon, and render the Bloſſoms ſo weak, that the leaſt inclement Weather will deſtroy them: It will alſo be proper, in very dry Seaſons, to ſprinkle ſome Water gently over the Branches of your Fruit-trees (eſpecially in mild Weather) which will ſtrengthen the Bloom, and forward the Fruit, and alſo be of great Service to the Trees.

You may yet tranſplant Fruit-trees upon a moiſt Soil; but if your Ground be not ready by the Middle of the Month to receive them, it will be proper to take them up and prune their Roots, and then lay them in the Ground, covering their Roots and Stems with Litter, to prevent their being dry'd by the Sun and Wind; this will retard their Shooting, and their Roots will be prepar'd for puſhing, by which Method there will be little Danger of their ſucceeding.

This is the principal Month for grafting moſt Sorts of Fruit-trees, beginning with the early Kinds, and ending with Apples; but this muſt be perform'd earlier or later, according to the Seaſon.

Cut off the Heads of thoſe Stocks which were inoculated the laſt Summer, leaving about four Inches above the Bud to attract the Sap; (and, if need be, to faſten the Shoot to, to prevent its being blown out) and after this is done, the Ground between the Trees ſhould be dug to bury the Weeds and looſen it, for the Roots of the Plant to find Nouriſhment.

Dreſs and freſh earth your Beds of Straw-berries, pulling off their Strings, and clearing them from Weeds, which will cauſe them to produce a greater Quantity of Fruit: and dig between the Rows of Raſpberries (where it was not before done) to make the Ground clean, and looſen it, that the Roots of the Plants may penetrate the better into it.

Your Fruit-trees which were planted the laſt Autumn, with their Heads intire, ſhould now be headed down to three or four Eyes; in doing of which you muſt be very careful not to diſturb their Roots: To prevent which, you ſhould place your Foot cloſe to the Stem, and hold the lower Part of the Tree faſt with your Left-hand, while, with a ſharp Knife in your Right-hand, you cut off the Head. You ſhould alſo cover the Ground carefully with Mulch, or rather with ſome Green-ſward, turning the Graſs downward, which will prevent the Sun and Wind from penetrating the Ground to their Roots, the Neglect of which has deſtroy'd many new-planted Trees.

Thoſe Trees which were grafted the former Spring, and are yet remaining in the Nurſery, ſhould be ſhorten'd to four or five Eyes, that they may be furniſh'd with lateral Branches near the Ground, otherwiſe they will run up tall, and become naked at Bottom.

Dig and clear the Ground between your Gooſeberries and Currants, which will ſtrengthen their Bloſſoms, and incourage the Trees, and add a Neatneſs to the Place.

Fruits in prime, or yet laſting.

Pears; Bergamot Bugi, St. Martial, Winter Boncretien, Double-fleur, Royal d'Hyver, Bezy de Chaumontelle, L'Amozelle; and for baking, the Cadillac, *Parkinſon*'s Warden, Union or Pickering, with ſome others.

Apples; Loan's Pearmain, Nonpareil, Golden Ruſſet, Pile's Ruſſet, Wheeler's Ruſſet, Kentiſh Pippen, Holland Pippen, French Pippen, Pomme d'Api, Stone Pippen, John Apple, with ſome others.

Work to be done in the FLOWER GARDEN.

In this Month you may tranſplant moſt Sorts of fibroſe-rooted Plants, as Carnations, Pinks, Sweet Williams, Roſe Campions Lychnis's, Thrift, Aſter's, Golden Rods, Perennial Sun-Flowers, Canterbury-Bells, Peach-leav'd Bell-flower, French Honey-ſuckles, Daizies, Buphthalmums, Leucanthemums, Columbines, Hieracium's, with many other Sorts; tho' if the Soil be dry, it would have been better if done at *Michaelmas*, becauſe they would have taken Root in the Ground, and ſo be better enabled to reſiſt the Drought, and alſo to produce a greater Quantity of Flowers.

Stir the Earth of your Borders, and Beds of Flowers which were planted at *Michaelmas*, with a narrow Trowel, and be very careful in doing of this, not to injure the Roots, nor the Flower-buds, which now begin to appear; this will prevent the Growth of Weeds, and when raked over ſmooth, will render the Beds more agreeable to the Eye.

Your choice Hyacinths, Anemonies, Ranunculus's and Tulips, will now begin to ſhew their Flower-buds, when they ſhould be carefully covered with Mats or Canvas in bad Weather; for at this Seaſon the Nights are often Froſty, and if the Flowers are expos'd, their Buds are frequently pinch'd, ſo that they will not open ſo fair, as thoſe which are protected.

Plant ſome Roots of common double Anemonies to flower late, after thoſe which were planted in Autumn are paſt, and if the Seaſon ſhould prove dry, refreſh them now and then with Water, otherwiſe they will not ſucceed well.

The Boxes and Pots with ſeedling Auricula's ſhould now be placed in a ſhady Situation; for the Plants will begin to appear, and if they are expoſed to the full Sun but one Day, while they are young, it will deſtroy moſt of them: You muſt alſo refreſh them with Water in dry Weather, but give it to them very gently, leſt you waſh them out of the Ground.

Your Pots of choice Auricula's muſt now be taken Care of, to protect them from blighting Winds and froſty Nights, which will otherwiſe pinch their Flower-buds, and ſpoil their Blowing: You muſt alſo refreſh them now and then with Water in dry Weather, but do not let the Wet get into the Center of the Plants, leſt it injure the Flower-ſtems.

Dig up the Ground in your Wilderneſs Quarters, and between flowering Shrubs, if it hath not been done the former Month: This will looſen the Ground, and encourage the Shrubs to flower ſtrongly, and render the Place free from Weeds, for Neatneſs is always to be deſired in every Part of a Garden.

Give freſh Earth to the Carnations which were planted out for good at *Michaelmas*, and pick off all decay'd Leaves; this will greatly ſtrengthen them for flowering.

Your Pots of double Roſe Campions, Campanula's, Scarlet Lychnis's, *&c.* which were planted at *Michaelmas*, ſhould alſo be pick'd from all dead Leaves and Filth, and the Earth on the Tops of the Pots taken out, and the Pots refilled with freſh rich Earth, which will ſtrengthen them greatly for flowering.

Toward the latter End of the Month you may ſow the Seeds of all hardy Annual Flowers, in the Borders of the Pleaſure Garden; ſuch as Flos-Adonis, Venus Looking-glaſs, Venus Navelwort, Sweet-ſcented Peaſe, Tangier Peaſe, Lobel's Catchfly, Dwarf Lychnis, Dwarf Annual Stock, Candy Tuft, Oriental Mallow, Lavatera's, Ketmia Veſicaria, Convolvulus Minor, with many others. The beſt Method is to ſow the Seeds thin in little Patches, where they are to remain, for they do not ſucceed ſo well when they are tranſplanted.

You may now ſow the Seeds of many Kinds of biennial and perennial Plants in your Flower Nurſery, to ſupply the Borders of the Flower Garden the following Year, as Columbines, Canterbury-Bells, French Honey-ſuckles, Stock-Gilliflowers, Wall-Flowers, Sweet-Williams, with ſome others. And this is a proper Seaſon for ſowing your choice Carnation and Pink Seeds, being careful not to bury the Seeds deep in the Ground, and place the Pots or Tubs where they may have the Morning Sun. Upon a moderate Hot-bed, you may now ſow the Seeds of Marvel of Peru, French Marygold, Female Balſamine, Love Apple, African Convolvulus Major, Capſicums, Stramoniums, Indian Pink, Sweet Sultan, and many other Sorts, which are indifferent hardy, but require a little Warmth, to bring 'em forward in the Spring, yet if ſown too early, are apt to grow too large before the Seaſon will be favourable enough to tranſplant them abroad.

Make freſh Hot-beds for your choice Sorts of Annual-Plants, which were ſown the former Month, and let the Earth upon theſe Beds be very good, for otherwiſe your Plants will not thrive well; when the Heat of the Beds is moderate, the Plants ſhould be placed into them, allowing them proper Diſtances to grow; and obſerve to refreſh them with Water, as they ſhall require, by which Method your Amaranthus's, and other Sorts of curious Annuals may be brought to a large Size.

Toward the End of the Month, if the Seaſon be mild, and inclinable to Wet, you may tranſplant moſt Sorts of Evergreens, as Hollies, Yews, Phillyrea's, Alaturnus's, Laurels, Bays, Lauruſtinus's, *&c.* with many Kinds of exotick Trees, obſerving to cover the Surface of the Ground with Mulch, to prevent the Sun and Wind from penetrating the Ground and drying their Roots; but if this Month be cold, and North or Eaſt Winds reign, with dry Weather, it will be better to wait till next Month, for more favourable Weather.

You may now ſow the Seeds of Firs, Pines, Bays, Cedars, Arbutus's, Alaturnus's, Phillyrea's, and other Evergreen or hardy exotick Trees, in ſuch Places where they be expos'd only to the Morning Sun.

Plants now in Flower in the PLEASURE GARDEN.

Crocus's of various Sorts, Double Snow-Drop, Large Snow-Drop, ſeveral Sorts of Narciſſus's, Perſian Iris, Double Pilewort, Daffodil, Spring Cyclamen, Early Tulips, Crown Imperials, Hyacinths of ſeveral Sorts, Fennel-leav'd perennial Adonis, ſome Anemonies, Violets, Hepatica's, Wall-flowers, Allyſon, perennial Fumitory, Primroſes, Polyanthus's, Daizies, Dens Canis, Muſcari, with ſome others.

Hardy Trees and Shrubs now in Flower.

Almond-tree, Cherry Plum, Mezerions, Spurge Laurel, Lauruſtinus, Spaniſh Traveller's Joy, Cornelian Cherry, Benjamin-tree, Willow-leav'd Sea Buckthorn, with ſome others.

Work to be done in the GREEN-HOUSE *and* STOVE.

Water your Orange-trees, Myrtles, Bays, Amomum Plinii, and other leſs tender exotick Trees, frequently, but do not give it to them too plentifully ; and begin to inure them to the Air by Degrees, opening the Glaſſes whenever the Air is ſoft and mild ; but in cold Days, or when the Air is ſharp, it ſhould not be admitted to them ; for by being made tender by the Houſe, a little ſharp Air will be prejudicial to them, until they are become a little hardier.

Waſh and cleanſe the Leaves and Stems of your Orange-trees from the Filth which they have contracted, during their Confinement in the Houſe, and take the Earth out from the Tops of the Tubs or Pots ; filling them up again with freſh rich Earth, which will ſtrengthen them greatly, and prepare them for flowering.

Toward the End of this Month (if the Weather be favourable) you may take out your Tubs of Bays, Oleanders, Lauruſtinus's, Lentiſcus, and other hardy Kinds, placing them near a Hedge, in a Situation where they may be well defended from cold Winds ; and this will thin the Houſe of Plants and give Room to thoſe that remain, to have a greater Share of free Air.

If any of your Orange-trees have decay'd Heads, they ſhould now be ſhifted and pruned in cloſe, and placed upon a Hot-bed of Tanners-bark, to force them out again ; treating them in the Manner directed in the former Month.

You may alſo head down ſuch Myrtles, Bays, and Lauruſtinus's, as have ragged or decay'd Heads, obſerving to give them a very moderate Warmth, juſt to make them puſh again, and then let them have as much free Air as poſſible. By this Method you may renew their Heads, which, with often Pruning, may be reduced into exact Order, and the Trees rendered beautiful.

Sow the Kernels of Oranges, Lemons, and Citrons, for Stocks to bud the ſeveral Kinds of thoſe Fruits upon ; if theſe are taken from rotten Fruits, they are better than thoſe from ſound ones ; and they ſhould be ſown upon moderate Hot-beds, refreſhing them often with Water, which will bring them on prodigiouſly ; but in very hot Weather the Glaſſes ſhould be cover'd with Mats.

Make ſome Hot-beds of Tanners-bark in order to tranſplant ſuch tender exotick Plants as are come up from the Seeds ſown the former Month ; and when the Beds are in due Order, you ſhould fill ſome ſmall Pots with freſh rich Earth, and plunge them into the Beds, that the Earth may become warm before the Plants are placed therein, which ſhould be done the Day after the Pots are plunged, otherwiſe the Earth will become too dry : When the Plants are planted, they muſt be gently watered, and the Glaſſes ſhaded until they have taken Root ; after which they ſhould be frequently refreſh'd with Water, and the Air muſt be let into the Beds proportionably to the Warmth of the Seaſon.

The Fires in the Stoves ſhould now be abated ; but this muſt be done by Degrees, according as the Weather increaſes in Warmth.

Your Anana's or Pine-Apples muſt now be removed into Bark-beds ; therefore, if you have not prepar'd your Beds ready to receive them, it ſhould be no longer delay'd ; for the Bloſſoms of the Fruit will now begin to appear ; and if the Plants are check'd at that Time, their Fruit is ſeldom ſo fair, nor ſo early ripe.

Stir up the Bark-beds in the Stove, where wanted, and clean the Leaves of your Coffee-tree and other woody Plants, from the Filth they may have contracted, and pick off all decay'd Leaves, which, if ſuffer'd to remain on, do greatly injure the Plants.

Plants now in Flower in the GREEN-HOUSE *and* STOVE.

Ficoides's of ſeveral Sorts, Ilex-leav'd Jaſmine, Spaniſh Jaſmine, Hermannia alni folio, Anemonoſpermos's two or three Kinds, Polygala Africana fruteſcens buxi folio, Aleppo Cyclamens, Geraniums, Hermannia Ibiſci folio, Doria Africana atriplicis folio, Chryſanthemum populi albæ folio, Aloes of ſeveral Sorts, Coronilla Cretica argentea, Sedum arboreſcens, Lilio Narciſſus, Pancratium, Turnera, Cotyledon with a broad cut Leaf, with ſome others.

MARJORAM. *Vide* Majorana.

MARLE, is a Kind of Clay, which is become fatter, and of a more inriching Quality by a better Fermentation, and by its having lain ſo deep in the Earth as not to have ſpent or weaken'd its fertilizing Quality by any Product.

Marle is ſuppos'd to be much of the Nature of *Chalk*, and is believ'd to be fertile from its ſalt and oily Quality, and that it contracts its Salts from the Air, and for that Reaſon is the better the longer it is expos'd to it.

Marles are of different Qualities in different Counties of *England*. There are reckon'd to be four Sorts of *Marles* in *Suſſex*, a Grey, a Blue, a Yellow, and a Red : Of theſe the Blue is accounted the beſt, the Yellow the next, and the Grey the next to that ; and as for the Red, that is the leaſt durable.

The *Marle* in *Suſſex* is moſt like Fuller's-Earth, and therefore muſt certainly be the fatteſt ; whereas that in the *North-Country* runs much upon the Loam.

In *Cheſhire* they reckon ſix Sorts of *Marle* :

1. The *Cowſhut Marle*, which is of a browniſh Colour, with blue Veins in it, and little Lumps of Chalk or Lime-ſtone : It is commonly found under Clay or low black Land ſeven or eight Feet deep, and is very hard to dig.

2. *Stone*, *Slate*, or *Flag-Marle*, which is a Kind of ſoft Stone, or rather Slate of a blue or bluiſh Colour, that will eaſily diſſolve with Froſt or Rain : This is found near Rivers and the Sides of Hills, and is a very laſting Sort of *Marle*.

In *Staffordſhire* they eſteem the *Dice* or *Slate-Marle* better than the *Clay-Marle*, and reckon the Blue beſt for Arable-Land, and the Grey for Paſture.

3. *Peat-Marle*, or *Delving-Marle*, which is cloſe, ſtrong, and very fat, of a brown Colour, and is found on the Sides of Hills, and in wet or boggy Grounds, which have a light Sand in them about two Feet or a Yard deep : This is accounted the ſtrongeſt of all *Marles*, and is very good for ſandy Land, but the Land muſt have a double Quantity laid on.

4. *Clay-Marle* ; This reſembles Clay, and is pretty near akin to it, but is fatter, and ſometimes mix'd with Chalk-ſtones.

5. *Steel-Marle* ; which lies commonly in the Bottom of Pits that are dug, and is of itſelf apt to break into cubical Bits : This is ſometimes under ſandy Land.

6. *Paper-Marle* ; which reſembles Leaves or Pieces of brown Paper, but ſomething of a lighter Colour : This lies near Coals. This Sort is leſs eſteem'd, it being hard to be got.

The Properties of any Sorts of *Marles*, and by which the Goodneſs of them may be beſt known, are better judg'd of by their Purity and Uncompoundedneſs, than their Colour ; as if it will break in Pieces like Dice, or into thin Flakes, or is ſmooth like Lead-Ore, and is without a Mixture of Gravel or Sand ; if it will flake like Slate-ſtones, and ſhatter after Wet, or will turn to Duſt when it has been expos'd to the Sun ; or will not hang and ſtick together when it is thoroughly dry, like tough Clay ; but is fat and tender, and will open the Land it is laid on, and not bind ; it may be taken for granted that it will be beneficial to it.

Some adviſe, to try the Goodneſs of *Marle*, by putting ſome of it into a Glaſs of Water ; and they account it to be good, if it be ſo tender that the Lumps break and diſſolve as ſoon as it comes to the Bottom : They alſo reckon it a good Sign, if it ſparkle in the Water, and feel fat between the Fingers ; but the ſureſt Sign of its Goodneſs, is, if it diſſolve by Wet or Froſt.

Some approve of marling Land ſhallow, becauſe, they ſay, it is apt to work downwards : Others, of laying it in deep at firſt, becauſe the Sun waſtes the Fatneſs of it.

Some recommend *Marles* for the improving of ſandy looſe Land : But the ſureſt way to know what Lands it will ſuit beſt with, is, to try with a little of it on Lands ſuppos'd to be of a contrary Nature to it.

Marles do not make ſo good an Improvement of Lands the firſt Year, as afterwards.

Some adviſe, firſt to burn the *Marle* before it is laid on the Lands, which, if it be done, one Load will go as far as five.

The Quantity of the *Marle* ought to be in Proportion to the Depth of the Earth ; and Over-marling has often prov'd of worſe Conſequence than Under-marling.

MARRUBIASTRUM: Baſtard Horehound.

The *Characters* are;

It is one of the Verticillate Plants with a Lip-flower, conſiſting of one Leaf, whoſe Upper Lip is hollow like a Spoon, but the Lower Lip (or Beard) is cut into three Segments: Out of the Centre of the Flower riſes the Pointal, attended, as it were, by four Embryo's, which afterwards turn to ſo many roundiſh Seeds. To which may be added, The little Flower-cup is cut into five ſmall Segments, upon which are produc'd ſmall Spines; and the Flowers grow in thick Whorles round the Stalk.

The *Species* are;

1. Marrubiastrum *vulgare. Tourn.* Common Baſtard Hore-hound.
2. Marrubiastrum *ſideritidis folio, caliculis aculeatis, flore candicante. Tourn.* Baſtard Hore-hound, with an Ironwort Leaf, and a white Flower.
3. Marrubiastrum *ſideritidis folio, caliculis aculeatis, flore flavo cum limbo atro-purpureo. Tourn.* Baſtard Hore-hound, with an Ironwort Leaf, and a yellow Flower with a dark purple Edge.
4. Marrubiastrum, *folio cardiacæ. Boc. Muſſ.* Baſtard Hore-hound, with a Motherwort Leaf.

The firſt of theſe Plants is found wild amongſt the Corn in *Kent*, and ſome other Counties in *England*, and is ſeldom cultivated, except in Botanic Gardens, for the ſake of Variety, where are alſo ſome other Species of this Plant preſerved for the ſame Purpoſe.

The other three Sorts are found wild in the Southern Parts of *France* and *Italy*, from whence the Seeds have been ſent to the Curious in Botany in divers Parts of *Europe*.

Theſe Plants may be all propagated by ſowing their Seeds as ſoon as they are ripe, upon a Bed of light dry Soil, where they will come up the ſame Autumn, and abide the Cold of our ordinary Winters very well, and may be tranſplanted out in the Spring where they are to remain. In *June* they will flower, and their Seeds will be ripe in *July* or *Auguſt*.

MARRUBIUM; [Some derive the Name of מריב, Heb. *Marrob*, i. e. *bitter Juice*; others, from the Latin Word *Marcidum*, becauſe the Leaves of this Plant are ſo wrinkled that they appear to be withering] Hore-hound.

The *Characters* are;

It is a verticillate Plant with a Lip-Flower conſiſting of one Leaf, whoſe Upper-Lip (or Creſt) is upright with two Horns; but the Under-Lip (or Beard) is divided into three Parts; the Pointal, which is fix'd to the Hinder-Part of the Flower, is attended by four Embryo's, which become ſo many oblong Seeds, incloſ'd in the Flower-cup.

The *Species* are;

1. Marrubium *album vulgare. C. B. P.* Common White Hore-hound.
2. Marrubium *album latifolium peregrinum. C. B. P.* Broad-leav'd Foreign White Hore-hound.
3. Marrubium *album anguſtifolium peregrinum. C. B. P.* Narrow-leav'd Foreign White Hore-hound.
4. Marrubium, *alyſſon dictum, foliis profunde inciſis. H. L.* Hore-hound, call'd Madwort, with Leaves deeply cut in.
5. Marrubium *Hiſpanicum ſupinum, foliis ſericeis argenteis. Tourn.* Low Spaniſh Hore-hound, with ſilken ſilver-colour'd Leaves.

There are ſome other Species of this Plant, which are preſerv'd in curious Botanick Gardens, for the ſake of Variety: but as they are of no Uſe or Beauty, ſo it would be needleſs to enumerate them in this Place.

The firſt Sort here mention'd is us'd in Medicine: This is found wild in divers Parts of *England*. The other Sorts are only kept by ſuch as delight in Variety of Plants; for they have no great Beauty in their Flowers, nor are there any Uſes to which they are applied.

They may all be propagated by ſowing their Seeds in *March* upon a Bed of freſh light Earth, and when they are come up, they ſhould be tranſplanted out into a dry Soil, at about eighteen Inches or two Feet aſunder, where they will require no farther Culture than only to keep them clear from Weeds. But the fourth Sort is ſomewhat tender, and ſhould have a warm Situation, otherwiſe it would be often kill'd by Froſts.

MARRUBIUM NIGRUM. *Vide* Ballote.

MARTAGON. *Vide* Lilium.

MARTYNIA.

This Name was given by the late Dr. *William Houſtoun* to this Genus of Plants, which he diſcovered in *America*, in Honour to his Friend Mr. *John Martyn*, Profeſſor of *Botany* at *Cambridge*.

The *Characters* are;

It hath an anomalous Flower conſiſting of one Leaf, which is divided into two Lips: the Upper Lip is erect, and ſlightly cut into two Parts; but the Under Lip is cut into three Parts, the Middle Segment being larger than the other two. The Flower is ſucceeded by a Fruit having a ſtrong thick Covering, in which is included a very hard Nut, having two ſharp crooked Horns at one End; and in the Nut are included four Seeds, lodged in ſo many ſeparate Cells.

The *Species* are;

1. Martynia *annua villoſa & viſcoſa, folio ſubrotundo, flore magno rubro. Houſt.* Annual hairy viſcous Martynia, with a roundiſh Leaf, and a large red Flower.
2. Martynia *annua villoſa & viſcoſa, aceris folio, flore albo, tubo longiſſimo. Houſt.* Annual hairy viſcous Martynia, with a maple Leaf, and a white Flower, having a very long Tube.
3. Martynia *perennis, folio ſubrotundo rugoſo, flore cæruleo, radice dentariæ. Linn.* Perennial Martynia, with a rough roundiſh Leaf, a blue Flower, and a Toothwort Root.

The firſt of theſe Plants was diſcovered by the late Dr. *William Houſtoun*, near *La Vera Cruz* in *New Spain*, from whence he ſent the Seeds into *England*, which ſucceeded very well in the Phyſic-Garden at *Chelſea*; and in the Year 1731, ſeveral of theſe Plants were raiſed, which produced their beautiful Flowers, and perfected their Seed; from whence ſeveral Plants were raiſed the ſucceeding Year.

The ſecond Sort was diſcovered by the ſame curious Gentleman in the Year 1733, near *Cartagena* in *New Spain*, from whence he ſent dried Samples of the Plant, with ſome of the Seeds to *England*; but they did not ſucceed.

The Seeds of the third Sort were ſent from *Carthagena* by Mr. *Robert Millar* Surgeon, from which ſome of the Plants were raiſed in the Gardens of Mr. *George Clifford* of *Amſterdam*; where they have flowered, but have not produced any Seeds in *Europe*. This Sort increaſes greatly by its Roots, which creep under Ground, ſo as to fill the Pots in which they are planted, in one Seaſon.

The two firſt Sorts being annual Plants, are only propagated by Seed, which ſhould be ſown in Pots filled with light rich Earth, and plunged into a Hot-bed of Tanners-bark; where (if the Earth is duly water'd to promote the Vegetation of the Seed) the Plants will appear in about a Fortnight, or three Weeks, and will grow pretty faſt, if the Bed is warm: So they ſhould be tranſplanted in a little Time after they come up, each into a ſeparate Pot, filled with light rich Earth, and then plunged into the Hot-bed again, obſerving to water them well, as alſo to ſhade them from the Sun, until they have taken new Root; after which Time they ſhould have a large Share of freſh Air admitted to them in warm Weather, by raiſing of the Glaſſes of the Hot-bed every Day, with Bricks or Stones, and the Plants muſt be frequently water'd. With this Management, the Plants will make great Progreſs, ſo as to fill the Pots with their Roots in about a Month's Time; when they ſhould be ſhifted into Pots, about a Foot Diameter at the Top, which ſhould be filled with light rich Earth, and then plunged into the Hot-bed in the Bark-ſtove, where they ſhould be allowed Room, becauſe they put out many Side-branches, and will grow three Feet high or more, according to the Warmth of the Bed, and the Care which is taken to ſupply them conſtantly with Water. About the Middle of *July*, the Plants will begin to ſhew their Flowers, which are produced in a Spike from the Top of the Plants, which, of the firſt Sort, are like thoſe of the *Fox-glove*. As the firſt Spike of Flowers decays, they are ſucceeded by Spikes from all the Side-branches; ſo that the Plants continue in Flower until *Michaelmas* or later, if the Seaſon proves favourable: But it is only from the firſt Spike of Flowers that good Seeds can be expected in this Country; ſo that particular Care ſhould be taken, that none of thoſe are pulled off or deſtroyed; becauſe it is very difficult to obtain good Seeds in this Country; and I believe few of thoſe which are produced on the Side-branches in the natural Country of their Growth, are duly ripened; for I received a great Quantity of theſe Seeds from abroad, which have appeared to be very good, and yet few of them have produced Plants.

The Seeds of theſe Plants have a ſtrong green Covering over them, as thick as the outer Covering of an Almond; and when the Seeds are ripe, the Covering opens, and lets the Seed fall, in the ſame Manner as the Covering of *Almonds*, *Walnuts*, &c. In each Covering there is one hard Nut, in Shape ſomewhat like a Beetle, having too ſharp crooked Horns at one End. This Nut contains four Embryo's; but there are ſeldom more than two Seeds which are perfect in any of them. However, when they are ſown, the whole Nut muſt be planted; for it is ſo hard, that it is impoſſible to take out the Seeds without ſpoiling of them; and where there are two Plants produced from the ſame Nut, they are eaſily ſeparated, when they are tranſplanted. Theſe Seeds will continue good for ſome Years; for I ſaved a pretty large Quantity of them in the Year 1734, Part of which I ſowed the following Year, but had not one Plant produced; the Remainder of the Seeds I divided, and ſowed ſome of them every ſucceeding Year, without any Succeſs, until the preſent Year 1738, when I ſowed all the Seeds I had left, from which I had one Plant produced. So that if the Seeds are good, it is evident they will grow when they are four Years old. Therefore, whenever we receive good Seeds from Abroad, or ſave any in this Country which are perfectly ripened, it will be proper to preſerve ſome of them for a Year or two, leſt a bad Seaſon ſhould happen, when the Plants may not perfect their Seeds; ſo that if this Precaution be not taken, the Species may be loſt in *Europe*.

The third Sort dies to the Root every Winter, and riſes again the ſucceeding Spring; this muſt be conſtantly preſerved in the Stove, and plunged into the Bark-bed, otherwiſe it will not thrive in this Country. During the Winter-ſeaſon, when the Plants are decayed they ſhould have but little Water given to them; for Moiſture at that Time will rot the Roots. In the Beginning of *March*, juſt before the Plants begin to ſhoot, is the proper Seaſon to tranſplant and part the Roots; when they ſhould be planted into Pots of a Middle Size, filled with light rich Earth, and then plunged into the Bark-bed, which ſhould at this Time be renewed with freſh Tan. When the Plants come up, they muſt be frequently refreſhed with Water; but it muſt not be given to them in large Quantities, leſt it rot their tender Roots; and as the Warmth of the Seaſon increaſes, it will be proper to admit a large Share of freſh Air, which will greatly ſtrengthen the Plants; but they muſt conſtantly remain in the Stove, otherwiſe they will not produce Flowers in this Country. The Time of their Flowering is in the End of *July*, and in *Auguſt*; and in *October*, the Plants die to their Roots.

MARVEL OF PERU. *Vide* Jalapa.

MARUM, [of *Amarum*, Lat. *Bitter*, becauſe this Plant is very bitter] Maſtick.

The *Characters* are;

It is a Plant with a Lip-Flower, conſiſting of one Leaf, but has no Galea (or Creſt) the Stamina *ſupplying the Place of it; but the Under-Lip is divided into five large Segments, the middlemoſt of which is hollow like a Spoon; theſe Flowers are produc'd ſingle from the Wings of the Leaves. To which may be added, It has the Appearance of a Shrub, and a hot volatile Smell.*

We have but one *Species* of this Plant, at preſent, in *England*, which is,

Marum *Syriacum vel Creticum. H. L.* Syrian Maſtick, *vulgo*.

This Plant is propagated by planting Cuttings, in any of the Summer Months, upon a Bed of freſh light rich Earth, obſerving to water and ſhade them, until they have taken Root; after which, they may be tranſplanted either into Pots or Borders of the ſame freſh light Earth: But the greateſt Difficulty is, to preſerve it from the Cats, who will come from a great Diſtance to tear this Plant in Pieces, and from whom there is ſcarcely any guarding it, eſpecially near Towns and Cities, where there are many of theſe Animals, unleſs by planting large Quantities of it; for it is obſervable, that where there are but few of them, the Cats will not leave them, until they have quite demoliſh'd them; whereas, when a large Quantity of the Plants are ſet in the ſame Place, they will not come near them.

Thoſe Plants, which are put into Pots, ſhould be ſhelter'd in Winter; but thoſe in the full Ground, will abide the Cold of our ordinary Winters very well, provided they are planted on a warm dry Soil; and may be clipt into Pyramids or Balls, in which Figures I have ſeen ſome Plants of this Kind near three Feet high, which have endur'd the open Air ſeveral Years without any Covering.

MARUM VULGARE. *Vide* Maſtichina.

MARYGOLD. *Vide* Caltha.

MARYGOLD (AFRICAN). *Vide* Tagetes.

MARYGOLD (FIG). *Vide* Ficoides.

MARYGOLD (FRENCH). *Vide* Tagetes.

MASTER-WORT. *Vide* Imperatoria.

MASTICHINA, [ſo call'd, of *Maſtick*, becauſe it has perfectly both the Smell and Virtue of that Plant. It is alſo call'd *Marum*, of its Bitterneſs] Herb Maſtick, *or* Maſtick-Thyme.

The *Characters* are;

The Leaves are like thoſe of Thyme, *but larger; the Stalks are upright and ſhrubby; the Cup of the Flower is long, narrow, and tubulous, but is ſpread open at the Top, where it is cut into five long ſlender Segments, and has a Woollineſs over every Part of it; the* Galea *(or Creſt) of the Flower ſtands upright, and is divided into two Parts; the Beard (or Lower Lip) is divided into three Segments, ſo that it appears ſomewhat like a Flower with five Leaves; the Flowers are collected into thick Whorles, and have a white Down growing upon the oblong Heads.*

The *Species* are;

1. Maſtichina. *Boerh. Ind.* Herb Maſtick, or Maſtick-Thyme.
2. Maſtichina *folio minore.* Herb Maſtick, with a leſſer Leaf.

There ſeems to be another Variety of this Plant in ſome of the *Engliſh* Gardens, which is of humbler Growth than the Common Sort: The Spikes of Flowers are alſo ſhorter and looſer; but the Leaves are full as large as thoſe of the common Sort. This I don't remember to have ſeen taken Notice of in any of the Books of *Botany*, tho' it ſeems conſtantly to retain this Difference.

Theſe Plants may be propagated by planting Cuttings, during any of the Summer Months, in a Bed of light rich Earth, obſerving to water and ſhade them, until they have taken Root: After which they may be tranſplanted into a light dry Soil, and have a warm Situation, where they will endure the Cold of our ordinary Winters very well, and produce great Quantities of Flowers in *July*, but ſeldom ripen their Seeds in this Country.

The Flowering Part of this Plant is order'd as an Ingredient in *Venice Treacle*, for which Purpoſe it ſhould be propagated in *Phyſick-Gardens*. And the Plant having an agreeable Scent, and being eaſily cultivated, may merit a Place in the Borders of every good Garden, where it may be reduced to a regular Head, and will appear very handſome.

MATRICARIA, [ſo call'd, from the *Matrix*, becauſe this Plant is very good againſt Diſeaſes of the Womb: And, for the ſame Reaſon, it is call'd *Parthenium*, of Πάρθενος; a *Virgin.*] Feverfew.

The *Characters* are;

It hath a fibroſe Root; the Leaves are conjugated, and divided into many Segments; the Cup of the Flower is ſquamoſe, and hemiſpherical; the Flowers grow in an Umbel upon the Top of the Stalks, and the Rays of the Flower are for the moſt part white.

The *Species* are;

1. Matricaria *vulgaris vel ſativa. C. B. P.* Common Feverfew.
2. Matricaria *vulgaris vel ſativa, caulibus rubentibus. H. L.* Common Feverfew, with reddiſh Stalks.
3. Matricaria *vulgaris vel ſativa, floribus nudis bullatis. H. L.* Common Feverfew, with naked Flowers.
4. Matricaria *vulgaris vel ſativa, florum petalis fiſtuloſis. H. L.* Common Feverfew, with the Petals of the Flower quill'd or fiſtulous.
5. Matricaria *vulgaris vel ſativa, florum petalis fiſtuloſis & brevioribus. H. L.* Common Feverfew, with ſhor fiſtulous Petals.

6. Matricaria *flore pleno. C. B. P.* Double-flower'd Feverfew.

7. Matricaria *flore pleno, petalis fiſtuloſis. H. L.* Feverfew, with double fiſtulous Flowers,

8. Matricaria *flore pleno, petalis marginalibus planis, diſcoidibus fiſtuloſis. H. L.* Double Feverfew, with the Petals round the Border plain, but thoſe in the middle of the Flowers fiſtulous.

9. Matricaria *foliis elegantiſſime criſpis, & petalis florum fiſtuloſis. Tourn.* Feverfew, with elegant curl'd Leaves, and the Petals of the Flowers fiſtulous.

The firſt of theſe Species (which is the Sort uſed in Medicine) is found wild upon Dunghills and uncultivated Places in divers Parts of *England*, but is cultivated in thoſe Gardens which propagate medicinal Plants to ſupply the Markets. The other Sorts are preſerv'd in curious Botanick Gardens for Variety: And the ſixth, ſeventh, and eighth Sorts deſerve a Place in the Borders of large Gardens, for the Beauty of their Flowers.

Theſe Plants are propagated by their Seeds, which ſhould be ſown in *March*, upon a Bed of light Earth; and, when they are come up, they ſhould be tranſplanted out into Nurſery-beds, at about eight Inches aſunder, where they may remain till the Middle of *May*, when they may be taken up, with a Ball of Earth to their Roots, and planted in the Middle of large Borders, where they will flower in *July* and *Auguſt*; and, if the Autumn be favourable, will produce ripe Seeds the ſame Year. But it is not adviſeable to permit them to ſeed, which often weakens and decays the Roots; therefore when their Flowers are paſt, you ſhould cut down their Stems, which will cauſe them to puſh out freſh Heads, whereby the Roots will be maintain'd.

When the different Varieties of theſe Plants are intermix'd with other Plants of the ſame Growth, they make a handſome Appearance during their Seaſon of Flowering, which commonly continues a full Month, or more, and renders them very valuable. But as their Roots ſeldom abide more than two or three Years, ſo freſh Plants ſhould be rais'd from Seeds, to ſupply their Places; for altho' they may be propagated by parting their Roots either in Spring or Autumn, yet theſe ſeldom make ſo good Plants as thoſe obtain'd from Seeds. But the ſixth Sort ſeldom produces any good Seeds; therefore that muſt be propagated in this manner, or by planting Cuttings in the Spring or Summer Months, which will take Root, and make good Plants.

MATTED ROOTS, are ſuch as are entangled or platted together.

MAUDLIN. *Vide* Ageratum.

MAY.

Work to be done in the KITCHEN GARDEN.

If the Weather in this Month proves hot and dry, it greatly retards the Growth of moſt eſculent Plants; and particularly the Beans and Peaſe which are in Flower (eſpecially on dry Lands) ſuffer greatly; moſt of their Bloſſoms falling off before their Maturity, ſo that they are not ſucceeded by Fruit. But when this Month happens to be wet, the Markets are plentifully ſtock'd with moſt Sorts of Garden Ware. But this does not only increaſe the Quantity of Plants, but alſo as great Plenty of Weeds, whereby the Labour of a Kitchen-Garden is more than double of what is required in a dry Seaſon; for if the young Crops are neglected but a very ſhort Time in moiſt Weather, the Weeds will get the better of 'em, and weaken them ſo much as they will hardly recover their full Strength again, nor will the Plants (with all poſſible Care afterward) ever arrive to the Size they would have grown to, provided they had not been ſtunted by the Weeds. Beſides many Sorts of Weeds will perfect their Seeds in a ſhort Time, which being ſhed upon the Ground, will occaſion a great deal of Labour for ſeveral Years to extirpate them again. Among theſe are Shepherd's-pouch, Groundſel, Dandelion, Fumitary, Pimpernel, and ſome others. And thoſe of them which do not ſeed ſo early, will (if let ſtand) eſtabliſh themſelves ſo firmly, as to occaſion much Labour to get them out of the Ground: ſo that it is certainly the beſt way to clear all Sorts of Crops from Weeds as ſoon as poſſible in the Spring, and to keep them conſtantly ſo.

In the Beginning of this Month you ſhould ſow Purſlain in the open Ground, and Endive for blanching, and continue to ſow all the Sorts of ſmall Sallet-Herbs every three or four Days, otherwiſe there will not be a Supply of ſuch Herbs which are young; for at this Seaſon they ſoon grow too large for Uſe: But theſe ſhould be ſown in a North Border, where they have little Sun.

Sow Peaſe, and plant Beans for latter Crops; but this ſhould be done on a moiſt Soil, otherwiſe they ſeldom ſucceed well, unleſs the Seaſon is uncommonly wet and cold.

Plant Kidney-Beans for a ſecond Crop; and about the twelfth Day of this Month you ſhould ſow Cauliflowers for Winter Uſe, obſerving to ſhade the Bed with Mats, and keep the Ground moiſt, otherwiſe the Plants will come up very ſparingly.

In moiſt Weather plant out Cabbages and Savoys for Winter Uſe, and tranſplant Celery into Drills for Blanching, which will come early, if planted in this Month.

The Crops of Spinach and Radiſhes being now gone, the Weeds ſhould be clear'd from the Cauliflower and Cabbage-Plants, or Beans which were planted on the ſame Ground; and in moiſt Weather draw ſome Earth round the Stems of the Plants, which will keep the Roots moiſt, and prevent the Sun and Wind from drying their Stems, which if permitted, will greatly retard the Growth of the Plants; but in doing of this, great Care ſhould be taken not to raiſe the Earth ſo high about them, as to fall into the Center of the Leaves, which will intirely deſtroy the Cauliflower Plants.

Tranſplant Radiſhes for Seed, placing them in Rows three Feet Diſtance, and two Feet aſunder in the Rows from each other, obſerving to make Choice of ſuch only as have long, ſtrait, well-colour'd Roots, and ſmall Tops, rejecting all ſuch as are forked or ſhort-rooted; for which Reaſon it is, that the moſt curious Gardeners never ſave Seeds from ſuch as remain where they were ſown, becauſe they can't judge of their Roots.

The Cucumbers and Melons which are under Frames, muſt be carefully ſhaded with Mats in the Heat of the Day, for the Sun is too violent at this Seaſon for them thro' Glaſſes; nor will they endure the open Air, to which many Perſons do often expoſe them; for being brought up tenderly, their Vines do harden and dry, when expoſed to the full Sun. But ſuch Plants as have been rais'd under Hand-glaſſes for the ſecond Crop, ſhould have full Liberty to grow, by raiſing the Glaſſes upon three Bricks or forked Sticks, and the End of the Plants laid out from under the Glaſſes; but this muſt not be done too ſoon, eſpecially if the Nights are cold, which if it ſhould ſo happen after the Plants are laid out, they muſt be covered with Mats every Night, to prevent their being nipp'd by the Cold.

The early Cauliflowers will now begin to appear in the Center of the Plants, therefore they ſhould be carefully look'd over every Day, breaking down ſome of the inner Leaves of ſuch as appear in Flower (as it is uſually term'd) to preſerve them white; for if they are expos'd to the Sun and Air, they will change yellow in a ſhort Time.

Hough Winter Crops of Onions, Carrots, Leeks, Parſnips and Beets, to clear them from Weeds; for by ſtirring of the Ground, the Plants are greatly forwarded in their Growth: keeping ſuch Crops clear from Weeds in this Month, will be of great Service to them, and ſave much Labour the ſucceeding Months.

Tranſplant Sileſia, Imperial, Cos and Brown Dutch Lettuces into North Borders, to ſucceed thoſe planted the laſt Month; and toward the End of the Month you may ſow ſome Brown Dutch and common Cabbage-Lettuces to ſupply the Table in *Auguſt* and *September*: But this muſt be in an open Situation; and if they are not tranſplanted, but ſowed thin, and the Plants houghed out to a proper Diſtance, they will do the better.

Sow Finochia in Drills about eighteen Inches or two Feet aſunder, to ſucceed that which was ſown the laſt Month, and draw the Earth up to the Plants which are almoſt full grown, to blanch them. *N. B.* This ſhould have a light, rich, moiſt Soil, when ſown at this Seaſon, otherwiſe it is apt to run to Seed.

You may yet plant Slips of Sage, Roſemary, Hyſſop, Lavender, Marum, Maſtick, and moſt other Aromatick Plants, obſerving to ſhade and water them until they have taken Root; but it is better to plant them juſt before they ſhoot, becauſe thoſe Shoots which have been produced the ſame Seaſon, are tender, and ſeldom take ſo well.

The early Cabbages do now begin to turn their inner Leaves for Cabbaging, which may be forwarded by tying their Leaves together, either with a withy or Baſs-mat, as is practis'd by the Gardeners near *London*.

Look over your Artichokes again in this Month, and pull up all the Plants from the Roots which have been produced ſince the Stocks were ſlip'd; for theſe will draw the Nouriſhment from the Plants intended for Fruit, and cauſe them to be ſmall. You ſhould alſo cut off all the ſmall Artichokes which are produced from the Side of the Stems of the Artichokes; for if theſe are permitted to grow, they will render the Artichokes on the Top very ſmall. Theſe the Gardeners term Suckers.

Sow Turneps, when there is a Proſpect of Rain in a ſhort Time, which will bring up the Plants very ſoon; and hough thoſe Turneps which were ſown the laſt Month, leaving them about eight or ten Inches aſunder, which will be ſufficient for theſe which are intended to be drawn very young.

Toward the Latter-end of the Month ſhould be ſown Broccoli for Spring Uſe, and a latter Crop of Kidney-Beans ſhould be planted, to ſucceed thoſe before directed, which will become too old by the Time theſe are fit to gather.

Sow Cucumbers in the open Ground, to produce ſome Fruit for pickling, and plant out Gourds and Pumpkins upon Dunghils, *&c.* where they ſhould be allow'd a large Compaſs to ſpread, otherwiſe they will interfere and ſpoil each other.

Products of the KITCHEN-GARDEN.

Radiſhes, Spinach, young Sallet-Herbs, ſeveral Sorts of Cabbage-Lettuce, Sorrel, Mint, Balm, Winter Savory, Borage, Bugloſs, Spring Coleworts, Tragopogon, the young Shoots of which are by ſome preferred to Aſparagus, young Onions, Cives, Aſparagus, Peaſe, Beans, ſome early Artichokes, Cauliflowers, early Cabbages, young Carrots from under Walls or Hedges, Cucumbers, Melons, Purſlain, and Kidney-Beans on Hot-beds, with many other Sorts of Spring-Herbs.

Work to be done in the FRUIT GARDEN.

In the Beginning of this Month you muſt look over your Wall and Eſpalier-trees, and carefully diſplace foreright Shoots, and ſuch as are luxuriant or ill-plac'd, and train ſuch kindly Branches as you would preſerve, regularly to the Wall or Eſpalier, which will prevent your Trees from growing into Confuſion, and ſtrengthen the Fruit-branches, as alſo admit the Sun and Air to the Fruit, which are often obſtructed by the luxuriant Growth of the Branches, to the great Prejudice of the Fruit.

Where Apricocks and Peaches are too thick, they ſhould be thinn'd the Beginning of this Month, obſerving never to leave two or more Fruit together (as is too often practis'd by covetous Perſons): Tho' there be but a ſmall Crop on the Trees, this will make thoſe which are left on much larger and better flavour'd, and render the Trees ſtronger for ſucceeding Years; whereas when they are over-charg'd with Fruit, they are often ſo much weaken'd, as not to be recoverable in three or four Years, notwithſtanding they may be under the moſt ſkilful Management: Beſides, one Dozen of fair well-flavour'd Fruit is preferable to five or ſix Dozen of ſmall ill-nouriſh'd Fruit, and will ſell for more Money in the Markets. The Diſtance which ſhould be allow'd to all Sorts of Fruit, muſt be proportionable to their uſual Sizes; for Inſtance, for middling or ſmall Peaches and Nectarines, five or ſix Inches aſunder is ſufficient; but for the large Sorts eight Inches is full near enough. This muſt alſo be proportion'd to the Strength of the Trees; for weak Trees ſhould have a leſs Number of Fruit left on them than thoſe which are ſtrong, becauſe they are more capable of nouriſhing them.

You muſt now look carefully over your Vines, and ſtop ſuch Shoots as have Fruit on them at the ſecond or third Joint beyond the Fruit, and train the Branches cloſe to the Wall in a regular Order; but ſuch Shoots as are deſign'd for bearing the ſucceeding Year, ſhould not be ſtopp'd until the next Month. You ſhould now rub off all trailing Branches cloſe to the Places where they are produc'd; for if theſe are ſuffer'd to remain, it will occaſion a great Confuſion of Branches, and weaken the bearing Shoots. If this be duly obſerved, there will never be any Neceſſity for diveſting the Shoots of their Leaves to let the Air and Sun to the Fruit, as is by ſome unſkilful Perſons too much practis'd, to the Injury of the Fruit and Branches.

In moiſt Weather you muſt carefully look after Snails, eſpecially in the Evenings and Mornings, or after warm Showers, when they will come from behind Wall-trees, and out of their Places of Shelter, ſo may be eaſily taken; for theſe are great Enemies to choice Fruits.

If the Seaſon ſhould prove dry, you muſt not forget to refreſh all ſuch Trees, as have been lately planted, with Water; in doing of which it will be proper to ſprinkle the Water over all their Branches, which will be of great Service to them in waſhing off Duſt and Filth, which their Leaves may have contracted, and open the Pores of the Shoots, which in very dry Weather are many Times almoſt cloſ'd, whereby the Trees ſuffer greatly; nor is the Water, when poured to the Root only, capable of relieving them when in this Condition; and this is what renders Rain much more effectual than artificial Watering.

Keep the Borders about Fruit-trees clear from Weeds, and all ſtrong growing Plant, which will exhauſt the Goodneſs of of the Soil, to the great Prejudice of your Trees; and this ſhould alſo be carefully obſerv'd in the Nurſery for the ſame Reaſon.

About the Middle of this Month you muſt look over your Vineyard Grapes, diſplacing all dangling Shoots, and ſtopping thoſe which have Fruit upon them, which muſt be faſten'd to the Stakes, to prevent their being broken by Winds; but the Shoots for the next Year's Bearing muſt be train'd up to the Stakes, and not ſtopp'd until the next Month.

You muſt alſo obſerve to keep the Ground in the Vineyard very clear from Weeds, and ſuffer no Sorts of Plants whatever to grow between the Rows of Vines; for nothing can be more prejudicial than permitting this in Vineyards.

Toward the latter End of the Month you ſhould break off the Clay from thoſe Trees which were grafted in the Spring, and looſen their Bandage, otherwiſe they are ſubject to break off where they are pinch'd with the Baſs.

Fruits in prime, or yet laſting.

Pears; L'Amozelle, or Lord Cheney's Green, Bergamot de Paque, Bezy du Chaumontelle, Parkinſon's Warden, and ſometimes the Cadillac.

Apples; Golden Ruſſet, Stone Pippen, John Apple, Winter Ruſſet, Pomme d'Api, Oaken Pin, Pile's Ruſſet, and ſometimes the Nonpareil and Golden Pippen.

Cherries; the May and May Duke; and in a warm Soil, ſome ſcarlet Strawberries, Gooſeberries and Currants for Tarts; and in the Forcing-frame, Maſculine Apricocks, Nutmeg Peaches, with ſome other early Fruits.

Work to be done in the NURSERY.

In this Month you muſt carefully keep the Ground houghed between your young Trees; for nothing is more injurious to them, than to ſuffer Weeds, or any other Plants, to grow amongſt them; for theſe rob the Trees of their Nouriſhment; and if Weeds are permitted to get Strength in this Month, it will be great Trouble to root them out afterwards.

The Middle of this Month you muſt look over your Grafts, and take off the Loam from them; and thoſe which were faſtened with Bandage, ſhould now be untied, otherwiſe the Graft will be pinched at the Stock, and be in Danger of breaking off with the Wind. You ſhould alſo look over your Trees, which were budded the laſt Seaſon; and where you obſerve the Leaves to curl up by being infeſted with Inſects, you ſhould take them off otherwiſe they will ſpoil the upright Shoot.

Your Seed-beds muſt now be carefully weeded, and in dry Weather frequently refreſh'd with Water, otherwiſe the young Plants will be ſo ſtunted, as not to make any Progreſs the ſame Seaſon. Your young Plants of Cedars, Firs, Pines, *&c.* muſt now be often refreſh'd with Water, but it ſhould not be given to them in large Quantities, but rather often and moderate. You muſt alſo obſerve to ſhade them from the Sun, to which if they are too much expoſed while young, it is often very deſtructive to them.

You may now make Layers of the Double and Single Virgins Bower, and of other climbing Plants; for many of theſe will not root from the woody Shoots; but the tender Branches of the ſame Year's Growth, if layed in this Month, will take Root very well. You may alſo lay down Alaternus's, Phillyrea's, and ſome other evergreen Trees, which do alſo take Root better from young Shoots, than from older Branches.

If this Month ſhould prove very dry, you muſt continue to water ſuch Evergreens, and other young Trees, as were removed the laſt Seaſon, otherwiſe the will ſuffer greatly. You ſhould alſo renew the Mulch round the Trees, to prevent the Sun and Wind from drying the Ground.

Work to be done in the FLOWER GARDEN.

The Beginning of this Mouth you ſhould take up your choice Hyacinth-roots, which are paſt flowering, and lay them horizontally in a Bed of Earth to ripen, leaving their Leaves and Stems out of the Ground to decay, in the Manner directed under the Article *Hyacinth*.

Shade your choice Tulips, Ranunculus's, Anemonies, and other curious Flowers now blowing, from the Sun during the Heat of the Day, which will continue them in Beauty much longer than if they are fully expos'd to the Weather.

Take up the Roots of the Saffron, whoſe Leaves are by this Time decay'd, and ſpread them on Mats in the Shade to dry; after which they may be kept in Bags until *July*, when it will be a proper Seaſon for planting them up.

Clean the Borders of your Flower-Garden from Weeds, which, if permitted to grow at this Seaſon, will be the more difficult, and cauſe a deal of Trouble to extirpate afterwards.

About the Middle of this Month you may plant out your hardy Annuals, ſuch as Marvel of Peru, Sweet Sultan, French and African Marygolds, Female Balſamine, Capſicum, Brown Jolly, and ſeveral other Sorts, which, if artfully diſpos'd, will afford an agreeable Pleaſure, after the Beauty of the Spring is paſt.

Sow Dwarf Annual Flower-Seeds in Patches upon the Borders of the Flower-Garden, where they are intended to remain, as Candy-Tuft, Venus-Looking-glaſs, Venus-Navelwort, Dwarf Annual Stock, Dwarf Lychnis, Lobel's Catchfly, Convolvulus Minor, with many other Kinds; as alſo plant the ſeveral Kinds of Lupine, Sweet-ſcented Peaſe, Tangier Peaſe, Seeds of the Indian Naſturtium, Large Convolvulus, and other climbing Annual Plants, where they may have room to ſpread, and have ſome Support, in which Places they will flower, and make a beautiful Appearance.

Tranſplant ſuch Biennial and Perennial Flowers, as were ſown in the Flower-Nurſery in *March* and *April*, into Beds of freſh Earth in the Nurſery, where they may remain till the latter End of *Auguſt*, or the Beginning of *September*, when they muſt be remov'd into the Borders of the Flower-Garden: Of theſe Sorts are Canterbury-Bells, French Honeyſuckles, Sweet-Williams, Pinks, Columbines, with many others.

Tie up the Spindles of Carnations, diveſting them of all ſide *Pods*, which, if permitted to remain on, would weaken the *Top* and principal Flower: And alſo ſtick and faſten the Stems of all tall Flowers which are to blow, otherwiſe they will be in danger of being broken by the Winds.

Make a freſh Hot-bed for your Amaranthus's, Double-ſtrip'd Balſamine, and other tender exotick Annuals, and put them into large Pots of good Earth, placing them upon the Hot-bed, and fill up the Interſtices with Earth; if Care be taken of them at this Time, they will be very ſtrong and beautiful.

Your Auricula's, which are now paſt flowering, ſhould be remov'd into a ſhady Situation (but not under the Droppings of Trees, which will rot them); in which Place they muſt remain, until the Heat of Summer is over.

Tranſplant Stock-Gilliflowers, Wall-flowers, ſeedling Pinks, Carnations, and other perennial ſeedling Flowers; and ſow ſome Seeds of Annual, ſcarlet, and purple Stock-Gilliflowers, which will produce ſhorter Plants, and many Times will endure the Cold better than thoſe which are larger.

Toward the latter End of the Month you may take up early Tulip-roots, and ſome of the forward Anemonies, if their Leaves are decay'd, after which they ſhould not be permitted to remain in the Ground.

Plant ſome Tuberoſe-roots upon a moderate Hot-bed, to ſucceed thoſe planted in *March* and *April*, by which Method you may continue a Succeſſion of this fragrant Flower until *October* in Beauty.

Your Pots of ſeedling Iris's and other bulbous rooted Flowers, ſhould be now remov'd into a ſhady Situation (if it was not done in *April*) where they muſt remain until Autumn, nothing being more injurious to theſe young Roots, than to be expos'd to the Violence of the Sun in Summer, eſpecially if they are in Tubs or Pots.

The young Plants of Venice Mallow, Oriental Mallow, and Lavatera's, may now be planted into the Beds or Borders of the Flower-Garden, where they will make a beautiful Appearance when they flower. But this Work ſhould be done in moiſt Weather.

Place your Pots of choice Carnations upon the Stage to protect them from Vermin, which will otherwiſe infeſt them, and will harbour about the Pots, ſo as not to be eaſily deſtroy'd.

Plants now in Flower.

Late Blowing Tulips, Anemonies, Ranunculus's, Pinks of ſeveral Sorts, white and yellow Aſphodel, Lily of the Valley, Daizies, Leucanthemums, Thrift, red and white Valerian, Cyanus Major, Thalictrums of ſeveral Kinds, Sage, Roſemary, Moth Mullein, Double Catchfly, Veronica multicaulis Pannonica, London-pride, Spaniſh Figwort, Geraniums of ſeveral Kinds, Helianthemums, Turkey perennial Poppy, Fiery Lily, Peonies of ſeveral Sorts, Columbines, Monkſhood, Fraxinella red and white, yellow Moly, Homer's Moly, Stock-Gilliflowers, Wall-flowers, Orobus viciæ foliis, Tragacantha, Leopard's-bane, Solomon's-ſeal, yellow Aſphodel Lily, Hyacinth of Peru, Dragon, Biſtort, Rhapontick, Lady's Mantle, Tuberoſe Iris's, Dwarf Annual Stock, Feather'd Hyacinth, Lady's Slipper, Welſh Poppy, Bird's-eye, yellow Violet, Orchis's, Heart's-eaſe, Double white Narciſſus, Pulſatilla, Double Rockets, Corn-Flags, Engliſh Hyacinth or Hare-bells, yellow and Pompony Martagons, Starry Hyacinth, Blue Grape Hyacinth, bulbous Iris, Tradeſcant's Spiderwort, Savoy Spiderwort, Double purple and large blue Periwinkles, Peach-leav'd and Nettle-leav'd Bell-flower, Hedyſarum Clypeatum flore albo & rubro, Lychnidea Virginiana, Greek Valerian white and blue, Double white and red Batchelor's Button, Double white Mountain Ranunculus, Double Ragged Robin, Double Feverfew, Fox-Glove three Sorts, Buphthalmums, Sea-Ragwort, Sea-Holly, Double Saxifrage, Double Ladies Smock, Borage-leav'd Auricula, Spaniſh Toadflax, Spurges of ſeveral Kinds, Graſs-leav'd Ranunculus, Honeſty or ſatten Flower, Upright Speedwell, yellow Eaſtern Bugloſs, Garden Bugloſs, Onobrychis, Scabious's, Bird's-eye, with ſome others of leſs Note.

Hardy Trees and Shrubs now in Flower.

Phlomis, or Jeruſalem Sage, two or three Sorts, yellow Jaſmine, Colutea Scorpioides, Oriental Colutea with bloody Flowers, Lilacs ſeveral Sorts, Early White, Italian, and Common Honeyſuckles, Gelder Roſe, White Thorn, Flowering Aſh, Bladder-Nut, Cinnamon Roſe, Monthly Roſe, Damask Roſe, Burnet-leav'd Roſe, Scotch Roſe, Apple-bearing Roſe, Horſe Cheſnut, Three-Thorn'd Acacia, Laburnus, Cytiſſus ſecundus Cluſii *vulgo*, Lote or Nettle-tree, Bladder Senna, Double flowering Almond, Cockſpur Hawthorn, Double flowering Hawthorn, Cinquefoil Shrub, Perſian Lilac, Bird Cherry, Corniſh Cherry, Lauro-Ceraſus, Scarlet Horſe-Cheſnut, Perfumed Cherry, Male-Ciſtus, Mallow-Tree, Arbor Judæ, Cytiſſus Lunatus, Sea Buckthorn, Spirea Salicis folio, Spirea Opuli folio, Spirea Hyperici folio, Dwarf Medlar, Amelanchier, Wild Service or Quickbeam, Aria Theophraſti, Double-flowering Cherry, Stœchas purpurea, with ſome others.

Work to be done in the GREEN-HOUSE, *and* STOVE.

Towards the Middle of this Month, if the Weather be ſettled, and the Nights warm, you ſhould bring forth your Orange-trees, and (if poſſible) take the Advantage of a Shower of Rain for this Work, which will waſh the Duſt from the Surfaces of their Leaves, and greatly refreſh them; you ſhould at this Time (if you have not before done it) take out the Earth from the Top of the Pots or Tubs, and fill them up with freſh rich Earth, which will greatly encourage their Flowering, and cauſe them to make vigorous Shoots; and if their Stems have not been cleans'd the precedent Month, it ſhould be now done; but this is only meant for ſuch Trees as are not remov'd the ſame Year.

You may now inarch Oranges, Jaſmines, Pomegranates, and other tender Exotick trees, obſerving to place them where they may be ſhelter'd from ſtrong Winds, which would diſplace the inarch'd Shoots, if they were too much expos'd thereto.

Make Layers of Myrtles, Pomegranates, Jaſmines, Granadilla's, Capers, and other tender Shrubs, obſerving to ſupply them conſtantly with Water, which will greatly facilitate their Rooting.

In the Middle of the Day, if the Weather prove hot, you ſhould ſhade the Glaſſes of the Stove, and the Hot-beds, where your choice Exotick plants are plac'd, and let them have free Air, in Proportion to the Warmth of the Seaſon; and ſuch of your Exotick plants as want ſhifting, ſhould now be remov'd, and ſome of them plac'd in larger Pots, giving them freſh Earth, and then plunge them into the Hot-bed again, obſerving to ſhade the Glaſſes until they have taken freſh Root.

Toward the Latter-end of the Month make Cuttings of Ficoides's, Sedums, Cotyledons, Cereus's, Euphorbiums, and other ſucculent Plants, laying them in a dry ſhady Place, a Week or more before they are planted, that the wounded Part may be heal'd up, otherwiſe they are ſubject to rot; and when they are planted, they ſhould be plac'd (ſuch of them as are hardy) in a ſhady Situation for a Week or more; but thoſe which are tender muſt be planted in Pots, and plung'd into a moderate Hot-bed of Tanners-bark, obſerving to ſhade the Glaſſes in the Heat of the Day, and refreſh them with Water as they may require.

Cleanſe the Leaves of Aloes, and other tender Exotick-plants, from Duſt and Filth, which they have contracted in the Houſe the laſt Winter, and cut off all decay'd Leaves of thoſe Plants, for now the Wounds given to them will ſoon heal: This is alſo a proper Time to cut off the Heads of thoſe Sorts of Aloes which grow with large Stems, and ſeldom afford Off-ſets; ſo that there is no other Method to propagate them, than by taking off their Heads for planting, and thereby cauſing their Stems to ſend forth a freſh Shoot or two; but you muſt obſerve to leave three or four good Leaves upon the Stem to draw the Sap, otherwiſe the Stem will decay without producing any new Head; you muſt alſo keep them in the Houſe, and not expoſe them abroad to the Wet, until the Wounds are perfectly heal'd; and if you plunge them into a moderate Hot-bed, it will facilitate their Shooting.

Bring out all your hardy Exotick Plants, ſuch as Ciſtus's, Geraniums, Alaternoides's, Sorrel-tree, Amber-tree, Anemonoſpermos's, Hermannia's, yellow Indian and Spaniſh Jaſmines, Polygala fruteſcens, Myrto-Ciſtus, Fabago's, Rhus's, with ſeveral other Sorts, which will now bear the open Air; but you ſhould obſerve to place them in a ſhady Situation for a Fortnight; for if they are immediately expos'd to the full Sun, it will change their Leaves to a brown Colour, and cauſe the Plants to appear very unſightly.

Thoſe Exotick Plants which are continu'd in the Houſe, muſt now have a great Share of freſh Air (eſpecially if the Seaſon be warm) otherwiſe they will draw very weak, and change to a pale languid Colour; and if the Glaſſes are ſhaded in the Heat of the Day, it will be better than to expoſe them too much to the Sun. You ſhould alſo obſerve to cleanſe their Leaves and Shoots from Inſects, which are very apt to infeſt them in the Houſe, eſpecially where the Plants are much crowded; and if theſe are not waſh'd off in time, they will greatly injure the Plants, eſpecially the Coffee-tree, which is now near Flowering, and is frequently infeſted with theſe ſmall Vermin, which at firſt appear like Duſt upon the Leaves, which ſhould be immediately waſh'd off, otherwiſe they will ſpread in a ſhort time over moſt Parts of the Plants.

If the Seaſon ſhould prove cool, and the Bark-bed, in which your Anana's are plac'd, ſhould abate of its Heat, you muſt ſtir it up again, and mix a little new Bark with it, which will renew the Heat, and be of great Service in forwarding the Fruit; and at this time you ſhould ſhift thoſe Plants which are to produce Fruit the ſucceeding Year into larger Pots, that their Roots may have room to ſpread.

Plants now flowering in the GREEN-HOUSE, *and* STOVE.

Geraniums ſeveral Sorts, Teucrium Bœoticum, Anemonoſpermos's, Chryſanthemoides atriplicis folio, Leucanthemum, Canarienſe pyrethri ſapore, Hermannia fruteſcens Ibiſci folio, Elichryſums, Cytiſſus Canarienſis, Ciſtus Ladanifera, Jaſminum Ilicis folio, Heliotropium Scorodoniæ folio, Polygala Africana, Arum Æthiopicum flore albo odorato, Convolvulus Canarienſis, Ficoides's ſeveral Sorts, Aloe-leav'd Aſphodel, African-tree Scabious, Salvia Africana fruteſcens flore aureo magno, Ricinoides folio multifido, Ricinoides Staphyſagriæ folio, Lotus Argentea Cretica, Turnera fruteſcens Ulmi folio, Lilio-narciſſus's, Panacratium's, Jujubes, Myrtles, Staphylodendron Africanum, Convolvulus erectus argenteus, Baſſella, Arabian Jaſmine, Indian Fig, Oranges, Lemons, Citorns, Limes, and ſome Sorts of Aloes.

MAYS; Indian Wheat.

The *Characters* are;

The whole Plant has the Appearance of a Reed; the Male Flowers are produc'd at remote Diſtances from the Fruit on the ſame Plant, growing, for the moſt part, in a Spike upon the Top of the Stalk; the Female Flowers are produc'd from the Wings of the Leaves, and are ſurrounded by three or four Leaves, which cloſely adhere to the Fruit until it is ripe.

The *Species* are;

1. MAYS *granis aureis. Tourn.* Common Indian Wheat, with yellow Grains.
2. MAYS *granis albicantibus. Tourn.* Indian Wheat, with white Grains.
3. MAYS *granis rubris. Tourn.* Indian Wheat, with red Grains.
4. MAYS *granis violaceis. Tourn.* Indian Wheat, with Violet-colour'd Grains.
5. MAYS *minor, granis luteis.* Leſſer Indian Wheat, with yellow Grains.
6. MAYS *minor, granis rubris.* Leſſer Indian Wheat, with red Grains.
7. MAYS *minor, granis violaceis.* Leſſer Indian Wheat, with Violet-colour'd Grains.

There are ſome other Varieties in the Colour of the Grains of this Plant, which are chiefly occaſion'd by the interchanging of the *Farina* of one Sort with that of another, whereby the Spikes are often of two or three different Colours, as it commonly happens when the ſeveral Colours are planted in the ſame Spot of Ground.

This Plant is ſeldom propagated in *England* but as a Curioſity in ſome curious Gardens; but in *America* it is one of their greateſt Supports, and is there cultivated with great Care, in the following Manner:

They dig the Ground well in the Spring, and, after having dreſs'd it well, they draw a Line acroſs the whole Width of the Piece intended to be planted; then they raiſe little Hills of Earth at about three Feet Diſtance, into each of which they plant two or three good Seeds, covering them about an Inch thick with Earth; then they move the Line four Feet farther, continuing to do the ſame through the whole Spot of Ground, ſo that the Rows may be four Feet aſunder, and the Hills in the Rows at three Feet Diſtance. Six Quarts of this Seed are generally allow'd to an Acre of Ground, which, if the Soil be good, will commonly produce fifty Buſhels of Corn.

If, in the planting of this Corn, you obſerve to put the Grains of any one Colour in a Field by itſelf, and no other colour'd Grain ſtand near it, it will produce all of the ſame Colour again, (as hath been affirm'd by ſeveral curious Perſons in that Country): but if you plant them in Rows of the different Colours alternately, they will interchange, and produce a Mixture of all the Sorts in the ſame Row, and frequently on one and the ſame Spike. Nay, it is affirm'd, that they will mix with each other at the Diſtance of three or four Rods, provided there be no tall Fence or Building between to intercept 'em.

There is nothing more obſerv'd in the Culture of this Plant, but only to keep it clean from Weeds, by frequent houghing the Ground, and, when the Stems are advanc'd, to draw the Earth up in a Hill about each Plant; which, if done after a Shower of Rain, will greatly ſtrengthen them, and preſerve the Ground about their Roots moiſt a long time.

When the Corn is ripe, they cut off the Stems cloſe to the Ground; and after having gather'd off the Spikes of Corn, they ſpread the Stalks to harden and dry, which they afterwards uſe for covering of Sheds, *&c.* for which Purpoſe it is very uſeful to the Inhabitants of the warm Parts of *America*, as alſo for feeding their Cattle, while green, which is what they often uſe, when other Fodder is ſcarce.

But notwithſtanding this Plant at preſent is only cultivated as a Curioſity in *England*, yet it is probable it might be propagated with good Succeſs, and become a Piece of Good-huſbandry in ſuch Places where *Beans* will not ſucceed, as particularly in light ſandy Lands, (where the Inhabitants are at a great Loſs for hearty Fodder for their Cattle) upon which this Plant will ſucceed extremely well, and ſupply the Want of *Beans*, perhaps better than any other Plant. The ſmall Sort is what I would recommend to be ſown in *England*, which is what the Inhabitants of *North-America* cultivate; and this will perfect its Seeds in leſs than four Months from ſowing, as I have ſeveral times proved; and even in ſome of the moſt unfavourable Years, it has ripen'd in full four Months from ſowing.

In cultivating this Plant, the Ground ſhould be well plough'd and dreſs'd, and the Rows of Corn placed four or five Feet aſunder, and about two Feet aſunder in the Rows; ſo that with a ſmall Breaſt-Plough the Ground may be often ſtirr'd, whereby the Weeds will be intirely deſtroy'd; which if duly obſerv'd while the Plants are young, there will be no occaſion to repeat it, after they are up to a Height; for then the Plants will prevent the Growth of Weeds, by overſhadowing the whole Ground.

The beſt Time to plant theſe Seeds is in the Beginning of *April*, when the Weather is ſettled; for if it be ſown too ſoon, the cold Nights and wet Weather often deſtroy the Seeds; and if it be ſown too late, and the Autumn ſhould prove bad, it would not ripen well.

The large Sort, when cultivated as a Curioſity, ſhould be ſown upon a moderate Hot-bed in the Beginning of *March*; and in the Middle of *April* they ſhould be carefully tranſplanted where they are to remain; and if the Seaſon proves favourable, the Seeds will ripen very well; but without being thus early rais'd, this Sort ſeldom comes to much in this Country.

MEADOW SAFFRON. *Vide* Colchicum.

MEDICA; [This Plant takes its Name from *Media*, (as *Pliny* writes); becauſe that when *Darius Hyſtaſpis* carry'd his Army into *Greece*, he had with him a great many Sacks of this Seed for Provender for his Cattle, and ſo the Seeds came to be ſcatter'd in *Greece*. This Plant is much cultivated in *France*, and there it is call'd *Burgundian Hay*: It is more filling and nutritious than double the Quantity of *Graſs*; and the Herds, by that means, become very plethorick, ſo that they require Blood-letting the oftner] Medick, *or* La Lucerne.

The *Characters* are;

It hath a papilionaceous (or Butterfly) Flower, out of whoſe Empalement riſes the Pointal, which afterwards becomes an intorted Pod ſomewhat like a Ram's Horn, in which are lodg'd Kidney-ſhap'd Seeds.

The *Species* are;

1. MEDICA *major erectior, floribus purpuraſcentibus. J. B.* Greater Upright Medick, *or* La Lucerne, with purpliſh Flowers.
2. MEDICA *major erectior, floribus violaceis. Tourn.* Greater Upright Medick, *or* La Lucerne, with Violet-colour'd Flowers.
3. MEDICA *major erectior, floribus luteis. Tourn.* Greater Upright Medick, *or* La Lucerne, with yellow Flowers.
4. MEDICA *major erectior, floribus ex violaceo & luteo mixtis. Tourn.* Greater Upright Medick, *or* La Lucerne, with Violet and Yellow Flowers mix'd.

Theſe Plants do not greatly differ from each other but in the Colour of their Flowers; tho' I think that with the Violet-colour'd Flower produces the largeſt Leaves, and ſtrongeſt Shoots; and that with the yellow Flowers, the ſmalleſt Leaves, and weakeſt Shoots: ſo that the Violet-colour'd Flowering is the beſt Sort to cultivate for Fodder.

This Plant is ſuppos'd to have been brought originally from *Media*, and from thence had its Name *Medica*: It is by the *Spaniards* call'd *Alfaſa*; by the *French*, *La Lucerne*, and *Grande Trefle*; and by ſeveral Botanick Writers it is call'd *Fœnum Burgundiacum*, i. e. *Burgundian Hay*. But there is little Room to doubt of this being the *Medica* of *Virgil*, *Columella*, *Palladius*, and other ancient Writers of Husbandry, who have not been wanting to extol the Goodneſs of this Fodder, and have given Direction for the Cultivation of it in thoſe Countries where they liv'd.

But notwithſtanding it was ſo much commended by the Ancients, and hath been cultivated to ſo good Purpoſe by our Neighbours in *France* and *Switzerland* for many Years, it hath not as yet found Reception in our Country, in any conſiderable Quantity: Tho' it is evident, it will ſucceed as well in *England* as in either of the before-mention'd Countries, being extreme hardy, and reſiſting the ſevereſt Cold of our Climate: Nay, I have had the Seeds which have happen'd to be ſcatter'd upon the Ground in Autumn, come up and endure the Cold of a ſevere Winter, and make very ſtrong Plants.

About the the Year 1650, the Seeds thereof were brought over from *France*, and ſown in *England*: but whether for want of Skill in its Culture, whereby it did not ſucceed, or that the People were ſo fond of going on in their old beaten Road, as not to try the Experiment, whether it would ſucced here, or not, was the Occaſion of its being intirely neglected in *England*, I cannot ſay. However, I hope, before I quit this Article, to give ſuch Directions for its Culture, as will encourage the People of *England*, to make farther Trial of this valuable Plant, which grows in the greateſt Heat, and alſo in very cold Countries, with this difference only, that in very hot Countries, ſuch as the *Spaniſh Weſt-Indies*, *&c.* where it is the chief Fodder for their Cattle at this Time, they cut it every Month, whereas in cold Countries it is ſeldom cut oftner than two or three times a Year. And it is very likely that this Plant will be of great Service to the Inhabitants of *Barbados*, *Jamaica*, and the other hot Iſlands in the *Weſt-Indies*, where one of the greateſt Things they want is Fodder for their Cattle; ſince, by the Account given of this Plant by *Pere Fuilleé* it thrives exceedingly in the *Spaniſh Weſt-Indies*, particularly about *Lima*, where they cut it every Week, and bring it into the Market to ſell, and is there the only Fodder cultivated.

It is alſo very common in *Languedoc*, *Provence*, and *Dauphiné*, and all over the Banks of the *Rhone*, where it produces abundantly, and may be mowed five or ſix times in a Year. *Horſes*, *Mules*, *Oxen*, and other domeſtick *Cattle* love it exceedingly, but above all when it is green, if they are permitted to feed on it, and eſpecially the Black Cattle, which will feed very kindly upon the dry'd Plant; the Exceſs of which is by many People thought to be very dangerous: But it is ſaid to be exceeding good for Milch Cattle, to promote their Quantity of Milk; and is alſo ſaid to agree with Horſes the beſt of all, tho' Sheep, Goats, and moſt other Cattle will feed upon it.

The Directions given by all thoſe who have wrote of this Plant, are very imperfect, and, generally, ſuch as if practis'd in this Country, will be found intirely wrong; for moſt of them order the mixing of this Seed with *Oats* or *Barley*, (as is practis'd for *Clover*); but in this Way it ſeldom comes up well, and if it does, it will draw up ſo weak by growing amongſt the Corn, as not to be recover'd under a whole Year, if ever it can be brought to its uſual Strength again.

Others have directed it to be ſown upon a low, rich, moiſt Soil, which is found to be the worſt next to a Clay of any for this Plant; in both which the Root will rot in Winter, and in a Year or two the whole Crop will be deſtroy'd.

But the Soil in which this Plant is found to ſucceed beſt in this Country, is a light, dry, looſe, ſandy Land, which ſhould be well plough'd and dreſs'd, and the Roots of all noxious Weeds, ſuch as *Couch-graſs*, &c. deſtroy'd, otherwiſe theſe will overgrow the Plants while young, and prevent their Progreſs.

The beſt time to ſow the Seed is about the Beginning of *April*, when the Weather is ſettled and fair; for if you ſow it when the Ground is very wet, or in a rainy Seaſon, the Seeds will burſt and come to nothing, (as is often the Caſe with ſeveral of the Leguminous Plants); therefore you ſhould always obſerve to ſow it in a dry Seaſon; and if there happens ſome Rain in about a Week or ten Days after it is ſown, the Plants will ſoon appear above-ground.

But the Method I would direct for the ſowing theſe Seeds, is as follows: After having harrow'd the Ground very fine, you ſhould make a Drill quite acroſs the Ground about half an Inch deep, into which the Seeds ſhould be ſcatter'd very thin; then cover them over about half an Inch thick, or ſomewhat more, with the Earth; then proceed to make another Drill about two Feet from the former, ſowing the Seeds therein in the ſame Manner as before, and ſo proceed through the whole Spot of Ground, allowing two Feet Diſtance between Row and Row, and ſcatter the Seeds very thin in the Drills. In this Manner an Acre of Land will require about ſix Pounds of Seeds; for when it is ſown thicker, if the Seed grows well, the Plants will be ſo cloſe as to ſpoil each other in a Year or two, the Heads of them growing to a conſiderable Size, as will alſo the Roots, provided they have Room. I have meaſur'd the Crown of one Root, which was in my Poſſeſſion, eighteen Inches Diameter, from which I cut near four hundred Shoots at one time, which is an extraordinary Increaſe, and this upon a poor, dry, gravelly Soil, which had not been dung'd for many Years, but the Root was at leaſt ten Years old; ſo that if this Crop be well cultivated, it will continue many Years, and be equally as good as when it was firſt ſown; for the Roots do generally run down very deep in the Ground, provided the Soil be dry; and although they ſhould meet a hard Gravel, a Foot below the Surface, yet their Roots would penetrate it, and make their Way downward, as I have experienc'd, having taken up ſome of them which were above a Yard in Length, and had run above two Feet into a Rock of Gravel, which was ſo hard as not to be looſen'd without Mattocks, and Crows of Iron, and that with much Difficulty.

The Reaſon for directing this Seed to be ſown in Rows, is that the Plants may have Room to grow; and for the better ſtirring the Ground between them, to deſtroy the Weeds, and encourage the Growth of the Plants, which may be very eaſily effected with a ſmall Breaſt-Plough, juſt after the cutting the Crop each time, which will cauſe them to ſhoot again in a very little Time, and be much ſtronger than in ſuch Places where the Ground cannot be ſtirred: but you can't pretend to to uſe a Plough the firſt Seaſon amongſt it, until the Plants have taken good Root in the Ground; therefore when they firſt come up, the Ground between ſhould be hough'd: And if in doing of this you cut up the Plants where they are too thick, it will cauſe the remaining to be much ſtronger. This Houghing, ſhould be repeated two or three times while the Plants are young, according as the Weeds are produc'd, obſerving always to do it in dry Weather, that the Weeds may the better be deſtroy'd; for if it be done in moiſt Weather, they will root and grow again.

With this Management, the Plants will grow to the Height of two Feet or more by the Beginning of *Auguſt*, when the Flowers will begin to appear; at which Time it ſhould be cut, obſerving to do it in a dry Seaſon, and keep it often turn'd, that it may ſoon dry, and be carry'd off the Ground; for if it lie long upon their Roots, it will prevent their ſhooting again: After the Crop is taken off, you ſhould ſtir the Ground between the Rows with a Breaſt-plough, to kill the Weeds, and looſen the Surface, which will cauſe the Plants to ſhoot again in a ſhort Time, ſo that by the Beginning of *September*, there will be Shoots four or five Inches high; when you may turn in Sheep upon it to feed it down, for it will not be fit to cut again the ſame Seaſon, nor ſhould the Shoots be ſuffer'd to remain upon the Plants, which would decay when the froſty Weather comes on, and fall down upon the Crown of the Roots, and prevent their ſhooting early the ſucceeding Spring.

So that the beſt Way is to feed it until *November*, when it will have done ſhooting for that Seaſon: But it ſhould not be fed by large Cattle the firſt Year, becauſe the Roots being young would be in Danger of being deſtroy'd either by their trampling upon them, or their pulling them out of the Ground: But Sheep will be of Service to the Roots by dunging the Ground, and they will not eat it too cloſe, ſo as to endanger the Crown of the Roots.

The Beginning of *February*, the Ground between the Roots ſhould be again ſtirred with the Plough, to encourage them to ſhoot again; but in doing of this, you ſhould be careful not to injure the Crown of the Roots, upon which the Buds are at that Time very turgid, and ready to puſh. With this Management, (if the Soil be warm) by the Beginning of *March* the Shoots will be five or ſix Inches high; when, if you are in want of Fodder, you may feed it down till a Week in *April*: After which it ſhould be ſuffer'd to grow for a Crop, which will be fit to cut the Beginning of *June*; when you ſhould obſerve to get it off the Ground as ſoon as poſſible, and ſtir the Ground again with the Plough, which will forward the Plants ſhooting again, ſo that by the Middle or Latter-end of *July* there will be another Crop fit to cut, which muſt be managed as before: After which it ſhould be fed down again in Autumn, and as the Roots by this Time will have taken deep Hold in the Ground, ſo there will be little Danger of hurting them, if you ſhould turn in larger Cattle; but you muſt always obſerve not to ſuffer them to remain after the Roots have done ſhooting, leſt they ſhould eat down the Crown of the Roots below the Buds, which would conſiderably damage, if not deſtroy them.

In this Manner you may continue conſtantly to have two Crops to cut, and two Feedings upon this Plant; and in good Seaſons there may be three Crops cut, and two Feedings, which will be a great Improvement, eſpecially as this Plant will grow upon dry barren Soils, where Graſs will come to little, and be of great Uſe in dry Summers when Graſs is often burnt up. And as it is an early Plant in the Spring, ſo it will be of great Service when Fodder falls ſhort at that Seaſon; when it will be fit to feed, at leaſt a Month before Graſs or Clover; for I have had this Plant eight Inches high by the tenth of *March*, at which Time the Graſs in the ſame Place has ſcarcely been one Inch high.

That the Cold will not injure this Plant, I am fully ſatisfy'd; for in the very cold Winter *Anno* 172$\frac{8}{9}$, I had ſome Roots of this Plant which were dug up in *October*, and laid upon the Ground in the open Air till the Beginning of *March*; when I planted them again, and they ſhot out very vigorouſly ſoon after; nay even while they lay upon the Ground, they ſtruck out Fibres from the Underſide of the Roots, and had begun to ſhoot green from the Crown of the Roots. But that Wet will deſtroy the Roots, I am fully convinc'd; for I ſow'd a little of the Seed upon a moiſt Spot of Ground for a Trial, which came up very well, and flouriſh'd exceedingly during the Summer-ſeaſon; but in Winter, when the great Rains fell, the Roots began to rot at Bottom, and before the Spring, were moſt of them deſtroy'd.

The beſt Places to procure the Seed from, are *Switzerland*, and the Northern Parts of *France*, which ſucceed better with us than that which comes from a more Southern Climate: But this Seed may be ſav'd in *England* in great Plenty; in order to which, a ſmall Quantity of the Plants ſhould be ſuffer'd to grow uncut till the Seeds are ripe; when it muſt be cut, and laid to dry in an open Barn where the Air may freely paſs through: But the Seed muſt be defended from the Wet; for if it be expos'd thereto, it will ſhoot while it remains in the Pod, whereby it will be ſpoil'd: When it is quite dry, it muſt be threſh'd out and cleans'd from the Huſk, and preſerv'd in a dry Place till the Seaſon for ſowing it: And this Seed ſav'd in *England* is much preferable to any brought from Abroad, as I have ſeveral times experienc'd; the Plants produc'd from it having been much ſtronger than thoſe produc'd from *French*, *Helvetian*, or *Turkey* Seeds, which were ſown at the ſame Time, and on the ſame Soil and Situation.

I am inclinable to think, that the Reaſon of this Plant not ſucceeding, when it has been ſown in *England*, has either been occaſion'd by the ſowing it with Corn, with which it will by do means thrive (for tho' the Plant be very hardy when grown pretty large, yet at its firſt coming up, if it be incommoded by any other Plants or Weeds, it ſeldom does well; therefore it ſhould always be ſown by itſelf, and carefully clear'd from Weeds until it has Strength, after which it is not eaſily deſtroy'd): Or perhaps People have ſown it at a wrong Seaſon, or in wet Weather, whereby the Seeds have rotted and never come up, which has diſcourag'd their attempting it again: But however the Succeſs has been, I dare aver, that if the Method of ſowing and managing of this Plant, which is here laid down, be duly follow'd, it will be found to thrive as well as any other Sort of Fodder now cultivated in *England*, and will continue much longer; for if the Ground be duly ſtirred between each Crop, and the laſt Crop fed, as hath been directed, the Plants will continue in Vigour twenty Years or more without renewing, provided they are not permitted to ſeed, which would weaken the Roots more than four times cutting it would do.

The Hay of this Plant ſhould be kept in cloſe Barns, it being too tender to be kept in Reeks open to the Air as other Hay; but it will remain good, if well dry'd before it be carry'd in, three Years. The People abroad reckon an Acre of this Plant ſufficient to keep three Horſes all the Year round.

MEDICA COCHLEATA; Snail-Trefoil.

The *Characters* are;

Theſe Plants differ from the former in the Fruit, which of theſe Kinds are ſhap'd like a Snail.

There are great Numbers of Sorts of this Plant, which are preſerv'd in Botanick Gardens for Variety; but I ſhall in this Place only mention two or three of the moſt curious Sorts, which are cultivated in Gardens for the Oddneſs of their Fruit.

The *Species* are;

1. MEDICA *ſcutellata. J. B.* The Snail-Trefoil, *commonly call'd in the Seed-ſhops* Snails.
2. MEDICA *orbiculata. J. B.* Flat, round Snail-Trefoil.
3. MEDICA *cochleata ſpinoſa, echinis magnis, utrinque turbinatis, cum ſpinulis reflexis. Raii Hiſt.* Prickly cochleated *Medick*, with a large Head turbinated on every Side with reflex'd Spines, *commonly call'd*, Horns and Hedge-hog.
4. MEDICA *marina. Lob. Icon.* Sea *Medick* or Snail-Trefoil.

The two firſt Sorts are common in the *Engliſh* Gardens, their Seeds being frequently ſold in the Seed-ſhops in *London*; but the third Sort is pretty rare at preſent in *England*.

Theſe three Sorts may be propagated by ſowing their Seeds upon a warm dry Border the Beginning of *April*, obſerving always to do it in dry Weather; for if the Ground be very wet, or there ſhould happen much Rain ſoon after they are put into the Earth, it very often burſts and deſtroys the Seeds; but if ſome gentle Showers fall about a Week or ten Days after the Seeds are ſown, it will bring up the Plants in a ſhort Time after. When they are come up, they ſhould be carefully clear'd from Weeds, and thinn'd out to about a Foot aſunder or more (for they muſt remain where they were ſown, ſeldom ſucceeding when tranſplanted); and after this, they will require no farther Care but only to keep them clear from Weeds; and in *July* they will flower, and their Fruit will ripen in a ſhort Time after: When the Plant is in full Beauty, the firſt Sort, at a ſmall Diſtance, will appear as if it had a great Number of *Snails* upon it; and the third Sort, having large rough Heads, will make a very good Appearance: For which ſingular Oddneſs, a good Garden ſhould always have a few Plants of each Sort, eſpecially ſince they require very little Care to cultivate them.

When the Fruit is full ripe, it ſhould be gather'd and laid by in a dry Place for the Seeds; for if they are permitted to remain upon the Plants, and there ſhould Rain happen, the Seeds would ſprout in the Heads, and be deſtroy'd.

The fourth Sort is a perennial Plant, which is preſerv'd by ſuch Perſons as are very curious in collecting great Variety of odd Plants. This may be propagated by ſowing the Seeds, as the former, or by planting Cuttings during any of the Summer

Months, which if water'd and ſhaded, will take Root in a ſhort Time; after which, they muſt be planted in Pots fill'd with light ſandy Earth, and ſhelter'd in Winter under a Hot-bed Frame, where they may have a great Share of free Air in mild Weather, and only require to be ſkreen'd from hard Froſt. This Plant is preſerv'd for the beautiful Whiteneſs of its Leaves, which when intermix'd with other low Plants, makes a pretty Variety.

MEDICAGO; Moon-Trefoil.

The *Characters* are;

It hath a papilionaceous Flower, out of whoſe Empalement ariſes the Pointal, which afterwards becomes a plain orbiculated Fruit, ſhap'd ſomewhat like a Half-Moon; in which are contain'd Kidney-ſhap'd Seeds.

The *Species* are;

1. MEDICAGO *annua, trifolii facie. Tourn.* Annual Moon-Trefoil, with the Appearance of Trefoil.
2. MEDICAGO *vulnerariæ facie, Hiſpanica. Tourn.* Spaniſh Moon-Trefoil, with the Appearance of *Vulneraria.*
3. MEDICAGO *trifolia fruteſcens incana.* Shrubby Three-leav'd hoary Moon-Trefoil, by many ſuppos'd to be the true *Cytiſus* of *Virgil.*

The two firſt Sorts are annual Plants, which are preſerved in Botanick Gardens for Variety, more than any ſingular Beauty or Uſe: Theſe may be propagated by ſowing their Seeds in the Beginning of *April*, upon a Bed of light Earth, in the Places where they are to remain; for they ſeldom ſucceed when they are tranſplanted; and when they come up, they ſhould be clear'd from Weeds, and thinn'd to the Diſtance of a Foot aſunder; after which, they will require no farther Care, but only to keep them clear from Weeds, and in *July* they will flower, and their Seeds will be perfected in *Auguſt.* The Seed-veſſels of theſe Plants being ſhap'd like Half-Moons, is the only remarkable Difference between them and the *Medica's.*

The third Sort grows to be a ſtrong Shrub, and will riſe to the Height of five or ſix Feet, and may be reduc'd to a regular Head, when it will appear very beautiful: But it ſhould not be cut too often, which would prevent its Flowering; for if the Shoots are permitted to grow without much Trimming, they will produce Flowers moſt Parts of the Year, which, together with the Beauty of its Silver-colour'd Leaves, renders it worthy of a Place in every good Garden.

This Plant may be propagated by ſowing the Seeds, either upon a moderate Hot-bed, or a warm Border of light Earth, in the Beginning of *April*; and when the Plants come up, they ſhould be carefully clear'd from Weeds: But they ſhould remain undiſturb'd, if ſown in the common Ground till the *April* following; but if on a Hot-bed, they ſhould be tranſplanted about *Midſummer* into Pots, placing them in the Shade until they have taken Root: After which they may be remov'd into a Situation where they may be ſcreen'd from ſtrong Winds, in which they may abide till the Latter-end of *October*, when they muſt be put into a Frame, in order to ſhelter 'em from hard Froſts; for thoſe Plants which have been brought up tenderly, will be liable to ſuffer by hard Froſts, eſpecially while they are young. In *April* following theſe Plants may be ſhaken out of the Pots, and placed into the full Ground where they are deſign'd to remain, which ſhould be in a light Soil, and a warm Situation, in which they will endure the Cold of our ordinary Winters extremely well, and continue to produce Flowers moſt part of the Year.

Thoſe alſo which were ſown in an open Border may be tranſplanted in the *April* following in the ſame manner: But in doing of this, you muſt be careful to take 'em up with a Ball of Earth to their Roots, if poſſible; as alſo to water and ſhade 'em until they have taken Root; after which they will require little more Care than to keep 'em clear from Weeds, and to prune their Heads once a Year, *i. e.* about the Beginning of *July*, in order to reduce them to a regular Figure: But you ſhould never prune them early in the Spring, nor late in the Autumn; for if Froſt ſhould happen ſoon after they are pruned, it will deſtroy the tender Branches, and, many times, the whole Plant is loſt thereby.

Theſe Plants have been conſtantly preſerv'd in the Green-houſe, ſuppoſing 'em very tender: But I have had large Plants of this Kind, which have remain'd in the open Air in a warm Situation many Years without any Cover, and have been much ſtronger, and flower'd better, than thoſe which were houſed: Though, indeed, it will be proper to keep a Plant or two in Shelter, leſt, by a very ſevere Winter (which ſometimes happens in *England*) the Plants abroad ſhould be deſtroy'd.

They may alſo be propagated by Cuttings, which ſhould be planted in *April*, upon a Bed of light Earth, and water'd and ſhaded until they have taken Root; after which they may be expos'd to the open Air, but they ſhould remain in the ſame Bed till the *April* following before they are tranſplanted; by which Time they will have made ſtrong Roots, and may be remov'd then with Safety to the Places where they are to remain, obſerving (as was before directed) to water and ſhade them until they have taken Root: After which you may train them up with ſtrait Stems, by faſtening them to Sticks, otherwiſe they are apt to grow crooked and irregular; and when you have got their Stems to the Height you deſign them, they may then be reduc'd to globular Heads, and with pruning their irregular Shoots every Year, they may be kept in very good Order.

This Plant grows in great Plenty in the Kingdom of *Naples*, where the Goats feed upon it, with whoſe Milk the Inhabitants make great Quantities of Cheeſe: It alſo grows in the Iſlands of the *Archipelago*, where the *Turks* uſe the Wood of theſe Shrubs to make Handles to their Sabres; and the *Calogers* of *Patmos* make their Beds of this Wood.

This is, as hath been before obſerv'd, by many People ſuppos'd to be the *Cytiſus* of *Virgil*, *Columella*, and the old Writers in Huſbandry, which they mention as an extraordinary Plant, and worthy of Cultivation for Fodder; from whence ſeveral Perſons have recommended it as worth our Care in *England*. But however uſeful this Plant may be in *Crete*, *Sicily*, *Naples*, or thoſe warmer Countries, yet I am perſuaded it will never thrive in *England*, ſo as to be of any real Advantage for that Purpoſe; for in ſevere Froſt it is very ſubject to be deſtroy'd, or at leaſt ſo much damag'd as not to recover its former Verdure before the Middle or latter End of *May*; and the Shoots which are produc'd, will not bear cutting above once in a Summer, and then will not be of any conſiderable Length; and the Stems growing very woody, will render the cutting of it very troubleſome: So that upon the whole, it can never anſwer the Trouble and Expence in cultivating it, nor is it worth the Trial, ſince we have ſo many other Plants preferable to it; tho' in hot, dry, rocky Countries, where few other Plants will thrive, this may be cultivated to great Advantage, ſince in ſuch Situations this Plant will live many Years, and thrive very well.

But however unfit this may be for ſuch Uſes in *England*, yet for the Beauty of its hoary Leaves, which will abide all the Year, together with its long Continuance in Flower, it deſerves a Place in every good Garden, where being intermix'd with Shrubs of the ſame Growth, it makes a very agreeable Variety.

As there are at preſent ſo many Perſons inquiſitive to know which is the true *Cytiſus* mention'd by the Antients, I have taken the Pains of tranſcribing briefly what they have ſaid as to its Deſcription; by which may be judged how uncertain it is to determine in an Affair where there is ſo little to be found in Authors to aſſiſt us.

Theophraſtus ſays, *Cytiſus* is ſuch an Enemy to other Plants, that it will kill them, by robbing them of Nouriſhment; and that the *Medulla* of it is ſo hard and thick, that it comes the neareſt of any Thing to *Ebenum.*

The Shrub *Cytiſus*, by *Ariſtomachus* the *Athenian*, as may be ſeen in *Pliny*, [who ſays much the ſame as *Varro* and *Columella*, from whom probably he has taken it] is highly commended for Food for Sheep, and being dry, for Swine: The Utility [as to Health and Fattening; *Dal.*] the ſame as that of *Ervum*; but the Satiety is quicker, a four-footed Beaſt growing fat with a little of it, ſo that Cattle ſet light by their Barley.

No Food makes a greater Quantity, nor better Milk, and it excels all Things as to the Diſeaſes of Cattle: Moreover, being given dry, or in a Decoction of Water mix'd with Wine, to Nurſes whoſe Milk fails, it helps very much, and makes the Children ſtronger, and take to their Feet ſooner: Green, it is alſo good for them; or dry, if it be made moiſt.

Democritus and *Ariſtomachus* ſay, Bees will never want Food if they have *Cytiſus* enough, nor is any Thing cheaper.

It is ſown with Barley early in the Spring, or in Autumn.

If when the Seed be ſown, Showers be wanting, *Columella* directs, That it be water'd the fifteen following Days.

It is ſown [according to the Antients] after the *Equinoxes.* It is perfected in three Years. It is mown in the *Vernal Equinox*, [for it flouriſhes all the Winter; *Dal.*] when it has done flowering, with the cheap Labour of a Boy or old Woman.

The *Cytiſus* is hoary in Aſpect: If any one would expreſs its Likeneſs briefly, it is a Shrub of a broader Trefoil.

In Winter being moiſten'd, ten Pounds will ſatisfy a Horſe, and a leſs Quantity other Animals. Being dry, it has more Virtue, and a leſs Quantity ſatisfies.

Garlick and *Onions* grow very well between the Rows.

This Shrub was found in the Iſle *Cythnus*, thence it was tranſlated into all the *Cyclades*, and afterwards into the Cities of *Greece*, where it occaſioned a great Increaſe of Cheeſe.

It fears not the Injury of Heat nor Cold, nor Hail nor Snow; and *Hyginus* adds, nor of Enemies, becauſe the Wood is of no Value.

Alſo *Galen*, in his Book, *de Antid.* writes, " *Cytiſus* is a " Shrub. In *Myſia*, in that Part that is neareſt to our Pro- " vince, there is a Tract which they call *Brotton*, in which " there is a Place full of *Cytiſus*; from the Flowers of which, " all agree, the Bees make very much Honey.

" It is a ſruticoſe Plant. It riſes to the Height of a " *Myrtle*.

He ſays, ſeven ſimple Leaves have the Faculty of Digeſting, mix'd with warm Water, as the Leaves of *Mallows*. Thus *Galen*.

Baſil Fab. in *Theſ.* calling *Cytiſus Wiefflee* and *Spitflee*, like to the *Lotus*, and a Shrub grateful to the Goats, knows not what he writes.

Cornarus too ſecurely writes, That *Cytiſus* either never came among the *Germans*, or that it periſh'd long ago. From what *Pliny* ſays, That it was very rare in *Italy* in his Time; he cannot perſuade me, that nothing could grow in *Germany* that was ſcarce in *Italy*. *Jo. Baub.*

Strabo, contrary to *Dioſcorides*, *Pliny*, and *Galen*, will have the *Cytiſus* to be a Tree; and he likens it to the *Balſamum*, an odoriferous Tree; which probably was the Occaſion that *Cornarus* thought this Tree came neareſt to a Shrub, becauſe *Pliny* ſaid the Wood was of no Value; therefore he perſuades himſelf, that produces woody Branches, not tender and ſoft, as in an Herb.

But *Virgil* ſhews it is neither a Tree, nor a Shrub, when he ſays;

——Non me paſcente, capellæ,
Buc. Eclog. 1.
Florentem Cytiſum, & ſalices carpetis amaras.
Eclog, 9.
Sic Cytiſo paſtæ diſtendunt ubera vaccæ.
Eclog. 10.
Nec Cytiſo ſaturantur apes, nec fronde capellæ.

Virgil, I ſay, indicates very plainly in theſe Verſes, that it is neither a Tree, nor a Shrub; for Goats do not uſe it, nor can they, if they were wont to eat flowery Trees. Neither will what *Cornarus* ſays, avail, when *Pliny* ſays the Wood is of no Value, that it muſt, of Neceſſity, produce woody Branches; nay, the contrary is rather true, that there is no Value in the Wood; that it bears viney, pliable Branches, with which the Goats cannot be ſatiated.

Theocritus very plainly expreſſes it, That *Cytiſus* is a very grateful Food to Goats;

Ἡ αἲξ τον κύτισον, ὁ λύκος τὴν αἶγα διώκει.

Capra Cytiſum, lupus capellam ſequitur.

Amatus, to avoid this Difficulty, concludes *Cytiſus* to be between Trees and Shrubs, by the Difference of Genus, to be diſtinguiſh'd by *Pliny*, that, as a Tree, it may be us'd in the Feminine Gender, as a Shrub, in the Maſculine; which is not worth the minding.

Columella uſes *Cytiſus* in the Feminine Gender; and *Theocritus* and others in the Maſculine; as *Rob. Conſt.* in *Lex.* who writes, it was call'd ἀρνόφυλλον; and *Theocritus* calls this Shrub κυτιλὸν; and others, κυτισὸν; others, τηλιν.

Of *Cythnus*, or, as others, of *Cythiſa*, the Name of an Iſland, as *Severius* has it.

Among theſe Words of *Dioſcorides* in ſome Manuſcripts, there are found, falſly written, in ſome *Telinen*, *Triphyllon*, in others *Lotum Grandem*.

Dioſcorides's Deſcription of the *Cytiſus*, is not ſo accurate, that, from it, the true *Cytiſus* may be aſcertain'd; from whence it has happen'd, that different Authors have exhibited different *Cytiſus*.

The following Plants are denominated *Cytiſus*'s by the Writers in *Botany*:

Cytiſus ſiliqua incurva, folio candicante a Maranthe deſcripto.
Cytiſus Cluſ. 1. folio vireſcente.
Cytiſus montis Calcaris.
Cytiſus Hiſp. Cluſ. 2.
Cytiſus ſpicato flore.
Cytiſus 3 Hiſp. Cluſ. non brevi pediculo.
Cytiſus hirſuta.
Cytiſus Pann. Cluſ. omnia incana.
Cytiſus 2 Pannon. Cluſ. ſpecies altera hirſuta valde.
Cytiſus Pann. 3 Cluſ. ſparſis ramis.
Cytiſus Pannon. 3 Cluſ. ſpecies, altera ſupinis ramulis.
Cytiſus ſiliqua anguſta glabra.
Cytiſus glabra lata ſiliqua.
Cytiſi genus flore purpureo.
Cytiſi facie alyſſon fruticans.

Altho', in this Multitude of *Cytiſus's*, it is hard to judge which is the legitimate *Cytiſus* ſpecify'd by the Antients; the moſt Skilful take it to be that which *Maranthus* has deſcrib'd, which is our *Medicago*.

Beſides theſe, there are alſo certain other Plants that bear the Name of *Cytiſus*, which I have for good Reaſons omitted from amongſt the fore-mentioned.

Trifolium fruticans according to *Dodonæus*, or *Polemonium* according to ſome, is improperly call'd *Cytiſus* by many.

Laburnum is call'd *Cytiſus* by ſome.

Some have thought *Colutea*, as it is call'd by ſome, to be a *Cytiſus*.

Colutea Scorpioides is near a kin to *Cytiſus*, according to *Cluſius*.

Camerarius thinks *Dorycnium Monſpelienſium*, as it is accounted, to be akin to the *Cytiſus* of *Columella*.

Trifolium Candidum Dodon. by ſome, is ſaid to be the *Cytiſus* of *Columella*; concerning which, ſee *Lib. Hiſt. n.* 9. 17. of *Trifolious Herbs*.

Some will have the *Cytiſus* of *Marcellus Empiricus*, and alſo of *Dioſcorides*, *Columella*, and *Virgil*, to be a certain great *Trefoil*.

Tragus writes, That their Opinion is to be rejected, who interpret the *Trifolium Pratenſe* to be a *Cytiſus*.

Some contend, That the *Trifolium Candidum* of *Dodon.* the *Rectum Melilotum Vulgarem* to be the *Cytiſus* of the Antients, as *Dodonæus* ſays; but they have not hit on the Truth.

Ruellus writes, That he was afraid, that *Marcellus* took *Cytiſus* for *Medica*.

The *Lotus Sativa Odorata* is by ſome thought to be the *Cytiſus*, but others do not approve of it.

MEDLAR. *Vide* Meſpilus.

MELAMPYRUM; [Μελάμπυρον, of μέλας, *Black*, and πυρὸς, *Wheat*] Cow-Wheat.

The *Characters* are;

The Leaves grow oppoſite by Pairs; the Flower conſiſts of one Leaf, is of an anomalous perſonated Figure, and divided into two Lips; the uppermoſt of which has a Spur, but the under one is intire; the Fruit is round, and divided into two Cells, containing Seeds reſembling Grains of Wheat.

The *Species* are;

1. MELAMPYRUM *luteum latifolium. C. B. P.* Yellow broad-leav'd Cow-Wheat.
2. MELAMPYRUM *luteum anguſtifolium. C.B.P.* Narrow-leav'd Yellow Cow-Wheat.
3. MELAMPYRUM *coma purpuraſcente. C. B. P.* Cow-Wheat, with purpliſh Tops.

The two firſt Sorts are very common in Woods and ſhady Places, growing near the Foot of Trees in divers Parts of *England*, and are never cultivated in Gardens.

The third Sort is very rarely found wild in *England*; but, in *Weſt-Frieſland* and *Flanders* it grows very plentifully among the Corn; and *Cluſius* ſays, it ſpoils their Bread; making it dark, and that thoſe who eat of it, us'd to be troubled with Heavineſs of the Head, in the ſame Manner as if they had eaten *Darnel* or *Cockle*; but Mr. *Ray* ſays, He has eat of this Bread very often, but could never perceive that it gave any diſagreeable Taſte, or that it was accounted unwholeſome by the Country People, who never endeavour to ſeparate it from the Corn; and *Tabernemontanus* declares, He has often eaten it without any Harm, and ſays, it makes a very pleaſant Bread. It is a delicious Food for Cattle, particularly for fattening of *Oxen* and *Cows*: For which Purpoſe it may be cultivated in the ſame Manner as hath been directed for the *Fagopyrum* or *Buck-Wheat*: It loves a light ſandy Soil.

MELIANTHUS; [Μελίανθος, of μέλι, *Honey*, and ἄνθος, *Flower*] Honey-Flower.

The *Characters* are ;

It hath a perennial Root ; and the Appearance of a Shrub ; the Leaves are like thoſe of Burnet ; *the Cup of the Flower is divided into ſeveral Parts ; the Flower conſiſts of four Leaves, and is of an anomalous Figure ; the Petals (or Leaves) are placed ſometimes in the Shape of a Fan, and at other Times are of a conical Figure ; the Ovary becomes a Fruit reſembling a Bladder four-corner'd, divided into four Cells, and pregnant with roundiſh Seeds.*

The *Species* are ;

1. MELIANTHUS *Africanus. H. L.* The large Honey-flower, *vulgarly called*, The Locus *or* Wild Honey.
2. MELIANTHUS *Africanus minor fœtidus. Com. Rar.* The ſmaller ſtinking Honey-flower.

The firſt of theſe Plants is pretty common in many *Engliſh* Gardens, where it is preſerv'd as a Curioſity. This produces large Spikes of Chocolate-colour'd Flowers in *May* ; in each of which is contain'd a large Quantity of a black ſweet Liquor, from whence it is ſuppos'd to derive its Name.

This Plant was formerly preſerv'd in Green-houſes as a tender Exotick ; but, if planted in a dry Soil, and a warm Situation, will endure the Cold of our ordinary Winters very well ; and if, in a ſevere Froſt, the Tops of them ſhould be deſtroyed, yet the Roots will abide, and put forth again the ſucceeding Spring, ſo that there is no great Danger of loſing it ; and the Plants which grow in the open Air, do always flower much better than thoſe which are preſerv'd in the Green-houſe, as being leſs drawn, which always is hurtful to the flowering of Plants, and many Times prevents their producing any Flowers.

This Plant may be propagated by taking off its Suckers or Side-ſhoots any Time from *March* to *September*, obſerving to chuſe ſuch as are furniſh'd with Fibres ; and after they are planted, you muſt water, and ſhade them, until they have taken Root, after which they will require no farther Care but to keep them clear from Weeds. They may alſo be propagated by planting Cuttings, during any of the Summer Months ; which, if watered and ſhaded, will take Root very well, and may afterwards be tranſplanted where they are deſign'd to remain.

The ſecond Sort is leſs common than the former, and only to be found in ſome curious Collections of Plants, tho' it ſeems to be equally as hardy as the former. This produces leſſer Spikes of Flowers, but they are much more beautiful than the former, their Flowers having a Mixture of Red, Green, and Yellow. This produces its Flowers in *May*, and ſometimes perfects its Seeds with us, by which it may be propagated : And the Plants obtain'd from ſuch Seeds, would be hardier than thoſe which come from abroad, or are rais'd from Slips. This may be propagated in the ſame Manner as the former, and requires much the ſame Culture, tho' it is commonly preſerv'd in the Green-houſe ; but I have ſeen Plants of this Kind which were growing in the Gardens of *Charles du Bois*, Eſq; at *Mitcham* in *Surrey*, under a warm Wall, which produced a greater Quantity of Flowers, and ripen'd their Seeds better than any of thoſe Plants which are preſerv'd in the Green-houſe. This Sort commonly grows to a greater Height than the former, and its Branches become more woody.

MELILOTUS ; [μελίλοτος, of μέλι, *Honey*, and *Lotus*, the *Lote-tree*, which was a celebrated Plant among the Antients : It was call'd the *Honey Lotus*, becauſe Bees do not collect more and ſweeter Honey from any Herb than from this Plant ; but it is not ſo call'd on account of its Taſte, for the Leaves, Flowers, and Fruit of it are bitter] Melilot.

The *Characters* are ;

It hath a papilionaceous Flower ; out of whoſe Empalement ariſes the Pointal, which afterwards becomes a naked Capſule, that is not hid in the Empalement, (as in Trefoil) pregnant with one or two roundiſh Seeds : To theſe Notes may be added, the Leaves grow by Threes on the Footſtalks, and the Flowers are produc'd in a Spike.

The *Species* are ;

1. MELILOTUS *officinarum Germaniæ. C. B. P.* Common Melilot.
2. MELILOTUS *fruticoſa candida major. Mor. Hiſt.* Shrubby Melilot, with a white Flower.
3. MELILOTUS *major odorata violacea. Mor. Hiſt.* Greater ſweet-ſcented Melilot, with a Violet-colour'd Flower, *commonly called*, Sweet Trefoil, *or* Lotus Urbana.
4. MELILOTUS *corniculis reflexis, major. C. B. P.* Greater Melilot with reflected Horns.
5. MELILOTUS *corniculis reflexis, minor vel repens. C.B.P.* Smaller creeping Melilot, with reflexed Horns.
6. MELILOTUS *Italica, folliculis rotundis. G. B. P. Italian* Melilot, with round Leaves.
7. MELILOTUS *anguſtifolia repens, folliculis rotundis. C. B. P.* Narrow-leav'd creeping Melilot, with round ſmaller Leaves.
8. MELILOTUS *lutea minor, floribus & ſiliculis minoribus, ſpicatim & densè diſpoſitis. Mor. Hiſt.* Smaller yellow Melilot, with ſmaller Flowers and Pods, growing in a thick Spike.
9. MELILOTUS *Meſſanenſis procumbens, folliculis rugoſis ſublongis, ſpicis florum brevibus. Raii Syn.* Trailing Melilot of *Meſſina*, with rough oblong Leaves, and ſhort Spikes of Flowers.
10. MELILOTUS *Cretica humillima humifuſa, flore albo magno. Tourn. Cor.* Low Melilot of *Crete*, with a large white Flower.
11. MELILOTUS *capſulis reni ſimilibus, in capitulum congeſtis. Tourn.* Melilot Trefoil *or* Noneſuch.

The firſt Sort here mention'd, is that uſed to make the *Melilot Plaiſter :* This is found wild in ſeveral Parts of *England*, but is generally cultivated in ſome Gardens near *London*, from whence the Markets are ſupply'd with it. The ſecond Sort is by ſome ſuppos'd to be only a Variety of the firſt, differing in the Colour of its Flowers, but this is a Miſtake, for the whole Plant has a very different Appearance, the Leaves being narrower, the Stalks much taller, nor has it near ſo ſtrong a Scent. The third Sort is ſometimes uſed in Medicine, but is rarely cultivated except in Botanick Gardens.

Theſe may be all cultivated by ſowing their Seeds in *March*, upon a Bed of light Earth ; and when the Plants are come up, they ſhould either be tranſplanted out, or hough'd, ſo as to leave 'em eight or ten Inches aſunder, (eſpecially the two firſt Sorts, which will abide two or three Years, and grow very large) obſerving to keep them clear from Weeds, and the *Auguſt* following they will flower ; when they may be cut for Uſe, which will cauſe them to puſh out new Shoots, whereby the Roots will be maintain'd thro' the Winter, and flower in *May* or the Beginning of *June* the ſucceeding Year. The cutting off the Shoots when the Plant is in flower, will maintain the Roots much longer than if they were permitted to ſtand till the Seeds are ripe, ſo that thoſe Roots you intend for Seeds, muſt not be depended on to ſtand very long.

The third Sort is an annual Plant, which may be ſown as the two former, but ſhould not be tranſplanted, but rather houghed out to the Diſtance of five or ſix Inches, and permitted to remain in the ſame Place, obſerving to keep them clear from Weeds, and they will flower in *June*, and their Seeds will be ripe in *Auguſt*.

The fourth, fifth, ſixth, ſeventh, eighth, and ninth Sorts are annual Plants, which grow wild in the South of *France*, and in *Italy*, from whence the Seeds of them have been procured by ſuch Perſons who are curious in Botany. Theſe Sorts are all of them preſerved in Botanick Gardens for Variety, but they are Plants of no great Beauty, nor are they uſed in Medicine. But if there were Trials made of ſome of the Kinds, I believe they might be found uſeful to ſow for feeding of Cattle, as the laſt Sort here mentioned is at preſent in divers Parts of *England*, which was the Reaſon of my enumerating theſe Sorts here. For as ſome of the other Sorts are very hardy, and will grow on almoſt any Soil, ſo if they are found to be equally good with the Noneſuch, they may be better worth cultivating, becauſe they are of much larger Growth ; ſo conſequently will produce much more Fodder on an Acre of Land, than that will. But as I have had no Opportunity of trying if Cattle will eat any of them, ſo I cannot recommend them, but by way of Trial, to ſuch Perſons who are curious in making theſe Sorts of Improvement.

As theſe are annual Plants, ſo their Seeds muſt be ſown every Year ; or if they are permitted to ſcatter when ripe, the Plants will come up in Autumn, and will abide the Winters Cold very well in this Country ; thoſe Plants which come up in the Autumn, will grow much larger than thoſe which are ſown in the Spring, and will more certainly produce good Seeds. Therefore thoſe Perſons who are curious to preſerve their Kinds, ſhould either ſow them in Autumn ſoon after the Seeds are ripe, or permit them to ſcatter their Seeds ; and the ſelf-ſown Plants may be eaſily tranſplanted, where they are deſigned to grow ; and they will require no farther Care, but to keep them clear from Weeds. They will all of them grow on almoſt any Soil ; but they will thrive better on dry light ſandy Soil, than on a ſtiff clayey Ground.

The tenth Sort is an abiding Plant, which rarely produces Seeds in this Country, ſo is propagated by parting of the Roots in the Spring. This Sort is not ſo hardy as the others; therefore ſome of the Plants ſhould be preſerved in Pots, that they may be removed into Shelter in Winter; for very hard Froſts will deſtroy them, if they are expoſed. But they muſt always have as much free Air as poſſible in mild Weather, ſo that if they are placed under a common Hot-bed Frame in Winter, where the Glaſſes may be drawn off every Day in mild Weather, and only covered in hard Froſt, the Plants will thrive much better than where they are placed in a Green-houſe. In Summer the Plants muſt be frequently watered in dry Weather, and kept clear from Weeds, which is all the Culture they require.

The *Noneſuch* which is now cultivated in the open Fields in ſeveral Parts of *England*, is an Inhabitant of this Kingdom; growing wild by the Sides of Paths, and on arable Land, in great Plenty every where near *London*; and if the Seeds are permitted to ſcatter, there will be a Supply of Plants to ſtock the Ground, ſo that it often becomes a very troubleſome Weed in Gardens, and is difficult to extirpate after it hath gotten Poſſeſſion.

The Seeds of this Plant are ſown in the Spring, either alone, or with *Barley*, the latter of which I ſhould recommend; for as this is a low trailing Plant, ſo it will not injure the *Barley*, which will get forward before the *Noneſuch* comes up; and if there doth not ariſe a great Crop of the *Noneſuch*, yet being permitted to ſtand until the *Barley* is ripe, the Seeds of the *Noneſuch* will be ripe, and moſt of it ſcattered, by that Time; and after the Corn is taken off, the Rains in Autumn will ſoon bring up the Plants, which will flouriſh all the Winter, and the Spring following will afford an early Feed for Cattle.

Where this Plant is ſown by itſelf, it muſt not be fed or mow'd, until the Seeds are ripe; for as it is an annual Plant, ſo where it is eaten, or cut down, the Roots will periſh; and if there is not a Supply of young Plants to ſucceed them, the Crop will be deſtroyed in one Seaſon. Indeed, as theſe Plants begin to flower very young, and near their Roots, ſo before the Seeds are formed at the Extremity of the Shoots, thoſe produced near the Root will be ripe and ſcattered, from whence young Plants will come up, and ſupply the Crop; which has deceived ſome Perſons, who have thought this Plant will abide two or three Years, and produce ſeveral Crops from the ſame Roots; which is a great Miſtake, for the Root periſhes annually. But as the Plants produce ſuch Quantities of Seed, at almoſt every Joint of the Stalks, ſo it is almoſt impoſſible to deſtroy the Crop totally, if the Plants are permitted to grow to any Size, before they are fed or cut down.

The Seeds of *Noneſuch* being ſmaller than Clover-ſeed, a leſs Quantity will ſow an Acre. If it is ſown by itſelf, there ſhould be ten Pounds allowed to an Acre; but if it is ſown with *Barley*, ſix Pounds will be ſufficient. When it is ſown with *Barley*, the *Barley* ſhould be firſt ſown and harrowed, and then the Seeds of the *Noneſuch* ſhould be ſowed, and the Land rolled, which will bury this Seed deep enough.

MELISSA; [ſo call'd of μέλι, *Honey*, becauſe in making *Honey* you procure it from this Plant: It is alſo call'd *Meliſophyllon*, of μέλι, and φύλλον, a *Leaf*, q. d. *Honey-leaf*: It is alſo call'd *Apiaſtrum*, of *Apis*, Lat. a *Bee*, becauſe *Bees* are delighted with this Plant] Balm.

The *Characters* are;

It is a verticillate Plant, with a labiated Flower, conſiſting of one Leaf, whoſe Upper-lip is roundiſh, upright, and divided into two; but the Under-lip is cut into three Parts: Out of the Flower-cup riſes the Pointal, which is attended, as it were, with four Embryo's; theſe afterwards turn to ſo many Seeds, which are roundiſh, and incloſ'd in the Flower-cup. To theſe Notes may be added, the Flowers are produc'd from the Wings of the Leaves, but are not whorled quite round the Stalks.

The *Species* are;

1. MELISSA *hortenſis. C. B. P.* Garden Balm.
2. MELISSA *hortenſis, foliis ex luteo variegatis.* Garden Balm, with yellow variegated Leaves.
3. MELISSA *Romana, molliter hirſuta & graveolens. H. R. Par.* Stinking Roman Balm, with ſofter hairy Leaves.

There are ſome other Species of this Plant which are preſerv'd in curious Gardens for Variety; but as they are never cultivated for Uſe, ſo I ſhall paſs them by without naming.

The firſt of theſe Sorts is cultivated in Gardens for Medicinal and Culinary Uſe: This is propagated by parting the Roots, either in Spring or Autumn, planting the Slips at about eight or ten Inches Diſtance, in Beds about four Feet wide, leaving a Path two Feet between the Beds, for the Conveniency of cleaning, watering, and cutting the Plants.

When they are firſt planted, if the Seaſon proves dry, you muſt carefully water them until they have taken Root, otherwiſe they will be ſubject to decay, but afterwards they will require no farther Care, but only to keep them clear from Weeds. Theſe Plants ſhould be tranſplanted and parted every other Year, otherwiſe their Roots will grow ſo large as to injure each other, and for want of Room will rot and decay.

The variegated Sort makes a very pretty Appearance in the Spring Seaſon, while the Leaves are young, but afterwards their Beauty goes off; however, a few Plants of this Sort may be planted in large Borders for Variety.

The third Sort is a Plant of no great Beauty or Uſe, but is preſerv'd in ſeveral curious Gardens for Variety. This is ſomewhat tender, and ſhould have a dry Soil, and a warm Situation, otherwiſe it is ſometimes deſtroy'd in ſevere Froſts.

The two firſt Sorts will grow in almoſt any Soil or Situation; but the ſtrip'd Sort ſhould not have a rank Soil, which would cauſe it to grow vigorouſly, whereby the Beauty of its variegated Leaves ſoon goes off.

MELISSA TURCICA. *Vide* Moldavica.

MELO, [takes its Name of μῆλον an *Apple*, becauſe the Fruit reſembles an *Apple*: The *Italians* call it *Milo*, as tho' of *Mille*, Lat. a *Thouſand*, becauſe ſcarce one of a thouſand is found to be good] A Melon.

The *Characters* are;

The Flower conſiſts of one Leaf, which is of the expanded Bell-ſhape, cut into ſeveral Segments, and exactly like thoſe of the Cucumber; ſome of theſe Flowers are barren, not adhering to the Embryo; others are fruitful, growing upon the Embryo, which is afterwards chang'd into a Fruit, for the moſt part of an Oval-ſhape, ſmooth or wrinkled, and divided into three ſeminal Apartments, which ſeem to be cut into two Parts, and contain many oblong Seeds.

The *Species* are;

1. MELO *vulgaris. C. B. P.* Common Musk Melon.
2. MELO *rotundus parvus. C. B. P.* Small round Musk Melon, *commonly call'd*, The Portugal or Pocket Melon.
3. MELO *reticulatus. J. B.* Netted or wrought Melon.
4. MELO *magnus, cortice virente, ſemine parvo. J. B.* Greater Musk Melon, with a ſmooth green Skin, and a ſmall Seed.
5. MELO *Hiſpanicus, cortice alba intus rubente.* White Spaniſh Melon, *vulgo.*
6. MELO *cortice lævi intus virente.* The Green-fleſh'd Melon, *vulgo.*

As there is not any Plant cultivated in the Kitchen-Garden, which the Gardeners near *London* have a greater Ambition to produce early and in Plenty; ſo there is a great Number of Methods now practis'd in the raiſing and dreſſing of the Vines, in order to obtain them in greater Perfection: But to enumerate them all in this Place, would greatly exceed my intended Bounds; therefore I ſhall only ſet down the plain and eaſy Method, whereby a Perſon may depend on having a good Crop of *Melons*, whenever the Seaſon is tolerably good for them, provided the Seed be good, and the Directions duly follow'd.

And firſt, as to the Choice of Seed: In this you muſt be careful, becauſe the whole Succeſs of your Labour and Expence depends upon it. You ſhould annually (if poſſible) exchange your Seeds, and not continue to ſave and ſow the ſame for ſeveral Years in the ſame Ground; for they will certainly degenerate in two or three Years, and from being extraordinary good Sorts, will become very bad; therefore you ſhould purchaſe ſome good *Melons* from ſome Gardens at a great Diſtance from you; which Seed (provided the Fruit was well-taſted, high-colour'd, and of a firm Nature) ſhould be carefully preſerv'd two or three Years before it be ſown; when will not be ſo ſubject to produce ſtrong luxuriant Vines, bu will be more productive of Fruit (for as I have obſerv'd, tha by keeping theſe Seeds, they annually loſe of their Weight ſo it is certain, that the watry Parts do firſt evaporate; an theſe are what promote Luxuriancy in all Plants, therefore th more of theſe are loſt by keeping, *&c.* the more fruitful wi the Plants be): but it muſt be obſerv'd, that although the

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Seeds will retain their growing Quality for eight or ten Years, yet they are not near ſo good at that Age (whatever may have been ſaid to the contrary); for the Plants produc'd from ſuch Seeds are generally too weak to produce Fruit of any conſiderable Size, and Seed of three or four Years old is by the beſt Judges always preferr'd.

But if you cannot obtain Seeds of that Age, and are oblig'd to ſow new ones, then you ſhould either carry it in your Breeches Pocket, where it may be kept warm, or plac'd at a proper Diſtance from a Fire two Months before it be ſown; by which means the watry Parts will be carry'd off, and the Seed prove equally as good as if it had been kept two or three Years, as hath been experienc'd by ſeveral curious Perſons.

There are commonly great Quantities of *Melon* Seed brought into *England* annually as great Curioſities, which often tempts the Gardeners to ſow it, expecting ſomething very extraordinary from it; but it ſeldom happens that it ever proves good; therefore great Care ſhould be taken to know from whence it comes; by which may be gather'd how proper it is for our Climate, and alſo ſome Judgment made of the Goodneſs of the Sorts: For thoſe *Melons* which are produc'd in the *Weſt-Indies*, are generally very large, and being brought from a very hot Country, ſeldom come to any thing in *England*; and thoſe Seeds which come from *Spain*, *Italy*, or the *Levant*, are ſeldom good for much, the Gardeners in thoſe Countries being very careleſs in ſaving their Seeds: But the beſt Country to procure *Melon* Seeds from, is *Languedoc* in the South of *France*, where the Gardeners emulate each other in producing the fineſt *Melons*, and the Seeds brought from thence are much preferable to any ſav'd in *England*, and do ſucceed better than thoſe brought from moſt other Countries.

Having thus largely treated of the Choice of Seeds, I ſhall now proceed to the Method and Times of ſowing them; which, according to the common Practice of the Gardeners near *London*, is at two Seaſons; *viz.* The firſt (which is for the early Crop, to be planted under Frames) in the latter end of *January*, or the Beginning of *February*; tho' indeed there are ſome who, endeavouring to produce early Fruit, ſow their Seeds in *December*, but then there muſt be a great Expence and Care, otherwiſe they will come to nothing. So that the moſt certain Seaſon is that before-mention'd: for if by great Care the Plants which are rais'd ſooner are preſerv'd in Health, yet when the Fruit firſt appears, if the Beds are not in good Temper for Heat, and great Care be not taken in giving them a juſt Proportion of Air, the Fruit will fall off, and come to nothing. The ſecond Seaſon for ſowing this Seed (which is for Bell or Hand-Glaſſes) is about the Beginning of *March*, or a little later, according to the Earlineſs or Lateneſs of the Seaſon; and is the general Crop of *Melons*, which are commonly ripe in *July* or *Auguſt*: But I ſhall firſt begin with Directions for Raiſing and Managing the early Crop for Frames.

About ſeven or eight Days before you intend to ſow the Seeds, you muſt prepare a Parcel of new Horſe-Dung from the Stable, which ſhould be caſt up (together with the Litter) into a round Heap, mixing therewith a few Sea Coal Aſhes, which will help to preſerve the Heat of the Dung. After it has lain in the Heap a Week, it will have acquir'd Heat enough for the Purpoſe: You muſt therefore dig a Trench the Length and Width of the Frame you intend for the Bed, and about a Foot deep (provided the Ground be dry; but if it be wet, the Trench ſhould not be above three or four Inches deep); into this Trench you muſt lay the Dung, obſerving to ſhake and work it well with the Fork, ſo that every Part of it may be equally ſtirr'd, whereby it will ſettle all alike; and it ſhould be beaten down with the Fork, to prevent the Heat from going off too ſoon: This Dung ſhould be laid three Feet thick; and after having made it exactly level on the Top, you ſhould lay ſome fine light Earth thereon, about three Inches thick, on which the Seeds ſhould be ſown two Days after the Bed is made, covering it about half an Inch with the ſame light Earth. If after the Seed be ſown, the Bed ſhould prove very hot, you muſt raiſe the Light with a Stone about an Inch high, which will make Way for the Steam of the Bed to paſs off: but if it ſhould prove cool, you muſt lay ſome Litter about the Sides, and cover the Glaſs well with Mats or Straw every Night, and in bad Weather, which will ſoon bring it to a Heat. In about five Days after the Seed is ſown, the Plants will appear above Ground; when you muſt carefully give them Air, to prevent their being ſuffocated by the Steam of the Bed, as alſo turn the Light every Day, when the Weather is fair, to dry off the Damp which ſettles upon the Glaſs; and if the Weather ſhould not admit of the Light lying the wrong Side upwards to dry, then you muſt only turn it, and wipe off all the Moiſture with a Woollen Cloth, and turn the Light again; for if the Moiſture which is collected upon the Underſide of the Glaſs be ſuffer'd to fall upon the Plants, it will occaſion their changing yellow, and cauſe them to be very weak; for this proceeds from the Steam of the Dung and Earth, and the Perſpiration of the Plants, which being confined and mix'd together, becomes of a rancid Nature, and ſo proves deſtructive to whatever Plants it lodges upon, or that imbibe any Part of it.

You ſhould alſo, ſo ſoon as the Plants appear, caſt up a freſh Heap of new Dung, as before; and after having lain in the Heap about ſix Days, you muſt make a new Bed in the Manner before directed, covering the Dung three Inches thick with good freſh light Earth; then put on the Frame and Glaſſes, and let it remain two or three Days, for the great Heat to paſs off before you ſet the Plants therein, that the Bed may be of a moderate Temper, otherwiſe the Roots of the Plants will burn. When you find your Bed of a proper Temper for Heat, which you may eaſily know, by thruſting your Finger down in the Earth, letting it remain a ſmall time, and if you feel no violent Heat, then you may be ſure there will be no Danger of injuring them thereby: therefore you ſhould take up the Plants carefully out of the Seed-bed, (raiſing them with your Finger, that the Roots may not be injured) and prick them into the new Bed, about three Inches Diſtance each Way, covering the Glaſſes with Mats, if the Sun ſhould be warm, till they have taken Root; after which you muſt be very careful to give them Air in Proportion to the Heat of the Bed, otherwiſe they will draw up very weak, and change yellow. You muſt alſo, as the Stems of the Plants advance in Height, put in ſome dry freſh Earth between them, to Earth the Shanks, which will greatly increaſe their Strength; and be very careful to wipe the Moiſture off from the Glaſſes, as was before directed, for the Reaſons already laid down; and proportion your Covering of Mats every Night to the Heat of the Bed.

In about a Fortnight after the Plants are prick'd out, they will begin to ſhew the third (or what, in the Gardeners Language, is call'd the rough) Leaf; at which time you muſt be provided with a freſh Parcel of new Dung in Proportion to the Quantity of Lights you intend to plant, allowing a full Load (which commonly contains fourteen good Wheel-barrows) to each Light: when the Dung has lain in the Heaps ſix or eight Days, you muſt dig out a Trench in Proportion to the Length and Breadth of your Frames, and about a Foot deep, if the Soil be dry, but if wet, four or five Inches will be ſufficient: then wheel the Dung therein, obſerving to ſhake and work it equally in every Part of the Bed, that the Heat may be equal; and after having laid it even and level, you ſhould lay on the Earth (obſerving to break it very fine) about three Inches thick, laying it exactly even; then put on the Frames, and in the Middle of each Light, where the Plants are to be planted, you ſhould put a good Baſket full of freſh light rich Earth, raiſing it into a little Hill; then cover the Beds with the Lights, letting it remain two or three Days, till you perceive it is of a proper Temper for Heat; when you muſt take the Plants carefully out of the former Bed, and after having levell'd the Hills in the Middle of each Light on the Top, and made it a little hollow, to contain a ſmall Quantity of Water, you ſhould ſet two ſtrong Plants into each, obſerving to give them a little Water if the Earth be dry, as alſo to ſhade them from the Sun until they have taken Root; after which you muſt be careful to give them Air, according to the Proportion of the Heat of the Bed, as alſo to turn the Glaſſes to dry them. And when the Plants have put out the fourth Leaf, (which is what the Gardeners term having two Joints) you ſhould pinch off the extreme Part of the Shoot, in order to force out lateral Branches or Runners; which when they have produced about ſix Inches long, ſhould be regularly placed in the Manner they are deſigned to remain; for theſe Shoots ought never to be diſplaced, or the Leaves bruiſed with the Hand, which is very injurious to them; therefore you ſhould conſtantly keep them clear from Weeds, and as the Shoots are produced, lay them in their true Order, ſo as not to croſs or intangle with each other; but by no means ſhould you ſtop them, as is too often practiſed, which occaſions their putting forth a greater number of Shoots; but then they are the weaker, and ſo there is a Confuſion of Vine, but thoſe not ſtrong enough to produce any conſiderable Fruit, nor will the firſt *Melons*, which appear upon ſuch Vines, remain, but, on the contrary, fall away, and come to nothing.

Theſe Plants ſhould be often refreſh'd with Water, but you muſt be careful not to give them too much; and when the Vines have grown off from the little Hill upon which they were planted, you ſhould water them gently all over their Leaves, which will greatly refreſh them; but you ſhould be careful not to do this in the Heat of the Day, leſt the Sun, by immediately exhauſting the Moiſture, ſhould ſcorch the Leaves of the Plants; nor ſhould it be done late in the Evening; for the Glaſſes being then put down cloſe, and cover'd with Mats or Straw, the Moiſture which always ariſes after ſuch Waterings, where there is a Warmth in the Beds, being pent in, will become rancid, and mixing with the Air, will occaſion its being hurtful to the Plants; therefore the beſt Time is about Seven or Eight of the Clock in the Morning, according to the Seaſon of the Year; and when you find the Sun ſhines hot upon the Glaſſes, you ſhould raiſe them, to let the Steam paſs off, and in the Middle of the Day, in very hot Weather, the Glaſſes ſhould be ſhaded with Mats or Straw, which will prevent their ſcorching, and preſerve a gentle Moiſture in the Bed, which is abſolutely neceſſary for the Growth of Plants.

When your Fruit begins to appear, you will at the ſame time perceive a great Number of Male Flowers, (which the Gardeners call falſe Bloſſoms, and are eaſily diſtinguiſh'd from the fruitful ones, by their being produced upon a ſlender Pedicle; whereas the fruitful ones are always faſten'd to the Top of the young Fruit) theſe are by many Perſons carefully pick'd off, as ſuppoſing that they weaken the Plants, and are injurious to the young Fruit; but this is a very great Miſtake, (as I have more than once experienced) for they are abſolutely neceſſary to impregnate the Ovary of the fruitful Flower: which when done, the Fruit will ſoon ſwell and grow large; but if this be obſtructed, they ſeldom come to any thing, but on the contrary, change yellow, and fall off: therefore I would caution every one againſt the nice pruning of *Melons*, in which they are ſo liable to commit Miſtakes; whereas on the contrary, when they never do any thing more but only ſtop the firſt leading Shoots, to encourage their producing ſtrong Runners, there is no Danger of miſcarrying, if the Vines are but kept clear from Weeds, and not tumbled or bruiſed, but carefully attended with Water, *&c.* then the natural Growth of the Plants not being obſtructed, you need not fear Succeſs.

During the Growth of the *Melons* you ſhould conſtantly attend them with Water, being cautious not to give them too much; but when the Fruit is arriv'd to a conſiderable Bigneſs, you ſhould intirely forbear watering them, or at leaſt do it very ſparingly; for the Water which is then given them, does but contribute to the making them large and ill-taſted, which ſhould always be avoided; for a middle-ſized well-taſted Fruit is far preferable to the moſt monſtrous, watery, green, ill-taſted *Melon* that was ever produced.

When the Fruit begins to ripen, (which you may know by the changing its Colour, and emitting an Odour when cloſely ſmell'd to) you ſhould turn it every Day, that every Side of the *Melon* may be expoſed to the Sun, that it may be equally ripen'd on all Sides: and if you intend to eat it ſoon after it is gather'd, you ſhould let it remain upon the Vines until it changes pretty yellow, and the Stalks ſeem to ſeparate from the Fruit; then you ſhould cut it off in the Morning before the Sun is too hot, obſerving to preſerve two Inches of the Stalk to the Fruit, otherwiſe it will loſe of its Richneſs: But when the Fruit is to be ſent to any Diſtance, ſo that it will be two or three Days before it is eaten, then you muſt obſerve not to let it be too ripe before it be cut; for it will be little worth, after being kept two or three Days.

If the above-mention'd Directions be duly obſerved, you will not have Occaſion to pull off the Leaves from the Vines, to admit the Sun to the Fruit, as is often practiſed, tho' very abſurdly; for the Fruit will always thrive much better where it has a gentle Coverture of Leaves, than when it is too much expoſed to the Sun, which hardens the outer Skin, and prevents its kindly Growth, whereby it is render'd tough and ill-taſted.

But notwithſtanding I have adviſed the planting out the *Melon* Plants upon the Hills in the Middle of each Light, yet if any Perſon is very curious to have early Fruit, the beſt Method is to plant them in Baſkets, (in the Manner as was directed for *Cucumbers*, under which Head you will find proper Inſtructions how they are to be managed, until they are ridged out into the Frames for good, which ſhould not be done till the Flowers begin to appear;) after which the Management muſt be the ſame as hath been before inſerted, both as to Pruning, Watering, *&c.* therefore I ſhall forbear repeating either of thoſe Articles in this Place, but ſhall now proceed to the Method practiſed by the moſt ſkilful Gardeners, for the ſecond or general Crop of *Melons*, which are raiſed commonly under Bell or Hand-glaſſes.

The Seaſon for ſowing the Seed for this Crop, is (as I before mention'd) about the Beginning of *March*, and may be put into the Upper-ſide of the Hot-beds, where your early *Melons* or *Cucumbers* are planted; in which Place they will ſoon come up, and may then be taken up and tranſplanted into a new Hot-bed, and cover'd either with Hand-glaſſes or Frames, (according as you have Conveniency) obſerving to refreſh them with Water, as alſo to ſhade them, until they have taken Root; after which you muſt let them have a great Share of freſh Air when the Weather is good, that the Plants may grow ſhort and ſtrong; and obſerve to earth up their Stems, as they advance, with light Earth, which will greatly encourage the Plants.

About the Beginning of *April* the Plants will put out their rough Leaves; at which Time you ſhould be provided with a Quantity of new Dung, in proportion to the Number of Holes intended, (always allowing a good Load of Dung to five Holes, which is the common *Quantum*) which ſhould be caſt into a Heap for ſix or ſeven Days, mixing therewith a few Sea-coal Aſhes; and when the Dung is in a proper Temper for uſing, you muſt dig a Trench, the Length whereof ſhould be according to the Number of Glaſſes you intend in each Row, allowing them three Feet Diſtance, and in Width two Feet and an half: But the Depth muſt be proportion'd to the Moiſture or Dryneſs of the Soil; in a dry one it ſhould be ten Inches deep, but in a moiſt Soil two or three Inches will be enough; then you muſt wheel the Dung therein, obſerving to ſhake and work every Part of it equally, and to lay it of an equal Thickneſs, as alſo to make the Sides ſtrait: Then having laid the Dung even, you muſt mark out the Places intended for the Holes, at each of which you muſt lay a Baſket full of freſh light rich Earth, thruſting in a Stick about two Feet long into the Middle, which muſt remain for a Mark where the Hole is to be made; then cover the Dung all over, both Top and Sides, with the Earth that came out of the Trench, laying it exactly ſmooth and even, about three Inches thick, or ſomewhat more: Then put the Glaſſes on over each Stick, letting them remain cloſe down two Days, by which time the Dung will have warm'd the Earth ſufficiently to receive the Plants: You ſhould therefore draw out the Sticks, and with your Hand level the Top of the Hill, breaking the Clods, and laying it hollow like a Diſh, to retain the Water given to them; then take the Plants up carefully from the other Bed, and put two ſtrong ones into each Hole, obſerving to water and ſhade them until they have taken Root.

Thus having made one Ridge, you may continue to make as many more as you have Glaſſes for, allowing ſix Feet between each Ridge, for a Path to go between them; which, at the firſt making the Ridges, may ſeem a great deal; yet after the Vines have run, and the Sides of the Ridges made up, to ſupport them, there will not be above two Feet left for a Path, which is as little as can well be allow'd.

Your Plants having made new Roots, and put out a fourth Leaf, you ſhould nip off the Top of each, to force out Runners from the Bottom, (as was before directed for thoſe in Frames) and as the Weather increaſes warm, ſo you ſhould always raiſe up the Glaſſes on the South Side with Stones, in the Middle of the Day, to give them Air, which will cauſe them to be very ſtrong; and alſo give them a little Water twice a Week, if the Weather be good; but don't give them too much at each Time, leſt you thereby canker and rot their Roots.

About the Middle of *May*, or ſooner, (according as your Plants have thriven) their Runners will have grown ſo as to cruſh againſt the Glaſſes on every Side; therefore you ſhould place three Bricks under each Glaſs at right Angles, upon which the Glaſſes ſhould be ſet, ſo that there may be a Hollow under each of about two Inches, or leſs, which will be ſufficient to admit the Runners out; then you ſhould gently lead them from under the Glaſſes, putting each into its right Poſition, ſo that they may not croſs or intangle with each other; to prevent which, you ſhould have ſome ſmall forked Sticks, (ſuch as are commonly uſed in laying *Carnations*) with which you ſhould gently peg down each ſtrong Runner, which will prevent their being diſplaced by the Wind, or any other Accident. But you muſt obſerve, if the Nights prove cold, after they are let out from under the Glaſſes, to cover them with Mats; otherwiſe the Ends of the Shoots will ſuffer by the Cold, to the no ſmall Injury of the Plants: you muſt alſo obſerve to refreſh them with Water, (as before) but forbear all other pruning or handling them, for the Reaſons before laid down.

When the Vines have extended themſelves to the Sides of the Ridges, you ſhould dig up the Ground on each Side about two Feet wide, laying therein ſome old rotten Horſe-dung, covering it with the Earth, ſo as to raiſe it even with the Top of the Ridges, whereby they will be widen'd near four Feet; and ſo the Vines will have Room to run on each Side, without hanging down from the Ridges; and the old Dung which was laid on each Side will be of great Service to the Roots. After having made up the Ridges in this Manner, you muſt gently lay out the Shoots thereon, being careful that you do not bruiſe or break the Leaves with your Hands; and then ſet the Glaſſes on again over the Roots, where they may remain unremoved during the Continuance of the Plants: for after this, all the Water which is given to them muſt be gently ſprinkled all over the Plants; and it is no matter whether any of it falls cloſe to the Stems: But, on the contrary, the drier they are preſerved, the greater Vigour they will have; for the Roots, which are the chief Support of them, are at this Time at a much greater Diſtance from the Hole, and will receive the Benefit of the Water much better, when given all over the Top of the Ridges.

When your *Melons* begin to appear upon the Vines, if the Seaſon ſhould be very hot and dry, you ſhould pour down the Water in the Paths between the Ridges, which will ſoak in, and ſupply the Roots with Moiſture; and at that Seaſon, the Water which is given all over the Plants ſhould be but little, and given to them very gently, leſt by the Violence of the Water you injure the tender Fruit: But after they are grown as large as your Thumb, they will be almoſt out of Danger, tho' then it will be adviſeable to give them but gentle Refreſhings over the Vines; but this may be repeated two or three times a Week, according to the Heat of the Seaſon, obſerving always to do it in the Evening, that it may have Time to ſoak in before the Sun comes on to exhale the Moiſture. As to the pruning of them, I would (as I before ſaid) adviſe never to be *buſy* in that, ſince the more exact you are in that, the more likely you are to do hurt; therefore you need do no more than keep the Vines clear from Weeds, and train them in regular Order.

When the Fruit is about the Bigneſs of a Tennis-Ball, you ſhould place a thin Piece of Tile under each, to raiſe them from the Ground, otherwiſe they are very apt to rot, (eſpecially if the Seaſon ſhould prove moiſt) or, at leaſt to receive Damage on the Underſide; and when the *Melons* are full grown, you ſhould forbear watering them; and if the Weather be cold, you ſhould place Glaſſes over them, which will greatly accelerate their Ripening, and cauſe them to be better taſted: you ſhould alſo turn the Fruit two or three times as it is ripening, that every Part may be equally ripen'd; and in cutting them, you ſhould obſerve the Directions before laid down.

In ſaving the Seeds, you ſhould be careful to take them from ſuch Fruit as are well ripen'd, of a firm Fleſh, and well-taſted, ſuffering it to lie in the Pulp ſpread upon a Paper four or five Days before it be waſh'd out; then you muſt dry it, and put it up for Uſe, always obſerving to title each Sort, and add the Year it was ſaved.

The beſt Sorts for Frames, are the *Black Galloway*, and the *Small Portugal Melons*, which ripen early, and do not produce ſo ſtrong Vines as the larger Sorts, which require more Room than can be allow'd them in Frames.

There hath of late Years been a very great Variety of Melons, introduced into the Gardens of the Curious, which are much higher flavour'd, than moſt of the old Sorts; but they are not quite ſo hardy, nor do the Fruit of theſe new Sorts ever grow to ſo large Size as ſome of the old ones, which is the Reaſon of their not being more common. However, as they are much preferable for the Table, I ſhall juſt mention the Names of ſome of the principal Sorts, for the Satisfaction of the Curious.

1. The ZATTE MELON: This is a ſmall rough-coated Fruit, which ſeldom grows much larger than a Man's Fiſt, is very red within, and the Fleſh is very delicate.

2. The SUCADO MELON: This is larger than the former, of an oblong Shape, more wrought on the Outſide, is very red within, and the Fleſh is firm, and of a vinous Flavour.

3. The CANTALEUPT MELON: This is a longer Fruit than either of the former, is pretty much wrought on the Outſide, the Fleſh is not quite ſo red as of either of them, but is of a rich vinous Flavour.

4. The ROMANETTO MELON: This is a middle-ſized Fruit, of an oblong Shape; the outer Coat is greener than either of the former, and not very much wrought; the Fleſh is very red, and of a delicate Flavour.

Theſe Sorts are the beſt worth cultivating for private Families, who eſteem a Fruit for its delicate Flavour, more than for the Size: But thoſe who raiſe them to ſupply the Markets, muſt have regard to the Size of the Fruit, being paid for them according to their Magnitude. The Seeds of theſe Sorts are only to be procured from Perſons who are very careful to ſave them diſtinctly; for if they are purchaſed from the common Venders of Seeds, they are not much to be depended on.

Of late Years there has been a Method of raiſing the general Crop of Melons under oiled Paper, inſtead of Bell or Hand-Glaſſes; which has ſucceeded ſo well, as to be now very commonly practiſed in the Gardens near *London*. The Perſon who firſt practiſed this Method, was Mr. *John Howard* Gardener, at *St. Leonard's Hill* in *Windſor Foreſt*, who continued it for many Years with great Succeſs, and was not followed in it by any other Perſon, until his Son, who was Gardener to his Grace the *Duke of Chandos*, practiſed it at *Cannons*; and then it became more generally known, and has ſince been conſtantly practiſed by many Gardeners. But this Method being at preſent unknown to Perſons who reſide in the Country, I ſhall inſert it in this Place. The Manner of raiſing the Plants, as alſo of making the Ridges, being the ſame as for Hand-Glaſſes, I ſhall not repeat either, but proceed to give Directions for preparing the Papers. You muſt provide yourſelf with a Quantity of ſtrong Cap-paper, nine Sheets of which muſt be allowed to each Hole of Melons. Theſe nine Sheets of Paper muſt be joined together with Paſte (which when done will ſpread the Width of a common Mat which is uſed for Covering). When the Paſte is dry, the Paper ſhould be ſpread on a Board, or hung againſt a Wall, and with a Bruſh ſhould be rubbed over with Oil, which need be done but on one Side; for the Oil will ſink thro' the Paper, if it be only lightly bruſhed over; then the Papers ſhould hang out till they are dry, after which they may be uſed for covering your Melon-Plants. Theſe Papers ſhould be prepared, before you plant out your Plants into the Holes, that they may be ready to cover them, which may be performed in the following Manner; *viz.* After the Ridges are made, you muſt procure ſome ſmall Hoops, or ſlender Withies, which ſhould be thruſt into the Ground on each Side of the Ridge, and arched over in the ſame Manner as is practiſed for covering Flower-beds; then the Papers may be laid over the Hoops, *&c.* and faſtened down at each End with a Cord, or a few large Stones or Bricks laid upon their Ends, to prevent the Winds from blowing them off. Theſe Papers ſhould be kept cloſe over the Plants, while they are young, or in bad Weather; but when the Plants have obtained Strength, and the Weather is favourable, they ſhould be raiſed on one Side to admit Air to the Plants, and in ſoft Rains they ſhould be taken quite off, that the Plants may enjoy the Benefit thereof. Theſe Papers may continue over the Plants throughout the Seaſon, obſerving only to take them off in ſoft Rains, and admit Air under them in warm Weather to the Plants, as was before directed. The Plants will thrive much better under theſe than under Glaſſes; for the Rays of Light will be more equally admitted thro' the Paper when oiled, than thro' a Glaſs, which collects the Rays, and thereby occaſions too great a Heat in Summer under them, more than moſt Plants can endure. So that Plants under Glaſſes are ſubject to Danger, from the great Inequality of Heat; whereas thoſe under Papers enjoy a more equal Degree, and hereby the Plants are continued much longer in Vigour; as I have always obſerved thoſe under Papers in great Health, when thoſe under Glaſſes have been decayed, tho' they were in the ſame Situation, and under the ſame Management. The only Danger of theſe Plants miſcarrying is, when the Papers are kept too cloſe over them, which will cauſe the Plants to grow weak, and of a pale ſickly Complexion; whenever this is the Caſe, there cannot be much good Fruit expected from them.

Tho' I have directed the making of the Ridges after the ſame Manner as for Hand-Glaſſes, yet there are ſome Perſons who only dig Holes in the Ground at proper Diſtances, into each of which they put two Barrows-full of hot Dung, covering it over with the Earth taken out of the Holes, into which they plant their Melon-plants; then arch over each Hole with a few ſlender Wands, covering them with the Papers, and managing them as hath been directed; in which Method I have obſerved they have had a prodigious Crop of Melons, with a much leſs Expence than uſual.

N. B. Theſe oiled Papers will laſt one whole Seaſon very well; ſo that the Expence of Paper and Oil will amount to Three-pence Half-penny for each Hole.

Theſe Oil Papers have been uſed by ſeveral Perſons, to cover tender exotick Plants in Summer, with great Succeſs, as alſo to cover Beds of Cuttings of tender Plants, for which Purpoſe there is no other Covering ſo proper. They are alſo uſed to cover the Flowers of large Carnations, in order to ſcreen them from the violent Heat of the Sun, and to preſerve them dry, without which many of the largeſt Flowers would not blow to Advantage. The Method uſed by Mr. *Samuel Brewer* to cover his Flowers with oiled Paper, is, to make a Frame of Wire, juſt in the ſame Form as the Glaſs-covers, which are uſed for this Purpoſe, over which he paſtes the oiled Paper; which if carefully done, will laſt ſeveral Years, and are much preferable to Glaſſes.

MELOCACTUS, [ſo call'd of Μῆλον, a *Melon*, and Κάκτος, a *Thiſtle*, becauſe it reſembles a *Melon*: and it is alſo call'd *Echinomelocactus*, becauſe it reſembles a *Hedge-hog* by its Prickles.] Melon-Thiſtle.

The *Characters* are;

The whole Plant hath a ſingular Appearance, is very ſucculent, and hath many Angles, which are beſet with ſharp Thorns; the Flower conſiſts of one Leaf, is tubuloſe and Bell-ſhaped, divided into ſeveral Parts at the Top, and hath many Stamina or Threads; the Ovary becomes a ſoft fleſhy Fruit, containing many ſmall Seeds.

The *Species* are;

1. Melocactus *Indiæ Occidentalis. C. B. P.* The common or large Melon-Thiſtle, *commonly call'd* Turk-cap or Pope's-head in the *Weſt-Indies.*
2. Melocactus *Americana, minor. Boerh. Ind.* The leſſer Melon-Thiſtle, or ſmall Turk's-head.
3. Melocactus *Americanus major, ſpinis albis longiſſimis recurvis.* The greater *American* Melon-Thiſtle, with very long white crooked Spines.
4. Melocactus *Americanus major, ſtriis in ſpiram intortis, ſpinis brevibus aduncis.* Greater *American* Melon-Thiſtle, with ſpiral Ribs, and ſhort crooked Spines.
5. Melocactus *Americanus major, ſpinis tenuibus flaveſcentibus.* Greater Melon-Thiſtle, with ſlender yellowiſh Spines.
6. Melocactus *Mexicanus, ſpinis creberrimis corallinis latis & recurvis. Houſt.* Melon-Thiſtle of *Mexico*, with broad flat crooked Spines.

The two firſt Plants are Natives of the Rocks in the *Weſt-Indies*, where they are thruſt out from the Apertures thereof, and can receive but little Nouriſhment from the Soil; nor will they thrive when tranſplanted into another Situation, tho' it be in the ſame Degree of Heat, unleſs the Place be raiſed above the Level of the Ground with Stones and Rubbiſh.

The great Sort (which is very plenty in *Jamaica*, and the other Iſlands in the *Weſt-Indies*) is brought into *England* very often; but it rarely happens that they arrive here in perfect Health; for the People who bring them over, ſuppoſe they can't live without Moiſture, which they ſeldom fail to ſupply all the Plants they bring over with, whereby they are rotted and deſtroy'd; and altho' theſe Plants do not preſently ſhew the Damage they have ſuſtain'd in their Paſſage, yet they ſeldom continue long before they periſh: Therefore the beſt Method to bring them over, is to take them up intire from their Places of Growth, and pack them up in a large Box, with dry Hay or Straw, ſo that they may not wound each other in their Paſſage, obſerving to place them where neither Moiſture nor Vermin can come to them, in which Way they will arrive in perfect Health; but the Perſons who get them, ſhould never chuſe the oldeſt Plants, but rather ſuch as are young and thriving, which are the moſt likely to continue any Time with us.

But if they are brought over planted in Tubs, then the beſt Method is to fill the Tubs with Rubbiſh, and ſet the Plants therein, obſerving never to give them any Water during their Paſſage, nor ſuffer them to receive Wet, which will certainly damage them: and when they arrive in *England*, they ſhould immediately be taken out of the Tubs, and planted into Pots filled with Lime-Rubbiſh and Sea-ſand intermix'd, and the Pots plunged into a Hot-bed of Tanners-bark, to facilitate their taking Root: In which Bed they ſhould remain until the Beginning of *October*, when they muſt be removed into the Stove, obſerving to place them in the warmeſt Situation, and be very careful not to let them have the leaſt Moiſture during the Winter-ſeaſon, which will infallibly rot them. In the Spring of the Year, they may be removed out of the Stove into the Bark-bed again, at the ſame Seaſons when the *Anana's* are taken out, and ſhould be placed in ſuch a Frame where they will only require a little Air in very hot Weather, but ſhould not be water'd; for the Moiſture which ariſes from the Tanners-bark will be ſufficient for them.

This Plant is not very eaſy to increaſe in this Country, tho' I have ſeen ſome young ones that were produced from Seeds which ripen'd in *England:* Theſe Seeds were ſown upon a Pot of Lime-rubbiſh, and but gently cover'd with the ſame Mixture of Lime-rubbiſh and Sand, (as was before order'd for theſe Plants) and the Pots plunged into a Hot-bed of Tanners-bark, where the young ones began to appear in about ten Weeks after ſowing and by careful Management were preſerved: But theſe Plants being of very ſlow Growth, do not arrive to any Magnitude in leſs than four or five Years, which renders this Method very tedious, and as it is not a very ſure one, ſo it is ſeldom practiſed in *England.* I have alſo made Uſe of another Method, which has ſucceeded very well; *i. e.* when the Cap or Crown, which is produced on the Top of the Plant, has been injured, it occaſions the Plant to ſend out many Side-heads, ſeveral of which I have taken off, and planted in Pots fill'd with Lime-rubbiſh and Sea-ſand, plunging the Pots into a Hot-bed, and they have taken Root very well, and in one Year's Time have made very handſome Plants; but theſe Heads ſhould not be planted immediately after they are taken from the old ones; for the wounded Part will be apt to rot; therefore you ſhould lay them by in a warm Part of the Stove for about a Fortnight; in which Time the wounded Part will heal over, and they may then be planted without Danger: But you muſt obſerve to keep them very dry, otherwiſe they will rot in a ſhort Time.

The ſmaller Sort is not ſo common in *England*, which is occaſion'd by its being very rare in our *American* Settlements, this being originally brought from the *Spaniſh Weſt-Indies*, where are a great Number of other very ſtrange Sorts.

This is only propagated by Seed, which is produced in great Plenty every Year from old Plants. The Fruit of this Kind is not thruſt out from the Top of the Plant, as in the larger Sort, but is produced from the Hollows between the Protuberances of the Plant, and are preceded by a white Cottony Subſtance, which ſurrounds the Flowers. Theſe Fruit are nearly as large, and of the ſame Shape and Colour with thoſe of the large Sort, and are as full of Seeds.

Theſe Seeds muſt be ſown in the ſame Manner as the former, and the Plants preſerved both Winter and Summer in the ſame Situation, and ſhould have but little Moiſture in very hot Weather; tho' in Winter they muſt not have any Water given them; for at that Seaſon they are very apt to rot, if they receive any Moiſture.

Theſe Plants are preſerved with great Care by ſuch as are curious in Exoticks, they being of the moſt uncommon and wonderful Structure, greatly differing from any Thing in the Vegetable Kingdom, of *European* Growth, inſomuch that many Perſons at the firſt Sight of theſe Plants, have ſuppoſed them not natural Productions, but rather ſome artful Contrivance to amuſe People, until they have more maturely conſider'd their Parts.

The Fruit of both Sorts are eaten in the *Weſt-Indies*: They have a very grateful Acidity in their Taſte, which is extremely agreeable to the Inhabitants of thoſe warm Countries: But I don't know any farther Uſe of the Plants.

The third, fourth, and fifth Sorts I have received from the *Engliſh* Settlements in *America*, where I doubt not there are ſeveral other Varieties, if they were examined by Perſons ſkilful in Botany. Theſe are generally older before they put out their Caps on their Tops, than the common Sort; for I have had two of the Sorts five or ſix Years in *England*, which have increaſed in their Magnitude greatly ſince I received them; but neither of them has any Tendency to put out Caps, tho' ſome of the common Sort, not near ſo large, have produced large Caps, and have ripened their Fruit. So that I am in Doubt whether ſome of theſe Sorts ever produce Caps in the natural Places of their Growth; for they may produce their Fruit, either from the Sides of the Plant, as the ſmall *American* Sort doth, or round the Center of the Head, as I have ſeen ſome of them repreſented in Figures.

The ſixth Sort was brought from *Mexico*, by the late Dr. *William Houſtoun*; but being a long Time in the Paſſage, and the Plants receiving ſome Wet, they all of them were decayed before they arrived in *England*. This is one of the moſt ſtrange Plants of this Genus I ever ſaw; the Spines, which are produced very cloſely all over the Plant, are two Inches or more in Length, and near a Quarter of an Inch broad at their Baſe; are extremely ſtrong, and of a browniſh red Colour; theſe the Inhabitants of *Mexico* make uſe of to pick their Teeth, from whence they give the Name of *Viſnaga*, i. e. Tooth-pick, to theſe Plants.

As theſe Plants are eſteemed by the Curious, for their ſingular Structure being ſo very different from all the *European* Plants; ſo moſt People who have the Conveniency of Stoves to preſerve them, are extremely curious to obtain them from Abroad; but the Perſons who have the Care of bringing them, for want of Judgment, generally deſtroy them with Water, before they arrive in *England:* for altho' they often arrive in ſeeming Health, yet the Moiſture which they have imbibed in their Paſſage, will rot them in a little Time after they are planted. Therefore, whenever theſe Plants are brought over planted in Tubs, the beſt Way is to take them up as ſoon as they arrive, and ſet them upon the Flues in the Stove to dry; where (if they arrive early in the Summer) they may remain two Months before they are planted; but when they come late in the Year, they ſhould remain on the Flues all the Winter; and about the Beginning of *April*, they may be planted in *Lime-rubbiſh*, as is above directed; and theſe Plants will more certainly ſucceed, than thoſe which are planted ſoon after they arrive, as I have ſeveral Times experienced. Some of theſe Plants I have kept dry out of Earth, on the Flues or in ſome dry warm Part of the Stove, nine Months, and have then planted them, and they ſucceeded better than thoſe which were planted ſoon after I received them, tho' they were to Appearance not near ſo likely to live. So that if thoſe Gentlemen who bring over theſe Plants, would take them out of the Ground, and hang them up in a dry warm Part of the Ship, where they might not be bruiſed or eaten by Vermin; they will more certainly ſucceed, than thoſe Plants which are brought over in Tubs of Earth.

The ſmaller Melon Thiſtle, which was ſome Years ſince very rare in *England*, is now become pretty common in the Gardens of the Curious: for as they produce a great many Fruit annually, ſo they may be propagated in great Quantities by Seed; nay, if the Seeds are permitted to fall on the Earth, in the Pots where the old Plants are growing, the young Plants will come up in great Abundance, ſo that a Perſon may ſoon be ſtocked with them.

MELOCARDUUS. *Vide* Melocactus.

MELON. *Vide* Melo.

MELONGENA, Mad-Apple.

The *Characters* are;

The Flower conſiſts of one Leaf, ſhaped like a Wheel, and cut into many Segments: From the Flower-cup ariſes the Ovary, which becomes a fleſhy Fruit, full of Kidney-ſhaped Seeds.

The *Species* are;

1. MELONGENA *fructu oblongo violaceo. Tourn.* Mad-Apple, with an oblong Violet-colour'd Fruit.
2. MELONGENA *fructu oblongo albo. Tourn.* Mad-Apple, with an oblong white Fruit.
3. MELONGENA *ſpinoſa fructu rotundo croceo. Tourn.* Prickly Mad-Apple, with a round Saffron-colour'd Fruit.
4. MELONGENA *fructu rotundo, cum ſpinis violaceis. Tourn.* Mad-Apple, with a round Fruit, and Violet-coloured Prickles.

There are ſeveral other Varieties of this Plant, which differ in the Size, Form, or Colour of the Fruit, or in the Shape of their Leaves; but thoſe here méntion'd, are all that I have obſerv'd in the *Engliſh* Gardens.

Theſe Plants are greatly cultivated in the Gardens of *Italy*, *Spain*, and *Barbary*; in which Places the Inhabitants eat the Fruit of them boil'd with fat Fleſh, putting thereto ſome ſcraped Cheeſe, which they preſerve in Vinegar, Honey or Salt-pickle all Winter, to provoke a Venereal Appetite: But in Summer, when the Fruit is juſt ripe, they uſually gather them, and make them up into Puddings with ſeveral Sorts of Spices, and other Ingredients: Which Diſh the *Italians* are very fond of.

They are propagated by Seeds, which muſt be ſown upon a moderate Hot-bed in *March*; and when the Plants come up, they muſt be tranſplanted into another Hot-bed about four Inches aſunder, obſerving to water and ſhade them until they have taken Root: After which you muſt give them a great Share of Air when the Weather is warm, otherwiſe they will draw up very weak: They muſt alſo be frequently water'd, without which they will make but a very indifferent Progreſs: But when they are grown ſo ſtrong as to fill the Frame (which will be by the Middle of *May*) you muſt tranſplant them out into a rich Spot of Ground at two Feet Diſtance, obſerving to preſerve as much Earth to the Roots as poſſible when you take them up, otherwiſe they are ſubject to miſcarry. You muſt obſerve to water them plentifully until they have taken Root, after which they will require but very little Care more than to keep them clear from Weeds, and in very dry Weather to give them ſome Water.

About the Middle of *June*, the Fruit will appear; at which Time, if the Weather be very dry, you muſt often water them, which will cauſe the Fruit to grow very large, and increaſe their Number: Toward the latter End of *July* their Fruit will ripen, when you muſt preſerve the Seeds of each Kind ſeparate.

Theſe Plants are only preſerv'd as Curioſities in the *Engliſh* Gardens, the Fruit being never us'd in this Country, except by ſome *Italians* or *Spaniards*, who have been accuſtom'd to eat of them in their own Countries.

MELOPEPO; [this Plant is ſo call'd of μῆλον, an *Apple* or *Melon*, becauſe its Fruit comes near to the Size of a *Melon*; and *Pepo* a *Pompion*; becauſe it participates of the Nature of a *Pompion*] The Squaſh.

The *Characters* are;

It hath the whole Appearance of a Pompkin *or* Gourd; *from which this differs in its Fruit, which is roundiſh, fleſhy, ſtreaked, angular, and for the moſt Part divided into five Partitions, incloſing flat Seeds adhering to a ſpongy Placenta.*

The *Species* are;

1. MELOPEPO *compreſſus. C. B. P.* The common *or* flat Squaſh.
2. MELOPEPO *fructu maximo albo. Tourn.* The large white Squaſh, *commonly call'd*, The white flat Pumkin.
3. MELOPEPO *fructu citriformi. Tourn.* The Citron-ſhaped Squaſh.
4. MELOPEPO *verrucoſus. Tourn.* The warted Squaſh.
5. MELOPEPO *verrucoſus, fructu & ſemine albis. Tourn.* Warted Squaſh, with white Fruit and Seed.
6. MELOPEPO *flaveſcens, folio aſpero. Tourn.* Yellowiſh Squaſh, with a rough Leaf.

There are ſeveral other Varieties of this Plant in the *Weſt-Indies*, where they greatly abound, moſt of which are ſeminal Variations, and ſeldom continue long to produce the ſame Kinds from Seeds, at leaſt with us they never do continue three Years together the ſame, but do vary moſt extraordinarily; for the Seeds ſav'd from ſuch Plants which grew upright, and did not produce Runners (as the more ordinary Sorts) the ſucceeding Year, were as luxuriant as any of other Kinds, and the Fruit was of a different Shape from thoſe which the Seeds were taken from.

Theſe are all propagated by ſowing their Seeds in *March* upon a moderate Hot-bed; and when the Plants come up, they ſhould have a great Share of Air, otherwiſe they will draw up ſo weak, as to be good for little; You muſt alſo gently refreſh them with Water, as you ſhall find they require it. In *April* they muſt be tranſplanted out where they are deſigned to remain (which in *England* is moſt commonly upon old Dunghills, over which the Vines will ſpread, and produce a great Quantity of Fruit:) If you plant them in an open Spot of Ground, you ſhould dig Holes at about fourteen Feet ſquare, into each of which you ſhould lay a Barrow full of hot Dung, making a Hollow in the Middle to receive the Plants, which muſt be fill'd with good rich Earth; then cover the Dung all over, Top and Sides, with the Earth that came out of the Hole, placing a Glaſs over the Middle; in which Manner it ſhould remain until the Earth in the Holes begins to warm, (which is commonly in twenty-four Hours after making) when you muſt take them up out of the Seed-bed, and plant two of 'em into each Hole, obſerving to water and ſhade them until they have taken Root: After which you muſt let them have much free Air; and when they begin to ſend forth their Shoots, you muſt take off the Glaſſes and permit them to run, obſerving only to clear them from Weeds, and in very dry Weather to refreſh them now and then with a little Water.

In *July* theſe Plants will produce a great Quantity of Fruit, which ſome People are very fond of: Theſe they will gather while young, and boil them with Meat inſtead of Turnips: But notwithſtanding what ſome Perſons have advanc'd concerning the Goodneſs of this Fruit, yet, from ſeveral Trials which I have made, I could not bring my Palate to reliſh them, for they have a very great Flatulency in their Taſte, which is agreeable to very few Perſons: But in the *Weſt-Indies*, where there is a Scarcity of Garden Roots and Plants, theſe and many other Sorts are eſteemed Delicacies.

MELONRY, or MELON-GROUND, is an Apartment in the Kitchen-Garden for the Propagation of *Melons*.

This Spot of Ground ſhould be open to the South-Eaſt Sun, but ſhelter'd from the Weſt, North-Weſt, and North-Eaſt Winds, by Walls, Pales, or Hedges; it ſhould alſo be upon a dry Soil, for nothing is more injurious to theſe Plants than much Wet: And in the Spring it often proves very wet Weather; when if the Soil be very wet, there will be no making the Ridges until it is very late. You ſhould alſo contrive to place it as near to the Dung as poſſible, which will ſave a great deal of Labour in wheeling the Dung; and, if poſſible, you ſhould contrive to have a Pond of Water near it, which in very dry Weather will be very uſeful to water the *Melons*.

As to the Size of the Ground, that muſt be proportion'd to the Quantity of Ridges intended, which you may eaſily calculate by allowing eight Feet and a half for every Ridge, and the Holes placed at about three Feet aſunder; but it is the beſt Way to allow Room enough where you are not ſtraiten'd for it.

This Ground ſhould be incloſ'd with a Reed-Fence, and kept conſtantly lock'd up during the Time that the *Melons* are growing, for if they are expoſ'd to every Perſon that walks in the Garden (moſt of whom have a Curioſity to handle the Vines, and look after the Fruit) it will be of ill Conſequence, nothing being more injurious to theſe Plants than frequent tumbling or diſturbing their Leaves.

The common Practice in moſt Gentlemen's Gardens, is, to incloſe a Spot of Ground either with Walls or Pales, which they conſtantly appropriate to this Purpoſe: But this is by no means a good Method; for it rarely happens that theſe ſucceed well, longer than two Years in the ſame Place, unleſs the Soil be removed, and freſh brought in, which is very expenſive; therefore the beſt Way is, to have a ſufficient Parcel of Reeds made into Pannels, which may be annually moved from Place to Place, ſo that you need not continue your Ridges longer than one Year in the ſame Place. And if you have a Piece of Ground which is large enough to divide into four ſuch Places, the Fence may be every Year remov'd forward, till the whole has been occupy'd; after which you may return to the Spot where you began, which, by that Time, will be as good as freſh Earth: And hereby, without much Trouble, you may remove them every Year; for as one of the Sides will remain unremov'd every Time the Fence is carried forward, ſo the Labour will not be ſo great as if it were wholly remov'd to ſome Diſtance; and theſe Reed-Fences are much preferable to either Walls or Pales for this Purpoſe.

MENISPERMUM, Moon-ſeed.

The *Characters* are;

It hath a roſaceous Flower, conſiſting of ſeveral ſmall Leaves, which are placed round the Embryo in a circular Order. The Pointal, which is divided into three Parts at the Top, afterward becomes the Fruit or Berry, in which is included one flat Seed, which is, when ripe, hollowed like the Appearance of the Moon.

The *Species* are;

1. MENISPERMUM *Canadenſe ſcandens, hederaceo folio. Acad. Reg. Scien.* 1706. Climbing Canady Moon-ſeed, with an Ivy-leaf.
2. MENISPERMUM *Canadenſe ſcandens, umbilicato folio. Acad. Reg. Scien.* 1706. Climbing Canady Moon-ſeed, with an umbilicated Leaf.
3. MENISPERMUM *folio hederaceo. Hort. Elth.* Ivy-leaved Moon-ſeed.

The firſt and ſecond Sorts have been long Inhabitants of the *European* Gardens. Theſe produce flexible woody Shoots from their Roots, which twiſt round whatever Plants ſtand near them, and will grow to the Height of ten or twelve Feet, and produce their Flowers in Autumn, but they rarely perfect their Seed in this Country.

Theſe Plants are Natives of *Virginia*, and moſt of the Northern Parts of *America*, from whence they were many Years ſince brought into *Europe*, and were preſerved in the Green-houſes in Winter, as tender Plants; but of late Years they have been planted in the full Ground, where they endure the Winter's Cold extremely well without any Shelter. They may be eaſily propagated by the Suckers, which are produced in Plenty from their Roots: theſe ſhould be taken off with ſome Fibres adhering to them, in the Spring, before the Plants make new Shoots; and may be planted where they are deſigned to remain, obſerving to water them, if the Seaſon ſhould prove dry, until they have taken Root; after which Time they will require no farther Care, but to keep them clear from Weeds, and to ſupport them with Stakes, unleſs they are planted near Trees, round which they may faſten themſelves; for if they trail on the Ground, they will not thrive.

The third Sort was brought from *Carolina* by Mr. *Catesby*. This is a Plant of humbler Growth than either of the former, ſeldom riſing above four or five Feet high in this Country, and the Stems do not become woody. The Leaves are alſo much ſmaller than either of the other Sorts. This Plant will endure the Cold of ordinary Winters very well in the open Air, provided it is planted in a warm Soil, and a ſheltered Situation. It may be propagated by Suckers from the Root, as the two former Sorts, which are alſo produced in as great Plenty.

The two former Sorts were by Dr. *Plukenet* ranged amongſt the Ivies, from ſome Similitude in the outward Appearance of the Plants to the Ivy. So, from his Name, they were commonly called in the Gardens, Ivy with a bind-weed Leaf.

MENTHA, [Μίνθη, according to the Ancients, a *Goddeſs*, and alſo according to the Poets. The Ancients alſo gave it the Name of *Sweet-ſmelling*; and where this Word is found, this Plant is underſtood. *Mentha* is likewiſe ſo call'd of *Mens*, Lat. the *Mind*, becauſe this Plant ſtrengthens the Mind: It hath the ſame Smell and Taſte, and is much the ſame in all the Plants of this Genus] Mint.

The *Characters* are;

It is a verticillate Plant, with a labiated Flower conſiſting of one Leaf, whoſe Upper-lip is arched, and the Under-lip is divided into three Parts; but both of them are ſo cut, that the Flower ſeems to be divided into four Parts, the two Lips ſcarcely appearing; theſe Flowers are collected into thick Whorles in ſome Species; but in others they grow in a Spike; each Flower having four Seeds ſucceeding it, which are incloſ'd in the Flower-cup: To which may be added, It hath a creeping Root, and the whole Plant has a ſtrong aromatick or balſamick Scent.

The *Species* are;

1. MENTHA *anguſtifolia ſpicata. C. B. P.* Common Spik'd-mint, *uſually call'd* Spear-mint.
2. MENTHA *ſpicis brevioribus & habitioribus, foliis menthæ fuſcæ, ſapore fervido piperis. Raii Syn.* Pepper-mint.
3. MENTHA *ſylveſtris, folio longiore. C. B. P.* Long-leav'd Horſe-mint, *or* Mentaſtrum.
4. MENTHA *arvenſis verticillata hirſuta. J. B.* Water-mint with whorled Coronets, *commonly call'd* Water Calamint.
5. MENTHA *aquatica, ſeu Siſymbrium. J. B.* Water-mint.
6. MENTHA *Siſymbrium dicta, hirſuta, glomerulis ac foliis minoribus ac rotundioribus. Raii Syn.* Orange-mint.
7. MENTHA *ſpicata, folio variegato. C. B. P.* Spear-mint, with a variegated Leaf.
8. MENTHA *rotundifolia, paluſtris ſeu aquatica major, folio variegato. Tourn.* The Great Round-leaf'd Water-mint, with a variegated Leaf.
9. MENTHA *anguſtifolia ſpicata glabra, folio rugoſiore, odore graviore. Raii Syn.* Spear-mint, with a rugged Leaf, and ſtrong Scent.
10. MENTHA *Chalepenſis anguſtifolia, raro florens. Boerh. Ind.* Narrow-leav'd Aleppo-mint, which rarely flowers.

There are ſeveral other Sorts of *Mint*, which are preſerv'd in ſome curious Botanick Gardens, many of which are Natives of *England*; but as they are not cultivated for Uſe, ſo I ſhall omit them in this Place, thoſe above-mention'd being the Sorts which are commonly propagated for Kitchen or Medicinal Uſes.

The firſt Sort is the moſt commonly cultivated in the *Engliſh* Gardens, both for the Uſe of the Kitchen and Medicine; but the ſecond Sort is by ſome greatly eſteem'd for its Heat, to make a ſimple Water: This, at preſent, is not very common in the Gardens, but has been found growing wild in ſeveral Parts of *England*. The third Sort is alſo us'd in Medicine, but is rarely cultivated in Gardens, being found in great Plenty in ſeveral Places near *London*. The fourth and fifth Sorts are very common by the Sides of Ponds, and on moiſt Soils, in divers Parts of *England*, and are rarely cultivated in Gardens: Theſe are both us'd in Medicine, but the Markets are ſupply'd with them from the Fields. The ſeventh and eighth Sorts are preſerv'd in Gardens, for the Beauty of their variegated Leaves: As are the ninth and tenth Sorts, for their Oddneſs; the one having curl'd Leaves, and the other being very white, but ſeldom produces Flowers in *England*.

All the Sorts of *Mint* are eaſily propagated by parting the Roots in the Spring, or by planting Cuttings during any of the Summer Months; but ſhould have a moiſt Soil: And after planting, if the Seaſon ſhould prove dry, they muſt be often water'd, until they have taken Root; after which, they will require no farther Care but only to keep them clear from Weeds: They ſhould be planted in Beds about four Feet wide, allowing a Path two Feet wide, to go between the Beds to water, weed, and cut the Plants. The Diſtance they ſhoul be ſet is about four or five Inches, or more, becauſe they ſpread very much at their Roots; for which Reaſon the Bed ſhould not ſtand longer than three Years before you plant freſh for by that Time the Roots will be matted ſo cloſely, as t rot and decay each other, if permitted to ſtand longer. Ther are ſome People who are very fond of *Mint-Sallet* in Winte and Spring; in order to obtain which, they take up the Roo before *Chriſtmas*, and plant them upon a moderate Hot-be pretty cloſe, covering them with fine Earth about an Inc thick, and cover the Bed either with Mats, or Frames of Glaſs in theſe Beds the *Mint* will come up in a Month's Time, an be ſoon fit to cut for that Purpoſe.

Whe

When the Herb is cut for Medicinal Uſe, it ſhould be done in a very dry Seaſon, juſt when it is in Flower; for if it ſtand longer, it will not be near ſo handſome, nor ſo well-taſted; and if it be cut when it is wet, it will change black, and be little worth: This ſhould be hung up to dry in a ſhady Place, where it may remain until it be uſed.

If the Soil be good in which theſe Plants are to be ſet, they will afford three Crops every Spring: But after *July* they ſeldom prove good; therefore what Shoots are produc'd after that Time, ſhould be permitted to remain till *Michaelmas*, when you muſt cut them down cloſe; and after having clear'd the Beds from Weeds, you ſhould ſpread a little fine rich Earth all over them, which will greatly encourage the Roots againſt the ſucceeding Spring.

MENTHA CATARIA. *Vide* Cataria.

MENTZELIA.

The *Characters* are;

It hath roſe-ſhaped Flower, conſiſting of ſeveral Leaves, which are placed in a circular Order, and reſt on the Flower-cup, which afterwards becomes a membranaceous tubulous Fruit, containing many ſmall Seeds.

We know but one *Species* of this Plant at preſent; *(viz.)*

MENTZELIA *foliis & fructibus aſperis. Plum. Nov. Gen.* Mentzelia with rough Leaves and Fruit.

The Name was given to this Plant by Father *Plumier*, who diſcovered it in the *French* Settlements in *America*, in Honour to Dr. *Mentzelius*, who was Phyſician to the Elector of *Brandenburgh*, and who publiſhed an Index of Plants, in *Latin, Greek* and *High Dutch*.

This Plant grows plentifully in the Iſland of *Jamaica*, from whence the Seeds were ſent to *England* by the late Dr. *William Houſtoun*, which have ſucceeded in the Phyſic-Garden at *Chelſea*.

It is an annual Plant, which periſhes ſoon after the Seeds are ripe; ſo muſt be ſown on a Hot-bed early in the Spring, that the Plants may be brought forward early in the Seaſon, otherwiſe they will not produce ripe Seed in this Country. When the Plants are come up about an Inch high, they ſhould be each tranſplanted into a ſeparate Half-penny-pot, filled with light rich Earth, and plunged into a Hot-bed of Tanners-bark, being careful to ſhade them from the Sun, until they have taken new Root; after which Time they muſt be conſtantly watered every other Day, in warm Weather, and ſhould have freſh Air every Day admitted to them, in proportion to the Warmth of the Seaſon, and the Heat of the Bed in which they are plunged. In about ſix Weeks or two Months after tranſplanting, if the Plants have made a good Progreſs, they will have filled the Pots with their Roots; when they ſhould be ſhifted into larger Pots, which muſt be filled with light rich Earth, and then plunged into the Bark-bed in the Stove, that they may have Room to grow in Height, obſerving, as before, to water them duly, as alſo to admit freſh Air to them every Day in warm Weather; with which Management the Plants will riſe to the Height of three Feet, and will produce ripe Seeds the latter End of *Auguſt*, or the Beginning of *September*. Theſe Plants are cloſely beſet all over with ſmall crooked Spines, by which they will faſten themſelves to whatever touches them, ſo ſtrongly, that by a Perſon's going near them, they will ſtick to the Cloaths, and the Branches of the Plant will ſeparate and adhere to the Cloaths in like Manner as the Seeds of *Clivers* or *Gooſegraſs*.

MENYANTHES, *is* Trifolium Paluſtre, *or* Bog-bean.

This Plant is common upon boggy Places in divers Parts of *England*; but is never cultivated in Gardens, for which Reaſon I ſhall not trouble the Reader with any farther Account of it.

MERCURIALIS: [This Plant takes its Name from *Mercury*, becauſe the Ancients had a Notion, that the God *Mercury* brought this Plant into Uſe] Mercury.

The *Characters* are;

The Leaves are crenated, and grow by Pairs oppoſite; the Cup of the Flower conſiſts of one Leaf, which expands, and is cut into three Segments; theſe are Male and Female in different Plants; the Flowers of the Male grow in long Spikes, and conſiſt of many Stamina *and* Apices, *which are loaded with* Farina; *the Ovary of the Female Plant becomes a teſticulated Fruit, having a ſingle round Seed in each Cell.*

The *Species* are;

1. MERCURIALIS *teſticulata, ſive mas Dioſcoridis & Plinii. C. B. P.* The teſticulated Mercury, *vulgarly call'd*, The Male French Mercury.
2. MERCURIALIS *ſpicata, ſive fœmina Dioſcoridis & Plinii. C. B. P.* The ſpiked French Mercury.
3. MERCURIALIS *montana teſticulata. C. B. P.* Teſticulated Mountain Mercury, *commonly call'd* Dogs Mercury.
4. MERCURIALIS *montana ſpicata. C. B. P.* Spiked Mountain, *or* Dogs Mercury.
5. MERCURIALIS *fruticoſa incana mas. Boerh. Ind.* Hoary Shrubby Male Mercury.
6. MERCULIALIS *fruticoſa incana teſticulata. Tourn.* Shrubby hoary teſticulated Mercury.

The two firſt Sorts are annual Plants, which grow wild in divers Parts of *England*, and are rarely propagated in Gardens: The Seeds thereof being ſown, produce the two Sorts promiſcuouſly, and are both gather'd indifferently for Medicinal Uſe. Theſe Seeds ſhould be ſown as ſoon as they are ripe by thoſe who would cultivate it: They will grow upon any Soil or Situation.

The third and fourth Sorts grow wild in ſhady Lanes in divers Parts of *England*, where they ſpread greatly at the Roots: Theſe are never us'd in Medicine.

The fifth and ſixth Sorts are not Natives of this Country, but are preſerv'd in curious Botanick Gardens for Variety: Theſe may be propagated by ſowing the Seeds ſoon after they are ripe in a Bed of freſh Earth, where, if the Seeds are good, the Plants will come up the ſucceeding Spring, and endure the Cold of our ordinary Winters very well: But if the Plants from which the Seeds are taken, have not had ſome of the Male Plants, growing amongſt them, the Seeds will not grow, as I have ſeveral times experienc'd.

MESPILUS; [Μέσπιλος] The Medlar.

The *Characters* are;

The Leaves are either whole, and ſhap'd like thoſe of the Laurel, *as in the manur'd Sorts, or laciniated, as in the wild Sorts; the Flower conſiſts of five Leaves, which expand in Form of a* Roſe; *the Fruit is umbilicated, and are not eatable till they decay, and have for the moſt part five hard Seeds in each.*

The *Species* are;

1. MESPILUS *Germanica, folio laurino non ſerrato, ſive Meſpilus ſylveſtris. C. B. P.* The Common Medlar, *commonly call'd*, The Nottingham Medlar.
2. MESPILUS *folio laurino, major. C. B. P.* The large Dutch Medlar.
3. MESPILUS *apii folio, ſylveſtris ſpinoſa, ſive oxyacantha. C. B. P.* The common Hawthorn.
4. MESPILUS *ſpinoſa, ſive oxyacantha, flore pleno. Tourn.* The Double-flowering Hawthorn.
5. MESPILUS *apii folio laciniato. C. B. P.* The Azarola *or* Neapolitan Medlar.
6. MESPILUS *ſpinoſa, pyri folio. H. L.* The Pyracantha *or* Evergreen Thorn.
7. MESPILUS *ſeu ſpina acuta, biflora Britannica. Park. Theat.* The Glaſtenbury Thorn.
8. MESPILUS *ſpinoſa, ſive oxyacantha Virginiana. H. L.* The Cockſpur or *Virginian* Hawthorn.
9. MESPILUS *aculeata pyrifolia denticulata ſplendens, fructu inſigni rutilo Virginienſis. Pluk. Phyt.* The Virginian Medlar, with ſhining Leaves, and very red Fruit, *commonly call'd* The Virginian Azarol with red Fruit.
10. MESPILUS *Virginiana, apii folio, vulgari ſimilis major, grandioribus ſpinis. Pluk. Phyt.* Virginian Hawthorn, with long ſtrong Thorns.
11. MESPILUS *prunifolia Virginiana non ſpinoſa, fructu nigricante. Pluk. Phyt.* Virginian Hawthorn, with a Plum-leaf and black Fruit.
12. MESPILUS *folio ſubrotundo, fructu rubro. Tourn.* The Dwarf Medlar, with red Fruit.
13. MESPILUS, *folio rotundiore, fructu nigro ſubdulci. Tourn.* Dwarf Medlar, with black Fruit.
14. MESPILUS *apii folio, ſylveſtris ſpinoſa, ſive oxyacantha, fructu albo. Cat. Plant. Hort.* The common Hawthorn, with white Fruit.
15. MESPILUS *Americana non ſpinoſa, fructu luteo.* The American Haw, with yellow Fruit.

The firſt of theſe *Medlars* was formerly more common in the Gardens and Nurſeries than at preſent, for ſince the *Dutch Medlar* has been introduc'd, it hath obtain'd the Preference, the Fruit of this being much larger and better flavour'd than the old one, which hath occaſion'd their being cultivated in greater Plenty.

Both theſe Sorts may be propagated by budding or grafting 'em upon the *Hawthorn*, or the *Pear-ſtock*, upon either of which they will take very well ; and may be afterwards tranſplanted into the Fruit-Garden, either in Standards or train'd againſt an Eſpalier, in both which Methods they will ſucceed very well ; but if the larger Sort be train'd on an Eſpalier, the Fruit will be much larger : But you muſt be careful in pruning, not to ſhorten their bearing Branches, for the Fruit being, for the moſt part, produc'd at the Extremity thereof ; if they are ſhorten'd, it will be cut away.

Theſe Plants will grow upon almoſt any Soil ; but the Fruit will be much larger upon a ſtrong Soil, rather moiſt than dry ; though upon a middling Soil they are generally beſt flavour'd.

Theſe Fruits are permitted to remain upon the Trees till *October*, when they will begin to fall ; at which time they muſt be gather'd, when dry, and laid by in a dry Place, until they become ſoft, and begin to decay, which is commonly about a Month after they are gather'd ; when they will be fit to be eaten ; before which they are ſo very harſh, that it is almoſt impoſſible to eat them.

The third Sort is ſo very common in *England*, that it would be to little Purpoſe to ſpend much Time in treating of it, ſince the great Uſe to which it is apply'd in *England*, is to make Fences, the manner of doing which is already deſcribed under the Article of *Fences* and *Hedges* ; but I would only mention in this Place, that there are two or three Varieties of this Plant, commonly obſerved in the Hedges near *London*, which differ in the Size of their Leaves and Fruit ; but that Sort which produces the ſmalleſt Leaves is the beſt worth cultivating for Hedges, becauſe their Branches always grow cloſe together, ſo that the Hedge will clip much cloſer, and appear more beautiful : for it is a common Obſervation, That the Branches of all Sorts of Trees grow in a proportionable Diſtance to the Size of their Leaves.

The fourth Sort is a Variety of the third, from which it differs in having fair double Flowers. This is propagated by being budded or grafted upon the common Sort, and may be train'd up with regular Stems to the Height of twelve or fourteen Feet, and when planted in Wilderneſſes or other Plantations of Trees, being intermix'd with other flowering Trees of the ſame Growth, makes a very fine Appearance, during the Seaſon of its Flowering, which is commonly moſt part of *May* ; the Flowers being produced in large Cluſters, as in the common Sort, but are very double : This Tree is pretty common in the Nurſeries near *London*.

The *Azarola* or *Neapolitan Medlar*, has been introduced from *Italy*, where the Fruit is greatly eſteemed. This is alſo propagated by budding or grafting it upon Stocks of the common *Hawthorn*, and ſhould be tranſplanted into a moiſt Soil and a warm Situation, where it will produce great Quantities of Fruit annually in *England*, which are ſhap'd like thoſe of the common *Hawthorn*, but much larger, and muſt be preſerv'd till they begin to decay before they are eaten, as the common *Medlar*.

I have obſerv'd theſe Trees in many Places planted againſt warm Walls, as ſuppoſing them too tender to produce Fruit in this Climate, without ſuch Aſſiſtance ; which is a very great Miſtake, for I have ſeen much more Fruit upon Standard-Trees than were upon thoſe againſt Walls, and they ripen'd well and were better taſted.

The *Pyracantha* or *Evergreen Thorn*, was formerly in greater Eſteem than at preſent ; it is commonly planted againſt Walls or Buildings, where it affords an agreeable Proſpect in Winter, (eſpecially if it has Plenty of Fruit) the Fruit being at that Seaſon of a beautiful red Colour, and are commonly produced in very large Cluſters, which, together with its evergreen Leaves, renders it worthy of a Place in every good Garden. But in order to have Fruit upon every Part of the Tree, in which its greateſt Beauty conſiſts, there ſhould always be a Succeſſion of young Branches train'd in ; for the Fruit is always produced upon the ſecond and third Years Wood ; and all thoſe Branches which are older, never produce any : for want of rightly obſerving this Method, moſt of the Trees of this Kind ſeldom have any Fruit but toward their extreme Parts ; which is one Reaſon theſe Trees have been ſo much neglected of late Years.

The Branches of this Tree are very flexible, ſo that it cannot be train'd up to a Standard, but muſt always have the Aſſiſtance of a Wall, or ſome other Building, to ſupport it. It is very hardy, and will grow in almoſt any Soil or Situation ; but it agrees beſt with a dry Soil, in which it will always produce a greater quantity of Fruit.

This may be propagated by laying down the tender Shoots, which are commonly two Years before they will be rooted enough to tranſplant ; (but notwithſtanding this, it is a more expeditious Method than to raiſe them from Seeds, which rarely come up until the ſecond Year, and are but of ſlow Growth the two ſucceeding Years) then they may be either planted where they are to remain, or into a Nurſery for two or three Years, where you may train them, according to the Places where they are deſigned to be planted. It is commonly three Years after they are planted out, before they begin to produce Fruit.

The *Glaſtenbury Thorn* is preſerved in many Gardens as a Curioſity : this often produces ſome Bunches of Flowers in Winter, and afterwards flowers again at the Seaſon with the common Sort ; but doth in no other reſpect differ from the common *Hawthorn* : the fabulous Story of its budding on *Chriſtmas-day* in the Morning, flowering at Noon, and decaying at Night, is now with good Reaſon disbelieved ; for altho' it may ſometimes happen, that there may be ſome Bunches of Flowers open on that Day, yet for the moſt part it is later in the Year before they appear ; but this in a great meaſure depends on the mildneſs of the Seaſon. This Sort may be propagated by budding or grafting it upon the common *Hawthorn*, and ſhould be planted in a warm Situation, which will greatly promote the Flowering in the Winter ; for if they are too much expoſed to cold Winds, the Flower-buds will decay without opening, tho' in other reſpects the Plant is equally as hardy as the common Sort, and may be treated in the ſame Manner.

The *Cockſpur Hawthorn* is of larger Growth than any of the former, and is very hardy : this may be propagated by ſowing the Seeds, in the ſame Manner as the common *Hawthorn*, and they commonly abide in the Ground till the ſecond Year, as they do ; therefore the moſt expeditious Way to increaſe this Plant is to bud or graft it upon the common *Hawthorn* ; tho' I muſt confeſs, that the Trees thus propagated will not arrive to the Magnitude as thoſe generally do which are propagated from Seeds, but will produce Fruit much ſooner ; but where a Perſon intends to have them in Perfection, they ſhould always be propagated from Seeds. This Sort will grow to the Height of eighteen or twenty Feet, and may be train'd up with regular Stems and Heads, and when planted amongſt other Trees of the ſame Growth, they make an agreeable Variety ; for in the Spring, when they are in Bloſſom, they are very pleaſing, the Flowers being very large, and are produced in great Bunches at the Extremity of their Branches ; and in Autumn, when the Fruit is ripe, which is very large, and grows in great Cluſters, they have a beautiful Appearance, and are eſteem'd very good Feed for Deer.

The ninth, tenth, and eleventh Sorts were brought from *Virginia* ſeveral Years ſince, and are preſerved as Curioſities, by ſuch Perſons as are Lovers of Trees. Theſe may be propagated from Seeds, as the other Sorts, or by budding or grafting them upon the common *Hawthorn* ; and may afterwards be tranſplanted into Wilderneſs Quarters amongſt other Trees of the ſame Growth, where they will afford an agreeable Variety.

The ninth Sort will grow larger than the other two, and if raiſed from Seeds, will equal the *Cockſpur Hawthorn* ; and the Flowers and Fruit are full as large as thoſe ; ſo that it is very proper to be intermix'd therewith.

The tenth and eleventh Sorts commonly grow to the Size of our common *Hawthorn*, with which they may be intermix'd, for Variety, in Wilderneſs Plantations. The Fruit of theſe two Kinds are hardly ſo large as thoſe of the common *Hawthorn* ; but whether any of theſe Fruits are eatable, I don't at preſent know ; tho' I believe they are much the ſame as the common Sort.

The fourteenth Sort is a Variety of the common *Hawthorn*, which was obſerved ſome Years ſince in *Hertfordſhire* ; but whether the Seeds of this Kind will produce the ſame again, is what I can't at preſent determine : however, it may be propagated by budding or grafting it upon the common *Hawthorn*, which is the only ſure Method to preſerve the Variety ; tho' there is nothing more in it, than that it is uncommon.

The fifteenth Sort has been lately introduced among us from *America* : this is different from the other Sorts in the Shape of the Leaves, and hath no Thorns upon the Branches ; but whether the Fruit will continue of the ſame Colour as the Original, can't as yet be determined ; ſince there are no Plants in *England* large enough to produce Fruit, that I know of. This may be propagated by budding or grafting it upon the common *Hawthorn*, and is worthy of a Place in all curious Collections of Trees.

The twelfth and thirteenth Sorts are of humbler Growth, ſeldom riſing above five or ſix Feet high, and are proper to intermix with Shrubs of the ſame Growth, where, by the Variety of their woolly Leaves, together with their Flowers and Fruit, in their Seaſons, they add greatly to the Variety of ſuch Plantations: they may be eaſily propagated by laying down their tender Branches, which, in one Year, will be rooted ſufficiently to tranſplant; when they may be placed where they are to remain, or planted into a Nurſery, and train'd up to regular Heads; by which Method they will be leſs liable to miſcarry, than if they were placed to remain in the Wilderneſs immediately.

The twelfth Sort produces great Quantities of Suckers from the Roots, which may be taken off in the Spring, and tranſplanted into a Nurſery two or three Years, until they have acquired Strength enough to tranſplant for good where they are to remain; by which Method they may be greatly increaſed: but the Plants thus raiſed will be more ſubject to produce a great number of Suckers from their Roots, which, if not yearly taken off, will grow up into a Confuſion, and ſtarve the old ones.

They produce their Flowers in *April* and *May*, and their Fruits are commonly ripe in *Auguſt*; but theſe are of no Uſe, except to propagate the Plants; which being a tedious Method, and the Layers taking Root ſo freely, renders it not worth practiſing; tho' it may happen that ſome Varieties may be obtain'd this Way, as is often found in many other Trees and Shrubs.

METHONICA, the Superb Lily; *vulgo.*

The *Characters* are;

It hath a fleſhy Root in Form of a ſtrait Ruler, which is venomous: The Stalk is climbing: The Leaves grow alternately, and ſhaped like thoſe of the Lily, *but have a Claſper at the End: The Flower is naked, conſiſting of ſix Leaves, which are elegantly ſinuated, feather'd, and reflex'd back, with ſix* Stamina, *(or Threads); in the Center of which is the Ovary, which becomes an oval Fruit, divided into three Cells, containing ſeveral round Seeds.*

There is but one *Species* of this Plant, at preſent known which is;

METHONICA *Malabarorum. H. L. Malabar* Methonica, or the Superb Lily of *Ceylon*.

This beautiful Plant is propagated by parting the Roots in *Auguſt* (when the green Leaves are decay'd); which ſhould be planted into Pots fill'd with light ſandy Earth, and may be expoſed to the open Air for about a Fortnight or three Weeks after, placing the Pots where they may have the Morning Sun till Eleven o' Clock; and if the Seaſon ſhould prove very dry, you muſt now and then gently refreſh them with Water; but you muſt avoid giving them too much, (eſpecially while the Roots are unactive) which will rot them in a ſhort Time.

Toward the End of *Auguſt* or the Beginning of *September*, you muſt remove the Pots into the Stove, placing them where they may have free Air, but ſo as to have a warm Situation; obſerving, as was before directed, to refreſh them gently with Water, but not to give them much until they appear above Ground, which is commonly in *November*, provided they have Warmth enough, otherwiſe they will not come up till after *Chriſtmas*: When the Leaves begin to appear above Ground, you muſt increaſe the Quantity of Water before given them, and place a Stick down by the Root, to which the Stem ſhould be faſten'd, to ſupport it, otherwiſe it will trail upon the Ground: You ſhould alſo obſerve to place the Pots ſo that they may not ſtand too near any large growing Plants, which may hang over them, whereby theſe Plants will be drawn up, which will prevent their flowering; but they muſt, at this Seaſon, be kept pretty warm, in order to encourage them to flower. The Heat with which they thrive beſt, is about ten Degrees above temperate, (as mark'd on Mr. *Fowler's Botanical Thermometers*) but you muſt never let them have a leſs than temperate Heat, leſt the Roots ſhould periſh.

The Off-ſets taken from the old Roots are commonly two or three Years before they flower; during which Time they ſhould not be tranſplanted, but the Earth in the upper Part of the Pots ſhould be taken out, and freſh put in every Year, to encourage the Roots; being very careful in doing this not to injure or diſturb the ſame. In *July* and *Auguſt* the Pots may be expoſed to the open Air, if the Seaſon be warm; but all the other Part of the Year they muſt be continued in the Stove.

MEUM, [of Μεῖον, *leſs*, becauſe the Leaves of this Plant are very ſmall] Spignel.

The *Characters* are;

It is an umbelliferous Plant, with very narrow Leaves: The Seeds are large, oblong, and ſtriated: To which may be added, it hath a perennial Root.

This Plant is propagated in the *Phyſick-Gardens*, for Medicinal Uſe; but is very ſeldom found in other Gardens. It may be propagated by Seeds, which ſhould be ſown in Autumn, ſoon after they are ripe; and in the Spring the Plants will appear, when they ſhould be carefully clear'd from Weeds; and in very dry Weather muſt be refreſh'd with Water. In this Place the Plants may remain until the Autumn following, when they may be tranſplanted into a ſhady Border, about a Foot aſunder, where they may remain for Uſe. They may alſo be propagated by parting their Roots in Autumn, which is the moſt expeditious Method.

MEZEREON. *Vide* Thymelea.

MICROSCOPE, a Dioptrical Inſtrument, by means of which, very minute or ſmall Objects are repreſented very large, and capable of being view'd very diſtinctly, according to the Laws of Refraction.

This Inſtrument may be of ſingular Uſe to a curious Inquirer into the Operation of Vegetative Nature, by viewing nicely the ſeveral minute Veſſels and Parts of Vegetables, in order to diſcover their various Uſes, and how the Buſineſs of Vegetation is carried on.

MILDEW, is a Diſeaſe that happens to Plants, and is cauſed by a dewy Moiſture which falls on them, and continuing, for want of the Sun's Heat, to draw it up, by its Acrimony corrodes, gnaws, and ſpoils the inmoſt Subſtance of the Plant, and hinders the Circulation of the nutritive Sap, upon which the Leaves begin to fade, and the Bloſſoms and Fruit are much prejudiced. Or,

Mildew is rather a concrete Subſtance, which exſudes thro' the Pores of the Leaves.

What the Gardeners commonly call *Mildew*, is an Inſect, which is frequently found in great Plenty, preying upon this Exſudation.

Others ſay, That *Mildew* is a thick clammy Vapour, exhaled in the Spring and Summer from Plants, Bloſſoms, and even the Earth itſelf, in cloſe ſtill Weather, where there is neither Sun enough to draw it upwards to any conſiderable Height, nor Wind of Force ſtrong enough to diſperſe it; and that, hanging in the lower Regions, when the Cold of the Evening comes on, it condenſes and falls on Plants, and with its thick clammy Subſtance ſtops the Pores, and by that means prevents Perſpiration, and hinders the Sap from aſcending to nouriſh the Flowers, Shoots, *&c.*

Others ſay, That *Mildew* is a corroſive or nipping *Dew*, proceeding from the Vapours that are exhaled by the Earth, which being drawn up, and falling down again on the tender opening Buds, infects them by its Acrimony, and hinders the Circulation of the nutritious Sap in the proper Veſſels; upon which the Leaves begin to fade, and the Bloſſoms and Fruit receive a very great Prejudice.

Some make this Obſervation, That the Places moſt liable to *Mildew* are incloſed Grounds and Vallies, and thoſe that lie tending to the Eaſt; and the Reaſons that they give why thoſe Grounds which lie from the Horizon to the Eaſt are moſt ſubject to *Mildew* and *Blaſtings*, may be by the Sun's attracting thoſe Vapours towards it, after the Manner that a great Fire in a Room draws the Air to it: So the Sun having ſet theſe in Motion, and not having Strength enough to draw them into the middle Region, to form them into a Cloud, he does yet draw them till he is below our Horizon, and then theſe *Dews* tend to the Earth, from whence they were exhaled, and in Motion to the Weſt, do, as it were, fall upon that Ground which lies Eaſtward, at right Angles, and therefore is moſt offenſive to them.

But I take the true Cauſe of the *Mildew* appearing moſt upon Plants which are expoſed to the Eaſt, to proceed from a dry Temperature in the Air when the Wind blows from that Point, which ſtops the Pores of Plants, and prevents their Perſpiration, whereby the Juices of the Plants are concreted upon the Surface of their Leaves, which being of a ſweetiſh Nature, Inſects are inticed thereto, where finding proper Nutriment, they depoſite their Eggs, and multiply ſo faſt as to cover the whole Surfaces of Plants, and by their corroding the Veſſels, prevent the Motions of their Sap; and it is very probable, that the Excrements of theſe Inſects may enter the Veſſels of Plants, and by mixing with their Juices may ſpread the Infection all over them: For it is obſervable, that whenever a Tree has been greatly affected by this *Mildew*, it ſeldom recovers it in two or three Years, and many Times, never is intirely clear from it after.

Others ſuppoſe, that the Reaſon why Vallies afford more Moiſture than Hills, is becauſe of the *Dew* which is attracted from the Earth and Herbs as before; and that they do afford more Moiſture than Hills (they ſay) is often ſeen by the Miſts, which are more frequent on them than on Hills: This being drawn by the Sun in the Day-time, and wanting Wind to aſſiſt its Motion, hangs in the lower Region, and when the Sun ſets, it falls upon the Plants with its thick clammy Subſtance, and hinders the Sap of the Plant or Tree from aſcending to nouriſh its Flowers or Shoots in thoſe whoſe Bark is tender and young, and the Pores open with the Heat of the Seaſon.

This *Dew* has been obſerved in the great-leav'd *Cherries*, ſuch as the *Black Heart*, the *White Heart*, &c. to fall upon them at the Top, juſt at the Beginning of the Midſummer-ſhoot, which has ſo ſtopp'd the Shoot that it has ſhot forth in other Places below; and that on the Top of theſe Shoots there have been many ſmall Flies feeding on this *Dew*, and that it may plainly be ſeen and taſted on the Leaves of Oak and Maple.

Some are of Opinion, that *Mildews* and *Blights* are the ſame Thing: But others again, that *Mildew* is quite another Thing than *Blaſtings*. They ſay, *Mildews* are cauſed from the Condenſation of a fat and moiſt Exhalation in a hot and dry Summer, from the Bloſſoms and Vegetables of the Earth, and alſo from the Earth itſelf, which is condenſed into a fat glutinous Matter by the Coolneſs and Serenity of the Air, and falls down on the Earth again; Part of which reſts upon the Leaves of the Oak and other Trees, whoſe Leaves are ſmooth, and for that Reaſon do not ſo eaſily admit the Moiſture into them, as the Elm and other rougher Leaves do.

Other Parts of *Mildew* reſt upon the Ears and Stalks of *Wheat*, beſpotting the ſame with a different Colour from what is natural, being of a glutinous Subſtance, by the Heat of the Sun, and binds up ſo cloſe the tender Ears of *Wheat*, that it prevents the Growth, and occaſions it to be very light in the Harveſt.

Some are of Opinion, that *Mildews* are the principal Food of *Bees*, it being ſweet, and eaſily convertible into Honey.

MILIUM, [ſo call'd of *Mille*, Lat. a *Thouſand*, becauſe of the Multitude of its Grains] Millet.

The *Characters* are;

It hath a looſe divided Panicle; and each ſingle Flower hath a Calyx, conſiſting of two Leaves, which are inſtead of Petals, to protect the Stamina *and* Piſtillum *of the Flower, which afterwards becomes an oval ſhining Seed.*

The *Species* are;

1. **Milium** *ſemine luteo. C. B. P.* Yellow *or* common Millet.

2. **Milium** *ſemine albo. C. B. P.* Millet, with a white Seed.

3. **Milium** *ſemine nigro. C. B. P.* Millet, with a black Seed.

4. **Milium** *arundinaceum, ſubrotundo ſemine, Sorgo nominatum. C. B. P.* Reed-like Millet, with roundiſh Seeds, *commonly call'd* Sorgo *or* Guiney Corn.

There are ſome other Varieties of theſe Plants, which chiefly differ in the Colour of their Seeds, which will be to little Purpoſe to enumerate in this Place, thoſe here mention'd being the principal Sorts which I have obſerved growing in *England*.

The three firſt Sorts are Varieties of each other, and only differ in the Colour of their Seeds; which Difference will ariſe from the ſame Seeds very often; but the Yellow is always preferr'd, tho' the White is no Way inferior to it; but the Black Sort is eſteem'd little worth.

Theſe Plants were originally brought from the Eaſtern Countries, where they are ſtill greatly cultivated, from whence we are furniſhed annually with this Grain, which is by many Perſons greatly eſteem'd for Puddings, *&c.* Theſe are never cultivated in *England*, but by Way of Curioſity in ſmall Gardens, where the Seeds do generally ripen very well.

They muſt be ſown the Beginning of *April*, upon a warm dry Soil, but not too thick, becauſe theſe Plants divide into ſeveral Branches, and ſhould have much Room; and when they come up, they ſhould be clear'd from Weeds, after which they will, in a ſhort Time, get the better of them, and prevent their future Growth. In *Auguſt* theſe Seeds will ripen, when it muſt be cut down, and beaten out, as is practiſed for other Grain.

The *Guiney Corn* ariſes commonly to be ten or twelve Feet high, and has jointed Stalks like the Reed; upon the Tops of which the Panicles are produced, which are very large, as are alſo the Grains. This Sort will come up very well, if ſown as the former, but ſeldom perfects its Seeds with us, except the Seaſon be very warm.

MILLEFOLIUM, [ſo call'd, as if the Leaves had a thouſand Inciſions. *Pliny* relates, that *Achilles* having been inſtructed by *Chiron* in Phyſick and the Art of curing Wounds, cured *Telephus*, wounded by his own Sword, with this Plant; and hence it was call'd *Achillea*. It is alſo call'd *Stratiotes*, of Στρατὸς, an *Army*, becauſe this Plant is uſeful in curing the Wounds of Soldiers in an Army] Yarrow, Milfoil, *or* Noſe-bleed.

There are ſeveral Sorts of this Plant, which are cultivated in Botanick Gardens for Variety; but as they are rarely propagated for Uſe, I ſhall paſs them over without naming them, and only obſerve, that the common Sort, which grows in great Plenty upon dry Banks, in moſt Parts of *England*, is that which is order'd for Medicinal Uſe.

MILLERIA.

The *Characters* are;

It hath a compound Flower, conſiſting of ſeveral Florets, and one half Floret, contained in one common Flower-cup; but theſe Florets are barren, and the half Floret, which is fruitful, is ſucceeded by one Seed, which is ſurrounded by the Flower-cup.

The *Species* are;

1. **Milleria** *annua erecta major, foliis conjugatis, floribus ſpicatis luteis. Houſt.* Greater upright annual Milleria, with Leaves growing oppoſite, and yellow Flowers growing in a Spike.

2. **Milleria** *annua erecta minor, foliis parietariæ, floribus ex foliorum alis. Houſt.* Leſſer upright annual Milleria, with pellitory Leaves, and the Flowers growing from the Wings of the Leaves.

3. **Milleria** *annua erecta ramoſior, foliis maculatis, profundius ſerratis. Martyn. Cent.* 1. Upright branching annual Milleria, with ſpotted Leaves, which are deeply ſawed.

4. **Milleria** *annua erecta minor, folio parietariæ longiori, floribus ex foliorum alis.* Leſſer upright annual Milleria, with a longer pellitory Leaf, and the Flowers growing from the Wings of the Leaves.

The two firſt Sorts were diſcovered by the late Dr. *William Houſtoun* at *Campechy* in the Year 1731, who conſtituted this Genus, on finding the Characters differing from all the Genus's which were before eſtabliſhed. The Seeds of both theſe Sorts he ſent to ſeveral curious Perſons in *England* and *Holland*, where they have ſucceeded very well.

The other two Sorts were diſcovered by Mr. *Robert Millar*, Surgeon, at *Campechy* in the Year 1734, from whence he ſent their Seeds into *England*, where they have alſo ſucceeded very well. The third Sort nearly reſembles the firſt in its Leaves, Flowers and Growth; but branches a little more than that doth, and the Leaves are ſpotted with Black; the Flowers alſo are a little larger. The fourth Sort, which is ſomewhat like the ſecond, grows taller, and doth not branch from the Bottom as the ſecond doth; the Leaves are alſo much longer, but there appears no Difference in their Flowers.

The Seeds of theſe Plants ſhould be ſown early in th Spring, on a moderate Hot-bed; and when the Plants ar come up about two Inches, they ſhould be each tranſplante into a ſeparate Pot, filled with light rich Earth, and the plunged into a moderate Hot-bed of Tanners Bark, bein careful to ſhade them from the Sun until they have taken Root as alſo to water them frequently. After the Plants are roote they ſhould have a large Share of free Air admitted to them by raiſing of the Glaſſes of the Hot-bed every Day when th Weather is fair; and they muſt be conſtantly watered ever Day in hot Weather, for they are very thirſty Plants. Wi this Management, the Plants will in a Month after tranſplan ing riſe to a conſiderable Height; therefore they ſhould ſhifted into larger Pots, and placed in the Stove, plungi them into the Bark-bed, where they may have Room to gro

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eſpecially the firſt and third Sorts, which uſually grow eight or nine Feet high, where they are well managed. But the ſecond and fourth Sorts ſeldom riſe above three Feet high, and do not ſpread their Branches very far, ſo theſe may be allowed leſs Room.

In the Middle of *July* theſe Plants will begin to flower, and the Seeds will be ripe ſoon after; therefore they muſt be gathered as ſoon as they change of a dark brown Colour, otherwiſe they will ſoon fall off, eſpecially thoſe of the two large Kinds, which will drop on the leaſt Touch when they are ripe. Theſe Plants will continue flowering till *Michaelmas* or later, if the Seaſon proves favourable; but when the Cold of the Autumn comes on, they will ſoon decay.

MIMOSA, The Senſitive Plant.

The *Characters* are;

The Flower conſiſts of one Leaf, which is ſhaped like a Funnel, having many Stamina *in the Center: theſe Flowers are collected into a round Head; from the Bottom of the Flower riſes the* Piſtillum, *which afterwards becomes an oblong, flat, jointed Pod, which opens both Ways, and contains in each Partition one roundiſh Seed.*

The *Species* are;

1. MIMOSA *ſeu frutex ſenſibilis. Tourn.* The common Senſitive Plant.
2. MIMOSA *humilis, fruteſcens, & ſpinoſa, ſiliquis conglobatis. Plum.* Dwarf ſhrubby Humble Plant, having Thorns, and the Pods growing together in Bunches.
3. MIMOSA *ſpinis horridiuſcula, & ſenſitiva magis. H. R. Par.* Greater Senſitive or Humble Plant, with very ſharp Thorns.
4. MIMOSA *latifolia, ſiliculis in orbem glomeratis. Tourn.* Broad-leaved or common Humble Plant.
5. MIMOSA *ſpuria de Pernambucq, dicta Mimoſa Italica. Zan.* The ſlothful Senſitive Plant: *vulgo.*
6. MIMOSA *herbacea procumbens & ſpinoſa, caule quadrangula, ſiliquis quadrivalvibus. Houſt.* Trailing herbaceous prickly Senſitive Plant, with ſquare Stalks, and Pods having four Cells.
7. MIMOSA *fruticoſa ſpinoſa, ſiliquis latis hirſutis & articulatis. Houſt.* Prickly ſhrubby Senſitive Plant, with broad hairy jointed Pods.
8. MIMOSA *non ſpinoſa, paluſtris & herbacea, procumbens, flore luteo pleno. Houſt.* Smooth marſh herbaceous trailing Senſitive Plant, with full yellow Flowers.
9. MIMOSA *fruteſcens ſpinoſa & hirſuta, tenuibus acaciæ foliis, ſiliquis articulatis. Houſt.* Shrubby prickly and hairy Senſitive Plant, with narrow Leaves like the Acacia, and jointed Pods.
10. MIMOSA *humilis fruteſcens & ſpinoſa, foliis acaciæ latioribus, ſiliquis conglobatis.* Dwarf ſhrubby and prickly Senſitive Plant, with broad Acacia Leaves, and Pods growing in Cluſters.
11. MIMOSA *herbacea non ſpinoſa minima repens. Sloan. Cat. Jam.* The leaſt creeping herbaceous Senſitive Plant, without Spines, commonly called Senſitive Graſs.

The firſt Sort is commonly known by the Name of *Senſitive Plant*, to diſtinguiſh it from the others, which are generally call'd *Humble Plants*, becauſe upon being touch'd, the Pedicle of their Leaves falls downward; whereas the Leaves of the other Sort are only contracted upon the Touch.

Theſe Plants are all propagated from Seeds, which muſt be ſown upon a Hot-bed early in the Spring; and when the Plants come up, they muſt be tranſplanted into ſmall Pots fill'd with light rich Earth, and plunged into a freſh Hot-bed, obſerving to water and ſhade them until they have taken Root: after which you muſt often refreſh them with Water, and let them have Air in proportion to the Warmth of the Seaſon, always obſerving to keep the Bed in a good Temper for Heat, as alſo to cover the Glaſſes every Night with Mats, which will greatly facilitate their Growth.

With this Management, in about a Month's Time, the Plants will have greatly advanced, and their Roots will fill the Pots; therefore you muſt remove them into larger Pots, by ſhaking them out of thoſe they are in, together with the Earth, which ſhould be preſerved to their Roots; and (after having pared off the Roots which were matted round the Outſide of the Ball of Earth) you muſt place the Plants into the larger Pots, filling them up with the like rich Earth; then plunge them into the Hot-bed, obſerving to water them well until they have taken Root; and if you ſee the Plants inclinable to droop, when the Sun ſhines warm upon the Glaſſes, you muſt ſhade them until they have recover'd, and are able to endure the Heat.

You muſt alſo obſerve to give them a greater Share of Air, as the Seaſon advances in Warmth; but you muſt never expoſe them to the open Air, which will not only retard their Growth, but alſo deſtroy the ſenſitive Quality; ſo that I have ſeen ſome Plants of theſe Kinds, which, after having been expoſed to the open Air a few Days, have intirely loſt their Motion.

The firſt of theſe Sorts, if duly water'd and preſerved in a kindly Warmth, will grow, in the Compaſs of one Seaſon, to the Height of eight or nine Feet, and produce great Quantities of Flowers; but unleſs the Autumn proves very favourable, the Seeds do ſeldom ripen, and the Plant being much tenderer than the other Sorts, is rarely preſerved thro' the Winter, tho' placed in the warmeſt Stoves; ſo that we are obliged to procure the Seeds from Abroad.

The ſecond Sort is of much humbler Growth, ſeldom riſing above two Feet high, but branches out very much, and is beſet with Thorns: This will abide two or three Years, if preſerved in a good Stove, and generally produces Seeds every Year; ſo that it is now become very common in the *Engliſh* Gardens, being the eaſieſt to preſerve, and the moſt plentiful in ſeeding of all the Sorts.

The third Sort hath very broad Leaves, and is greatly beſet with ſharp Thorns: This will riſe to the Height of five or ſix Feet, but has generally very ſlender Branches, and is tenderer than the laſt-mention'd: It rarely produces Seeds in this Country, but may be preſerved thro' the Winter in a very good Stove.

The fourth Sort has the quickeſt Motion of all the Kinds at preſent in *England:* This is ſomewhat like the third in Appearance, but grows more erect, and hath fewer Spines, and the Flowers are of a different Colour. The Seeds of this Kind are frequently brought over from *Barbadoes*, where, by the Plenty of Seeds brought over, it ſeems to be the moſt common in that Country.

The fifth Sort is preſerved in Botanick Gardens for Variety, but is a Plant of no great Curioſity: It hath ſomewhat the Appearance of the firſt Sort, and will grow erect to the Height of five or ſix Feet, and produce great Quantities of Seeds; but it having no Motion upon being touch'd, renders it leſs valuable than the others.

The ſixth, ſeventh and eighth Sorts were diſcovered by the late Dr. *William Houſtoun* at *La Vera Cruz*, from whence he ſent their Seeds into *England*, from which many Plants were raiſed. The ſixth Sort riſes to the Height of three Feet, and hath ſlender ſquare Stalks, which are ſtrongly armed with Spines. This is a perennial Plant, which creeps at the Root; ſo that it may be propagated by the Suckers, which are produced pretty plentifully. This hath not as yet produced any Flowers in *England*, for the Shoots generally die to the Root in Winter, and riſe again the following Spring. The Leaves of this Sort do not only cloſe on being touched, but alſo fall downward, ſo that it is ranked amongſt thoſe Kinds which are commonly called humble Plants.

The ſeventh Sort riſes to the Height of ſix or ſeven Feet, and hath a woody Stem, which is ſtrongly armed with crooked Spines. The Leaves conſiſt of ſeveral Wings, which have very narrow *Pinnæ*; theſe Leaves are alſo beſet on their under Side with ſharp crooked Spines all along the Midrib, ſo that it is troubleſome to go amongſt the Plants in the natural Place of their Growth. The Flowers of this Kind are of a bright purple Colour, which are ſucceeded by flat hairy jointed Pods, in which are included the Seeds. This Sort grows very plentifully in moiſt rich Places about *La Vera Cruz*, in the *Spaniſh Weſt-Indies.*

This Plant hath produced Flowers in *England*, but hath not perfected Seed, tho' it hath lived over the Winter, and has grown to a large Size. The Leaves of this Sort cloſe very ſoon on the Touch, but they fall downward very ſlowly, ſo that it is not ranged amongſt the humble Plants.

The eighth Sort grows plentifully in ſtanding Waters near *La Vera Cruz*, where the Branches float on the Water, in like Manner as do the Pond-weeds in this Country: But where the Water dries up, and leaves the Plants while they are young, they will grow more erect; and thoſe of them which have grown in *England*, have riſen to the Height of four or five Feet; but they ſpread themſelves on every Side, and required ſome Support, when they were full-grown. This Sort hath produced Flowers in *England*, but hath not perfected Seed; and being an annual Plant, is at preſent loſt in *Europe*. This is one of thoſe commonly called Senſitive Plants, for the Leaves do not fall on being touched. The ninth and tenth Sorts were diſcovered by Mr. *Robert Millar*, Surgeon, at *Carthagena*, from whence he ſent their Seeds into *England*, which have ſucceeded in ſeveral Gardens of the Curious. Theſe are both of them of the humble Kind, their Leaves falling on the ſlighteſt Touch. They will both of them live thro' the Winter, if they are placed in a very warm Stove.

The eleventh Sort is very common in *Jamaica*, where it creeps to the Ground, and grows in ſhort thick Tufts: This is very quick in its Motion; for, on drawing a Stick over the Plants, they will immediately contract, and leave the Impreſſion for ſome Time, till the Plants recover.

Theſe Plants were moſt of them thought to be Annuals formerly, becauſe upon the firſt Approach of cold Weather they were deſtroy'd; but ſince the modern Invention of Bark-ſtoves, moſt of theſe Sorts have been preſerved two or three Years, and do produce Seeds very well.

The Stove in which theſe Plants are placed in Winter, ſhould be kept to *Anana*'s Heat, (as mark'd on Mr. *Fowler's Thermometers*); and during that Seaſon they ſhould be frequently refreſh'd with Water, which muſt be placed in the Stove at leaſt twenty-four Hours before it be uſed, that it may have nearly an equal Warmth to the Air of the Stove; but you muſt not give it to them in large Quantities, which will rot their Roots, and cauſe them to decay: You muſt alſo obſerve to pick off all decay'd Leaves which may appear at that Seaſon; which, if not taken off, will harbour Inſects, to the great Prejudice of the Plants.

But where there is not the Conveniency of a good Stove to preſerve theſe Plants thro' the Winter, their Seeds may be annually procured, and a few Plants raiſed, which may be kept in a Hot-bed under Glaſſes, where they will continue until the Cold approaches in Autumn, and, being a great Curioſity, are worthy of Care in every good Garden.

The Philoſophical Reaſon of the ſudden Motion of this Plant, upon its being touch'd, has not, that I know of, been explain'd by any Perſon; but I ſhall here inſert what has been advanced on that Head.

The Phænomenon thereof is worthy Admiration, that not only in the Evening, or towards Night, but at all Hours of the Day, with the leaſt Touch of a Stick, or gentle one with the Hand, the Leaves, juſt like a Tree a dying, droop, and complicate themſelves with all the Quickneſs imaginable, and preſently after erect and recover themſelves, returning to their former Poſition; ſo that a Perſon would be induced to think they were really endow'd with the Senſe of Feeling.

This ſeem'd ſo hard to be diſcover'd, that a curious *Malabarian* Philoſopher, upon his obſerving the Nature of this Plant, ran mad; juſt as *Ariſtotle* is ſaid to have flung himſelf headlong into the Sea, becauſe he could not comprehend the Ebbing and Flowing thereof.

The Reaſon of theſe Plants thus drooping and reviving again ſo ſoon, may be accounted for as follows:

It is occaſion'd by the Structure of their Muſcles or Fibres, their Nerves, their Valves, and their Pores.

Firſt, By reaſon that the interior Nerves which belong to their ſuperior Muſcles or Fibres of the Leaves being wider than thoſe exterior which belong to the inferior; and therefore the Vapour aſcending out of the Earth thro' the inferior Nerves, as they are pretty broad, having a large Influence on the upper Fibres of the Leaf, and by reaſon of the Situation of the Valves croſs-wiſe, not being able to return to the Earth, dilate themſelves with reſpect to their Latitude, and abbreviate them in Longitude, and ſo erect the Leaves on which theſe Fibres are inſerted, to ſuch a Height, as their Articulation or Flexibility will permit.

Hence it is, that by the Inflation of the ſuperior Muſcles, and the Erection of the Leaves, the Breath which is in the inferior Muſcles or Fibres of the Leaves, ſo preſſed and ſo forced to open the Valves and Pores out of the narrower Nerves loooking into the broader or wider, and then to croſs over with the other Spirits in the wider Nerves into the ſuperior Muſcles of the Leaves, and raiſe them upwards; and that ſo much the more, becauſe the inferior Valves, by their Situation croſs-wiſe, hinder the Deſcent of the Fumes again into the Ground.

The Spirits then aſcending out of the Earth in pretty large Quantities, and pretty ſtrong, thro' the interior and wider Nerves, do not ſuffer the Valves, out of the wider Nerves, entering into the narrower, to be open'd, or the Fumes to croſs thro' theſe out of the wider Nerves into the narrower. When therefore the ſuperior Part of the Leaves are touch'd with the Hand, then the Spirits in thoſe upper Parts of the Leaves being driven more vehemently by that Touch, tend downwards, thro' the interior and wider Nerves, and by that means open the Valves and Pores, which look from the wider and inward Nerves into the outward and narrower, and, by reaſon of the Stoppage of the Valves croſs-wiſe, being not able to deſcend, they aſcend thro' them, and, by their Aſcent, ſhut up the Valves looking from the narrower Nerves into the broader, and ſo neceſſarily deſcend into the inferior Muſcles or Fibres of the Leaves, and by inflating them, and abbreviating them as to their Length, bend thoſe lower Leaves as much as their Articulation or Flexibility will allow of.

Then, after thoſe Leaves have been ſo preſs'd downwards, and the Hand removed from the Plant, the Exhalations out of the Earth aſcend into the Stalk in greater Quantities thro' the inward and wider Nerves, and thro' the Valves that go croſs them thro' the exterior and narrower, and by that means firſt ſhut thoſe Valves which come from the wider and inward Nerves into the exterior, and then proceeding forward, (*i. e.* the Exhalations) croſs over to the ſuperior Muſcles of the Leaves; and by inflating thoſe, they ſomewhat raiſe the Leaves which were depreſs'd; and by that ſmall Sublatation of the Leaves, preſs the Exhalations, which the inferior Muſcles of the Leaves are full of; and thoſe being preſs'd, they open the Valves in the narrower Nerves, out of the exterior Nerves into the interior, and ſo croſs over to the wider and inner Nerves; and there, by reaſon of the Vehemency of Fumes in great Quantities exhaling out of the Earth into them, and cloſing thoſe Valves, which go into the narrower Nerves, they can neither deſcend nor croſs over to the Sides, but are neceſſarily terminated in the ſuperior Muſcles of the Leaves, by Exhalations perpetually aſcending out of the Earth, thro' the wider Nerves; which Leaves, as their upper Parts are full of copious Exhalations, ſo they are thereby dilated.

MINT. *Vide* Mentha.

MIRABILIS PERUVIANA. *Vide* Jalapa.

MISLETOE. *Vide* Viſcum in the Appendix.

MITELLA, [ſo call'd of *Mitella*, Lat. a *little Mitre*, becauſe the Seed-veſſel of this Plant reſembles a Biſhop's Mitre] Baſtard *American* Sanicle.

The *Characters* are;

It hath a perennial Root: The Cup of the Flower conſiſts of one Leaf, and is divided into five Parts: The Flower conſiſts of five Leaves, which expand in form of a Roſe: *The Ovary becomes a roundiſh Fruit, which terminates in a Point, gaping at the Top, in form of a Biſhop's Mitre, and full of roundiſh Seeds.*

The *Species* are;

1. MITELLA *Americana, florum petalis integris.* Tourn. *American* Mitella, whoſe Flower-leaves are intire.
2. MITELLA *Americana, florum petalis fimbriatis.* Tourn. *American* Mitella, with fringed Flower-leaves.
3. MITELLA *Americana, flore ſquallide purpureo, villoſo. Boerh. Ind. American* Mitella, with hairy Flowers of a dirty purple Colour.
4. MITELLA *Americana maxima tinctoria. Inſt.* R. H. The Arnotto or Anotto.

The firſt three Sorts are preſerved in curious Botanick Gardens for Variety; but there being very little Beauty in their Flowers, they are ſeldom propagated in Gardens for Pleaſure. They are very hardy, and will thrive in almoſt any Soil or Situation, and may be propagated either from Seeds, or by parting their Roots, which may be done either in Spring or Autumn, in the Manner as is practiſed for *Polyanthus's*, &c. and being planted in a ſhady Situation, will grow very vigorouſly; ſo that, for the ſake of Variety, a few Roots may be admitted in ſhady Borders where few better Plants will thrive.

The fourth Sort riſes to the Height of ten or twelve Feet, and hath a woody Stem, which is beſet with many Branches at the Top, which are furniſhed with broad Leaves, ſhaped ſomewhat like a Heart; from theſe Branches the Flowers come out in ſmall Cluſters, which conſiſt of ſeveral Leaves, and expand in form of a Roſe; theſe are of a pale Fleſh-colour. The Flowers are ſucceeded by brown Pods, ſhaped like a *Mitre*, and are echinated on the Outſide in the ſam Manner as the Cheſnut; in which Pods are contained many irregular Seeds, which are of a red Colour.

The Seeds of this Plant are uſed to make a Dye, by the Inhabitants of *America*. The Manner of preparing it is as follows: They ſteep the Seeds in Water, until the outwar red Part is diſſolved intirely from them; then they boil th Water which is impregnated, ſeveral Times, (after the ſam manner as they do the Juice of the *Sugar Cane*) until it becomes of a pretty thick Conſiſtence; then they put it int Canvaſs, which is ſpread over a Fire of hot Aſhes, which dot not flame, to bring it to a farther Conſiſtence, when they mak it up into Balls, which are ſent into *Europe*, where it is uſ in Dying.

The *Indians* make uſe of this Colour to paint their Bodies eſpecially when they go to War, in order, as ſome ſuppoſe, t prevent their diſcovering the Blood when they are wounded

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being almoſt of the ſame Colour, ſo is ſuppoſed to make them courageous. But the chief Uſe of it is to prevent the *Muſketa's* and Flies from annoying them. This Dye is alſo mix'd with Chocolate to give it a Colour.

It grows in the warmeſt Parts of *America*, from whence the Seeds are pretty frequently ſent into *England*. Theſe Seeds ſhould be ſown early in the Spring of the Year, in ſmall Pots filled with light rich Earth, which ſhould be plunged into a moderate Hot-bed of Tanner's-bark, and the Earth ſhould be frequently watered, to forward the Vegetation of the Seed. When the Plants are come up two Inches high, they ſhould be carefully tranſplanted, each into a ſeparate ſmall Pot; filled with light rich Earth, and then plunged again into the Tanners-bark, obſerving to ſhade them from the Sun, until they have taken new Root; after which Time they muſt be frequently refreſhed with Water, and in hot Weather the Glaſſes of the Hot-bed ſhould be raiſed every Day, to admit freſh Air to the Plants. With this Management the Plants will grow to be a Foot high by the Middle of *July*, and will have filled the Pots with their Roots; therefore they ſhould then be ſhaken out of the Pots, and their Roots carefully trimmed, and then put into Pots a little larger, and plunged again into the Hot-bed, and managed as before. Theſe Plants may remain in the Hot-bed until toward *Michaelmas*, when the Nights begin to be cold, at which Time they muſt be removed into the Stove, and plunged into the Bark-bed, where they may enjoy a good Share of Warmth in the Winter-ſeaſon, otherwiſe they cannot be preſerved in this Country: they muſt be frequently refreſhed with Water during the Winter-ſeaſon, but they ſhould not have too much given to them each Time, eſpecially if they ſhould caſt their Leaves, which they frequently do toward the Spring. As theſe Plants are very tender, ſo they ſhould conſtantly remain in the Stove, obſerving in the Summer-ſeaſon, when the Weather is warm, to admit a large Share of freſh Air to the Plants, as alſo to water them frequently, but in cold Weather they muſt be kept very warm. When theſe Rules are duly obſerved, the Plants will thrive very faſt, and grow to the ſame Height which they uſually do in their native Soil.

MOLDAVICA, [this Plant is ſo call'd of *Moldavia*, becauſe it was brought to us from that Country, where it grows without Culture] Turkey Balm.

The *Characters* are;

It is a Plant with a labiated Flower, conſiſting of one Leaf, whoſe upper Lip is arched, cut into two Parts, and reflex'd: The under Lip is alſo divided into two Parts, both ending in border'd Jaws: The Flower-cup is hollow, and generally cut into two unequal Lips, out of which ariſes the Pointal, attended with four Embryo's, which afterwards become ſo many oblong Seeds.

The *Species* are;

1. Moldavica *betonicæ folio, flore cæruleo. Tourn.* Turkey Balm, with a Betony Leaf, and a blue Flower.
2. Moldavica *betonicæ folio, flore albo. Tourn.* Turkey Balm, with a Betony Leaf, and a white Flower.
3. Moldavica *betonicæ folio, flore purpuro-cæruleo. Tourn.* Turkey Balm, with a Betony Leaf, and a purpliſh blue Flower.
4. Moldaviga *orientalis, betonicæ folio, flore magno violaceo. T. Cor.* Eaſtern Moldavica, with a Betony Leaf, and a large Violet-colour'd Flower.
5. Moldavica *orientalis, betonicæ folio, flore parvo cæruleo. T. Cor.* Eaſtern Moldavica, with a Betony Leaf, and a large whitiſh Flower.
6. Moldavica *orientalis, ſalicis folio, flore parvo cæruleo. T. Cor.* Eaſtern Moldavica, with a Willow Leaf, and a ſmall blue Flower.
7. Moldavica *orientalis, ſalicis folio, flore parvo albo. T. Cor.* Eaſtern Moldavica, with a Willow Leaf, and a ſmall white Flower.
8. Moldavica *Americana, trifolia, odore gravi. Tourn.* Three-leav'd *American* Moldavica, with a ſtrong Scent, *commonly call'd*, The Balm of Gilead.

The ſeven firſt Species are annual Plants, which periſh ſoon after they have perfected their Seeds: theſe may be propagated by ſowing their Seeds in *March*, upon a Bed of freſh light Earth, in a warm Situation; and when the Plants are come up about two Inches high, they ſhould be tranſplanted into the Borders of the Pleaſure-Garden, obſerving to water them until they have taken Root: after which they will require no farther Care, but to keep them clear from Weeds; and if they grow pretty tall, to ſupport them with Sticks, to prevent their being broken by Winds.

In *June* and *July* they will produce their Flowers; and in *Auguſt* their Seeds will be perfected, when they muſt be gather'd, and preſerved dry for the ſucceeding Spring.

The Seeds may alſo be ſown upon a warm Border in *Auguſt*, where the Plants will come up ſoon after, and will endure the Cold of our ordinary Winters very well, provided they have a dry Soil, and a warm Situation.

In the Spring they may be tranſplanted out into the Borders where they are deſigned to be continued, where they will flower early, and produce good Seeds; whereas it ſometimes happens, that if the Seaſon proves cold and wet, thoſe Plants which are ſown in the Spring do not perfect their Seeds.

There is no very great Beauty in theſe Plants; but as they require little Culture, ſo they may be admitted into large Borders of the Flower-Garden, where being intermix'd with other Plants, they afford an agreeable Variety. The moſt valuable Sorts are the two Oriental Kinds with large Flowers; theſe commonly grow about eighteen Inches high, and divide into ſeveral Branches, but do not take up much Room; and being annual Plants, there will be no Danger of their injuring others that may grow near them. *

The eighth Sort is an abiding Plant, which may be eaſily propagated by planting Cuttings, during any of the Summer Months, in a Border of rich Earth, obſerving to water and ſhade them until they have taken Root, which they do commonly in about three Weeks Time; after which they will require no farther Care than only to keep them clear from Weeds, till they have made a conſiderable Progreſs, when they ſhould be taken up, preſerving a Ball of Earth to each Plant, and ſet into Pots fill'd with freſh light Earth, placing them in a ſhady Situation until they have taken freſh Root; after which, they may be expoſed to the open Air until the Middle or latter End of *October*, when they muſt be removed into Shelter, otherwiſe they will be liable to ſuffer by hard Froſts; tho' they ſhould be placed where they may enjoy as much free Air as poſſible in mild Weather, and only require to be protected from ſevere Cold; for in moderate Winters I have had them endure abroad very well, when planted under a warm Wall.

They will require frequently to be water'd, when planted in Pots; but in the Winter you ſhould not let them have it in great Quantities, which will be apt to rot their Roots, and deſtroy them. This laſt Species is preſerved in ſeveral Gardens, for its Oddneſs; and the ſtrong Balſamick Scent which the Leaves emit, upon being bruiſed, which gave occaſion to many Perſons formerly to ſuppoſe the *Balm of Gilead* was taken from this Plant.

MOLLE, The *Indian* Molle *or* Maſtick-Tree.

The *Characters* are;

It hath pinnated Leaves, like thoſe of the Lentiſcus, *but are terminated by an odd Lobe; the Flower expands in the form of a Roſe; and the Fruit reſembles a Grain of Pepper.*

We have but one *Species* of this Tree in *England*; which is,

Molle, *Cluſ. in Monard.* The Arbor Molle *or Indian* Maſtick-Tree.

This Tree is preſerved in many curious Gardens in *England*, but rarely produces any Flowers in this Country.

It may be propagated by laying down the tender Branches, which in two Years will take Root, when they may be taken off from the old Plants, and planted into Pots fill'd with freſh light Earth, obſerving to water and ſhade them until they have taken Root.

But as it is very difficult to make this Tree grow from Layers, ſo it will be neceſſary to ſlit the Branches when laid, which will facilitate their Rooting; and when you cut them off from the old Plants, (which ſhould be done in *April*) if you place the Pots upon a moderate Hot-bed, it will cauſe them to take Root much ſooner, provided you water and ſhade them carefully; but you muſt obſerve to let them have Air in Proportion to the Warmth of the Seaſon; and when they have taken freſh Root, you muſt inure them to the open Air by degrees, into which they ſhould be removed toward the latter End of *May*, placing them in a Situation where they may be defended from violent Winds, in which they may remain until the *October* following, when they muſt be removed into the Green-houſe, placing them where they may have a great Share of free Air in mild Weather; for they only require to be protected from ſevere Cold.

This Tree will grow to the Height of ſeven or eight Feet, but commonly produces its Shoots very irregular, ſo that it is very difficult to form it to a regular Head; for which Reaſon it is not ſo much eſteem'd, (except by the Curious in *Botany*) as the *Lentiſcus*; but for Variety it may have a Place in all curious Green-houſes.

MOLUCCA, [this Plant takes its Name of the *Molucca* Iſlands, becauſe it was found there] *Molucca* Balm.

The *Characters* are;

It is a verticillate Plant with a labiated Flower, conſiſting of one Leaf, whoſe upper Lip is hollow, like a Spoon, but the under Lip is cut into three Segments; out of the Flower-cup ariſes the Pointal, attended, as it were, by four Embryo's, which afterwards turn to ſo many angular Seeds, which are incloſed in the Bell-ſhaped Calyx.

The *Species* are;

1. MOLUCCA *lævis*. *Dod.* Smooth *Molucca* Balm.
2. MOLUCCA *ſpinoſa*. *Dod.* Prickly *Molucca* Balm.

Theſe Plants are annual, ſeldom abiding after they have perfected their Seeds. They are preſerved only in ſuch Gardens where a great Variety of Plants are maintain'd, being Plants of no great Beauty or Uſe. Theſe may be propagated by ſowing their Seeds in *March*, upon a Bed of freſh light Earth, in an open Situation, where the Plants will come up ſoon after; and when they are about two Inches high, they muſt be tranſplanted out, either into freſh Beds of light Earth, or in the Borders of the Pleaſure-Garden, placing them at two Feet Diſtance; for their Branches will extend pretty far, if the Soil be rich; and when they have taken Root, they will require no farther Care, but only to keep them clear from Weeds, and faſten them to Sticks, to prevent their being broke by Winds when they advance.

In *July* theſe Plants will flower, and if the Seaſon proves warm, their Seeds will be perfected in *September*, but if the Seaſon be cold and moiſt, they commonly periſh without producing good Seeds in this Country; for which Reaſon theſe Plants ſhould be raiſed in Autumn, and preſerved thro' the Winter under a common Frame, and in the Spring tranſplanted out, as before, when they will flower early, and produce good Seeds.

MOLY, [this Plant is ſo named of μωλύω, to *grieve* or *be in Pain*, becauſe *Homer* repreſents it as good to expel Poiſon] Wild Garlick.

The *Characters* are;

It agrees in every reſpect with the Garlick, *but hath, for the moſt part, a ſweet Scent; and the Flowers are produced in an Umbel.*

The *Species* are;

1. MOLY *latifolium, liliflorum*. *C. B. P.* Broad-leav'd Moly of *Theophraſtus*.
2. MOLY *latifolium Indicum*. *C. B. P.* Broad-leav'd *Indian* Moly.
3. MOLY *latifolium Hiſpanicum*. *C. B. P.* Broad-leav'd *Spaniſh* Moly, with purple Flowers.
4. MOLY *latifolium, flavo flore*. *H. Eyſt.* Broad-leav'd yellow Moly.
5. MOLY *anguſtifolium, umbellatum*. *C. B. P.* Narrow-leav'd Moly, *commonly call'd*, *Homer*'s or *Dioſcorides*'s Moly.
6. MOLY *anguſtifolium, foliis reflexis*. *C. B. P.* Narrow-leav'd Moly, with reflex'd Leaves, *commonly call'd*, The Serpent Moly.
7. MOLY *moſchatum, capillaceo folio*. *C. B. P.* The ſweet Moly of *Montpelier*, *vulgo*.

There are ſome other Varieties of this Plant, which are preſerv'd in curious botanick Gardens abroad, but thoſe here mention'd are what I have obſerved in the *Engliſh* Gardens.

They are all very hardy Plants, and may be eaſily multiplied by their Off-ſets, which they ſend forth in great Plenty: The beſt Seaſon to tranſplant them is in *Auguſt* or *September*, juſt after their Leaves decay; for if they are permitted to remain long after, and the Seaſon ſhould prove moiſt, they will ſend forth freſh Fibres, when it will be too late to remove 'em, unleſs they are taken up with Balls of Earth.

They will grow in almoſt any Soil or Situation, but will thrive beſt in a light, ſandy Soil, and an open Expoſure.

They commonly produce their Flowers in *May* and *June*, except the *ſweet-ſcented Montpelier* Kind, which ſeldom flowers till *Auguſt*, and are pretty Varieties in the large Borders of the Pleaſure-Garden, where, being intermix'd with other bulbous-rooted Flowers, they afford an agreeable Variety; but they ſhould not be permitted to remain longer than two Years before they are tranſplanted, becauſe they produce a great Number of Off-ſets, (eſpecially *Homer*'s *Moly*) which, if not taken from the old Roots, will ſtarve 'em and cauſe their Flowers to be very weak.

MOMORDICA, [The Origin of the Name is unknown] Male Balſam-Apple.

The *Characters* are;

The Flower conſiſts of one Leaf, is of the expanded, bell-ſhap'd Kind, but ſo deeply cut, as to appear compos'd of five diſtinct Leaves; theſe Flowers are ſome Male (or barren), others Female, growing upon the Top of the Embryo, which is afterwards chang'd into a Fruit, which is fleſhy, and ſometimes more or leſs tapering, and hollow; and when ripe, uſually burſts, and caſts forth the Seeds with an Elaſticity; which Seeds are wrapped up in a membranous Covering, and are, for the moſt part, indented on their Edges.

The *Species* are;

1. MOMORDICA *vulgaris*. *Tourn.* The common Male Balſam-Apple.
2. MOMORDICA *Zeylanica, pampinea fronde, fructu breviori*. *Tourn.* Male Balſam-Apple of Ceylon, with Vine-leaves and a ſhort Fruit.
3. MOMORDICA *Zeylanica, pampinea fronde, fructu longiori*. *Tourn.* Male Balſam-Apple of Ceylon, with Vine-leaves and a longer Fruit.
4. MOMORDICA *Americana, fructu reticulato ſicco*. *Com. Rar.* Male Balſam-Apple, of America, with a dry netted Fruit.

Theſe Plants are all annual, their Seeds muſt be ſown on a Hot-bed the Beginning of *March*, and when the Plants come up, they ſhould be tranſplanted out into a freſh Hot-bed, after the Manner of *Cucumbers* or *Melons*, putting two Plants of the ſame Kind, under each Light, and the Plants water'd and ſhaded until they have taken Root; after which they muſt be treated as *Cucumbers*, permitting their Branches to extend upon the Ground in the ſame Manner, and obſerve to keep them clear from Weeds.

With this Management (provided you do not let them have too much Wet, or expoſe 'em too much to the open Air) they will produce their Fruit in *July*, and their Seeds will ripen in *Auguſt*, when you muſt obſerve to gather it as ſoon as you ſee the Fruit open, otherwiſe it will be caſt abroad, and with Difficulty gather'd up again.

Theſe Plants are preſerv'd in curious Gardens for the Oddneſs of their Fruit; but as they take up a great deal of Room in the Hot-beds, requiring frequent Attendance, and being of little Beauty or Uſe, ſo they are not much cultivated in *England*, except in *Botanick* Gardens for Variety.

MONBIN, The Hog Plum-tree.

The *Characters* are;

It hath a roſe-ſhaped-Flower, conſiſting of ſeveral Leaves, which are ranged in a circular Order; from whoſe Cup ariſes the Pointal, which afterward becomes an oval fleſhy ſoft Fruit incloſing a hard Stone, in which are contained four Kernels or Seeds.

We have but one Sort of this Tree; *(viz.)*

MONBIN, *arbor, foliis fraxini, fructu luteo racemoſo*. *Plum. Nov. Gen.* The Hog Plum-tree; vulgo.

This Tree is a Native of the warmeſt Parts of *America*, where it grows in the *Savanna*'s and low marſhy Places in great Plenty. It riſes to be forty or fifty Feet high, and divides into a great many crooked Branches, which are beſet with winged Leaves ſomewhat like thoſe of the *Aſh-tree*. The Flowers, which appear in the Spring, are produced in large pyramidal Bunches at the Extremity of the Branches, which are of a white Colour, and are very ſweet. Theſe are ſucceeded by ſeveral yellow oval-ſhaped Plums, growing in Cluſters. The Wood of this Tree being ſoft, is uſed inſtead of Cork, to ſtop Bottles in *America*.

This is a very tender Tree, ſo muſt be conſtantly kept in the Stove, otherwiſe it cannot be preſerved in this Country. It may be propagated by Cuttings (which is the moſt common Method practiſed in *America*); but if theſe are to be brought to *England*, they ſhould be planted pretty cloſe together in Tubs of Earth, and placed in a ſhady Situation, until they have taken good Root, before they are put on Board the Ship; and in their Paſſage they muſt be kept from Salt-water, nor ſhould they be too plentifully ſupplied with freſh; for too much Moiſture hath deſtroyed many of theſe Plants, before they have arrived in *England* ; for if the tender Fibres are rotted, the Bark of the older Shoots will ſoon decay. When they arrive in pretty good Health, they ſhould be carefully taken out of the Tubs, and each planted into a ſeparate Pot, filled with light rich Earth, and plunged into a moderate Hot-bed of Tanners-bark, obſerving frequently to refreſh them with Water ; but it muſt not be given to them in large Quantities, until they have taken good Root. If they come over in a hot Seaſon, it will be proper to ſhade them from the Sun, until they are rooted ; and at that Seaſon they will require but a very moderate Warmth in the Hot-bed ; for too great Warmth would then be injurious to them. But when they arrive late in the Year, the Bed ſhould have a large Share of Heat, in order to forward their Rooting, before the Winter's Cold comes on ; for if they are not pretty well rooted before Winter, there will be ſmall Hopes of their living till Spring, ſo that they ſhould never be ſent over too late in the Year.

Theſe Plants may alſo be propagated by ſowing of their Stones, which ſhould be brought over as freſh as poſſible. Theſe ſhould be ſown in the Spring of the Year, in ſmall Pots filled with light rich Earth, and then plunged into a Hot-bed of Tanners-bark, where, if the Bed is in a good Temperature for Heat, and the Pots of Earth are duly moiſtened, the Plants will come up in about a Month after Sowing, when they ſhould have freſh Air admitted to them every Day, in proportion to the Warmth of the Seaſon, and they muſt be frequently refreſhed with Water. In about three Weeks or a Month after the Plants appear above Ground, they will be fit to tranſplant, when each Plant ſhould be planted in a ſeparate ſmall Pot, filled with light rich Earth, and then plunged into the Hot-bed again, where they muſt be ſhaded from the Sun, until they have taken new Root ; after which Time they muſt be duly watered, and have a pretty large Share of freſh Air in warm Weather.

When the Plants have grown ſo large as to have filled the Pots with their Roots, they ſhould be ſhifted into others of a larger Size, being careful not to ſhake the Earth from their Roots, but the Fibres round the Ball of Earth ſhould be trimm'd. They muſt then be plunged into the Hot-bed again, provided the Plants are not too tall to ſtand under the Glaſſes, without Injury to their Leaves ; in which Caſe they muſt be plunged into the Bark-bed in the Stove, where they may have Room to advance in Height. But if they have Room in the Hot-bed, they may remain there till about *Michaelmas*, when the Nights begin to be cold, at which Time they muſt be removed into the Stove, and plunged into the Bark-bed, in the warmeſt Part of the Stove. During the Winter Seaſon they muſt be often refreſhed with Water ; but it muſt not be given to them in large Quantities, when the Seaſon is cold ; eſpecially, if they ſhould caſt their Leaves, which they frequently do toward the Spring, then they muſt have but little Water, until they put out new Leaves ; becauſe too much Moiſture is injurious to them, when they are in almoſt an unactive State.

Theſe Plants are too tender to live in the open Air in *England*, even in the warmeſt Seaſon of the Year ; ſo that they ſhould conſtantly remain in the Bark-ſtove, where they ſhould have a large Share of freſh Air in Summer ; and they will at that Seaſon require to be plentifully watered, for they naturally grow in low moiſt Places ; but in Winter they muſt be kept very warm : with this Management, the Plants will thrive very faſt, and in few Years will produce their Fruit.

MONTIA.

The *Characters* are ;

It hath a funnel-ſhaped Flower, conſiſting of one Leaf, whoſe under Part is tubulous, but the upper Part is expanded, and cut into five Parts ; the Fruit which ſucceeds the Flower, is a bicapſular flat Seed-veſſel, which is ſurrounded on the Borders with a Plume, which expands like Rays.

We have but one Plant of this Genus ; *(viz.)*

MONTIA *arboreſcens, abutili folio ſerrato, fructu racemoſo. Houſt.* Tree-like Montia with a ſawed abutilon Leaf, and the Fruit growing in Bunches.

This Plant was diſcovered by the late Dr. *William Houſtoun*, near old *La Vera Cruz* in *New Spain*, who gave this Name to it in Honour to Dr. *Monti*, Profeſſor of *Botany* at *Bononia*.

It grows about ſixteen or eighteen Feet high, and hath a woody Stem, which divides into ſeveral Branches ; theſe are beſet with Leaves ſomewhat like thoſe of the yellow *Mallow*, which are five Inches long, and four broad, ending in a Point ; theſe are ſawed round the Edges, and have a Down on their under Sides. The Flowers are of a greeniſh yellow Colour, and are produced in Bunches. The Seaſon of its Flowering is in *January*, in the native Place of its Growth, and the Seeds are ripe in *March*.

This Plant is propagated by Seed, which ſhould be ſown early in the Spring on a Hot-bed ; and when the Plants are come up about two Inches high, they ſhould be each tranſplanted into a ſeparate ſmall Pot, filled with light freſh Earth, and plunged into a moderate Hot-bed, being careful to ſhade them from the Sun until they have taken Root ; after which Time they muſt have a large Share of freſh Air admitted to them in warm Weather, and they muſt be duly watered. In this Hot-bed the Plants may remain till Autumn, when they muſt be removed into the Stove ; and the firſt Year, while the Plants are young, it will be proper to plunge them in the Bark-bed ; but the following Winters they will do very well in the dry Stove, which ſhould be kept up to temperate Heat. And in the middle of the Summer, they will bear to be expoſed for near three Months, provided they are placed in a warm Situation. In hot Weather theſe Plants muſt be frequently watered, and as they advance in their Growth, ſo they ſhould be ſhifted into larger Pots, filled with light freſh Earth. With this Management the Plants will thrive very well, and in two or three Years will produce Flowers.

MORINA.

The *Characters* are ;

It hath a tubulous anomalous perſonated Flower, conſiſting of one Leaf, which is divided into two Lips : the upper Lip is again divided into two Parts, but the under Lip is divided into three. From the Flower-cup, which is for the moſt part bifid, ariſes the Pointal, fixed like a Nail in the hinder Part of the Flower ; but is barren, for the Flower-cup reſts on the Embryo, and is ſurrounded by another Cup as a Sheath, in which are many roundiſh and angular Seeds.

We have but one Sort of this Plant, *(viz.)*

MORINA *Orientalis, carlinæ folio. Tourn. Cor.* Eaſtern Morina, with a Leaf of the Carline Thiſtle.

This Plant was diſcovered by Dr. *Tournefort* in his Travels in the *Levant*, who gave it this Name in Honour to Dr. *Morin* a Phyſician at *Paris*.

This Plant is propagated by Seed, which ſhould be ſown ſoon after it is ripe in the Autumn, otherwiſe the Plants will not come up the following Summer ; for I have ſeveral times obſerved, where the Seeds have been ſown in the Spring, they have remain'd in the Ground fourteen or fifteen Months, before the Plants have appeared. Theſe Seeds ſhould be ſown in the Places where the Plants are to remain, becauſe they ſend forth tap Roots, which run very deep into the Ground ; and when theſe are broken or injured in tranſplanting, the Plants ſeldom thrive after. They may be ſown in open Beds or Borders of light freſh Earth, being careful to mark the Places, that the Ground may not be diſturbed, for it frequently happens, that the Seeds do not come up the firſt Year, when they are ſown in Autumn ; but when they are ſown in the Spring, they never come up the ſame Year. The Ground where the Seeds are ſown, muſt be kept clear from Weeds, which is all that is neceſſary to be done until the Plants come up, when, if the Seaſon ſhould prove dry, it will be proper to refreſh them two or three times a Week with Water ; and where they come up too cloſe together, they ſhould be thinned ſo as to leave them near eighteen Inches apart ; after which Time they will require no other Culture, but to keep them conſtantly clear from Weeds ; and in the Spring, juſt before the Plants put out new Leaves, to ſtir the Ground gently between them, and lay a little freſh Earth over the Surface of the Bed, to encourage the Plants.

In Autumn theſe Plants decay to the Ground, and ſend forth new Leaves the following Spring ; but it will be three Years from the Time of the Plants firſt coming up, to their Flowering ; but after that Time, they will flower every Seaſon, and the Roots will continue many Years, provided they are not diſturbed. Theſe Plants, when in Flower, make an agreeable Diverſity, when mixed with other hardy flowering perrennial Plants ; and as they do not require much Care to cultivate them, ſo they deſerve Room in every good Flower-Garden.

MORUS, [of μαυρὸς, *black*, becauſe its Fruit is ordinarily ſo] The Mulberry-tree.

The *Characters* are ;

It hath large, rough, roundiſh Leaves ; the Male Flowers (or Katkins, which have a Calyx conſiſting of four Leaves) are *ſometimes produced upon ſeparate Trees, at other times at remote Diſtances from the Fruit on the ſame Tree, the Fruit is compoſed of ſeveral Protuberances, to each of which adhere four ſmall Leaves; the Seeds are roundiſh, growing ſingly in each Protuberance.*

The *Species* are;

1. MORUS *fructu nigro.* *C. B. P.* The common Black Mulberry.
2. MORUS *fructu albo.* *C. B. P.* The White Mulberry.
3. MORUS *fructu nigro minori, foliis eleganter laciniatis.* *Tourn.* The leſſer Black Mulberry, with Leaves neatly jagged.
4. MORUS *fructu albo minori, ex albo purpuraſcente.* *Tourn.* The ſmall purpliſh White Mulberry.
5. MORUS *Virginiana, foliis latiſſimis ſcabris, fructu rubro longiori.* *Cat. Plant. Hort.* The broad-leav'd Virginian Mulberry, with long red Fruit.
6. MORUS *Virginienſis arbor, loti arboris inſtar ramoſa, foliis ampliſſimis.* *Pluk. Phyt.* The large-leav'd Virginian Mulberry, with blackiſh Shoots, ſomewhat like thoſe of the Lote *or* Nettle-tree.

The firſt of theſe Sorts is very common in moſt Gardens, being planted for the Delicacy of its Fruit: It may be propagated by ſowing the Seeds, or by laying down the tender Branches, which in two Years will take Root, and may then be tranſplanted into the Places where they are to remain. Thoſe Plants which are propagated from Seeds are commonly the moſt vigorous, and generally make the ſtraiteſt Stems, but then there is a very great Hazard of their being fruitful; for it often happens, that ſuch Plants are, for the moſt part, of the *Male* Kind, which produce *Katkins*, but ſeldom have much Fruit; for which Reaſon, thoſe who are deſirous to have fruitful Trees, ſhould always propagate them by Layers from ſuch Trees as do produce Plenty of good Fruit. But as the Trees thus rais'd are ſubject to have crooked, unſightly Stems, ſo there ſhould be Care taken in the Choice of ſtrait Shoots to make Layers; and when they are tranſplanted out, they ſhould have ſtrait Stakes fix'd down by each, to which they ſhould be faſten'd as the Shoot is extended, until it comes to the Height you deſign the Stem; then you may ſuffer the Branches to extend as they are inclinable, for this Tree ſhould not be often prun'd, but only ſuch Branches ſhould be cut off which ſhoot croſs, and bruiſe themſelves by rubbing againſt each other, and ſuch as decay ſhould alſo be cut off.

This Tree delights in a light Soil, not too wet nor over dry, and ſhould have an open Expoſure; for if it be planted too near to other Trees or Buildings, ſo as to be ſhaded thereby, the Fruit ſeldom ripens well; though if they are planted in a Situation where they may be defended from the violent *Weſt* and *South-Weſt* Winds, which very often blow down and deſtroy great Quantities of the Fruit, it will be of great Advantage; but they ſhould always be open to the *Eaſt* and *South-Eaſt* Sun, which is of great Service in drying up the Moiſture which lodges upon the Surface of their Leaves in the Night, and not only retards the Fruit, but renders it ill-taſted and watry.

The Soil under theſe Trees ſhould alſo be every Year well dug and manured, tho' there will ſcarce any Sort of Plants grow under them; but it is of great Advantage to the Fruit, notwithſtanding what may have been ſaid to the contrary.

The *White Mulberry* is commonly cultivated for its Leaves, to feed *Silk-worms*, in *France*, *Italy*, &c. tho' the *Perſians* always make uſe of the common *Black Mulberry* for that Purpoſe; and I have been aſſured by a Gentleman of Honour, who hath made Trial of both Sorts of Leaves, that the Worms fed with thoſe of the Black Sort, produce much better Silk than thoſe fed with the White; but he obſerves, that the Leaves of the Black Sort ſhould never be given to the Worms, after they have eaten for ſome Time of the White, leſt the Worms ſhould burſt, which is often the Caſe when they are thus treated.

The Trees which are deſign'd to feed Silk-worms, ſhould never be ſuffer'd to grow tall, but rather kept in a Sort of Hedge, and inſtead of pulling off the Leaves ſingly, they ſhould be ſhear'd off together with their young Branches, which is much ſooner done, and not ſo injurious to the Tree.

This white Sort may be propagated either from Seeds or Layers, as the *Black Mulberry*, and is equally as hardy: There are two or three Varieties of this Tree, which differ in the Shape of their Leaves, Size, and Colour of their Fruit; but as they are of no other Uſe than for their Leaves, ſo the ſtrongeſt ſhooting and the largeſt-leav'd Sort ſhould be preferr'd.

The *Large-leav'd Virginian* Sort, with long red Fruit, is at preſent very ſcarce in *England*, tho' it ſeems to be the common Sort, which grows ſpontaneouſly in the Woods of *America*: This may be propagated from Seeds, or by laying down the Branches, as the common Sort; it is very hardy, and will endure the Cold of our Winters in the open Air very well. The Leaves of this Kind are very large, and ſeem to be as proper for feeding of Silk-worms as thoſe of the common Sort; ſo that if ever the Project of eſtabliſhing a *Silk Manufactory* in the *Weſt-Indies* ſhould be ſet on foot, there would be no Occaſion of their ſending over for *Mulberry-trees*, as hath been by ſome propos'd, ſince they will find a ſufficient Quantity in all the Woods of that Country.

The *Large-leav'd Virginian Mulberry* with black Shoots, is ſtill more uncommon than any of the former: There is a large Plant of this Kind growing in the Gardens of the Biſhop of *London* at *Fulham*, which has been ſeveral Years an Inhabitant of that Garden, but has never produced any Fruit, that I could learn, but hath ſome Years a great Number of *Katkins*, much like thoſe of the *Hazel-Nut*, which occaſion'd Mr. *Ray* to give it the Name of *Corylus*; but it may be one of the Male Trees, which never produces Fruit, as it ſometimes happens in the common Sorts of *Mulberries*, the Leaves being very like thoſe of the *Black Mulberry*, but ſomewhat larger and rougher.

This Tree has not been propagated yet in this Country, for tho' it has been budded and grafted upon both the *Black* and *White Mulberries*, yet I can't hear that it hath ſucceeded upon either; and the Tree, being pretty tall, can't be laid down, which is the moſt likely Method to propagate it: This is very hardy, and will endure the Cold of our Climate in the open Air very well, and is coveted as a Curioſity by ſuch who delight in the Variety of Trees and Shrubs.

MOSCHATELLINA, Tuberous Moſchatel.

The *Characters* are;

It hath a Flower conſiſting of one Leaf, which is divided at the Brim into many Parts, from whoſe Cup ariſes the Pointal, fixed like a Nail in the Middle of the Flower, which afterward becomes a ſoft ſucculent Berry, in which are contained many flat Seeds.

We have but one Sort of this Plant, *(viz.)*

MOSCHATELLINA *foliis fumariæ bulboſæ.* *J. B.* Moſchatel with Leaves like thoſe of the bulbous Fumitory.

This Plant grows wild in ſhady moiſt Places in ſeveral Parts of *England*; it flowers the Latter-end of *March*, or the Beginning of *April*, and the Leaves decay about the Middle of *June*, when the Roots may be taken up and tranſplanted. Theſe ſhould have a pretty ſtrong Soil, and if they are planted under Thickets of Shrubs, they will thrive much better than in an open Expoſure. The Flowers are of a greeniſh white Colour, ſo are not very beautiful, but as the Plants will thrive under Trees, and require no Care in their Culture, ſo they may have a Place in Gardens for the ſake of Variety.

MOSS. *Vide* Muſcus.

MOTHERWORT. *Vide* Cardiaca.

MOULD, the Goodneſs of which may be known by the Sight, Smell, and Touch.

Firſt, by the *Sight*. Thoſe *Moulds* that are of a bright *Cheſnut* or *Hazelly* Colour are accounted the beſt; of this Colour are the beſt Loams, and alſo the beſt natural Earth; and this will be the better yet, if it cut like Butter, and does not ſtick obſtinately, but is ſhort, tolerably light, breaking into ſmall Clods, is ſweet, will be tempered without cruſting or chapping in dry Weather, or turning to Mortar in wet.

The next to that, the dark-grey and ruſſet *Moulds* are accounted the beſt, the light and dark Aſh Colour are reckon'd the worſt, ſuch as are uſually found on common or heathy Ground; the clear tawney is by no means to be approved but that of a yellowiſh red Colour is accounted the worſt o all; this is commonly found in wild and waſte Parts of th Country, and, for the moſt part, produce nothing but *Goſs*, *Furz*, and *Fern*, according as their Bottoms are more or leſ of a light and ſandy, or of a ſpewy Gravel or clayey Nature.

Secondly, by the *Smell*. All Lands that are good and wholeſome, will, after Rain or breaking up by the Spade, emit good Smell.

Thirdly, by the *Touch*. By this Means we may diſcove whether it conſiſts of Substances intirely arenaceous or clam my, or, according as it is expreſs'd by Mr. *Evelyn*, whether it be tender, fatty, deterſive, or ſlippery, or more harſh, gritty, porous, or friable.

That being always the beſt that is between the two Extreams, and does not contain the two different Qualities of ſoft and hard mix'd, of moiſt and dry, of churliſh and mild; that is, neither too unctuous or too lean, but ſuch as will eaſily diſſolve, of a juſt Conſiſtence, between Sand and Clay, and ſuch as will not ſtick to the Spade or Fingers upon every Flaſh of Rain.

A *Loam* or *Brick Mould* is not to be diſapprov'd, as requiring little Help or Improvement but the Spade, and is eſteemed both by the Gardener and Floriſt.

MUCILAGE, is a viſcous, clammy Subſtance about Seeds, *&c.*

MUCILAGINOUS, ſignifies endow'd with a clammy viſcous Matter.

MULBERRY. *Vide* Morus.

MULLEIN. *Vide* Verbaſcum.

MULTISILIQUOUS Plants, are ſuch as have after each Flower many diſtinct, long, ſlender, and, many times, crooked Caſes or *Siliquæ*, in which their Seed is contain'd; and which, when they ripen, open of themſelves, and let their Seeds drop. Of this Kind is the *Bear's-foot*, *Columbines*, common *Houſe-leek*, *Navel-wort*, *Orpine*, &c.

MUMMY, a ſort of Grafting-wax, made of one Pound of common Black Pitch, and a quarter of a Pound of common Turpentine, put into an earthen Pot and ſet on the Fire in the open Air; in doing this you ought to hold a Cover in your Hand, ready to cover it, in order to quench it, by putting it thereon, which is to be done ſeveral times, ſetting it on the Fire again, that the nitrous and volatile Parts may be evaporated. The Way to know when it is enough, is, by pouring a little of it upon a Pewter Plate, and if it be ſo, it will coagulate preſently; then this melted Pitch is to be poured into another Pot, and a little common Wax is to be added to it, mixing them well together; and then to be kept for Uſe.

Dr. *Agricola* directs the uſing this *Mummy* as follows:

When you would dreſs Roots with this Wax, you muſt melt it, and afterwards let it cool a little, then dip in the Ends of the Pieces of the Roots you would plant (for he propoſes it for the planting of Pieces of Roots of Trees, *&c.*) one after the other, but not too deep, and afterwards to put them in Water, and to plant them in the Earth, the ſmall End downwards, ſo that the larger End may appear a little Way out thereof, and have the Benefit of the Air; and then to preſs the Earth very hard down about them, that they may not receive too much Wet, becauſe that would rot them.

Mummy for Exotick Plants: The ſame Author directs the making it as follows:

Take half a Pound of Gum-Copal, beat it very fine, and ſearſe it; take three Pounds of *Venice* Turpentine, and melt it over a ſlow Fire in a ſtrong earthen Pot; when the Turpentine is melted and liquidated, put the ſifted Gum into it, keep it continually ſtirring with a little Stick, augmenting the Fire gradually, and it will all diſſolve inſenſibly; afterwards let the Turpentine evaporate well, and it will thicken; and when it is become of a ſufficient Conſiſtence, you may make it up into little Rolls, like Sealing Wax, and keep it for Uſe.

This *Mummy*, he ſays, is an excellent Vulnerary for Plants, it being ſubject to no Corruption, as other gummy Things are; it hinders any Rottenneſs between the Stock and the Root, by means of which the *Callus* is form'd the ſooner, and ſpreads over all the Parts, and the Stock becomes intirely connected with the Root. It alſo gives Strength and Vigour to the Root, and likewiſe facilitates it.

Vegetable Mummy: The ſame Author directs the making of this as follows:

Fill a large Kettle or earthen Pot about a third Part full of common Black Pitch, and add to it a little fine Roſin, or ſulphurated Pitch, and a little yellow Wax; melt theſe together till they become liquid, then take them off the Fire, and let them ſtand till they have done ſmoaking, and when cool, you may, with a Bruſh, plaiſter the Inciſions which are made for Inoculation, Grafting, *&c.*

Garden or *Foreſt Mummy:* The ſame Author directs the making it as follows:

Take three Pounds of common Turpentine, and four Pounds of common Pitch, melt the Turpentine over the Fire, and having beaten the Pitch to a Powder, throw it in; when they are well mix'd together, and grown pretty thick, take it off and keep it for Uſe.

This Compoſition may be either made up into little Sticks, like thoſe of Sealing-Wax, to be made uſe of on little Trees, or it may be kept in little Pots, and melted over a ſlow Fire, when there is Occaſion to uſe it; and dipping a little Bruſh in it you may plaiſter the Graft.

The *Noble Mummy*, or *Grafting Wax:* To make this the ſame Author directs:

Take two Pounds of pure Pitch, ſuch as is call'd at *Ratiſbonne*, *Virgin Pitch*, and add to it half a Pound of good Turpentine; put them together in an earthen Pot, and ſet them over the Fire, that the volatile Part of the Turpentine may evaporate, otherwiſe it would be very prejudicial to Trees and Roots: Prove it as you did the former, to know when it is enough, then add to it half a Pound of Virgin-Wax, and half an Ounce of pounded Myrrh and Aloes; when theſe are well mix'd, make it up into little Rolls, or Plaiſters; or elſe it may be kept in Gally-pots.

The Time he directs when the Operation of the Roots is to be performed, is in the Months of *September*, *October*, and *November*; tho' it may ſucceed well at any Time of the Year, yet thoſe Months are the moſt proper Seaſons for it. The only Difference, he ſays, is, what is planted in the Spring will ſhoot out in *June* or *July*, and what is planted in Autumn comes not forth till the Month of *April*.

The aforeſaid Author mentions great Performances by uſing theſe *Mummies*; thoſe who have a mind to be ſatisfied may peruſe his Treatiſe.

MUNTINGIA.

The *Characters* are;

It hath a Roſe-ſhaped Flower, conſiſting of ſeveral Leaves, which are placed in a circular Order, from whoſe Cup ariſes the Pointal, which afterward becomes a globular ſoft fleſhy umbilicated Fruit, in which are contained many ſmall Seeds.

The *Species* are;

1. MUNTINGIA *folio ſericeo, molli fructu majori. Plum. Nov. Gen.* Muntingia with a ſoft ſilky Leaf, and a larger Fruit.
2. MUNTINGIA *folio ulmi aſpero, fructu minimo glomerato. Plum. Nov. Gen.* Muntingia with a rough Elm-leaf, and the leaſt Fruit growing in Cluſters.
3. MUNTINGIA *folio corni, fructu minore. Plum. Nov. Gen.* Muntingia with a cornel Leaf, and a leſſer Fruit.

Theſe Plants all of them grow in *Jamaica*, and ſeveral other Parts of *America*. They were diſcovered by Father *Plumier*, who gave them the Name from Dr. *Muntingius*, who was Profeſſor of *Botany* at *Groningen* in *Holland*, ſo that we have no *Engliſh* Name for them.

They may be propagated by Seeds, which ſhould be ſown in Pots filled with light rich Earth, and plunged into a moderate Hot-bed of Tanners Bark, where they ſhould be duly watered, and in warm Weather the Glaſſes ſhould be raiſed to admit freſh Air. Theſe Seeds will often remain in the Ground a whole Year, before the Plants will appear; in which Caſe the Pots muſt be kept conſtantly clear from Weeds, and ſhould remain in the Hot-bed till after *Michaelmas*, when they may be removed into the Stove, and plunged into the Bark-bed, between other Pots of tall Plants, under which they will ſtand very well, ſo may be crowded in where Plants will not thrive. During the Winter Seaſon, the Pots ſhould be now and then watered, when the Earth appears dry; and in the Beginning of *March*, the Pots ſhould be removed out of the Stove, and placed into a freſh Bark-bed under Frames, which will bring up the Plants in a ſhort Time after.

When the Plants are come up about two Inches high, they ſhould be carefully taken out of the Pots, and each planted into a ſeparate ſmall Pot filled with light rich Earth, and then plunged into the Hot-bed again, obſerving to ſhade them from the Sun, until they have taken new Root, after which Time they ſhould be duly watered, and in warm Weather muſt have a large Share of freſh Air. In this Hot-bed the Plants may remain until the Autumn, when the Nights begin to be cold, when they ſhould be removed into the Stove, and plunged into the Bark-bed. During the Winter-ſeaſon theſe Plants muſt be kept warm, (eſpecially while they are young) and they muſt be frequently refreſhed with Water; but it muſt not be given to them in large Quantities at this Seaſon, leſt it rot the tender

Fibres of their Roots. It will be proper to continue theſe Plants in the Stove all the Year; but in warm Weather they ſhould have a large Share of Air, and Plenty of Water; but as the Plants grow in Strength, ſo they will be more hardy, and may be more expoſed in Summer, and in Winter will live in a dry Stove, if kept in a moderate Degree of Heat.

The firſt of theſe Plants riſeth to the Height of thirty Feet or more in the Places of its natural Growth, and divides into many Branches at the Top; the Flowers are white, having ſeveral yellow Threads in each; the Fruit is about the Size of a Cherry, and ſhaped like a Pomegranate, and, when ripe, of a brown Colour.

The other two Sorts ſeldom grow above twelve or fourteen Feet high, and put out many Branches on their Sides. The Fruit of theſe are ſmall, and of an Orange Colour.

MURUCUIA.

The *Characters* are;

It hath a roſe-ſhaped Flower, conſiſting of ſeveral Leaves, which are placed in a circular Order, which is incloſed in a many-leav'd Cup. The Middle of the Flower is occupied by a Tube, ſhaped like the Trunk of a Cone; out of which ariſes the Pointal, with the Embryo on the Top, on which reſt three Clubs or Nails, and under them the Stamina. The Embryo afterward becomes a fleſhy oval Fruit, having one Cell, which is filled with Seeds, which are covered with a Hood or Veil.

There is but one *Species* of MURUCUIA, which is;

MURUCUIA *folio lunato. Inſt. R. H.* Murucuia with a horned Leaf.

This Plant is very nearly allied to the Paſſion-flower, and is by ſome Authors ranged with them; but as it differs from them in the Structure of the Flower, having a large Trunk in the Center of the Flower, which the Paſſion-flowers have not, ſo Dr. *Tournefort* has ſeparated it from them, and applied this Name to it, which is the *American* Name given to ſeveral Sorts of Paſſion-flowers.

It grows in *Jamaica*, and ſeveral other Places in the hotteſt Parts of *America*, from whence the Seeds may be procured. Theſe Seeds ſhould be ſown early in the Spring of the Year, on a moderate Hot-bed; and when the Plants are come up, they muſt be tranſplanted each into a ſeparate ſmall Pot, and plunged into a Hot-bed of Tanners-bark, and then managed in the ſame Manner as hath been directed for the tender Sorts of Paſſion-flowers, with which this Plant will thrive, and produce its beautiful Flowers every Year in Plenty.

MUSA, The Plantain-Tree.

The *Characters* are;

Muſa *is a Kind of Plant with a polypetalous, anomalous Flower; the upper Petal is excavated or hollowed like a little Boat, and divided into three at the Summit; the hither one is concave, but the inward one pellated, or in the Form of a Creſcent or Half-moon Shield, and accompanied with two little narrow-pointed Leaves; the Calyx paſſes into a Cucumber-ſhaped Fruit, that is ſoft, fleſhy, covered with a Skin, divided, as it were, into three Loculaments, in which there appear, as it were, ſome Rudiments of Seeds.*

The *Species* are;

1. MUSA *fructu cucumerino longiori. Plum. Nov. Gen.* The Plantain-tree, *vulgo*.
2. MUSA *caudice maculato, fructu recto rotundo breviore odorato. Sloan. Cat.* The Banana-tree, *vulgo*.

Theſe Plants are very common in the *Eaſt* and *Weſt-Indies*, as alſo in moſt hot Countries of the World. They are carefully cultivated by the Planters in the *Weſt-Indies*, who plant 'em in low, rich Ground, by the Sides of Gullies, where they produce Fruit moſt Parts of the Year. In *England* they are only preſerved as Curioſities, where they muſt be conſtantly kept in a Bark-Stove; for tho' they may be kept alive in another warm Stove, yet they will make very little Progreſs therein, and do not appear half ſo beautiful, their chief Ornament being the Largeneſs of their Leaves, which are ſometimes ſix Feet long, and near two Feet broad; but as theſe Plants take up a great deal of Room in the Stove, eſpecially when they arrive to a conſiderable Size, ſo it is not convenient to keep more than one Plant of each Kind.

During the Summer-ſeaſon theſe Plants muſt be plentifully water'd, for the Surface of their Leaves being large, occaſions a great Conſumption of Moiſture, by Perſpiration, in hot Weather; but in the Winter they muſt be water'd more ſparingly, tho' at that Seaſon they muſt be often refreſh'd, but it muſt not be given 'em in ſuch Quantities.

The Pots in which theſe Plants are placed ſhould be large, in proportion to the Size of the Plants, for their Roots generally extend pretty far; and the Earth ſhould be rich and light. The Degree of Heat with which theſe Plants thrive beſt, is much the ſame with the *Anana* or *Pine-Apple*.

Theſe Plants are eaſily propagated, by cutting off an old Plant near the Ground, which will occaſion their ſhooting out ſeveral young ones from the Root; which is the manner they are propagated in the hot Countries; ſo that after a Spot of Ground is once planted with 'em, they will continue ſeveral Years; for the old Plant producing one large Bunch of Fruit from the Center, when that is ripe and cut off, the whole Plant decays, and ſeveral young ones ſpring up from the Roots, which being produced one after another, ſucceſſively, affords the Inhabitants Plants of various Size and Age, which produce their Fruit ſucceſſively, in like manner.

It is the firſt of theſe Species which is chiefly cultivated in the *Weſt-Indies*; that, producing a much larger Bunch of Fruit, is by the Inhabitants greatly preferr'd to the other, which is accounted a very pleaſant Fruit, when ripe, and is by many Perſons greatly coveted by way of Deſert, being ſofter and more luſcious to the Taſte, but is not ſo much eſteem'd for Food.

Theſe Plants do riſe to be fifteen or twenty Feet high in the *Weſt-Indies*, to which Height they generally arrive in about ten Months from their firſt planting, ſoon after which they produce their Fruit and then decay: They are of the quickeſt Growth of any Vegetable yet known. Sir *Hans Sloane* ſays, one may almoſt ſee them grow; he cut a young Tree even at the Top with a Knife, which immediately grew up diſcernably, and in an Hour's Time the middle Leaves, which were wrapped up within the others, were advanced above them half an Inch.

There have been lately ſeveral of theſe Plants in Flower and Fruit, in ſeveral Parts of *Europe*. The firſt of theſe Kinds, which produced Fruit in *England*, was in the Garden of Sir *Joſeph Ayloffe*, Bart. near *Harrow*: Which was of that Sort with longer Fruit, commonly called the *Plantain-Tree*. This Plant grew above twenty Feet high, and at fourteen Feet from the Surface of the Bark-bed, was produced the Bunch of Fruit from between the Leaves, which was about four Feet in Length, and weighed above forty Pounds. Theſe Fruit grew to a large Size, and became of a pale yellow Colour in Autumn, which is the Sign of Ripeneſs; but it was an ill-flavoured Fruit, as I am informed it is in the native Places of its Growth.

Since this there have been ſome other of theſe Plants in Fruit in *England*; one was at Mr. *Blackbourn*'s in *Lancaſhire*; and two Plants; one of each Kind hath produced Fruit in the *Phyſick-Garden* at *Chelſea*. The moſt ſure Method to have theſe Plants fruit in *England*, is, after they have grown for ſome Time in Pots, ſo as to have made good Roots, to ſhake them out of the Pots with the Ball of Earth to their Roots, and plant them into the Tan-bed in the Stove, obſerving to lay a little old Tan near the Roots, for their Fibres to ſtrike into; and in few Months the Roots of theſe Plants will extend themſelves many Feet each Way in the Bark, and theſe Plants will thrive a great deal faſter, than thoſe which are confined in Pots or Tubs. When the Bark-bed wants to be renewed with freſh Tan, there ſhould be great Care taken of the Roots of theſe Plants, not to cut or break them, as alſo to leave a large Quantity of the old Tan about them, becauſe, if the new Tan is laid too near them, it will ſcorch their Roots, and injure them. Theſe Plants muſt be plentifully ſupplied with Water, otherwiſe they will not thrive; in Winter they ſhould be watered every other Day, giving at leaſt a Gallon to each Plant; but in Summer they muſt be watered every Day, and double the Quantity given to them each Time. If the Plants puſh out their Flower-ſtems in the Spring, there will be Hopes of their perfecting their Fruit; but when they come out late in the Year, the Plants will decay before the Fruit is ripe. The Stoves in which theſe Plants are placed, ſhould be at leaſt twenty-four Feet in Height; otherwiſe there will not be room for their Leaves to expand: For when the Plants are in Vigour, the Leaves are often eight Feet in Length, and near three Feet broad; ſo that if the Stems grow to be ſixteen Feet, to the Diviſion of the Leaves, if the Houſe is not twenty-four Feet high, the Leaves will be cramp'd, which will retard the Growth of the Plants.

MUSCARI, Muſk, *or* Grape Hyacinth, *vulgo*.

The *Characters* are;

It hath a bulbous Root, the Leaves are long and narrow, the

Flower is hermaphroditical, conſiſting of one Leaf, and ſhaped like a Pitcher, and cut at Top into ſix Segments which are reflex'd; the Ovary becomes a triangular Fruit, divided into three Cells, which are full of round Seeds.

The *Species* are;

1. Muscari *arvenſe, juncifolium minus cæruleum. Tourn.* Common leſſer blue Grape-flower, or Muſcary.
2. Muscari *arvenſe, juncifolium exalbidum minus. Tourn.* Leſſer whitiſh Grape-flower, or Muſcary.
3. Muscari *obſoletiore, flore ex purpura virente. Cluſ.* Muſk Hyacinth or Grape-flower, of a worn-out purple-greeniſh Colour.
4. Muscari *cæruleum majus. Tourn.* Greater blue Muſcary or Grape-flower.
5. Muscari *arvenſe, latifolium purpuraſcens. Tourn.* Broad-leav'd Muſcary or Grape-flower, with a purpliſh Flower.
6. Muscari *panicula comoſa purpuro-violacea. Boerh. Ind.* The feather'd Hyacinth, *vulgo.*

There are ſome other Varieties of this Plant which are preſerv'd in the curious Flower-Gardens in *Holland* and *Flanders*, but thoſe here mention'd are what I have obſerv'd in the *Engliſh* Gardens.

The firſt Sort is very common in moſt old Gardens, where, by its plentiful Increaſe, it is become ſo troubleſome as to render it little eſteem'd; for when once theſe Roots have taken Poſſeſſion of a Garden, they are ſcarcely ever eradicated afterward; the ſmalleſt Off-ſets growing, altho' they are buried a Foot under the Surface of the Ground. This produces its Flowers in *April* and *May*, and if permitted to remain, will produce ripe Seeds in *June*.

The ſecond Sort is leſs common than the firſt, and is preſerved by ſuch who are curious in Flowers, tho' it is a Plant of no great Beauty; this is propagated by Off-ſets, as the common *Hyacinth*, and will thrive in almoſt any Soil or Situation, but beſt in that which is warm and dry.

The third Sort is a very deſpicable Flower, to Appearance, but is chiefly preſerv'd for its uncommon Sweetneſs; this is alſo increas'd, as the former, and produces its Flowers much about the ſame Seaſon.

The fourth, fifth, and ſixth Sorts are alſo preſerved in curious Gardens for Variety, but neither of theſe have much Sweetneſs in their Flowers; theſe are alſo propagated by Off-ſets as the former, but produce their Flowers later in the Seaſon.

The proper Seaſon for taking up the Roots of theſe Flowers is in *June*, when their Leaves are decay'd; at which Time they ſhould be ſpread upon Mats, in a dry Place, for a Fortnight, until their Bulbs be dry'd, when they may be laid up, each Sort by itſelf, until the Beginning of *October*, which is the Seaſon for planting moſt of thoſe bulbous-rooted Flowers; and the various Sorts of theſe may then be intermix'd amongſt other Flowers of the ſame Growth, where, in the Seaſon of their flowering, they afford an agreeable Variety. Theſe Roots ſhould never be permitted to remain longer than two Years unremoved, for they multiply ſo faſt, that the Number of their Off-ſets would greatly weaken the blowing Roots, and cauſe their Flowers to be very ſmall; and the firſt Sort, which increaſes ſo plentifully, would fill the Borders with Off-ſets, ſo as not to be clear'd out again.

MUSCIPULA. *Vide* Lychnis.

MUSCOSE, MUSCOSUS; Moſſy, or abounding with Moſs.

MUSCOSITY; Moſſineſs.

MUSCUS; Moſs.

Theſe, tho' formerly ſuppos'd to be only Excreſcencies produced from the Earth, Trees, *&c.* yet are no leſs perfect Plants than thoſe of greater Magnitude, having Roots, Branches, Flowers, and Seeds, but yet cannot be propagated from the latter by any Art.

The Botaniſts diſtinguiſh theſe into ſeveral *Genera*, under each of which are ſeveral Species; but as they are Plants of no Uſe or Beauty, ſo it would be to no purpoſe to enumerate them in this Place.

Theſe Plants chiefly flouriſh in cold Countries, and in the Winter-ſeaſon, and are many Times very injurious to Fruit-trees, which grow upon cold, barren Soils, or where they are ſo cloſe planted as to exclude the free Acceſs of Air: The only Remedy in ſuch Caſes is to cut down Part of the Trees, and plough up the Ground between thoſe left remaining, and in the Spring of the Year, in moiſt Weather, you ſhould, with an Iron Inſtrument, made a little hollow, the better to ſurround the Branches of the Tree, ſcrape off the Moſs, carrying it off the Place; and by two or three Times thus cleanſing them, together with carefully ſtirring the Ground, it may be entirely deſtroy'd from the Trees: But if you do not cut down part of the Trees, and ſtir the Ground well, the rubbing off the Moſs will ſignify little, for the Cauſe not being remov'd, the Effect will not ceaſe, but the Moſs will, in a ſhort Time, be as troubleſome as ever.

MUSHROOMS; are, by many Perſons, ſuppos'd to be produc'd from the Putrefaction of the Dung, Earth, *&c.* in which they are found; but notwithſtanding this Notion is pretty generally received amongſt the unthinking Part of Mankind, yet, by the curious Naturaliſts, they are eſteem'd perfect Plants, tho' their Flowers and Seeds have not, as yet, been diſcover'd. But ſince they may, and are annually propagated by the Gardeners near *London*, and are (the eſculent Sort of them) greatly eſteem'd, by moſt curious Palates, ſo I ſhall briefly ſet down the Method practis'd by the Gardeners who cultivate them for Sale.

But, firſt, it will not be improper to give a ſhort Deſcription of the true eatable Kind, ſince there are ſeveral unwholeſome Sorts which have been, by unſkilful Perſons, gather'd for the Table.

The true *Champignon*, or *Muſhroom*, appears at firſt of a roundiſh Form, like a Button, the upper Part of which, as alſo the Stalk, is very white, but being open'd, the under Part is of a livid Fleſh-colour, but the fleſhy Part, when broken, is very white: When theſe are ſuffer'd to remain undiſturb'd, they will grow to a large Size, and explicate themſelves almoſt to a Flatneſs, and the red Part underneath will change to a dark Colour.

In order to cultivate them, if you have no Beds in your own, or in neighbouring Gardens, which produce them, you ſhould look abroad in rich Paſtures, during the Months of *Auguſt* and *September*, until you find 'em (that being the Seaſon when they are produced) then you ſhould open the Ground about the Roots of the *Muſhrooms* where you will find the Earth, very often, full of ſmall white Knobs, which are the Off-ſets or young *Muſhrooms*; theſe ſhould be carefully gather'd, preſerving them in Lumps with the Earth about them; then being provided with a Parcel of new Horſe-dung, you ſhould ſhake out the Litter, if there be any amongſt it, and caſt it up into a Heap, for ſeven or eight Days, to heat; then you ſhould dig a Trench about three Feet wide, and in Length, according to the Quantity of *Muſhrooms* required, or the Plenty of Earth you can procure for that Purpoſe, into which you ſhould lay the Dung about a Foot thick, covering it over with light rich Earth, about ſix or eight Inches, into which, on each Side, you ſhould put in ſome of the Knobs of *Muſhroom* Earth, about ſix Inches aſunder.

Then make another Layer of Dung upon this Earth, as before, about eight or ten Inches thick, obſerving to draw in the Sides, ſo as not to bury the Knobs of *Muſhroom* Earth above half an Inch; then put another Laying of Earth, placing ſome Knobs on the Sides, as before, and put a third Laying of Dung thereon, ſtill drawing it in narrower, and cover this with Earth, ſo as to bring it to a Ridge, ſtill placing ſome Knobs of the *Muſhroom* Earth into the Sides, all the Way up; then cover the Bed all over with dry Litter, about half a Foot thick, to prevent the Earth from drying too faſt, as alſo to keep out the Wet, if there ſhould happen to be Rain; and this Litter will retain the moiſt Vapour which ariſes from the Fermentation of the Dung, and is of great Service in promoting the Growth of the *Muſhrooms*; for it is obſerved, that too much Drowth or over Moiſture is deſtructive to them, but a *Medium* between both is abſolutely neceſſary for their Production.

When your Bed has been made a Fortnight, you muſt carefully look over it, (by drawing off the Litter with your Hands) to ſee if the *Muſhrooms* begin to appear; for if they are permitted to remain long in the Bed after they are large enough for Uſe, they will rot, and infect all the young Spawn, or Off-ſets, ſo that all that Part of the Bed where they rot, will be intirely ſpoil'd. After they once begin to produce, the Bed muſt be diligently ſearch'd every Day, during their chief Seaſon of Growth, which is commonly in *Auguſt* and *September*, but at other Times, every other Day, in order to gather all ſuch as are fit for Uſe; in doing of which you ſhould pull them gently out of the Ground, ſo that no Part of their Stems be left behind, which will engender Worms, whereby the young Spawn will be deſtroy'd; but if in pulling them up, there ſhould any of the Spawn adhere to their Roots, that ſhould be gently taken off, being careful not to bruiſe it, and thruſt into the Bed again, where it will ſoon fix.

As the Cold increaſes in Autumn, ſo you ſhould increaſe the Quantity of your Litter over the Beds, to preſerve 'em from that and Wet, which, if not guarded againſt, will ſoon retard the Growth of the *Muſhrooms*, and ſpoil the Beds for a future Crop.

A Bed thus manag'd, if the Spawn takes kindly, will continue good for ſeveral Months, and produce great Quantities of *Muſhrooms*; from theſe Beds you take the Spawn for a freſh Supply, which may be laid up in a dry Place until the proper Seaſon of uſing it, which is toward the latter End of *July* or the Beginning of *Auguſt*, and it will be the better for the Purpoſe, if kept dry three or four Months, as I have experienc'd; nay, I have had it ſucceed extremely well, after having been kept in a warm dry Place above ſix Months.

MUSTARD. *Vide* Sinapi.

MYAGRUM, Gold of Pleaſure.

The *Characters* are;

It hath a Flower conſiſting of four Leaves, which are placed in form of a Croſs, out of whoſe Cup ariſes the Pointal, which afterwards becomes a turbinated Fruit, having one Cell, in which are included an oblong Seed, and two empty Cells at the Point.

The *Species* are;

1. Myagrum *monoſpermum latifolium. C. B. P.* Broad-leaved one-grain'd Gold of Pleaſure.
2. Myagrum *monoſpermum minus. C. B. P.* Leſſer one-grained Gold of Pleaſure.
3. Myagrum *capitulis rotundis. J. B.* Round-podded Gold of Pleaſure.

Theſe are all of them annual Plants, which periſh ſoon after their Seeds are ripe. They grow wild in the Corn-fields, in ſeveral Parts of *Europe*, where if the Seeds are permitted to ſcatter, the Plants will come up and thrive better than thoſe which are ſown with Care; ſo that the beſt Way to continue theſe Species, is to let the Seeds fall in Autumn, or to ſow them ſoon after they are ripe; for when they are ſown in the Spring, they very often miſcarry. When the Plants are come up, they ſhould be cleared from Weeds; and where they are too cloſe together, they ſhould be thinned ſo as to leave them about eight or ten Inches aſunder, which is all the Culture they require.

The Oil of theſe Seeds is much uſed in *Germany*, where the Inhabitants ſow large Fields with the Seed. This Oil is frequently uſed in Medicine, but the poor People eat the Oil in Sallads and Sauces, and the Rich uſe the Oil for their Lamps; but in *England* it is very rarely uſed either Way.

MYOSOTIS: [of μυὸς, a *Mouſe*, and ὦτα, an *Ear*] Mouſe-ear Chickweed.

The *Characters* are;

It hath the whole Appearance of Chickweed; but the Flower is larger, and the Fruit is ſhaped like an Ox's-horn, gaping at the Top, and full of ſmall round Seeds.

The *Species* are;

1. Myosotis *Hiſpanica ſegetum. Tourn.* Spaniſh Corn Mouſe-ear Chickweed.
2. Myosotis *Alpina latifolia. Tourn.* Broad-leav'd Mouſe-ear Chickweed of the *Alps*.
3. Myosotis *orientalis perfoliata, folio lychnidis. Flor.* Eaſtern Thorough-wax, Mouſe-ear Chickweed, with a Campion Leaf.

There are ſeveral other Varieties of this Plant, which are preſerved in curious Botanick Gardens; but as they are of little Beauty or Uſe, ſo I ſhall omit mentioning them in this Place. Theſe may be propagated by ſowing their Seeds in *March*, upon a Bed of light freſh Earth, in an open Situation, where they may remain to flower and ſeed, being careful to clear them from Weeds, as alſo to pull up the Plants, where they come up too thick; but they do not ſucceed well if tranſplanted, ſo that they ſhould always remain where they are ſown.

MYRRHIS; [is ſo call'd, becauſe it has the Scent of *Myrrh*] Sweet Cicely.

The *Characters* are;

It is an umbelliferous Plant, with a Roſe-ſhap'd Flower, conſiſting of ſeveral unequal Petals, or Flower Leaves, that are placed circularly, and reſt upon the Empalement; which turns to a Fruit, compos'd of two Seeds, reſembling a Bird's-bill, channell'd and gibbous on one Side, but plain on the other.

The *Species* are;

1. Myrrhis *magno ſemine longo ſulcato. J. B.* Sweet Cicely, *or* Great ſweet Chervil, and by ſome ſweet Fern.
2. Myrrhis *annua, ſemine ſtriato villoſo incano. M. Umb.* Annual ſweet Cicely, with hairy ſtriated Seeds, by ſome call'd Candy Carrot.
3. Myrrhis *orientalis, folio anguſtiori peucedani ſemine villoſo. Boerh. Ind.* Eaſtern ſweet Cicely, with a narrow ſulphur-wort Leaf and hairy Seeds, *or* the True Candy Carrot.

There are many more Sorts of this Plant preſerved in the Gardens of ſuch as are curious in Botany, but as they are Plants of little Uſe or Beauty, ſo I thought it not neceſſary to enumerate 'em in this Place.

The firſt mention'd is an abiding Plant, which is ſometimes uſed in Medicine: This may be propagated by ſowing the Seeds in *February*, upon a Bed of light rich Earth, in a ſhady Situation; and when the Plants come up they ſhould be tranſplanted out into the like rich Earth, in a moiſt ſhady Situation, at about two Feet aſunder; for they ſpread very wide, and take up much Room, eſpecially if they are permitted to remain two or three Years unremoved); after the Plants have taken Root they will require no further Care, but to keep 'em clear from Weeds, and they will endure ſeveral Years, and produce great Quantities of Seeds, by which, as alſo by parting the old Roots, they may be greatly increas'd.

The Seeds of the ſecond Sort are moſt commonly ſold in the Shops for thoſe of the *Daucus Creticus*; but it is the third Sort which is generally accounted the true *Daucus Creticus*: The Seeds of which are us'd in ſome of the capital Medicines of the Shops.

Theſe may be propagated by ſowing their Seeds in the Spring upon a Border of light Earth, expos'd to the Morning Sun, in which the Plants will riſe in about ſix Weeks after; when they may be tranſplanted out into Beds of light Earth, obſerving to water and ſhade them until they have taken Root; after which they will require no farther Care but only to keep them clear from Weeds: The Summer following theſe Plants will produce Flowers and Seeds; ſoon after which, the ſecond Sort will decay; but the third will ſometimes abide two or three Years, and produce Seeds annually.

MYRTUS; [according to ſome Authors, was ſo call'd on account of the Likeneſs of its Scent to that of *Myrrh*; but others will have it derive its Name of *Myrrha*, an *Athenian* Damſel, with whom *Pallas* being enamour'd, after her Death is ſaid to have transform'd her into this Tree] The Myrtle.

The *Characters* are;

The Flower conſiſts of ſeveral Leaves diſpos'd in a circular Order, which expand in Form of a Roſe; *upon the Top of the Footſtalk is the Ovary, which has a ſhort Star-like Cup, divided at the Top into five Parts, and expanded; the Ovary becomes an oblong umbilicated Fruit, divided into three Cells, which are full of Kidney-ſhap'd Seeds.*

The *Species* are;

1. Myrtus *communis Italica. C. B. P.* Common Myrtle, with pretty large Leaves.
2. Myrtus *latifolia Romana. C. B. P.* Common broad-leav'd Myrtle.
3. Myrtus *minor vulgaris. C. B. P.* Thyme-leav'd Myrtle, *vulgo*.
4. Myrtus *folio Buxi. Schuyl. Boerh. Ind.* Box-leav'd Myrtle, *vulgo*.
5. Myrtus *foliis minimis & mucronatis. C. B. P.* Roſemary-leav'd Myrtle, *vulgo*.
6. Myrtus *flore pleno. Corn.* Double-flowering Myrtle, *vulgo*.
7. Myrtus *foliis odore nucis moſchatæ, cauliculis rubentibus, vulgo odore Citri. Schuyl. Boerh. Ind.* The Nutmeg Myrtle, *vulgo*.
8. Myrtus *Bœtica anguſtifolia. Cluſ.* Narrow-leav'd *Spaniſh* Myrtle, *commonly call'd*, The Upright Myrtle.
9. Myrtus *balſamica, foliis mali granatæ. H. L.* The Pomegranate-leav'd Myrtle.
10. Myrtus *latifolia Bœtica ſecunda, vel foliis laurinis confertim naſcentibus. C. B. P.* The Orange-leav'd Myrtle, *vulgo*.
11. Myrtus *minor, foliis ex albo variegatis.* The ſtriped Thyme-leav'd Myrtle.
12. Myrtus *foliis odore nucis moſchatæ, cauliculis rubentibus,*

bus, foliis ex luteo variegatis. The ſtriped Nutmeg Myrtle, *vulgo.*

13. Myrtus *foliis mucronatis, ex albo & viridi variegatis, floſculis rubro candidis. Boerb. Ind.* The ſtriped Thyme-leav'd Myrtle, *vulgo.*

14. Myrtus *latifolia Romana, foliis ex luteo variegatis.* The broad-leav'd Myrtle, with ſtriped Leaves.

There are ſome other Varieties of theſe Plants which are preſerv'd in the Gardens of the Curious, but thoſe here mention'd are what I have obſerv'd in the Gardens near *London.*

Theſe Plants may be all propagated from Cuttings; the beſt Seaſon for which is in *July*, when you ſhould make Choice of ſome of the ſtraiteſt and moſt vigorous young Shoots, which ſhould be about ſix or eight Inches long, and the Leaves on the Lower Part muſt be ſtripp'd off about two Inches high, and the part twiſted which is to be plac'd in the Ground: Then having fill'd a Parcel of Pots (in Proportion to the Quantity of Cuttings deſign'd) with light rich Earth, you ſhould plant the Cuttings therein at about two Inches Diſtance from each other, obſerving to cloſe the Earth faſt about them, and give them ſome Water to ſettle it to the Cuttings; then place the Pots under a common Hot-bed Frame, plunging them either into ſome old Dung or Tanners-bark, which will prevent the Earth from drying too faſt; but you muſt carefully ſhade them with Mats in the Heat of the Day, and give 'em Air in proportion to the Warmth of the Seaſon, not forgetting to water them every two or three Days, as you ſhall find the Earth in the Pots require it: With this Management, in about a Month's time, the Cuttings will be rooted, and begin to ſhoot; when you muſt inure 'em to the open Air by degrees, into which they ſhould be remov'd towards the latter End of *Auguſt*, placing them in a Situation where they may be ſhelter'd from cold Winds, in which Place they may remain till *October*; when the Pots ſhould be remov'd into the Green-houſe, but ſhould be plac'd in the cooleſt Part thereof, that they may have Air given to them whenever the Weather is mild, for they require only to be protected from ſevere Cold, except the *Orange-leav'd* and the ſtrip'd *Nutmeg Myrtles*, which are ſomewhat tenderer than the reſt, and ſhould have a warmer Situation.

During the Winter-ſeaſon they muſt be frequently water'd, and if any decay'd Leaves appear they ſhould be conſtantly pick'd off, as alſo the Pots kept clear from Weeds, which if permitted to grow, will ſoon overſpread the young Plants and deſtroy them.

The *March* following theſe Plants ſhould be taken out of the Pots very carefully, preſerving a Ball of Earth to the Roots of each of them, and every one ſhould be placed into a ſeparate ſmall Pot fill'd with rich light Earth, obſerving to water them well to ſettle the Earth to their Roots, and place them in the ſhady Part of the Green-houſe until they have taken Root, after which they ſhould be inur'd to the Sun and Air; and in *May* they muſt be expos'd to the open Air, obſerving to place them near Hedges, where they may be defended from ſtrong Winds.

During the Summer-ſeaſon they will require to be plentifully water'd, eſpecially being in ſuch ſmall Pots, which in that Seaſon ſoon dries, therefore you ſhould obſerve to place them where they may have only the Morning-Sun, for when they are too much expos'd to the Sun in the Heat of the Day, the Moiſture contain'd in the Earth of thoſe ſmall Pots will ſoon be exhal'd, and the Plants greatly retarded in their Growth thereby.

In *Auguſt* following you ſhould examine your Pots, to ſee if the Roots of the Plants have not made Way out through the Hole in the Bottom of the Pots; which if you obſerve, you muſt then ſhift them into Pots a Size bigger, filling them up with the like rich Earth, and obſerve to trim the Roots which were matted to the Side of the Pots, as alſo to looſen the Earth from the Outſide of the Ball with your Hands, ſome of which ſhould be taken off, that the Roots may the eaſier find Paſſege into the freſh Earth; then you muſt water them well, and place the Pots in a Situation where they may be defended from ſtrong Winds: And at this time you may trim the Plants, in order to reduce them to a regular Figure; and if they are inclinable to make crooked Stems, you ſhould thruſt down a ſlender ſtrait Stick cloſe by them, to which their Stems ſhould be faſten'd, ſo as to bring 'em upright.

If Care be taken to train them thus while they are young, the Stems afterwards, when they have acquired Strength, will continue ſtrait without any Support, and their Branches may be prun'd, ſo as to form either Balls or Pyramids; which for ſuch Plants as are preſerv'd in the Green-houſe, and require to be kept in ſmall Compaſs, is the beſt Method to have them handſome: But then theſe ſheer'd Plants will not produce any Flowers; for which Reaſon that Sort with double Flowers ſhould not be clipp'd, becauſe the chief Beauty of that conſiſts in its Flowers: But it will be neceſſary to ſuffer a Plant or two of each Kind to grow rude, for the Uſe of their Branches in Noſegays, &c. for it will greatly deface thoſe which have been conſtantly ſheer'd to cut off their Branches.

As theſe Plants advance in Stature, ſo they ſhould annually be remov'd into larger Pots, according to the Size of their Roots, but you muſt be careful not to put them in Pots too large, which will cauſe them to ſhoot weak and ſtraggling, and many times proves the Deſtruction of them; therefore when they are taken out of the former Pots, the Earth about their Roots ſhould be pared off, and that withinſide the Ball muſt be gently looſen'd, that the Roots may not be too cloſely confin'd; and then place them into the ſame Pots again, provided they are not too ſmall, filling up the Sides and Bottom of them with freſh rich Earth, and giving them Plenty of Water to ſettle the Earth to their Roots, which ſhould be frequently repeated, for they require to be often water'd both in Winter and Summer; but in hot Weather they muſt have it in Plenty.

The beſt Seaſon for ſhifting theſe Plants, is either in *April* or *Auguſt*, for if it be done much ſooner in the Spring, the Plants are then in a ſlow growing State, and ſo not capable to ſtrike out freſh Roots again very ſoon: And if it be done later in Autumn, the cold Weather coming on will prevent their taking Root; nor is it adviſeable to do it in the great Heat of Summer, becauſe they will require to be very often water'd, and alſo to be plac'd in the Shade, otherwiſe they will be liable to miſcarry: And that being the Seaſon when theſe Plants ſhould be plac'd amongſt other Exoticks to adorn the ſeveral Parts of the Garden, theſe Plants being then remov'd, could not be expos'd until they have taken Root again, which at that time (if the Seaſon be hot and dry) will be three Weeks or a Month.

In *October*, when the Nights begin to have Froſts, you ſhould remove the Plants into the Green-houſe; but if the Weather proves favourables in *Autumn*, (as it often happens) they may remain abroad until the Beginning of *November*; for if they are carry'd into the Green-houſe too ſoon, and the Autumn ſhould prove warm, they will make freſh Shoots at that Seaſon, which will be weak, and often decay in Winter, if the Weather ſhould be ſevere, whereby they will be greatly defac'd; for which Reaſon they ſhould always be kept as long abroad as the Seaſon will permit, and remov'd out again in the Spring before they ſhoot out; and during the Winter-ſeaſon that they are in the Green-houſe, they ſhould have as much free Air as poſſible when the Weather is mild.

The two firſt mention'd Sorts I have ſeen planted abroad in warm Situations, and upon a dry Soil, where they have endured the Cold of Winters for ſeveral Years very well, with only being cover'd in very hard Froſts with two or three Mats, and the Surface of the Ground about their Roots cover'd with a little Mulch to prevent the Froſt from entering the Ground: But in *Cornwall* and *Devonſhire*, where the Winters are more favourable than in moſt other Parts of *England*, there are large Hedges of *Myrtle* which have been planted ſeveral Years, and are very thriving and vigorous, ſome of which are upward of ſix Feet high; and I believe if the Double-flowering Kind were planted abroad, it would endure the Cold as well as any of the other Sorts, it being a Native of the Southern Parts of *France*. This and the *Orange-leav'd* Kind, are the moſt difficult to take Root from Cuttings; but if they are planted toward the latter end of *July*, making Choice of only ſuch Shoots as are tender, and the Pots be plung'd into an old Bed of Tanners-bark which has loſt moſt of its Heat, and the Glaſſes ſhaded every Day, they will take Root extremely well, as I have more than once experienc'd. The *Orange-leav'd* Sort, and thoſe with variegated Leaves are ſomewhat tenderer than the ordinary Sorts, and ſhould be hous'd a little ſooner in Autumn, and plac'd farther from the Windows of the Green-houſe.

MYRTUS BRABANTICA. *Vide* Gale.

MYXA, The Sebeſten.

The *Characters* are;

It hath a Roſe-ſhaped Flower conſiſting of five Leaves. Theſe grow in Bunches. At the Bottom of the Flower-cup is the Ovary, which afterward becomes a plum-ſhap'd Fruit, including a Nut, which has ſometimes one, and at other times three Cells, in which is contain'd the Seed.

We have but one *Species* of this Plant in *Europe*, which is;

Myxa. *Dod. p.* 806. The Sebeſten Plum.

This Plant is very rare at preſent in *Europe*, being to be found in very few Gardens. It is propagated by Seeds, which do not ripen in *Europe* ; ſo the Seeds ſhould be obtained from the *Eaſt-Indies*, which is the natural Country of their Growth ; but as the Paſſage is long from thence to *Europe*, ſo the Seeds ſeldom come good to *England*. Therefore they ſhould be taken freſh from the Tree, and put into Tubs of Earth or Sand, and Care taken of them in their Paſſage, that the Salt-water do not come to them, nor Vermin deſtroy them. When they arrive, they ſhould be taken out of the Tub, and planted in ſmall Pots, filled with light rich Earth, and plunged into a moderate Hot-bed of Tanners-bark, obſerving frequently to water the Earth, in order to forward the Vegetation of the Seed. When the Plants come up about two Inches high, they ſhould be each tranſplanted into a ſeparate ſmall Pot filled with light rich Earth, and then plunged into the Hot-bed again, obſerving to ſcreen them from the Sun until they have taken new Root; after which Time they muſt have a large Share of freſh Air in warm Weather, and ſhould be frequently refreſhed with Water. The Plants may remain in the Hot-bed till the Autumn, when they ſhould be removed into the Stove ; and the firſt Year, being young, they ſhould be kept pretty warm ; but as the Plants grow ſtronger, ſo they will bear to be uſed more hardily, tho' they ſhould always be placed in a Stove in Winter, otherwiſe they will not thrive in this Country.

The Fruit of this Tree was formerly uſed in Medicine, but of late Years they have been neglected, ſo that they are rarely brought into *England*.

N A

NAPELLUS. *Vide* Aconitum.

NAPUS ; The Navew *or* French Turnip.

The *Characters* are ;

It agrees in moſt reſpects with the Turnip, but hath a leſſer Root, and ſomewhat warmer to the Taſte.

The *Species* are ;

1. NAPUS *ſativa radice alba. C. B. P.* Garden Navew, with a white Root.
2. NAPUS *ſativa radice nigra. C. B. P.* Garden Navew, with a black Root.
3. NAPUS *ſylveſtris. C. B. P.* Wild Navew.

The two firſt Species of this Plant are cultivated in *France*, *Italy*, and *Germany*, in great Abundance ; in which Places they are much preferr'd to common *Turnips*, being accounted a more delicious Food ; but in *England* they have not yet ſo much obtain'd, being only cultivated by ſome curious Perſons, and are but rarely brought to the Markets.

Theſe Plants may be cultivated by ſowing their Seeds in *June*, *July*, and *Auguſt*, after the ſame manner as is practis'd for common *Turnips* ; and when the Plants are come up, they ſhould be hough'd in the like manner to deſtroy the Weeds, and cut up the Plants where they come up too thick, with this Difference only, *viz.* that theſe may be left cloſer together than common *Turnips*, for neither their Leaves nor Roots do grow near ſo large ; Theſe Plants being thus clear'd from Weeds, and cut up where they are too thick, will require no farther Care until they are fit for Uſe, which (if the Seaſon proves favourable) will be in about two Months after they are ſown, when they muſt be drawn up, and treated as common *Turnips*. The wild Sort is pretty common upon dry Banks in moſt Parts of *England*, where it flowers early in the Spring, but is never cultivated in Gardens ; but in the Iſle of *Ely* it is very much cultivated, it being the Cole Seed from which they draw an Oil : The Seeds of this Kind are us'd in Medicine, and by moſt preferr'd to thoſe of the Garden Sort.

NARCISSO-LEUCOJUM ; [This Plant is ſo call'd becauſe it reſembles both the *Narciſſus* and *Leucojum*] The Snow-drop, *vulgo*.

The *Characters* are ;

The Flower is for the moſt part compos'd of ſix Leaves in form of a Lily, *which are ſometimes equal, and ſometimes unequal and pendulous ; the Empalement becomes a roundiſh Fruit, which is divided into three Cells, and full of roundiſh Seeds : To which may be added, It hath a bulbous Root.*

The *Species* are ;

1. NARCISSO-LEUCOJUM *trifolium minus. Tourn.* Leſſer Bulbous-violet *or* Snow drop.
2. NARCISSO-LEUCOJUM *vulgare. Tourn.* Common Bulbous-violet *or* Snow-drop.
3. NARISSO-LEUCOJUM *trifolium minus, flore pleno. Boerh. Ind.* The double Snow-drop.
4. NARCISSO-LEUCOJUM *trifolium majus. Tourn.* Greater Snow-drop *or* Bulbous-violet.
5. NARCISSO-LEUCOJUM *altiſſimum, flore parvo albo, apicibus viridibus. Boerh. Ind.* The talleſt Snow-drop, with ſmall white Flowers tipp'd with Green.

The firſt of theſe Plants is very common in moſt *Engliſh* Gardens, where it is preſerv'd for its early flowering, which is generally in *January*, when they often appear, tho' the Ground at that Time be cover'd with Snow, and is one of the firſt Uſherers in of the Spring.

This Plant is very eaſily propagated from Off-ſets, which the Roots ſend forth in great Plenty, (eſpecially if they are permitted to remain undiſturb'd for two or three Years) in which Time, from a ſingle Bulb, there will often be ten or twelve flowering Roots, and as many more ſmall Off-ſets.

The beſt Seaſon for tranſplanting the Roots is in *May*, after their Leaves are decay'd, when they muſt be taken up ; and after being dry'd in a ſhady Place, they may be kept out of the Ground until *September* before they need be planted again ; when they ſhould be planted about two Inches deep, and pretty cloſe together, otherwiſe their Flowers being ſmall, will make but a poor Appearance.

They will thrive in almoſt any Soil or Situation, but are commonly planted near Hedges, and by the Sides of large Walks ; where being permitted to remain two or three Years unremov'd, till they have increas'd, and become large Bunches, they make a very good Appearance before any other Flowers come up.

The Double Sort is preferr'd to the Single, for the Largeneſs and Fairneſs of its double Flowers. This may be propagated as the laſt, but does not multiply quite ſo faſt, nor do the Flowers appear ſo ſoon in the Spring, but they are of longer Duration.

The Great *Snow-drop* is pretty rare in *England*, and only to be found in ſome curious Gardens. This produces much larger Flowers than the common Sort, and generally riſes eight or ten Inches high. It flowers toward the Latter-end of *February* or the Beginning of *March*, and continues a long Time in Beauty. This is alſo propagated by Off-ſets as the former, but does not increaſe very faſt : It requires a middling Soil which is freſh, but ſeldom thrives well in very rich Ground, and ſhould be planted to an Eaſt or South-Eaſt Aſpect, where it may have the Morning Sun ; in which Situation it will thrive better than if expos'd to a greater Heat.

The talleſt *Snow-drop* is a very hardy Plant, and increaſes pretty faſt by Off-ſets, ſo that it is much commoner than the laſt. This flowers in *April* and *May*, and generally riſes two Feet high. The Bulbs of this Kind are very large, and do greatly reſemble thoſe of the *Narciſſus*, and the Leaves are very broad, but the Flowers are ſmall, and ſeldom more than two or three produc'd upon each Stalk. Theſe make a pretty Variety when intermix'd with other bulbous-rooted Flowers.

All theſe Sorts may be tranſplanted when their Leaves are decay'd, before they ſtrike out freſh Fibres, after which it will be too late to remove them : Their Roots may be kept out of the Ground two or three Months, if preſerv'd in a dry Place, and may be planted in almoſt any Soil, but they thrive beſt in a freſh light ſandy Earth.

NARCISSUS ; [takes its Name of ναρκὸς, or ναρκὴ, a *Torpidneſs* or *Deep-ſleep*, becauſe the Smell of this Flower is ſaid to cauſe a Heavineſs of the Head, and a Stupidity. *Plutarch* tells us, This Plant was ſacred to the infernal Gods. The Poets tell us, that *Narciſſus* was the Son of *Cephiſus* and the Nymph *Lyriope*, a Youth of ſuch excellent Beauty, that once upon a Time coming to a Fountain to drink, and ſeeing his beauteous Image in the Water, he grew ſo enamour'd with it, that he pin'd away with Deſire, and was transform'd into a Flower of his Name.] The Daffodil.

The *Characters* are ;

It hath a Lily *Flower, conſiſting of one Leaf, which is* Bell-*ſhap'd, and cut into ſix Segments, which incircle its* Middle lik *a* Crown ; *but the Empalement, which commonly riſes out of* *membranous* Vagina, *turns to an oblong or roundiſh Fruit,* whic *is triangular, and gapes in three Parts, is divided into three Cells, and full of roundiſh Seeds.*

The *Species* are;

1. Narcissus *ſylveſtris pallidus, calyce luteo. C. B. P.* Wild *Engliſh* Daffodil.

2. Narcissus *medio-luteus vulgaris. Park.* Common pale Daffodil, or Primroſe Peerleſs.

3. Narcissus *major totus luteus, calyce prælongo. C. B. P.* Great yellow *Spaniſh* Daffodil, with a long Cup.

4. Narcissus *latifolius omnium maximus, amplo calyce flavo five nonpareille. Park. Par.* The Great Nonpareil or Nonſuch Daffodil.

5. Narcissus *parvus totus luteus. C. B. P.* Small yellow *Spaniſh* Daffodil.

6. Narcissus *luteus, florum petalis reflexis. C. B. P.* Yellow Daffodil, with the Leaves of its Flowers turning back.

7. Narcissus *multiplex totus flavus. C. B. P.* Common yellow Daffodil, with a double Flower.

8. Narcissus *incomparabilis, flore pleno, partim flavo, partim croceo. H. R. Par.* The incomparable double Daffodil, with the Flower-leaves partly yellow, and partly of a Saffron Colour.

9. Narcissus *latifolius, flore pleniſſimo, petalis majoribus candidis, minoribus aureis interpolatis. Boerh. Ind.* Nonſuch Daffodil, with a very double Flower, whoſe larger Leaves are white, but the leſſer Leaves (which are intermix'd) of a Gold Colour.

10. Narcissus *latifolius, flore pleniſſimo, petalis majoribus pallidis, minoribus flavis interpolatis. Boerh. Ind.* Nonſuch Daffodil, with a very double Flower, whoſe larger Leaves are of a pale Colour, which are intermix'd with ſmaller Leaves of a yellow Colour.

11. Narcissus *latifolius, flore pleniſſimo, petalis partim flavis, partim viridibus interpolatis.* Broad-leav'd Daffodil, with a very double Flower, whoſe Leaves are ſome yellow, and others green, intermix'd, *commonly call'd* Tradeſcant's Daffodil.

12. Narcissus *Anglicus, flore pleno.* The double *Engliſh* Daffodil.

13. Narcissus *latifolius, ſulphureus vel albus, brevi calyce. C. B. P.* Broad-leav'd Daffodil, with a Brimſtone-colour'd Flower, having a ſhort Cup.

14. Narcissus *latifolius ſulphureus, calycis brevis aurei ora fimbriata. Boerh. Ind. Alt.* Broad-leav'd Brimſtone-colour'd Daffodil, with a ſhort Gold-colour'd Cup, fring'd about the Edge.

15. Narcissus *Illyricus liliaceus. C. B. P.* The Sea Daffodil, or Narciſſus tertius Matthioli.

16. Narcissus *maximus pallidus, foliis incanis. C. B. P.* Greater pale-colour'd Daffodil.

17. Narcissus *albus multiplex. Park. Par.* The double white Daffodil, or Narciſſus.

18. Narcissus *albus, circulo croceo. C. B. P.* The white Daffodil, with the Rim of the Cup of a Saffron Colour.

19. Narcissus *Narbonenſis, ſive medio luteus, ſerotinus major. Park. Par.* The Great late-flowering *French* Daffodil.

20. Narcissus *Orientalis albus, calyce luteo, campanulæ ſimilis maximus. C. B. P.* The Boſſelman's Narciſſus, *vulgo.*

21. Narcissus *Orientalis albus, calyce luteo, medius. C. B. P.* Oriental white Daffodil, with a yellow Cup.

22. Narcissus *luteus polyanthos Luſitanicus. C. B. P.* Yellow Portugal Daffodil, with many Flowers.

23. Narcissus *Orientalis albus minor, calyce ſulphureo pallido amplo. Boerh. Ind.* Leſſer white Oriental many-flower'd Daffodil, with an ample pale Brimſtone-colour'd Cup.

24. Narcissus *pallidus medio aureus. C. B. P.* Pale Daffodil, with a Golden Cup, *commonly call'd* Le Soleil D'Or.

25. Narcissus *Orientalis albus, calyce luteo, minor. C. B. P.* Leſſer white Oriental Daffodil, with a yellow Cup.

26. Narcissus *Orientalis albus, calyce ſtellato. C. B. P.* Oriental white Daffodil, with a ſtarry Cup.

27. Narcissus *Orientalis lacteus maximus, calyce pallido amplo. Boerh. Ind.* Largeſt Oriental white Daffodil, with an ample pale Cup, *commonly call'd* The Czar of Muſcovy.

28. Narcissus *Orientalis maximus lacteus, calyce pallido parvo. Boerh. Ind.* Greateſt white Oriental Narciſſus, with a ſmall pale-colour'd Cup.

29. Narcissus *Orientalis major polyanthos totus albus. H. Eyſt.* Great Oriental Narciſſus, with many white Flowers upon a Stalk.

30. Narcissus *Orientalis medius polianthos totus albus. H. Eyſt.* Middle Oriental Narciſſus, with many white Flowers upon a Stalk.

31. Narcissus *Orientalis minor polyanthos totus albus. H. Eyſt.* Leſſer Oriental Narciſſus, with many white Flowers upon a Stalk.

32. Narcissus *juncifolius, oblongo calice, luteus major. C. B. P.* Single yellow Jonquil, with a large oblong Cup.

33. Narcissus *juncifolius luteus minor. C. B. P.* Leſſer ſingle yellow Jonquil.

34. Narcissus *juncifolius, flore pleno. Cluſ. Cur. Poſt.* Double yellow Jonquil.

35. Narcissus *juncifolius, petalis anguſtiſſimis, calyce maximo tubam referente. Boerh. Ind.* Ruſh-leaf'd Daffodil, with very narrow Petals, and a large tubulous Cup, *commonly call'd* the Hoop-Petticoat.

36. Narcissus *juncifolius, flore pallidiore, calyce flavo. C. B. P.* Ruſh-leaf'd Daffodil, with a paler Flower, and a yellow Cup.

37. Narcissus *medio-purpureus. Hort. Eyſt.* Single Daffodil, with a white Flower, and a purple Middle.

38. Narcissus *Conſtantinopolitanus polyanthos major, melino pleno flore. H. R. Par.* Greater many-flowered Daffodil of *Conſtantinople*, with double yellow Flowers.

39. Narcissus *Cyprius luteus polyanthos, flore pleno. Lob. Adv.* Many-flowered Daffodil of *Cyprus*, with double yellow Flowers, commonly called the *Cyprus Narciſſus.*

40. Narcissus *Orientalis polyanthos, pleno flore, petalis exterioribus albis, interioribus luteis, odoratiſſimus. Cleric.* Sweet-ſcented Eaſtern Daffodil, with many double Flowers, whoſe outer Leaves are white, and the inner Leaves yellow.

41. Narcissus *niveus, calyce flavo, odoris fragrantiſſimi. C. B. P.* Snow-white Daffodil, with a yellow Cup, and of a fragrant Scent.

42. Narcissus *Orientalis polyanthos, floribus odoris fragrantiſſimi. Cler.* Many-flowered Eaſtern Daffodil, with ſnow-white Flowers, and a very fragrant Odour.

43. Narcissus *Orientalis polyanthos major, flore flaveſcente ſtellato.* Greater many-flowered Eaſtern Daffodil, with a yellowiſh ſtarry Flower.

44. Narcissus *Orientalis polyanthos major, flore aureo, calyce flaveſcente ſtellato.* Greater many-flowered Eaſtern Daffodil, with a golden Flower, having a pale yellow ſtarry Cup.

45. Narcissus *albus, flore minore, jaſmini odore. C. B. P.* White Daffodil, with a ſmaller Flower, ſmelling like Jaſmine.

46. Narcissus *Orientalis polyanthos albus odoratus, calyce ſtellato.* Eaſtern many-flowered Daffodil, with white ſweet-ſcented Flowers, having a ſtarry Cup.

47. Narcissus *Americanus anguſtifolius, croci flore. Houſt.* Narrow-leaved *American* Daffodil, with a ſaffron-coloured Flower.

There are ſeveral Varieties of theſe Flowers, which are annually brought over from *Holland* and *Flanders*, where the Gardeners are very induſtrious in raiſing theſe and moſt other Bulbous-rooted Flowers from Seeds, whereby they continually procure ſome new Varieties, which recompenſes them for their Trouble and Expence: But in *England* there are very few Perſons who have Patience to propagate any of theſe Flowers that Way, it being commonly five Years before they can expect to ſee the Fruits of their Labour: However, after the firſt five Years are paſt, if there be Seeds ſown every Year, there will be annually a Succeſſion of Flowers to ſhew themſelves; ſo that there will be a continual Expectation; which will take off the Tediousneſs which, during the firſt five Years, might be very troubleſome to ſome Perſons; and the annual Production of new Flowers correſponding to the annual Sowing, it will be as if the Product aroſe ſoon after.

The not practiſing this Method, has occaſion'd our ſending Abroad annually for great Quantities of Flower-roots, which have been kept up to a great Price, on account of the great Demand for 'em in *England*; whereas if we were as induſtrious to propagate them as our Neighbours, we might ſoon vie with them, if not out-do 'em, in moſt Sorts of Flowers; as may be eaſily ſeen, by the vaſt Variety of *Carnations, Auricula's, Ranuncula's*, &c. which are what have been produc'd from Seeds in *England*, and do exceed every thing of thoſe Kinds in any Part of *Europe.*

I ſhall therefore firſt lay down the Method of propagating theſe Flowers from Seeds; and afterwards proceed to the neceſſary Directions for increaſing them from Off-ſets; with the manner of treating the Roots, to produce ſtrong Flowers.

You muſt be very careful, in ſaving your Seeds, to gather none but from ſuch Flowers as have good Properties, and particularly from ſuch only as have many Flowers upon a Stalk, that flower tall, and have beautiful Cups to their Flowers; from ſuch you may expect to have good Flowers produc'd: But if you ſow ordinary Seed, it is only putting yourſelf to Trouble and Expence to no Purpoſe; ſince from ſuch Seeds there can be no Hopes of procuring any valuable Flowers.

Having provided yourſelf with good Seeds, you muſt procure either ſome ſhallow Caſes or flat Pans made on Purpoſe for the raiſing of Seedlings, which ſhould have Holes in their Bottoms, to let the Moiſture paſs off; theſe muſt be fill'd with freſh light ſandy Earth about the Beginning of *Auguſt*, (this being the beſt Seaſon for ſowing the Seeds of moſt Bulbous-rooted Flowers) which much be levell'd very even; then ſow the Seeds thereon pretty thick, covering them over with fine ſifted light Earth about half an Inch thick, and place the Caſes or Pans in a Situation where they may have only the Morning Sun till about ten o'Clock, where they ſhould remain until the Beginning of *October*, when they muſt be removed into a warmer Situation, placing 'em upon Bricks, that the Air may freely paſs under the Caſes, which will preſerve them from being too moiſt.

They ſhould alſo be expos'd to the full Sun, but ſcreen'd from the cold North and Eaſt Winds, where they may remain until the Beginning of *April*, by which Time the Plants will be up, when you muſt carefully clear 'em from Weeds; and if the Seaſon ſhould prove dry, they muſt be frequently water'd: The Caſes ſhould alſo now be remov'd into their former ſhady Poſition; for the Heat of the Noon-day Sun will be too great for the young Plants.

The Latter-end of *June*, when the Leaves of the Plants are decay'd, you ſhould take off the upper Surface of the Earth in the Caſes, (which by that Time will have contracted a Moſſineſs, and, if ſuffer'd to remain, will greatly injure the young Roots), obſerving not to take it ſo deep as to touch the Roots; then ſift ſome freſh light Earth over the Surface about half an Inch thick, which will greatly ſtrengthen the Roots: The ſame ſhould alſo be repeated in *October*, when the Caſes are mov'd into the Sun.

During the Summer Seaſon, if the Weather ſhould prove very wet, and the Earth in the Caſes appear very moiſt, you muſt remove 'em into the Sun till the Earth be dry again; for if the Roots receive much Wet during the Time they are unactive, it very often rots them; therefore you muſt never give 'em any Water after their Leaves are decay'd, but only place 'em in the Shade, (as was before directed).

Thus you ſhould manage them the two firſt Seaſons, till their Leaves are decay'd the ſecond Summer after ſowing, when you ſhould carefully take up the Roots; which may be done by ſifting the Earth in the Caſes with a fine Sieve, whereby the Roots will be eaſily ſeparated from the Earth; then having prepared a Bed or two of good freſh light Earth, in proportion to the Quantity of your Roots, you ſhould plant 'em therein at about three Inches Diſtance every Way, and about three Inches deep in the Ground.

Theſe Beds ſhould be rais'd above the Level of the Ground, in proportion to the Moiſture of the Soil, which if dry, three Inches will be enough; but if it be wet, they muſt be rais'd ſix or eight Inches high, and laid a little rounding to ſhoot off the Wet.

If theſe Beds are made in *July*, which is the beſt Time to tranſplant the Roots, the Weeds will ſoon after appear very thick; therefore you ſhould gently hough the Surface of the Ground, to deſtroy 'em; being very careful not to cut ſo deep as to touch any of the Roots; and this ſhould be repeated as often as may be found neceſſary by the Growth of the Weeds, obſerving always to do it in dry Weather, that they may be effectually deſtroy'd: And toward the Latter-end of *October*, after having intirely clear'd the Beds from Weeds, you ſhould ſift a little rich light Earth over them about an Inch thick, the Goodneſs of which will be waſh'd down to the Roots by the Winter's Rain, which will greatly encourage their Shooting in the Spring.

If the Cold ſhould be very ſevere in Winter, you ſhould cover the Beds with Peaſe-haulm, or ſome ſuch light Covering, to prevent the Froſt from penetrating the Ground to the Roots, which might greatly injure them while they are ſo young.

In the Spring, when the Plants begin to appear above Ground, you muſt gently ſtir the Surface of the Ground, clearing it from Weeds, *&c.* in doing of which, you ſhould be very careful not to injure the Plants: and if the Seaſon ſhould prove dry, you ſhould now-and-then gently refreſh 'em with Water, which will ſtrengthen the Roots.

When their Leaves are decay'd, you ſhould clear the Beds from Weeds, and ſift a little Earth over 'em, (as was before directed); which muſt alſo be repeated in *October*, in like manner; and ſo every Year continu'd till the Roots flower, when you ſhould mark all ſuch as promiſe well, which ſhould be taken up as ſoon as their Leaves decay, and planted at a greater Diſtance in new-prepared Beds: But thoſe which do not flower, or thoſe you do not greatly eſteem, ſhould be permitted to remain in the ſame Bed; therefore, in taking up thoſe Roots which you mark'd, you muſt be careful not to diſturb the Roots of thoſe left, and alſo to level the Earth again, and ſift ſome freſh Earth over the Beds (as before), to encourage the Roots; for it often happens, in the Seedlings of theſe Flowers, that at their firſt Time of Blowing, their Flowers do ſeldom appear half ſo beautiful as they do the ſecond or third Year; for which Reaſon none of them ſhould be rejected until they have flower'd two or three times, that ſo you may be aſſured of their Worth.

Thus having laid down Directions for the Sowing and Managing theſe Roots, until they are ſtrong enough to flower; I ſhall proceed to give ſome Inſtructions for Planting and Managing the Roots afterwards, ſo as to cauſe 'em to produce large fair Flowers.

All the Sorts of *Narciſſus* which produce many Flowers upon a Stalk, ſhould have a Situation defended from Winds, otherwiſe they'll be ſubject to be brought down while in Flower; for notwithſtanding their Stalks are generally pretty ſtrong, yet the Number of Flowers upon each, renders their Heads weighty, eſpecially after Rain, which lodges in the Flowers, and, if ſucceeded by ſtrong Winds, very often deſtroys their Beauty, if they are expos'd thereto; ſo that a Border under a Hedge, which is open to the South-Eaſt, is preferable to any other Poſition for theſe Flowers.

The Morning Sun riſing upon them will dry off the Moiſture which had lodged upon them the preceding Night, and cauſe 'em to expand fairer than when they are planted in a ſhady Situation; and if they are too much expos'd to the Afternoon Sun, they will be hurry'd out of their Beauty very ſoon; and the ſtrong Winds uſually coming from the Weſt and South-Weſt Points, they will be expos'd to the Fury of them, which frequently is very injurious to them. But you ſhould not plant them under a Wall, or any other cloſe Fence; for that will reflect the Heat too greatly upon the Flowers, and alſo draw them up with weak Stems, ſo that they will not flower ſo ſtrong, nor continue ſo long in Beauty.

Having made choice of a proper Situation, you muſt then proceed to prepare the Earth neceſſary to plant them in; for if the natural Soil of the Place be very ſtrong, or poor, it will be proper to make the Border of new Earth, removing the former Soil away about a Foot deep. The beſt Earth for theſe Flowers is a freſh light hazle Loam, mix'd up with a little very rotten Dung, or tan; this ſhould be well mix'd together, and often turn'd over, in order to ſweeten it: Then having remov'd away the old Earth at leaſt a Foot deep, you ſhould put a Laying of rotten Dung or Tan in the Bottom about two Inches thick, upon which you muſt lay ſome of the prepared Earth about four Inches thick, making it exactly level; then having mark'd out by Line the exact Diſtances at which the Roots are to be planted (which ſhould not be leſs than four or five Inches ſquare) you muſt place the Roots accordingly, obſerving to ſet them upright; then you muſt cover them over with the before-mention'd Earth about ſix Inches deep, being very careful, in doing of it, not to diſplace the Roots: When this is done, you muſt rake the Surface of the Border even, and make up the Side ſtrait, which will appear handſome.

The beſt Time for planting theſe Roots is in *Auguſt*; for if they are kept too long out of the Ground, it will cauſe their Flowers to be very weak. You ſhould alſo obſerve the Nature of the Soil where they are planted, and, whether the Situation be wet or dry, according to which you ſhould adapt the freſh Earth, and order the Beds; for if the Soil be very ſtrong, and the Situation moiſt, you ſhould then make choice of a light Earth, and raiſe the Beds ſix or eight Inches above the Level of the Ground, otherwiſe the Roots will be in danger of periſhing by too much Wet: But if the Situation be dry, and the Soil naturally light, you ſhould then allow the Earth to be a little ſtronger: And the Beds ſhould not be rais'd above three Inches high; for if they are made too high, the Roots will ſuffer very much, if the Spring ſhould prove dry, nor would the Flowers be near ſo fair.

Toward the Middle of *October*, if the Weeds have grown upon the Beds, you ſhould, in a dry Day, gently hough the Surface of the Ground, to deſtroy them, obſerving to rake it over ſmooth again: After which, they will require no farther Care till the Spring, when their Leaves will appear above Ground, at which Time you ſhould gently ſtir the Surface of the Earth, with a ſmall Trowel, being very careful not to injure the Leaves of the Plants, and rake it ſmooth with your Hands, clearing off all Weeds, *&c.* which, if ſuffer'd to remain at that Seaſon, will ſoon grow ſo faſt, as to appear very unſightly, and will exhauſt the Nouriſhment from the Earth.

With this Management theſe Roots will flower very ſtrong, ſome of which will appear in *March*, and the others in *April*; which, if ſuffer'd to remain, will continue in Beauty a full Month, and are at that Seaſon very great Ornaments to a Flower-Garden.

After the Flowers are paſt, and the Leaves decay'd, you ſhould ſtir the Surface of the Ground, to prevent the Weeds from growing; and if at the ſame time you lay a little very rotten Dung over the Surface of the Beds, the Rain will waſh down the Salts thereof, which will greatly encourage the Roots the ſucceeding Year.

During the Summer Seaſon they will require no farther Care, but to keep them clear from Weeds till *October*, when the Surface of the Beds ſhould be again ſtirr'd, raking off all Weeds, *&c.* and laying ſome good freſh Earth over the Beds about an Inch deep, which will make good the Loſs ſuſtain'd by Weeding, *&c.* and in Spring you muſt manage as was before directed for the preceding Year.

Theſe Roots ſhould not be tranſplanted oftener than every third Year; becauſe the firſt Year after removing they never flower ſo ſtrong as they do the ſecond and third; nor will the Roots increaſe ſo faſt when they are often tranſplanted; but if you let them remain longer than three Years unremov'd, the Number of Off-ſets, which by that Time will be produced, will weaken the large Bulbs, and cauſe them to produce very weak Flowers; therefore, at the Time of tranſplanting them, all the ſmall Off-ſets ſhould be taken off, and planted in a Nurſery-bed by themſelves, but the large Bulbs may be planted again for Flowering. If you plant them in the ſame Bed where they grew before, you muſt take out all the Earth a Foot deep, and fill it up again with freſh, in the manner before directed, which will be equal to removing them into another Place: This is the conſtant Practice of the Gardeners in *Holland*, who have but little Room to change their Roots; therefore they every Year remove the Earth of their Beds, and put in freſh, ſo that the ſame Place is conſtantly occupy'd by the like Flowers.

The common Sort of *Daffodil* are generally planted in large Borders of the Pleaſure-Garden, where being intermix'd with other Bulbous rooted Flowers, they afford an agreeable Variety in their Seaſons of Flowering: Theſe Roots are very hardy, and will thrive in almoſt any Soil or Situation, which renders 'em very proper for Rural Gardens, where being planted under the Shade of Trees, they will endure ſeveral Years without tranſplanting, and produce annually, in the Spring, great Quantities of Flowers, which afford an agreeable Proſpect.

The *Jonquils* ſhould be planted in Beds, or Borders, ſeparate from other Roots; becauſe theſe require to be tranſplanted at leaſt every other Year, otherwiſe their Roots are apt to grow long and ſlender, and ſeldom flower well after; which is alſo the Caſe, if they are continued many Years in the ſame Soil; wherefore the Roots ſhould be often remov'd from one Part of the Garden to another, or at leaſt the Earth ſhould be often renew'd, which is the moſt probable Method to preſerve theſe Flowers in Perfection.

The Soil in which theſe Flowers ſucceed beſt, is a Hazle Loam, neither too light, nor over-ſtiff; it muſt be freſh, and free from Roots of Trees, or noxious Weeds; but ſhould not be dung'd; for 'tis very remarkable, that where the Ground is made rich, they ſeldom continue good very long, but are ſubject to ſhoot downwards, and form long ſlender Roots.

Theſe Flowers are greatly eſteem'd by many People for their ſtrong ſweet Scent, tho' there be very few Ladies that can bear the Smell of them; ſo powerful is it, that, many times, it overcomes their Spirits, eſpecially if confined in a Room; for which Reaſon they ſhould never be planted too cloſe to an Habitation, leſt they become offenſive; nor ſhould the Flowers be placed in ſuch Rooms where Company is entertain'd.

The thirty-ſeventh Sort is pretty common in many of the Gardens near *London*: this produces only one ſingle white Flower on the Top of the Stalk, which turns on one Side, and has a purple Rim to the Cup in the Middle: it flowers the latter End of *April*, and the Beginning of *May*, and is very hardy.

The other Sorts have been lately introduced into the *Engliſh* Gardens, ſo are not at preſent very common; but as theſe are all of them very hardy Plants, and multiply pretty faſt by Off-ſets, ſo in few Years they will be in as great Plenty as any of the other Kinds.

The thirty-eighth, thirty-ninth, fortieth, forty-firſt, forty-ſecond and forty-fifth Sorts, are extremely worth cultivating in every good Garden, for the ſake of their beautiful ſweet-ſmelling Flowers, which continue from the Middle of *March* to the End of *April*, unleſs the Seaſon proves very hot. The forty-fifth Sort produces often twenty Flowers on each Stalk, which are of a ſnow-white Colour, and ſmell exceedingly ſweet.

Theſe Sorts may be propagated after the Manner as hath been above directed.

The forty-ſeventh Sort was diſcovered by the late Dr. *William Houſtoun* at *La Vera Cruz*, where it grew in great Plenty. This hath Leaves like thoſe of the *Jonquil*, and there is but one Flower produced on each Stalk. It is propagated by Off-ſets from the Roots, in the ſame Manner as the common *Narciſſus*, but is very tender; ſo muſt be preſerved in the Bark-ſtove, and treated after the ſame Manner as the tender Kinds of *Lilio-narciſſus*, otherwiſe they will not thrive in this Country.

NASTURTIUM: This ſome derive of *Naſi Tormentum*, i. e. *Torment of the Noſe*; becauſe it has ſuch an Acrimony, that the Smell of the Seed bruiſed will provoke Sneezing] Creſs.

The *Characters* are;

The Flower conſiſts of four Leaves, which are placed in form of a Croſs; the Pointal, which riſes from the Centre of the Flower-cup, becomes a roundiſh ſmooth Fruit, which is divided into two Cells, by the intermediate Partition, obliquely placed, with reſpect to the Valves, and furniſh'd with Seeds, which are generally ſmooth: To which may be added, The Leaves are cut into many Parts, by which Creſs *is diſtinguiſh'd from* Thlaſpi, *or* Treacle-Muſtard.

The *Species* are;

1. NASTURTIUM *hortenſe vulgatum.* C. B. P. Common Garden-Creſs.
2. NASTURTIUM *hortenſe criſpum.* C. B. P. Curled Garden-Creſs.
3. NASTURTIUM *hortenſe latifolium.* C. B. P. Broad-leav'd Garden-Creſs.
4. NASTURTIUM *ſylveſtre, capſulis criſtatis.* *Tourn.* Swine's-Creſs, *or* Warted Bucks-horn.

The firſt Sort is commonly cultivated in Gardens as a Sallet-herb, and is chiefly eſteem'd in the Winter and Spring, it being one of the warm Kind. During the Winter Seaſon, it muſt be ſown upon a gentle Hot-bed, and cover'd with either Mats or Glaſſes, to preſerve it from great Rains or Froſt, both of which are equally deſtructive at that Seaſon: In the Spring it may be ſown in warm Borders, where, if it be defended from cold Winds, it will thrive very well: but if you would continue it in Summer, you muſt ſow it upon ſhady Borders, and repeat ſowing every Week, otherwiſe it will be too large for Uſe; for at that Seaſon it grows very faſt.

The *Broad-leav'd* and *Curled* Sorts are preſerv'd in ſome Gardens for Curioſity Sake, and to garniſh Diſhes, but the common Sort is equally as good for Uſe. Theſe ſhould be ſown ſomewhat thinner than the common Sort, and when the Plants come up, they ſhould be drawn out, ſo as to leave the remaining ones half an Inch aſunder, whereby they will have Room to expand their Leaves, in which their Difference from the common Sort conſiſts.

In order to preſerve theſe Varieties diſtinct, you muſt carefully ſeparate all ſuch Plants as appear inclin'd to degenerate from their Kinds, leaving only ſuch of the broad-leav'd Kind as have very fair broad Leaves; and ſo of the curl'd Sort, only ſuch as have their Leaves very much curl'd; being very careful not to intermix 'em together. When the Seeds are ripe, the Plants ſhould be drawn up, and ſpread upon a Cloth two or three Days to dry, after which the Seeds ſhould be beaten out, and preſerved in a dry Place for Uſe.

NASTURTIUM INDICUM. *Vide* Acriviola.

NATURAL; is belonging to, or proceding from *Nature*.

NATURAL FACULTY; is that *Faculty* or Action whereby Bodies are increaſed, nouriſhed, or preſerved.

NATURE; is a Term variouſly uſed, and Mr. *Boyle*, in a Treatiſe of *The vulgarly receiv'd Notion of Nature*, gives us eight principal ones.

1. *Nature* is uſed for the Syſtem of the World, the Machine of the Univerſe, or the Aſſemblage of all created Beings.

In this Senſe we ſay, the *Author of Nature*, meaning *God*; and ſpeaking of the *Sun*, call him the *Father of Nature*, becauſe he warms the Earth, and makes it fruitful; and the *Eye of Nature*, becauſe he illuminates the Univerſe; and of a Phœnix, an Unicorn, a Griffin, a Satyr, that there are no ſuch Things in *Nature*.

2. *Nature*, in a more confined Senſe, comprehends the ſeveral Kinds of Beings, created and uncreated; corporeal and ſpiritual; thus we ſay, human *Nature*, *i. e.* all Men who poſſeſs the ſame rational Souls; angelical *Nature*; divine *Nature*.

3. *Nature*, in a ſtill more reſtrain'd Senſe, is uſed for the Eſſence of a Thing, or that Attribute that makes a Thing what it is, as 'tis the *Nature* of the Soul to think.

4. *Nature* is particularly uſed for the eſtabliſh'd Order and Courſe of material Things, the Series of the Second Cauſes or the Laws that God has impos'd on the Motions impreſs'd by him. In this Senſe we ſay, The Day and Night, by *Nature*, ſucceed one another; Phyſick is the Study of *Nature*; Reſpiration is by *Nature* neceſſary to Life.

Again, in this Senſe we ſay, Miracles are Effects above Powers of *Nature*; and that Art exceeds *Nature*, by means of Machines and moving Powers which produce Effects which go beyond what we ſee in the common Courſe of Things.

5. *Nature* is alſo uſed to ſignify an Aggregate of Powers, which belong to any Body, eſpecially a living one. Thus we ſay, *Nature* is ſtrong, *Nature* is weak, *Nature* is ſpent, *&c.*

6. *Nature* is alſo more ſtrictly uſed for the Action of Providence, the Principle of all Things, or that ſpiritual Being which is diffus'd throughout the Creation, and moves and acts in all Bodies, and gives them certain Properties, and procures certain Effects. In this Senſe, *Nature* ſignifies the Qualities or Virtues that God has given to his Creatures, Animal, Vegetable, *&c.*

In ſpeaking of the Action of *Nature*, no more is to be underſtood, but that *Bodies act on one another*, in a Manner, *agreeable to the general Laws of Motion which the Creator has eſtabliſhed.*

Mr. *Boyle* alſo propoſes a Notion of *Nature*, as more fit than any yet given, to paſs for the principal one of *Nature*; with regard to which, many Axioms and Expreſſions relating to the Word *Nature*, may be conveniently underſtood; and in order to this, he diſtinguiſhes between *general* and *particular Nature.*

General Nature he defines the Aggregate of the Bodies that make up the World, conſider'd as a Principle, by Virtue whereof, they act and ſuffer according to the Laws of Motion, preſcrib'd by the Order of Things.

Particular Nature of any ſubordinate or individual, conſiſts in the *general Nature*, apply'd to a diſtinct Portion of the Univerſe. Or, it is a Convention of the Mechanical Properties, (as Magnitude, Figure, Order, Situation, and Local Motion) of Parts convenient and ſufficient to conſtitute, or intitle to its particular Species or Denominations, the particular Body they make up; the Concourſe of all theſe being conſider'd, as the Principle of Motion, Reſt, *&c.*

The *Laws of Nature* are Axioms or General Laws and Rules of Motion and Reſt, obſerv'd by natural Bodies in their Actions one on another; and in all the Changes which befal them in their *natural* State.

The Laws of *Nature* and of Motion are in Effect the ſame: Cuſtom, indeed, has made ſome Difference, and we find Authors call the particular Caſes of Motion, *Laws of Motion*; the more general or catholick ones, and thoſe from which, as from Axioms, the others are deduc'd, they call *Laws of Nature*.

Of theſe Sir *Iſaac Newton* has eſtabliſh three *Laws of Nature:*

1. Every Body perſeveres in the ſame State, either of Reſt, or Uniform Motion; except ſo far as it is forced to change that State by ſome foreign Force.

Thus *Projectiles* perſevere in their Motions, ſo far as 'till they are retarded by the Reſiſtance of the Air, and the Cauſe of Gravity; and thus a Top, whoſe Parts, by Coheſion, are continually drawing one another out of their Rectilinear Motion, only ceaſes to run round, becauſe reſiſted by the Air, and the Friction of the Plane whereon it moves. And thus the larger Bodies of the Planets and Comets preſerve their progreſſive, circular Motion a long time undiminiſh'd, in Regions void of all ſenſible Reſiſtance.

2. *The Change of Motion is ever proportional to the Moving Force whereby it is effected, and in the Directiou of the Right Line, wherein that Force is impreſs'd.*

If a certain Force produce a certain Motion, a double Force will produce double the Motion, a triple Force triple the Motion, whether it be impreſs'd all at once, or ſucceſſively, by Degrees. And this Motion, ſince it is ever directed to the ſame Point, (with the generating Force) if the Body were in Motion before, is either to be added to it, as if the Motions conſpire, or ſubtracted from it, as where contrary; or added obliquely, as where oblique; and is compounded with it, according to the Determinations of each.

3. *Reaction is always contrary and equal to Action: or the Actions of two Bodies upon one another are always mutually equal, and directed contrary Ways.*

Whatever preſſes or pulls another, is equally preſs'd or pull'd thereby. Thus, if I preſs a Stone with my Finger, the Finger is equally preſs'd by the Stone; if a Horſe draw a Weight by a Rope, the Horſe is equally drawn back by the Weight; for the Rope being equally ſtretch'd each Way, will, with an equal Endeavour to relax itſelf, drive the Horſe towards the Stone, and the Stone towards the Horſe, and will hinder the Progreſs of the one as much as it promotes that of the other.

Again; if any Body, by ſtriking on another, do, in any manner, change its Motion, it will itſelf, by means of the other, undergo an equal Change in its own Motion, by Reaſon of the Equality of the Preſſure.

In theſe Actions the Changes are equal; not thoſe, we mean, of the Velocities, but thoſe of the Motions, the Bodies being ſuppos'd free of any other Impediments: For the Changes of Velocities, which are likewiſe made contrary Ways, inaſmuch as the Motions are equally changed, are reciprocally proportionate to the Bodies.

For a further Illuſtration of the three foregoing Laws of Motion take what follows:

As to the firſt of thoſe Laws of Motion, *That all Bodies do perſevere in the ſame State of Reſt or Moving*, &c. conſider how inviolably this Law is obſerv'd by Natural Agents: For it never has yet been obſerv'd that any Body did bring itſelf from *Reſt* to *Motion*; nor that ever any Body in *Motion* did bring itſelf to *Reſt*; nor that ever any Body in Motion alter'd its Courſe of itſelf: But that there were always evident Cauſes, where-ever ſuch Caſes have happen'd.

If it were ſo, that the Bodies of themſelves did change their Places, then all Things would run into Confuſion; nor would there be any certain Means to regulate the Univerſe. It is certain, that *Projectiles* would for ever move on the ſame ſtrait Line, were not their own Motion ſtopp'd by the *Air*, their own *Gravity*, or the *Ruggedneſs* of the Place on which they mov'd; or if ſome Body by a different Direction did not alter their Courſe. For Inſtance, a Top, as we juſt now mention'd; whoſe Parts, by their Coheſion, hinder one another's Rectilinear Motions, if the Air did not gradually impair its Motion, would for ever turn round.

Natural Bodies conſiſt of a Maſs of Matter which can never alter its State of itſelf; and Bodies that are once at Reſt, muſt continue ſo, till ſome new Force put them into Motion. If Bodies are once in Motion, the ſame Energy will continue them in Motion, and drive them forwards with the ſame Direction.

And beſides, There is in Matter a *Paſſive Principle*, which by Sir *Iſaac Newton* is aptly call'd, The *Vis Inertiæ*; by which Principle, Bodies do to the utmoſt of their Power reſiſt any Change or Alteration of their State, whatever it be, either of *Reſt*, *Motion*, or its *Direction*; and this Reſiſtance is always equal in the ſame Body; and in different Bodies is proportional to the Quantity of Matter they contain.

There is as much Force requir'd to ſtop a Body in Motion, as is requir'd to put it into Motion, and on the contrary: And therefore ſince the ſame Body reſiſts equally the contrary equal Changes of the State; this Reſiſtance will as powerfully operate to keep a Body in *Motion*, as to keep it at *Reſt*, and by conſequence it can never change its State of *Reſt*, *Motion*, or *Direction* of itſelf: For to change its Direction, and of itſelf to move itſelf another Way, is one and the ſame Thing; ſo that *Matter* of itſelf is ſo far indifferent as to *Motion* or *Reſt*, that it is not inclin'd more to one than it is to the other; and does reſiſt a Change from *Reſt* to *Motion*, as much as it does from *Motion* to *Reſt*.

This Paſſive Principle in Matter, or *Vis Inertiæ*, is very conſpicuous in the Motion of a Veſſel full of Liquor upon a Horizontal Plane; for at the firſt, while the Veſſel is in Motion along the Plane, the Liquor in it ſeems to move with a Direction contrary to that of the Veſſel, the Water riſing on the hinder Side of the Veſſel.

This is not becauſe there is any ſuch Motion impreſs'd upon the Water, but becauſe the Water endeavouring by its *Vis Inertiæ* to continue in its State of *Reſt*, the Veſſel is not able to communicate its Motion to it immediately, becauſe of the Bulk and fluid State of it; but the Water perſeveres in its State of Reſt, while the Veſſel makes forward, and ſo ſeems to move a contrary Way. But as ſoon as the Water has the Motion of the Veſſel intirely communicated to it, and begins to move with a Velocity equal to that of the Veſſel; if you ſtop the Veſſel on a ſudden, the Water ſtill continues its Motion, and daſhes over the Sides of the Veſſel.

This *Vis Inertiæ*, or Paſſive Principle, is eſſential to Matter; for it neither can be depriv'd of it, nor intended or remitted in the ſame Body, but is always in Proportion to the Quantity of Matter Bodies do contain.

From what has been before ſaid, the following Corollaries may be deduc'd:

1. It appears plain from hence, That neither any Particle of Matter, or Combination of Particles, *i. e. No Body*, can either move of it, or themſelves, or alter the Direction of their Motion by themſelves: For *Matter* is not endow'd with Self-Motion, nor with a Power to alter the Courſe in which it is put; but is merely Paſſive, and muſt of itſelf for ever continue in that State and Courſe that it is ſettled in, for ever; and if it cannot move of itſelf, it never can of itſelf alter its Courſe, when it is in Motion: For of itſelf to alter its Courſe, is no other than to move of itſelf after a particular Manner.

2. It is alſo plain from hence, that no Body, when it is once put *into Motion*, will of itſelf naturally move in a curve Line. All Motion is naturally forward in the ſame ſtrait Line with the Direction of the Moving Force; but whatſoever does move in a curve Line, muſt alter its Direction in every Point; and therefore no Body can naturally move of itſelf in a curve Line.

3. Hence it appears, that thoſe great Bodies, the *Planets*, their *Satellites*, and *Comets* (tho' they are at firſt put into Motion) do not naturally, and of themſelves, move in their reſpective Orbits, which are curve Lines, returning into themſelves; but are kept in them by ſome attracting Force; which if it were once ſuſpended, they would run out in right Lines for ever: And of Conſequence, the Motions of theſe vaſt Bodies in their Orbits depend abſolutely upon this attracting Force. And thence it is,

4. That neither *Motion* nor *Reſt* (not one of them particularly) is eſſential to Matter: That is as much as to ſay, that Matter is indifferent as to either of theſe particularly, and does no leſs reſiſt its being chang'd from *Reſt* to *Motion*, than it does being chang'd from *Motion* to *Reſt*. And as any Force will impreſs ſome Degree of *Motion* on a reſting Body; ſo, in like manner, the ſame Degree of Force being impreſs'd at the ſame Time with a contrary Direction, will bring it again to *Reſt*; but it is not abſolutely neceſſary, as to the Being of Matter, that it be either in *Motion* or *Reſt*. For, let Matter be in which of theſe States ſoever, it will ſtill be Matter. And ſo, ſince the *Vis Inertiæ* or paſſive Principle is eſſential to Matter, it thereby becomes indifferent as to *Reſt* or *Motion*, and is equally ſuſceptible of either, according as the external Force urges it.

5. Hence may be demonſtrated the Neceſſity of a *Vacuum*, or Space diſtinct from Matter: For ſince it is ſo that all Bodies do by their *Vis Inertiæ*, to the utmoſt of their Power, reſiſt any Manner of Change or Alteration of their State either of *Reſt* or *Motion*; and ſince the Reſiſtance is always equal in the ſame Body, or the ſame, and in different Bodies, is proportionable to the Quantity of Matter whereof they conſiſt; and ſince, by Conſequence, if two Bodies which contain equal Quantities of Matter, moving with equal Quickneſs in contrary Directions, ſo that they ſtrike directly upon one another, they will for certain both *reſt* or *ſtop* at the Point of their Meeting or Concourſe; as alſo it being demonſtrable, That two Bodies moving with equal Celerities contrary one to the other, and both reſting where they meet, are equally heavy; it then follows of Neceſſity, that two Bodies, which contain equal Quantities of Matter, are equally heavy: And if this be allow'd, if there were two Spheres of equal Diameters, and there were no Vacuities in Bodies, they would contain equal Quantities of Matter, and of Conſequence would be of equal Weight; *i. e.* Two Spheres, the one of *Wood*, and the other of *Gold*, would have the ſame ſpecifick Gravities: But this being contradicted by Experience, Vacuities in the Sphere of Wood muſt of Neceſſity be admitted to anſwer for the Difference of their Gravities.

As to the Second, *That the Changes made in the Motion of Bodies are always proportional*, &c. that may be illuſtrated by the following Conſiderations:

Effects are always in Proportion to their adequate Cauſes; and if any Degree of *Force* produce any Degree of *Motion*, then it follows, that a double Degree of the ſame Force will produce a double Degree of Motion; and a three-fold Degree of the ſame Force, a three-fold Degree of the ſame Motion; and ſo on: And this Motion muſt of Neceſſity proceed in the ſame Direction as that of the Force moving, ſince the Motion is cauſed only by it; and becauſe by the former Law, Bodies which are in Motion cannot change their Directions of themſelves; ſo that except their Courſe be alter'd by ſome new Force, the Bodies muſt proceed in the ſame Direction with that of the moving Courſe. And if a Body was before in Motion, the Motion which ariſes from that impreſs'd Force, if in the ſame Direction, does ſo much increaſe the former Motion; if it has a contrary Direction, it deſtroys a Part of the former Motion, equal to that which is impreſs'd; when it has a Direction oblique to the former Motion, it is either added to or ſubtracted from the former Motion, according as the Motion, ariſing from a Compoſition of theſe two, is determin'd.

From what has been ſaid, it plainly appears, That in the preſent Conſtitution of Things, there can be no perpetual Motion. By a *perpetual Motion* you are to underſtand an uninterrupted Communication of the ſame Degree of Motion, from one Part of Matter to another in a Circle: Not as Bodies, which are put into a Motion, do for ever continue in the ſame, unleſs ſo far as they are reſiſted or ſtopp'd by other Bodies; but a Circulation of the ſame Quantity of Motion, ſo as it returns perpetually undiminiſh'd from the firſt Mover.

For, Motion produced (by the Law) is but proportionable to the Force generating; and all the Motions which are perform'd on this Globe, being perform'd in a reſiſting Fluid (the Air) a conſiderable Quantity of this Motion muſt neceſſarily be ſpent in the Communication, on this *Medium*, and ſo of Conſequence it is impoſſible that the ſame Quantity of Motion ſhould return undiminiſh'd upon the firſt Mover; which is neceſſary, in order to a *perpetual Motion*.

Beſides, ſuch is the Nature of material Organs, that a greater or leſſer Degree of Friction cannot be avoided, altho' the Machine ſhould be framed according to the moſt exact Principles of *Geometry* and *Mechanicks*, there not being in Nature any Congruity that is perfect, or Smoothneſs that is exact; the Manner of Coheſion of Bodies; the ſmall Proportion the ſolid Matter bears to the Vacuities in them, not admitting of them ſo to be. And beſides, an ordinary Microſcope will diſcover how very imperfect our moſt finiſh'd Mechanick Performances are.

Now as the Things before-mention'd muſt very conſiderably diminiſh the Force communicated, it is impoſſible there ſhould be a perpetual Motion, except the Force communicated were greater than the Force generating, by ſo much as to make amends for the Diminution made therein by all theſe Cauſes; ſo that the Motion impreſs'd may never return undiminiſh'd to the *firſt Mover*: But that being contrary to this Law, it is evident, that the Motion muſt decreaſe, till at laſt it ſtops, and ſo of conſequence, in the preſent State of Things, there cannot be any perpetual Motion.

As to the Third Law, *That Repulſe and Re-action is always equal to Impulſe or Action*, &c.

To illuſtrate this, conſider, That whatſoever preſſes or draws another, is as much preſs'd or drawn by that other. If a Stone be preſs'd by the Finger, the Finger is preſs'd by the Stone again. If an Anvil be ſtruck with a Hammer, the Hammer is ſtruck by the Anvil with equal Force. If a Horſe draw a Stone forward by a Rope, the Stone does equally draw back the Horſe; for the Rope being diſtended equally both Ways, does equally act upon both; as we intimated before.

That the Steel draws the Load-ſtone as much as the Magnet draws the Steel, appears evidently, by making both ſwim in Water. And in the Deſcent of heavy Bodies, the Earth is attracted by the Stone, as much as the Stone is by the Earth; *i. e.* the Earth gravitates towards the Stone, as much as the Stone does towards the Earth: and the Motions, which are produced by both theſe Gravitations, are equal in both, excepting that the Stone is altogether inconſiderable, compared to the Bulk of the Earth; and ſo of Conſequence the Velocity of the Motion of the Earth towards the Stone is inconſiderable, compared to the Motion of the Stone towards the Earth; and therefore the Earth's Motion towards the Stone is inſenſible.

And univerſally in all the Actions of Bodies; if one Body act on another, and change its Motion any Manner of Way, that other Body will make the ſame Change in the Motion of this Body, with a contrary Direction; ſo that there are equal Changes made by theſe Actions, of the Motion, but not of the Velocities: For the Changes which are made on the Velocities in contrary Directions are in a Proportion, which is reciprocal to the Bodies.

NEBULOSE or **NEBULOUS**, ſignifies cloudy, miſty, foggy, hazy.

NECTARINE, [probably ſo call'd of *Nectar*, the Poetical Drink of the Gods] Nectarine.

This Fruit ſhould have been placed under the Article of *Peaches*, to which it properly belongs, differing from them in nothing more than in having a ſmooth Rind, and the Fleſh being firmer. Theſe the *French* diſtinguiſh by the Name of *Brugnon*, as they do thoſe *Peaches* which adhere to the Stone, by the Name of *Pavie's*, retaining the Name of *Peſche* to only ſuch as part from the Stone: But ſince the Writers in Gardening have diſtinguiſh'd this Fruit by the Name of *Nectarine* from the *Peaches*, ſo I ſhall follow their Example, leſt by endeavouring to rectify their Miſtakes, I ſhould render myſelf leſs intelligible to the Reader. I ſhall therefore mention the ſeveral Sorts of this Fruit which have come to my Knowledge:

1. *Fairchild's Early Nectarine.* This is one of the earlieſt ripe *Nectarines* we have: It is a ſmall round Fruit, about the Size of the *Nutmeg Peach*, of a beautiful red Colour, and well flavour'd; it ripens the Middle of *July*.

2. *Elruge Nectarine* is a middle-ſized Fruit of a dark-red or purple Colour next the Sun, but of a pale yellow or greeniſh Colour towards the Wall; it parts from the Stone, and has a ſoft melting Juice. This ripens in the End of *July*.

3. *Newington Nectarine* is a fair large Fruit, (when planted on a good Soil) of a beautiful red Colour next the Sun, but of a bright yellow towards the Wall; it has an excellent rich Juice, the Pulp adheres cloſely to the Stone, where it is of a deep red Colour. This ripens the Beginning of *Auguſt*.

4. *Scarlet Nectarine* is ſomewhat leſs than the laſt, of a fine red or ſcarlet Colour next the Sun, but loſes itſelf in paler red towards the Wall. This ripens in the End of *July*.

5. *Brugnon* or *Italian Nectarine* is a fair large Fruit, of a deep red Colour next the Sun, but of a ſoft yellow towards the Wall; the Pulp is firm, of a rich Flavour, and cloſely adheres to the Stone, where it is very red. This ripens in the Middle of *Auguſt*.

6. *Roman Red Nectarine* is a large fair Fruit, of a deep red or purple Colour towards the Sun, but has a yellowiſh Caſt next the Wall; the Fleſh is firm, of an excellent Flavour, cloſely adhering to the Stone, where it is very red. This ripens in the Middle of *Auguſt*.

7. *Murry Nectarine* is a middle-ſized Fruit, of a dirty red Colour on the Side next the Sun, but of a yellowiſh green towards the Wall; the Pulp is tolerably well flavour'd. This ripens the Middle of *Auguſt*.

8. *Golden Nectarine* is a fair handſome Fruit, of a ſoft red Colour next the Sun, but of a bright yellow next the Wall; the Pulp is very yellow, of a rich Flavour, and cloſely adheres to the Stone, where it is of a faint red Colour. This ripens the Beginning of *September*.

9. *Temple's Nectarine* is a middle-ſized Fruit, of a ſoft red Colour next the Sun, but of a yellowiſh green towards the Wall; the Pulp is melting, of a white Colour towards the Stone, from which it parts, and has a fine poignant Flavour. This ripens in the Middle of *September*.

10. *Peterborough* or *Late Green Nectarine* is a middle-ſized Fruit, of a pale green Colour on the Outſide next the Sun, but of whitiſh green towards the Wall; the Fleſh is firm, and, in a good Seaſon, well flavour'd. This ripens at the End of *September*.

There are ſome Perſons who have mention'd more Sorts than I have here ſet down, but I much doubt whether they are different from thoſe here mention'd, there being ſo near Reſemblance between the Fruits of this Kind, that it requires a very cloſe Attention to diſtinguiſh them well, eſpecially if the Trees grow in different Soils and Aſpects, which many Times alters the ſame Fruit ſo much as hardly to be diſtinguiſh'd by Perſons who are very converſant with them; therefore in order to be thoroughly acquainted with their Differences, it is neceſſary to conſider the Shape and Size of their Leaves, the Size of their Flowers, their Manner of Shooting, *&c.* which is many Times very helpful in knowing of theſe Fruits: All which, together with a more ample Deſcription of them, as alſo the true Shape of the Flowers, Leaves, and Fruits engraven on Copper Plates, and painted from the Life, will, I hope, be exhibited by the Society of Gardeners, for thoſe who are curious to know their ſeveral Diſtinctions.

The Culture of this Fruit differing in nothing from that of the *Peach*, I ſhall forbear mentioning any Thing on that Head in this Place, to avoid Repetition, but refer the Reader to the Article *Perſica*, where there is an ample Account of their *Planting*, *Pruning*, &c.

NEMORAL, ſignifies belonging to a Wood or Grove.

NEMOROSE, ſignifies full of Woods or Groves.

NEPETA. *Vide* Cataria.

NERIUM, The Oleander, or Roſe-bay.

The *Characters* are;

The Flowers are monopetalous and funnel-ſhaped, divided into five Segments at the Top; out of the Flower-cup ariſes the Pointal, which becomes a taper Fruit, or Pod, divided into two Cells by an intermediate Partition, and filled with flat Seeds, which have Down adhering to them.

The *Species* are;

1. NERIUM *floribus rubeſcentibus. C. B. P.* Oleander with red Flowers.

2. NERIUM *floribus albis. C. B. P.* Oleander with white Flowers.

3. NERIUM *Indicum anguſtifolium floribus odoratis ſimplicibus. H. L.* Narrow-leaved Indian Oleander, with ſingle ſweet-ſcented Flowers.

4. NERIUM *Indicum latifolium, floribus odoratis plenis. H. L.* Broad-leaved Indian Oleander, with double ſweet-ſcented Flowers.

5. NERIUM *Indicum, flore variegato odorato pleno. H. Amſt.* Indian Oleander, with double ſweet-ſcented variegated Flowers, *commonly called* South-Sea Roſe.

6. NERIUM *floribus ex albo & roſeo variegatis. T. Cor.* Oleander or Roſe-bay with a white Flower ſtriped with Red.

7. NERIUM *Indicum latifolium, flore rubro majore.* Broad-leaved Indian Oleander, with a larger red Flower.

The firſt and ſecond Sorts are very common in the *Engliſh* Gardens, where they are preſerved in Pots or Tubs, and placed among *Myrtles*, *Oranges*, &c. in the Green-houſe: They are pretty hardy Plants, and only require to be ſheltered from hard Froſt; for in moderate Winters I have known them ſtand abroad in warm Borders, but in hard Froſts they are often deſtroyed, if expoſed thereto.

Theſe may be placed in Winter in an ordinary Green-houſe among *Bays*, &c. which require a great Share of free Air, and only want Protection from hard Froſts, where they will thrive better, than if placed in a warmer Houſe, or kept too cloſe in Winter. They are propagated from Suckers, which they ſend forth from their Roots in great Plenty, or by laying down their tender Branches, which will take Root in one Year: The Time for laying them down is in the Beginning of *April*, and the Year following the Layers ſhould be taken off, when they ſhould be planted into Pots filled with freſh rich Earth, obſerving to place them in the Shade, until they have taken Root, after which they may be expoſed with *Myrtles*, *Geraniums*, &c. in ſome Place where they may be ſheltered from ſtrong Winds. During the Summer-ſeaſon they muſt be plentifully water'd, otherwiſe they will make but poor Progreſs, and produce very few Flowers; but if they are conſtantly ſupplied with Water, they will make a fine Appearance during the Months of *July* and *Auguſt*, when they will be covered with Flowers. In Winter they muſt be frequently refreſhed with Water, but it ſhould not be given them in large Quantities at that Seaſon.

The third, fourth, fifth, and ſeventh Sorts are tenderer than the others; therefore require a warmer Situation in Winter, nor muſt they be expoſed to the open Air in Summer; for if they are placed abroad, their Flowers will not open. So that in Winter they ſhould be placed in a warm Green-houſe, and in Summer they ſhould be removed into an airy Glaſs-caſe, where they may be defended from the Cold of the Nights; but in the Day-time they ſhould have a large Share of free Air, obſerving to give them Plenty of Water, which will cauſe them to produce their Flowers large, and in great Quantities. Theſe Plants are Natives of the *Spaniſh* *Weſt-Indies*, from whence they were brought into the *Engliſh* Colonies in *America*, where they were planted for the Beauty of their Flowers; but ſince the Inhabitants have found they deſtroy their Cattle which have browzed on the Plants, they uſually root them out near their Settlements.

Theſe Sorts alſo flower in *July* and *Auguſt*, when they make a beautiful Appearance; for they produce their Flowers in very large Bunches, and the Flowers of the fourth and fifth Sorts are very large and double, and ſmell greatly like thoſe of white Thorn, ſo that they deſerve a Place in every good Green-houſe.

Theſe Plants may be propagated from Suckers or Layers, as the two former; but they do not produce Suckers in ſo great Plenty as thoſe in this Country. They all grow naturally on the Sides of Rivers, and moiſt Places; ſo that they muſt have Plenty of Water.

The ſixth Sort was diſcovered by Dr. *Tournefort* in the *Levant*. This is very rare at preſent in *Europe*, but is as hardy as the common Sort, and may be propagated in the ſame Manner.

The third Sort produces fleſh-coloured Flowers, of the ſam Size and Shape as thoſe of the common Sort; but have a ver muſky Scent, ſo that they perfume the Houſe in which the are placed, when they are in Flower. The Flowers of thi Kind will not open fair, if they are expoſed in the open Air ſo that they ſhould be placed in a Stove or Glaſs-caſe in Summer, with the two double Kinds, and the ſeventh Kind, wher they will make a beautiful Appearance, and continue a lon Time in Flower.

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All the Sorts ſhould be ſhifted every Spring, about the Beginning of *April*, when the Suckers, or Layers, which are rooted, muſt be taken off, and planted into Pots filled with light rich Earth. The Roots of the old Plants muſt be trimmed, and as much of the Earth taken from their Roots, as may be done without Injury to the Plants, and the Pots filled with freſh rich Earth, which will encourage the Plants to produce a great Number of Flowers.

NERVES, are long tough Strings, which run either acroſs or lengthways in the Leaves of Plants.

NICOTIANA, [this Plant takes its Name of *James Nicotius*, Counſellor to *Francis* II. King of *France*, who, in the Year 1560, being an Ambaſſador in the Court of *Portugal*, bought this Plant of a *Dutchman*, that brought it from *America*, and ſent it to Queen *Catharine de Medicis* in *France*; where being ſown, it produced Seeds: The *Indian* Inhabitants call it *Tabac*, becauſe it grew in an Iſland call'd *Tabaco*. The leſſer Sort is call'd *Hyoſcyamus*, becauſe it agrees with this Plant; but the Flowers differ, altho' the Virtues are the ſame: It is alſo call'd *Priapeia*] Tobacco.

The *Characters* are;

The Flower conſiſts of one Leaf, is Funnel-ſhaped, and divided at the Top into five deep Segments, which expand like a Star; the Ovary becomes an oblong or roundiſh membranaceous Fruit, which is divided into two Cells by an intermediate Partition, and is fill'd with ſmall roundiſh Seeds.

The *Species* are;

1. Nicotiana *major, latifolia. C. B. P.* The greater broad-leav'd Tobacco.
2. Nicotiana *major, anguſtifolia. C. B. P.* The greater narrow-leav'd Tobacco.
3. Nicotiana *major, anguſtifolia, perennis. Jeſſieu.* The greater narrow-leav'd perennial Tobacco.
4. Nicotiana *minor. C. B. P.* The leſſer *or* common *Engliſh* Tobacco.
5. Nicotiana *minor, foliis rugoſioribus amplioribus. Vaill.*
6. Nicotiana *major, foliis latiſſimis & rugoſioribus, floribus rubicundis.* Greater Tobacco, with very broad and rough Leaves, and reddiſh Flowers, *commonly called* Oronoko.
7. Nicotiana *major latifolia, floribus albis, vaſculo brevi. Martyn. Cent.* 1. Greater broad-leav'd Tobacco, with white Flowers, and a ſhort Seed-veſſel.
8. Nicotiana *humilis, primulæ veris folio. Houſt.* Dwarf Tobacco, with a Primroſe Leaf.
9. Nicotiana *minor, folio cordiformi, tubo floris prælongo. Feuillée.* Smaller Tobacco with a Heart-ſhaped Leaf, and a Flower with a longer Tube.

The firſt Sort is known by the Planters in *America* under the Title of *Oronooka*; of which there ſeems to be two different Kinds, varying in the Largeneſs and Texture of their Leaves, ſome having very broad, rough, roundiſh Leaves; and others are narrower, ſmoother, and do terminate in a Point: but neither of theſe Sorts are eſteem'd by the *American* Planters, becauſe the Produce of this (tho' it is much greater than the narrow-leav'd Sort) yet it is not near ſo much eſteem'd by the *Engliſh*. This Sort is commonly cultivated in *Germany*, about *Hanover* and *Straſburgh*, and is ſomewhat hardier than the narrow-leav'd Sorts, which renders it preferable to that for cultivating in Northern Climates.

This Plant is order'd by the College of Phyſicians for Medicinal Uſe, and is what ſhould be made uſe of for the *Unguentum Nicotianæ*, (or Ointment of *Tobacco*) tho' many Times the Leſſer or *Engliſh Tobacco* is brought to Market for that Purpoſe.

The narrow-leav'd Sort is commonly call'd the *Sweet-ſcented Tobacco*, from its having a much more agreeable Scent, when ſmoak'd, than the broad-leav'd Sort; the Smoak of which is very offenſive to moſt Perſons who have not been accuſtom'd to it. This Sort is cultivated in great Plenty in *Virginia*, *Cuba*, *Braſil*, and ſeveral other Parts of *America*; from whence it is brought to moſt Parts of *Europe*, but eſpecially to *England*, it being prohibited to be cultivated in this Country, leſt his Majeſty's Revenues ſhould be thereby leſſened: But as a ſmall Quantity is permitted to be cultivated for Medicinal Uſe, I ſhall briefly ſet down the Method how it may be propagated, ſo as to have fair large Leaves for that Purpoſe.

The Seeds of this Plant muſt be ſown upon a moderate Hot-bed in *March*; and when the Plants are come up, they ſhould be tranſplanted into a new Hot-bed of a moderate Warmth, about four Inches aſunder each Way, obſerving to water and ſhade them until they have taken Root: After which you muſt let them have Air in Proportion to the Warmth of the Seaſon, otherwiſe they will draw up very weak, and be thereby leſs capable of enduring the open Air: You muſt alſo obſerve to water them frequently, (but while they are very young it ſhould not be given to them in too great Quantities) tho' when they are pretty ſtrong, they will require to have it often and in plenty.

In this Bed the Plants ſhould remain until the Beginning of *May*; by which Time (if they have ſucceeded wel) they will touch each other; therefore they ſhould be enured to the open Air gradually: After which they muſt be taken up carefully, preſerving a large Ball of Earth to each Root, and planted into a rich light Soil, in Rows two Feet aſunder, and the Plants a Foot Diſtance in the Rows, obſerving to water them until they have taken Root; after which they will require no farther Care (but only to keep them clear from Weeds) until the Plants begin to ſhew their Flower-ſtems; at which Time you ſhould cut off the Tops of them, that their Leaves may be the better nouriſh'd, whereby they will be render'd larger, and of a thicker Subſtance. In *Auguſt* they will be full grown, when they ſhould be cut for Uſe; for if they are permitted to ſtand longer, their under Leaves will begin to decay.

The Perennial Sort was brought from the *French* Settlements in the *Weſt-Indies* into the *Royal Garden* at *Paris*, where it is cultivated in ſmall Quantities for making Snuff. The Seeds of this Kind I received from Monſieur *de Jeſſieu*, Demonſtrator of the Plants in the *Royal Garden*: It has ſucceeded very well in the *Phyſick Garden*, and abides the Winter in a common Green-houſe without artificial Heat.

The two ſmaller Sorts of *Tobacco* are preſerved in Botanick Gardens, for Variety, but are ſeldom propagated for Uſe. The firſt Sort is found growing upon Dunghils in divers Parts of *England*. Theſe are both very hardy, and may be propagated by ſowing their Seeds in *March*, upon a Bed of light Earth, where they will come up, and may be tranſplanted into any Part of the Garden.

The ſixth Sort is the moſt common in *England*, and is generally raiſed by the Gardeners near *London*, who ſupply the Markets with Pots of Plants to adorn Balconies and Shop-windows in the City. This Sort, when raiſed early in the Spring, and planted in a rich Soil, will grow to the Height of fifteen or ſixteen Feet, provided the Plants are duly water'd in dry Weather. This Kind is not ſo much cultivated in *Virginia*, as the common broad-leav'd Sort, becauſe it is a much ſtronger Tobacco, ſo is not eſteemed by the *Engliſh*.

The ſeventh Sort of Tobacco was found growing wild in the Iſland of *Tobago*, by Mr. *Robert Millar*, Surgeon, who ſent the Seeds into *Europe*, which have ſucceeded in ſeveral curious Gardens. This Sort produces broader and rounder Leaves, than the common Sort, which are leſs veined, and very glutinous. The Plants uſually grow about five Feet high, and the Flowers of this are white, in which it differs from all the other Sorts.

Theſe two Sorts are both of them as hardy as the common broad-leav'd Kind, and are propagated by Seeds in the ſame Manner as hath been above directed.

The eighth Sort was diſcovered by the late Dr. *William Houſtoun* at *La Vera Cruz*; from whence he ſent the Seeds and dried Samples of the Plants. This Sort is very different from all the other Kinds in the Manner of its Growth: For the Leaves of this Plant grow in Tufts near the Ground; out of the Middle of theſe Leaves, ariſes the Flower-ſtem, which is naked, having no Leaves upon it, to the Height of eighteen Inches or a little more, and divides into many ſmall Branches, on which ſtand the Flowers on ſhort Foot-ſtalks, which are of a greeniſh yellow Colour.

The ninth Sort was diſcovered by Father *Feuillée*, in the *Spaniſh Weſt-Indies*. This Sort commonly grows between three and four Feet high, and divides into ſeveral ſmall Branches; the Leaves of this Sort are ſhaped like a Heart, and the Flowers are of a greeniſh yellow Colour.

Theſe two Sorts are ſomewhat tenderer than the former, ſo ſhould be ſown early in the Spring on a Hot-bed; and when the Plants come up, they ſhould be tranſplanted on another moderate Hot-bed, where they muſt be duly water'd, and ſhould have a large Share of free Air in warm Weather; and when the Plants have obtained a good Share of Strength, they ſhould be tranſplanted into ſeparate Pots, and plunged into a moderate Hot-bed to bring them forward; about the Middle of *June* ſome of the Plants may be ſhaken out of the Pots, and planted into Beds of rich Earth; but it will be proper to keep two Plants of each Kind in Pots, which may be placed in the Stove, (in caſe the Seaſon ſhould prove bad) that they may ripen their Seeds, ſo that the Species may be preſerved.

NIGELLA, [ſo call'd, as tho' *Nigrella*, from the Colour of its Seed, becauſe the Seeds of this Plant are for the moſt part black. It is alſo call'd *Melanthium*, of μέλας, *black*, and ἄνθος, a *Flower*; q. d. *black Flower*, altho' the Flower is not black: It is alſo call'd *Melaſpermum*, of μέλας, *black*, and σπέρμα, *Seed*] Fennel-Flower *or* Devil in a Buſh.

The *Characters* are;

The Flower-cup conſiſts of five Leaves, which expand in form of a Star, and branch out into many other ſmall narrow Leaves; the Flower conſiſts of many Leaves placed orbicularly, and expand in form of a Roſe, having many ſhort Stamina ſurrounding the Ovary in the Center of the Flower; which Ovary becomes a membranaceous Fruit, conſiſting of ſeveral Cells, which are furniſh'd with Horns on the Top, and are full of Seeds.

The *Species* are;

1. **Nigella** *arvenſis cornuta. C. B. P.* Wild horned Fennel-flower.
2. **Nigella** *latifolia, flore majore, ſimplici cœruleo. C.B.P.* Broad-leav'd Fennel-flower, with a large ſingle blue Flower.
3. **Nigella** *anguſtifolia, flore majore ſimplici cœruleo. C. B. P.* Narrow-leav'd Fennel-flower, with a large ſingle blue Flower.
4. **Nigella** *anguſtifolia, flore majore ſimplici albo. C. B. P.* Narrow-leav'd Fennel-flower, with a large ſingle white Flower.
5. **Nigella** *flore majore, pleno cœruleo. C. B. P.* Double blue Nigella *or* Fennel-flower.
6. **Nigella** *flore minore, ſimplici candido. C. B. P.* Fennel-flower, with a ſmall white ſingle Flower.
7. **Nigella** *flore minore, pleno & albo. C. B. P.* Fennel-flower, with a ſmall double white Flower.
8. **Nigella** *orientalis, flore flavo, ſemine alato plano. T. Cor.* Oriental Fennel-flower, with a yellow Flower, and a flat-wing'd Seed.
9. **Nigella** *Cretica, latifolia, odorata. Park. Theat.* Broad-leav'd ſweet-ſcented *Candy* Fennel-flower.

There are ſome other Varieties of this Plant which are preſerved in ſome curious Botanick Gardens; but thoſe here mention'd are what I have obſerved cultivated in the *Engliſh* Gardens at preſent.

All theſe Plants may be propagated by ſowing their Seeds upon a Bed of light Earth, where they are to remain, (for they ſeldom ſucceed well if tranſplanted;) therefore in order to have them intermix'd amongſt other annual Flowers, in the Borders of the Flower-Garden, the Seeds ſhould be ſown in Patches at proper Diſtances; and when the Plants come up, you muſt pull up thoſe which grow too cloſe, leaving but three or four of them in each Patch, obſerving alſo to keep them clear from Weeds, which is all the Culture they require. In *July* they will produce their Flowers, and their Seeds will ripen in *Auguſt*, when they ſhould be gather'd, and dried; then rub out each Sort ſeparately, and preſerve them in a dry Place.

The Seaſon for ſowing theſe Seeds is in *March*; but if you ſow ſome of them in *Auguſt*, ſoon after they are ripe, upon a dry Soil, and in a warm Situation, they will abide the Winter, and flower ſtrong the ſucceeding Year; by which Method they may be continued in Beauty moſt part of the Summer.

The fifth Sort is that which is moſt commonly cultivated in *England*, the Seeds of which are ſold in the Seed-ſhops; but the other Sorts do deſerve to be preſerved as much as that; for the various Sorts, when rightly intermix'd, do afford an agreeable Variety. They are all annual Plants, which periſh ſoon after they have perfected their Seeds; which if permitted to ſcatter upon the Borders, will come up without any farther Care. The Plants commonly grow about a Foot high, and if they have a good Soil, will ſend forth many Branches, each of which terminates in a Flower.

NIGELLASTRUM. *Vide* Lychnis Segetum major.

NIGHT-SHADE. *Vide* Solanum.

NIL. *Vide* Anil.

NISSOLIA, Crimſon Graſs-Vetch: *vulgo*.

The *Characters* are;

It hath a papilionaceous Flower, like the Lathyrus, *to which this Plant agrees in every reſpect, except the Leaves, which in this are produced ſingly, and are not terminated by Claſpers.*

The *Species* are;

1. **Nissolia** *vulgaris. Tourn.* Common Crimſon Graſs-Vetch.
2. **Nissolia** *Orientalis, flore purpureo. Tourn. Cor.* Eaſtern Graſs-Vetch, with a purple Flower.
3. **Nissolia** *Americana procumbens, folio rotundo, flore luteo. Houſt. American* trailing Vetch, with a round Leaf, and a yellow Flower.

The firſt Sort is found wild in ſeveral Parts of *England*, growing commonly by the Sides of Foot-paths, but is not very common near *London*: I have gather'd it in a Field juſt before you come to *Putney Common*, on the Left-hand Side of the Road, under the Hedge which parts the Field from the Road.

This Plant may be cultivated by ſowing the Seeds in *Auguſt*, ſoon after they are ripe, on a dry Soil, and in a warm Situation, where they will riſe ſoon after, and endure the Cold of our Climate very well, and flower early the ſucceeding Spring; but if you ſow the Seeds in the Spring, the Plants commonly decay before they come to flower, as I have ſeveral times experienced: Therefore you need only to let the Seeds fall upon the Ground when they are ripe, and they will grow without any farther Trouble, but only to keep them clear from Weeds.

The Flowers of this Plant are ſmaller than thoſe of the *Sweet Pea*, but are much the ſame in Shape, and of a fine Scarlet Colour; ſo that being intermix'd in large Borders amongſt theſe and other annual Plants, it makes a pretty Variety, and deſerves a Place in every good Garden.

The ſecond Sort was diſcovered by Dr. *Tournefort* in the *Levant*: This is a hardy Plant, and may be ſown in the full Ground, and treated as the common Sort; but the third Sort is more tender. This was diſcovered by the late Dr. *William Houſtoun*, near *La Vera Cruz*. The Seeds of this Plant ſhould be ſown on a moderate Hot-bed early in the Spring; and when the Plants are come up, they ſhould be frequently refreſhed with Water, and in warm Weather the Glaſſes of the Hot-bed ſhould be raiſed a little every Day, to admit freſh Air to the Plants, which will cauſe them to grow ſtrong, and in about a Month's Time they will be fit to tranſplant; when they ſhould be taken up carefully, and each planted into a ſmall Pot filled with light rich Earth, and then plunged into a moderate Hot-bed of Tanners-bark, obſerving to ſhade them from the Sun in the Heat of the Day, until they have taken new Root; after which Time they ſhould have a large Share of Air in warm Weather, and be frequently refreſhed with Water. The Plants may remain in the Hot-bed until the Autumn, when the Cold begins to come on; at which Time they ſhould be removed into the Stove, and plunged into the Bark-bed, where if they are carefully managed, they will live thro' the Winter, and flower early the following Summer, ſo will perfect their Seeds.

NITRE, is a Kind of Salt impregnated with Abundance of Spirits out of the Air, which renders it volatile.

Monſieur *Le Clerc* gives us the following Account of it:

In *Egypt* they make a great Quantity of it, but it is not ſo good; for it is duſky, and full of Knots and Stones.

It is made almoſt in the Manner that Salt is made, but only that they uſe Sea-Water in their Salt-works, and the Water of *Nile* about their *Nitre*.

When the *Nile* retires, their *Nitre-pits* ſtands ſoaking for forty Days together; but as the *Nitre* is grown firm, they are in haſte to carry it off, leſt it ſhould melt again in the Pits: they pile it up in Heaps, and it keeps very well.

The *Memphian Nitre* grows ſtrong, and there are ſeveral Pits of Stone thereabouts: Out of theſe they make Veſſels, and ſome they melt down with Sulphur among their Coals.

This ſame *Nitre* they uſe alſo about ſuch Things as they would have to laſt a long Time.

The Proof of the Goodneſs of *Nitre* is, that it be very light, very friable, and very near of a purple Colour.

There is but little Difference between the *natural* and *artificial Nitre*; that the one refines itſelf, and the other is refined by Art, as Salt; and, indeed, all *Nitre* is a kind of Salt, and hardly differs from Salt, properly ſo call'd, farther than in theſe reſpects; that well-refined *Nitre* is more acid and lighter than Salt, and eaſily takes Fire.

The Reaſon of which Difference, he ſays, ſeems to be,

1. That the Angles at both Ends of the oblong Particles of *Nitre*, are ſhorter than the Angles of the ſaline Particles.

2. That the Particles of *Nitre* are finer, and fuller of Pores; which, when the Particles of Fire get in, they ſoon put the nitrous Particles into a Hurry, till they break to pieces, and turn to Flame.

3. *Nitre* exceeds Salt in Lightneſs, becauſe the *ſaline* Particles contain more homogeneous Matter in the ſame Compaſs, than the *nitrous* do.

Dr. *Liſter* tells us, he has view'd the Particles of *Nitre* thro' a *Microſcope*, and found them to have ſix Angles, Parallelogram Sides, and pointed like a Pyramid at one End.

Some Authors are of Opinion, that the *nitrous Salts* ſeem to be aſſigned by Nature chiefly for the Growth of Plants.

Others differ from them in Opinion, and ſay, that when *Nitre* is contiguous to Plants, it rather deſtroys than nouriſhes them: But yet they allow, that *Nitre* and other *Salts* do certainly looſen the Earth, and ſeparate the concreted Parts of it, and, by that means, fit and diſpoſe them to be aſſumed by Water, and carried up into the Seed or Plant, for its Formation and Augment.

It is obſervable, how all Salts are wrought upon by *Moiſture*; how eaſily they liquidate and run with it: And when theſe are drawn off, and have deſerted the Lumps wherewith they were incorporated, thoſe muſt moulder immediately, and fall aſunder of courſe.

The hardeſt Stone, if it has any Salt mix'd with the Sand of which it conſiſts, upon being expoſed to an humid Air, in a ſhort Time diſſolves and crumbles all to pieces; and much more will clodded Earth or Clay, which is not of near ſo compact and ſolid a Conſtitution as ſtone is.

If the Earth be never ſo good, and fit for the Production of Vegetables, little will come of it, unleſs the Parts of it be ſeparated and looſe; and for this Reaſon is the Ground digged, ploughed, and harrowed, and the Clods broken: And it is this Way that *Nitre*, *Sea-Salt*, and other *Salts* promote Vegetation.

A certain Gentleman has given a Relation, That he dwelling in the Country, near a *Petre-houſe*, where ſuch *Salt-petre* as is brought from Abroad is boiled and refined, to make Gunpowder; this being ſo near as to communicate the Steam of the *Nitre* to the greateſt Part of the Orchard and Garden; and tho' ſome were of Opinion, that it injured his Trees and Plants, yet he found that it had a contrary Influence upon his Orchard, *&c.* in that it never fail'd to bring him a plentiful Crop of Fruit every Year, altho' thoſe about him had but very little, or ſcarce any, notwithſtanding his Orchard, *&c.* was not leſs expoſed to blighting Winds by its natural Situation, than the other Orchards in the ſame Town. From whence he judged, that the *nitrous* Vapour which mixes with the Air that ſurrounds his Orchard, prevents Blights, and is noxious to the Caterpillars.

The Lord *Bacon*, in his *Natural Hiſtory*, commends the Uſe of *Nitre*, for the Preſervation of Health in human Bodies; and many ſkilful Botaniſts have given it no leſs a Character for the Preſervation of Vegetables, if its Quantity be rightly proportion'd.

That the Atmoſphere does abound with *ſaline* Particles, is moſt certain; for being fill'd continually with *Effluvia* from Earth and Sea, it muſt needs have from both a great Quantity of *ſaline* Corpuſcles; and theſe will be of different Kinds, according to the Variety of thoſe *Salts* from whence they are derived.

NOLI ME TANGERE. *Vide* Balſamina Mas.

NONSUCH, or FLOWER of BRISTOL. *Vide* Lychnis.

NORTHERN ASPECT, is the leaſt favourable of any in *England*, as having very little Benefit from the Sun, even in the Height of Summer, therefore can be of little Uſe, whatever may have been advanced to the contrary; for altho' many Sorts of Fruit-trees will thrive and produce Fruit in ſuch Poſitions, yet ſuch Fruit can be of little Worth, ſince they are deprived of the kindly Warmth of the Sun to correct their crude Juices, and render them well-taſted and wholeſome: Therefore it is to little purpoſe to plant Fruit-trees againſt ſuch Walls, except it be thoſe which are intended for Baking, *&c.* where the Fire will ripen, and render thoſe Juices wholeſome, which for want of Sun could not be perform'd while growing.

You may alſo plant *Morello Cherries* for preſerving; and *White* and *Red Currants*, to come late, after thoſe which are expoſed to the Sun are gone: And if the Soil be warm and dry, ſome Sorts of Summer Pears will do pretty well on ſuch an Expoſure, and will continue longer in eating, than if they were more expoſed to the Sun. But you ſhould by no means plant Winter Pears in ſuch an Aſpect, as hath been practiſed by many ignorant Perſons; ſince we find, that the beſt South Walls, in ſome Years, are barely warm enough to ripen thoſe Fruits.

NOVEMBER.

Work to be done in the KITCHEN GARDEN.

The Ground between your Artichokes muſt now be trench'd, obſerving to lay a large Ridge of Earth over the Roots, equally on their Sides and Tops, to prevent their being injured by Froſt, which will preſerve them much better than long Dung, which is by ſome ignorant Perſons uſed for that Purpoſe.

Your Aſparagus Beds, which were not dreſſed the laſt Month, ſhould not be deferred any longer than till the Beginning of this; therefore you muſt cut down the Haulm, and hough the Weeds from off the Beds into the Alleys, where they muſt be buried, and the Earth of the Alleys ſhould be ſpread over the Beds.

In mild Weather you muſt let your Cauliflower and Lettuce Plants, which are under Glaſſes or in Frames, have as much free Air as poſſible, by ſetting off the Glaſſes every Day in dry Weather; and in moiſt Weather the Glaſſes ſhould be raiſed to let in Air; for they ſhould not receive too much Wet at this Seaſon, leſt it ſhould cauſe them to rot.

You muſt alſo ſow Peaſe and plant Beans in dry Weather, to ſucceed thoſe which were planted the former Month; and you ſhould draw ſome Earth to the Stems of thoſe which are come up, which will preſerve them from being injured by the Froſt.

Sow all Sorts of Sallet-herbs upon moderate Hot-beds, as Lettuce, Creſſes, Muſtard, Rape, Radiſh, Turnep, *&c.* that the Table may be conſtantly furniſhed with them; and in dry Weather take up your Endive which is full grown, and lay it into Trenches to blanch, obſerving always to place it on the Sides of the Ridges, that the Wet may run off, otherwiſe it would rot the Plants: You muſt alſo earth up your Celery to blanch it, being careful not to bury the Heart of the Plants.

You ſhould now dung and trench the Ground which is deſigned for early Crops, laying it in Ridges until the Time that you make uſe of it, which will be of great Service to refreſh and ſweeten the Ground.

The Beginning of this Month you ſhould ſow ſome Carrots and Radiſhes on warm Borders, near Pales and Hedges, to come early in the Spring, provided you did not perform it the Latter-end of the laſt Month, which if you did, you may defer the doing of it until the Middle of this, whereby you will have a greater Chance of ſucceeding.

Your Spinach, Onions, and other Crops which were ſown in *July* and *Auguſt*, muſt be conſtantly kept clear from Weeds, which, if permitted to remain at this Seaſon, will overſpread the Crops, and by detaining the Moiſture will cauſe them to rot.

Pick all decay'd Leaves from off your Cauliflower Plants, and draw ſome Earth up to the Stems of thoſe which are under Bell or Hand-Glaſſes, being careful that you do not draw the Earth into the Heart of the Plants; for that will deſtroy them.

You may now make Hot-beds for Aſparagus to come in at *Chriſtmas*; but theſe will not produce ſo large nor ſo many Heads as thoſe Beds which are made the Beginning of *January*, nor will the Aſparagus be near ſo well coloured; ſo that it is only fit for Perſons of Curioſity to make Beds at this Seaſon.

Take up the Roots of Carrots, Parſnips, Potatoes, *&c.* toward the End of this Month, and lay them in Sand, in a Place where they may be defended from Froſt and Wet, which are many times injurious to them; and where this is neglected, if the Ground ſhould be frozen up for any Continuance, there will be no Poſſibility of getting the Roots out of the Ground, whereby the Kitchen cannot be ſupplied with theſe Things until the Froſt is out of the Ground again.

If this Month ſhould prove dry and froſty, you muſt carry Dung into the Quarters of the Kitchen-Garden, that it may be ready when you want to dig the Ground, which will forward your Affairs greatly. The not obſerving of this many times cauſes a great Hurry of Buſineſs together, which ſhould be avoided as much as poſſible, becauſe whenever this happens, either ſome Things are intirely neglected, or are ſlighted over too careleſly.

You muſt now freſh tie your Reed-Hedges with Oſiers, otherwiſe the ſtrong Winds, which uſually happen at this Seaſon, will tear them from the Stakes, and break the Reeds, which will render it troubleſome to repair them.

Where there are Hot-beds either for Salleting, Cucumbers, or any other Purpoſe, they muſt be carefully attended at this Seaſon; for the Nights are now long and cold, and the Days either froſty, wet, or foggy, ſo that little Air can be given to the Beds, whereby the Plants do often grow mouldy, and rot off, and the Heat of the Beds is often greatly abated either by Rain or Snow, which renders it very difficult to manage Hot-beds at this Seaſon.

Products of the KITCHEN-GARDEN.

Cabbages, Savoys, Cauliflowers which were ſown in *May*, Brown-cole or Bore-cole, ſome late Artichokes, Red Cabbages, Spinach, Sprouts of Cabbages, Onions, Leeks, Garlick, Rocambole, Shalots, Turneps, Beets, Carrots, Parſnips, Skirrets, Salſafy, Potatoes, Scorzonera, Horſe Radiſh, Jeruſalem Artichokes, *&c.*

For Sallets; Lettuce, Creſſes, Turnep, Muſtard, Corn-Sallet, Coriander, and other ſmall Herbs from the Hot-bed, or warm Borders near Walls; as alſo Endive, Celery, and, if the Seaſon is mild, ſome Brown Dutch and common Cabbage Lettuce.

For Soup; Beets, Chardoons, Thyme, Celery, Winter Savory, Hyſſop, Sorrel, with ſome others.

Work to be done in the FRUIT GARDEN.

If the Seaſon be mild, you may ſtill prune Pear-Trees, Apple-Trees, Vines, and other hardy Kinds of Fruit-Trees, either againſt Walls, Eſpaliers, or Standards; but it is not proper to do it too late in the Month, leſt great Rains and Froſts ſucceeding each other, hurt the Trees when the Wounds are freſh.

You muſt now diveſt your Fig-Trees of all their late Fruit, which, if left on, will rot and infect the tender Branches; and nail the Shoots of the Trees cloſe to the Wall, whereby they will be protected from the Injuries of the Froſt much better than if they were left at a Diſtance from the Wall. You may alſo place ſome Pannels of Reeds before them, if the Froſt be very ſevere, which will preſerve the fruiting Branches from being kill'd, and cauſe the Fruit to come out much earlier the following Spring.

Such Fruit-trees as were planted the former Month for Standards, ſhould be carefully ſtaked, and thoſe againſt Walls or Eſpaliers muſt be faſten'd thereto, to prevent their being diſplaced by the Violence of the Wind, whereby their new Fibres, which have been ſent forth ſince they were planted, would be deſtroy'd, to the great Prejudice of the Trees. You muſt alſo obſerve to lay ſome Mulch upon the Surface of the Ground, about their Roots, (where it has not been done already) to prevent the Froſt from penetrating the Ground to the Roots of the Trees.

The Beginning of this Month you may tranſplant Fruit-trees upon a warm dry Soil, if the Weather is mild; but it would have been better done the former Month, becauſe the Ground being then warm, the Trees do put out Fibres very ſoon after planting, which ſtrengthens them to endure the Cold; whereas thoſe which are late planted rarely take freſh Rooting until the Spring.

Plant Gooſeberries, Raſpberries, Strawberries, and Currants, if the Weather be mild, and dig between the Rows of Gooſeberries and Currants which were formerly planted, to clear the Ground from Weeds; but you ſhould firſt prune the Trees, that there may be no Litter afterwards; and if you want Ground for Kitchen Herbs, you may plant ſome Coleworts for Spring Uſe between them.

Clear your Strawberry-beds from Weeds and Runners, and dig up the Alleys between the Beds, ſpreading a little of the Earth between the Plants upon the Beds, which will greatly ſtrengthen them; but if the Ground be very poor, it will be proper to ſpread a little very rotten Dung over the Beds, which will be very ſerviceable to them.

If you have any late Fruits ſtill remaining upon the Trees, you muſt gather them the firſt dry Day; for if they are ſuffer'd to hang longer upon the Trees, they will be in danger of periſhing by Froſt and Wet: And your fine Winter Pears and Apples, which were gather'd the laſt Month, muſt now be pack'd up cloſe in Baſkets of Wheat-ſtraw, and placed where the Froſt nor too much Air can get to them, otherwiſe they are liable to periſh in a ſhort Time.

Fruits in prime, or yet laſting.

Pears; Sucre-vert, La Chaſſerie, La Marquiſe, Chat Brulé, Le Beſidery, Craſane or Bergamot Craſane, Martin Sec, L'Amadote, Louiſe-bonne, Colmar, Petit Oin, Virgoule, Spaniſh Boncretien, Ambrette, with ſome others.

Apples; Rennette Griſe, Aromatick Pippen, Nonpareil, Golden Pippen, Calville rouge, Calville blanch, Courpendu, Fenouillette, Herefordſhire Pearmain, Holland Pippen, French Pippen, Kentiſh Pippen, Harvey Apple, Pile's Ruſſet, Golden Ruſſet, Wheeler's Ruſſet, Winter Queening, Pear Ruſſet, with ſome others of leſs Note.

Bullace, Cheſnuts, Hazle-nuts, Walnuts, Medlars, Services, Almonds, with ſome late Grapes.

Work to be done in the NURSERY.

If in the former Month you could not finiſh tranſplanting all your Trees in the Nurſery, you may now complete it; but this ſhould be done the Beginning of this Month, that the Fibres may be puſh'd out before Winter; for all ſuch Trees as are planted at the End of this Month, or in the two following Months, do ſeldom put out Roots until the Spring; for the Ground being now render'd cold, Vegetation is at a Stand, till the Warmth of the Spring puts the Juices into Motion again.

You muſt now lay ſome Mulch upon the Surface of the Ground about the Stems of the new-planted Trees, to prevent the Froſt from penetrating to their Roots, which often deſtroys the young Fibres, and greatly weakens the Trees.

Continue to carry Dung into ſuch Parts of your Nurſery as require it, in dry Weather, and ſpread it upon the Surface of the Ground between the Trees, that the Rain in Winter may waſh the Salts into the Ground, before the Ground is dug in Spring.

Where you intend to make new Plantations in the Spring, you ſhould now prepare your Ground, by trenching of it well, and laying it in Ridges, that the Froſt may mellow it.

Faſten all your new-planted Trees with Stakes, *&c.* that the ſtrong Winds of this Seaſon may not diſplace them.

Where you have any Exotick Trees or Shrubs in Pots, you ſhould now plunge the Pots either into the Earth, or ſome old Tan, in a warm Situation, to prevent the Froſt from freezing their Roots, which often is deſtructive to them while they are young.

Work to be done in the FLOWER GARDEN.

The Beginning of this Month you muſt finiſh planting your bulbous-rooted Flowers, which are deſigned for planting before *Chriſtmas*; for if they are ſet late in the Month, there will not be Time enough for them to ſtrike Root before the Froſt comes on, which will prevent them, ſo that they will be in danger of being deſtroy'd.

Your Boxes and Pots of ſeedling bulbous-rooted Flowers muſt now be placed in a warm Situation, where they may enjoy the Sun, and be ſcreen'd from cold Winds.

Cut down the Stalks of ſuch late flowering Plants which now begin to decay, and rake over the Borders of the Pleaſure-Garden, to ſtir the Surface of the Ground, which will prevent Weeds and Moſs from growing thereon; but you ſhould be very careful not to ſtir the Earth too deep, leſt you injure the Roots which are under Ground.

If the Seaſon continues mild, you may yet tranſplant Peonies, Monks-hood, Flag-leav'd Iris's, and moſt other knobbed-rooted Plants, as alſo ſome Lychnis's, Veronica's, Canterbury Bells, London Pride, and other hardy fibroſe-rooted Plants; tho' it were better if done the former Month, becauſe if the Froſt ſhould ſet in ſoon after they are planted, it will prevent their taking Root.

The Beds of ſeedling bulbous-rooted Flowers, which were not removed the laſt Seaſon, ſhould be raked over, to prevent Weeds and Moſs from growing thereon, and ſome freſh Earth ſhould be ſpread over their Surface, to prevent the Froſt from injuring the Roots.

Your Pots of choice Auricula's and Carnations muſt be ſhelter'd from hard Rains, Froſt, and Snow, by Coverings either of Mats or Cloths; but where there is not Conveniency for this, the Pots ſhould be laid down on one Side, to prevent the Moiſture from lodging in the Pots, which often rots them.

You may yet tranſplant Roſes, Lilacs, Syringa's, Jaſmines, Laburnums, Spirea frutex, Honeyſuckles, Hyperium frutex, Colutea's, and moſt other hardy flowering Shrubs, if the Soil be dry where they are to be planted, otherwiſe it is better to defer it till *February*.

Turn your Compoſts which have been prepared for Pots o Borders, that the Parts may be equally mix'd, and may receiv the Benefit of Air and Froſt, to ſweeten them, and rende them looſer. You ſhould alſo prepare freſh Compoſts at thi Seaſon, that you may not want a Supply the following Year it being the better way to have three or four Stocks under eac other, that they may lie the longer before they are uſed; fo if the Parts are not well mixed, the Plants will not thrive we which are planted therein.

Toward the Latter-end of this Month, if the Seaſon ſhoul prove wet or froſty, you muſt arch your Beds of choice Anemonies, Ranunculus's, and Hyacinths, with Hoops, that the may be cover'd with Mats or Cloths, to prevent the Froſt fro penetrating the Ground to the Roots, and keep off too larg Quantities of Water, which, if permitted to ſoak into th Beds, will cauſe the Roots to rot off in the Spring.

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Your Wilderneſs Quarters ſhould now be trimm'd, and the Ground dug between the Trees, which will render it neat, and encourage the Growth of the Trees; but if you have any Flower-roots growing therein, you muſt be careful not to deſtroy them in digging.

In very wet or froſty Weather, when little Work can be done in the Garden, you ſhould prepare your Seeds ready for ſowing in the Spring, and make a Quantity of Numbers to label your choice Flowers; and be ſure to prepare your Tools of all Sorts, that they may be ready for Uſe in the Spring.

Plants in Flower in the open Air.

Some ſorts of Starworts, two ſorts of Golden Rods, Annual Stock-Gilliflower, Double Colchicum, Saffron, Heart's-eaſe or Panſies, three or four ſorts of perennial Sunflowers, Plumbago or Leadwort; and if the Seaſon be mild, ſome Single Anemonies and Polyanthus Narciſſus, where they were not removed the laſt Summer.

Hardy Trees and Shrubs now in Flower.

Arbutus or Strawberry-tree, Lauruſtinus, Muſk Roſe, Paſſion Flower, Clematitis Boœtica, Cytiſſus Lunatus, Geniſta Spinoſa, and Monthly Roſe.

Work to be done in the GREEN-HOUSE *and* STOVE.

The Beginning of this Month you muſt remove into the Green-houſe ſuch hardy Exotick Plants as have been permitted to remain abroad till this Time: and now you ſhould place all your Plants in the Green-houſe into the Order you intend they ſhall remain all the Winter; in doing of which you ſhould obſerve to place the talleſt Plants backward, and to let them ſlope down gradually toward the Front; but do not place them ſo near that their Branches may interfere; for that would greatly injure their Heads.

In mild Weather you ſhould let your hardy Exotick Plants have as much free Air as poſſible, by opening the Glaſſes every Day, and you muſt look over them every Day conſtantly, to ſee which of them want Water; for there are ſome Sorts of Plants which will require to be water'd three or four times in a Week, when many others do not require it above once; ſo that you ſhould not water them all at the ſame Time, but only thoſe which you ſee require it; you ſhould alſo obſerve to do it in a Morning, that the Damp may paſs off before the Windows are cloſe ſhut in the Evening, otherwiſe it will injure your Plants.

You muſt frequently pick off all decayed Leaves from your Plants, and not permit them to fall among your Pots and Tubs, which will make a Litter in the Houſe, and as they rot will infect the Air, which being imbibed by the Plants, will cauſe them to change the Verdure of their Leaves, to a pale ſickly Complexion.

As the Cold advances you muſt increaſe your Fires in the Stoves proportionably, being careful not to over-heat the Air, leſt you cauſe the Plants to ſhoot too freely, which is injurious to them at this Seaſon, nor ſhould you ſuffer the Air to be too cold, leſt their Leaves decay and fall off, and the extreme Parts of the Plants periſh; you muſt alſo obſerve to water the Plants as often as you perceive they require it, which will be proportionable to the Heat of the Air; but the Water ſhould be placed in the Stove eighteen or twenty Hours before it is uſed, that it may acquire a proportionable Heat to the Air of the Houſe; and never give it in too great Quantities; for it is much the better Method, to water your Plants often and ſparingly, than to over-water them at this Seaſon.

You muſt conſtantly pick off all decayed Leaves from the tender Plants in the Stove, and clean their Leaves and Stems from Filth, which they are very ſubject to contract at this Seaſon, as alſo from Inſects, which often infeſt them, eſpecially the Coffee-tree, which will require to be frequently cleaned.

Your Anana or Pine-Apple Plants muſt not be ſuffer'd to remain longer in the Bark-bed than the Beginning of this Month, at which Time they ſhould be removed into the Stove, obſerving to do it in a warm Day, and place them where they may have a great Share of Heat, without which they ſeldom produce Fruit.

Plants now in Flower in the GREEN-HOUSE *and* STOVE.

Several ſorts of Aloes, ſome Geraniums, Sedum Arboreſcens, Cotyledons, Anemonoſpermos's, Leonurus, Canary Campanula, Candy-tuft Tree, yellow Indian Jaſmine, Indian Nasturtium with a double Flower, Spaniſh Jaſmine, Viburnums, Ilex-leav'd Jaſmine, Senecio folio retuſo, Large Blue Virginian Starwort, Double-flower'd Myrtle, Caſſia Bahamenſis, Papaw-Tree, Chryſanthemum Arboreſcens, Doria Africana Jacobææ folio, Senſitive Plants, Azorian Jaſmine, Granadilla's, Alcæa Africana Arboreſcens, Guernſey Lily, Belladonna Lily, with ſome others.

NUCIFEROUS TREES, are ſuch which produce *Nuts*.

NUMMULARIA, [takes its Name of *Nummus*, Lat. *Money*, becauſe its Leaves, by their Roundneſs, reſemble Money: It is alſo call'd *Centimorbia*, as tho' it were a Plant that cures an hundred Diſeaſes.] Money-wort, or Herb Two-pence.

This Plant grows wild in ſhady moiſt Places, in divers Parts of *England*; but as it is ſeldom cultivated in Gardens, ſo I ſhall ſay nothing of its Culture in this Place.

NURSERY: There is no ſuch Thing as having a fine Garden or Plantation, without a *Nurſery* both for Trees and Flowers, in which there are continually new Varieties of *Fruits*, *Timber*, or *Flowering Trees*, and choice *Flowers*, raiſed for a Supply of the ſeveral Parts of the *Garden*, *Orchard*, and *Wilderneſs*. The Size of this *Nurſery* muſt be proportion'd to the Extent of your Garden, or deſigned Plantation; ſo that it is impoſſible to be exact in determining the Quantity of Ground neceſſary to be employed in this Way. But for a *Nurſery* of *Fruit*, *Foreſt*, or *Flowering Trees*, there ſhould not be leſs than two or three Acres for a large Garden, but for a ſmall Garden half an Acre will be ſufficient. And for a *Nurſery* for *Flower-roots*, *Plants*, &c. one Acre for a large Garden, and a quarter of an Acre for a ſmall one, will be enough. But this (as I ſaid before) cannot be well limited; ſince ſome Perſons, who are very curious in raiſing vaſt Quantities of new Flowers from Seed, will employ more than three times the Ground that is neceſſary only to raiſe a Supply of Flowers for their Borders, which are either annual, or biennial, and require to be brought up to ſupply the Place of ſuch as have flower'd and decayed. But I ſhall firſt take Notice of the Method for raiſing a *Nurſery* of *Fruit* or *Foreſt Trees*: in doing of which, you ſhould obſerve,

1. That the Soil in which you make the *Nurſery* be not better than that where the Trees are to be planted out for good: The not obſerving this, is the Reaſon that Trees are often at a ſtand, or make but little Progreſs for three or four Years, after they come from the *Nurſery*; as it commonly happens to ſuch Trees as are raiſed near *London*, and carried into the Northern Parts of *England*, where being planted in a poor Soil, and a much colder Situation, their Fruits ſeldom ripen well: Therefore it is by far the better Method (when you have obtained the Sorts you would propagate) to raiſe a *Nurſery* of the ſeveral Sorts of Stocks proper for the various Kinds of Fruit, upon which you may bud or graft them; and thoſe Trees which are thus raiſed upon the Soil, and in the ſame Degree of Warmth where they are to be planted, will ſucceed much better than thoſe brought from a greater Diſtance, and from a richer Soil.

2. This Ground ought to be freſh, and not ſuch as has been already worn out by Trees, or other large-growing Plants; for in ſuch Soil your Stocks will not make any Progreſs.

3. It ought not to be too wet, nor over-dry, but rather of a middling Nature; tho' of the two Extremes, dry is to be preferr'd: Becauſe in ſuch Soils (tho' the Trees do not make ſo great a Progreſs as in moiſt, yet) they are generally ſounder, and more diſpoſed to Fruitfulneſs.

4. You muſt alſo obſerve to incloſe it, that Cattle and Vermin may not come in; for theſe will make ſad Havock with young Trees, eſpecially in Winter, when the Ground is cover'd with Snow, that they have little other Food which they can come at: Some of the moſt miſchievous of theſe Animals are *Hares* and *Rabbits*, which are great Deſtroyers of young Trees at that Seaſon, by eating off all their Bark; therefore you muſt carefully guard your *Nurſery* againſt theſe Enemies.

The Ground being incloſed, ſhould be carefully trench'd about eighteen Inches or two Feet deep, provided it will allow it; this ſhould be done in *Auguſt*, that it may be ready to receive young Stocks at the Seaſon for Planting, which is commonly at the Beginning of *October*. In trenching of the Ground, you muſt be very careful to cleanſe it from the Roots of all noxious Weeds, ſuch as *Couch-graſs*, *Docks*, &c. which, if left in the Ground, will get in amongſt the Roots of the Trees, ſo as not to be gotten out afterwards, and will ſpread and over-run the Ground, to the great Prejudice of your young Stocks.

After having dug the Ground, and the Seaſon being come for planting, you muſt level down the Trenches as equal as poſſible; and then lay out the Ground into Quarters, proportionable to the Size thereof; and thoſe Quarters may be afterwards laid out in Beds, for the ſowing of Seeds, or the Stones of Fruit.

The beſt Sort of Stocks for *Peaches*, *Nectarines*, &c. are ſuch as are raiſed from the Stones of the *Muſcle* and *White Pear Plum*: but you ſhould never plant Suckers of theſe, (which is what ſome People practiſe;) for thoſe ſeldom make ſo good Stocks, nor are ever well-rooted Plants: beſides, they are very ſubject to produce great Quantities of Suckers from their Roots, which are very troubleſome in the Borders or Walks of a Garden, and do greatly injure the Tree; ſo that you ſhould annually, or at leaſt every other Year, ſow a few other Stones, that you may never be at a Loſs for Stocks.

For *Pears*, you ſhould have ſuch Stocks as have been raiſed from the Kernels of the Fruit where *Perry* hath been made; or elſe preſerve the Seeds of ſome Sorts of Summer *Pears*, which do generally ſhoot ſtrong and vigorous, as the *Cuiſs Madam*, *Windſor*, &c. which you ſhould ſow for Stocks, early in the Spring, upon a Bed of good light freſh Earth, where they will come up in about ſix Weeks, and, if kept clear from Weeds, will be ſtrong enough to tranſplant out the *October* following. But for many Sorts of Summer and Autumn *Pears*, *Quince* Stocks are preferable to free (*i. e. Pear*) Stocks; theſe are very often propagated from Suckers, which are generally produced in Plenty from the Roots of old Trees: but thoſe are not near ſo good as ſuch as are propagated from Cuttings, which have always much better Roots, and are not ſo ſubject to produce Suckers as the other; which is a very deſirable Quality; ſince theſe Suckers do not only rob the Trees of Part of their Nouriſhment, but are very troubleſome in a Garden.

Apples are grafted or budded upon Stocks raiſed from Seeds which come from the *Cyder-Preſs*, or upon *Crab* Stocks; the latter of which are eſteem'd for their Durableneſs, eſpecially for large Standard Trees; theſe ſhould be raiſed from Seeds, as the *Pear* Stocks, and muſt be treated in the ſame Manner; for thoſe procured from Suckers, *&c.* are not near ſo good: but for ſmall Gardens, the *Paradiſe* Stock hath been of late greatly eſteem'd; it being of very humble Growth, cauſeth the Fruit-Trees grafted or budded thereon to bear very ſoon, and they may be kept in ſmall Compaſs: but theſe are only proper for very ſmall Gardens, or by way of Curioſity; ſince the Trees thus raiſed are but of ſhort Duration, and ſeldom ariſe to any Size to produce Fruit in Quantities, unleſs the Graft or Bud be buried in Planting, ſo that they put forth Roots, and then they will be equal to Trees grafted upon free Stocks, ſince they receive but ſmall Advantage from the Stock.

For *Cherries*, you ſhould make uſe of Stocks raiſed from the Stones of the common *Black* or the wild *Honey Cherry*, both of which are ſtrong free Growers, and produce the cleaneſt Stocks.

For *Plums*, you may uſe the Stones of moſt free-growing Sorts; which will alſo do very well for *Apricocks*, theſe being not ſo difficult to take as *Peaches* or *Nectarines*: but (as I ſaid before) theſe ſhould not be raiſed from Suckers, for the Reaſon there aſſigned, but rather from Stones.

There are ſome Perſons who recommend the *Almond* Stock for ſeveral Sorts of tender *Peaches*, upon which they will take much better than upon *Plum* Stocks: but theſe being tender in their Roots, and apt to ſhoot early in the Spring, are by many People rejected: and I think, if ſuch tender Sorts of *Peaches* which will not take upon *Plum* Stocks, were budded upon *Apricocks*, they would take very well; as would all Sorts of *Peaches* which are planted upon dry Soils, continue much longer, and not to be ſo ſubject to Blight, if they were upon *Apricocks*; for it is obſerved, that upon ſuch Soils where *Peaches* ſeldom do well, *Apricocks* will thrive exceedingly; which may be owing to the Strength and Compactneſs of the Veſſels in the *Apricocks*, which render it more capable of aſſimilating or drawing its Nouriſhment from the *Plum* Stock, which in dry Soils ſeldom afford it in great Plenty to the Bud; and the *Peach*-Tree being of a looſe ſpungy Nature, is not ſo capable to draw its Nouriſhment therefrom, which occaſions that Weakneſs which is commonly obſerved in thoſe Trees when planted on a dry Soil.

There are ſome People who of late have budded and grafted *Cherries* upon Stocks of the *Corniſh Cherry*, which, they ſay, will render the Trees more fruitful, and leſs luxuriant in Growth, ſo that they may be kept in leſs Compaſs; theſe Stocks having the ſame Effect upon *Cherries*, as the *Paradiſe* Stock hath on *Apples*.

Having provided yourſelf with young Stocks of all theſe different Sorts, which ſhould be raiſed in the Seminary the preceding Year, you ſhould proceed to tranſplanting of them in *October* (as was before directed) into the *Nurſery*. The Diſtance which they ſhould be planted, if deſigned for Standards, ſhould be three Feet and an half, or four Feet, Row from Row, and a Foot and an half diſtant in the Rows; but if for Dwarfs, three Feet Row from Row, and one Foot in the Rows, will be a ſufficient Diſtance.

In taking theſe Stocks out of the Seed-beds, you muſt raiſe the Ground with a Spade, in order to preſerve the Roots as intire as poſſible; then with your Knife you ſhould prune off all the very ſmall Fibres; and if there are any which have a Tendency to root down-right, ſuch Roots ſhould be ſhortened: then having thus prepared the Plants, you ſhould draw a Line acroſs the Ground intended to be planted, and with your Spade open a Trench thereby exactly ſtrait, into which you ſhould place them at the Diſtance before deſigned, ſetting them exactly upright; and then put the Earth in cloſe to them, filling up the Trench, and with your Foot preſs the Earth gently to the Roots of them, obſerving not to diſplace them ſo as to make the Rows crooked, which will render them unſightly. Theſe Plants ſhould by no means be headed, or pruned at Top, which will weaken them, and cauſe them to produce lateral Branches, and thereby ſpoil them.

If the Winter ſhould prove very cold, it will be of great Service to your young Stocks, to lay ſome Mulch upon the Surface of the Ground near their Roots, which will prevent the Froſt from penetrating the Ground ſo as to hurt the tender Fibres which were produced after planting: but you ſhould be careful not to let it lie too thick near the Stems of the Plants, leſt the Moiſture of the Dung ſhould hinder the tender Bark, which it often does where there is not due Care taken to prevent it.

In the Summer Seaſon, you muſt always obſerve to hough and deſtroy the Weeds; which, if permitted to remain in the *Nurſery*, will greatly weaken and retard the Growth of your Stocks: and the ſucceeding Years, you ſhould obſerve to dig up the Ground every Spring between the Rows, which will looſen it ſo, as that the Fibres may eaſily ſtrike out on each Side, and the Weeds will be thereby deſtroyed: you ſhould alſo obſerve, where any of the Stocks have ſhot out lateral Branches, to prune them off, that they may be encouraged to grow upright and ſmooth.

The ſecond Year after planting, ſuch of the Stocks as are deſigned for Dwarf-trees, will be fit to bud; but thoſe which are deſigned for Standards, ſhould be ſuffer'd to grow five or ſix Feet high before they are budded or grafted. The Manner of Budding and Grafting being fully deſcribed under their reſpective Heads, I ſhall not repeat them in this Place; nor need I ſay any thing more of treating theſe Trees after budding, that being alſo treated of under the ſeveral Articles of Fruits; I ſhall only add, that thoſe Stocks which were budded in the Summer, and have failed, may be grafted the following Spring; but *Peaches* and *Nectarines* ſeldom take well from Grafts; theſe ſhould therefore be always budded.

The *Nurſery* deſigned for *Foreſt-Trees* and *Flowering-Shrubs* ſhould be larger than that for *Fruit-Trees*, eſpecially if you intend to make large Plantations of theſe Trees: but in planting of theſe, you ſhould always obſerve to place the large growing Kinds by themſelves, ſeparate from thoſe of lower Growth, otherwiſe the large Trees will overſhade and ſtarve the ſmaller. But as the Method of propagating all the different Sorts of theſe Trees, whether from Seeds, Cuttings, or Layers, is ſet down under their ſeveral Articles, ſo it is needleſs to repeat it in this Place.

I ſhall therefore only add, that after you have drawn off the Trees from any Part of your *Nurſery*, you ſhould, for a Year or two, employ the Ground for Kitchen-Garden, or ſome other Summer Crops, in order to refreſh it, before you plant it again with Trees; and you ſhould always obſerve to put different Sorts of Trees upon the Ground from thoſe which grew in the ſame Place before, otherwiſe they ſeldom thrive well.

The Ground you intend for the *Flower-Nurſery*, ſhould be well ſituated to the Sun, but defended from ſtrong Winds by Plantations of Trees or Buildings, and the Soil ſhould be light and dry, which muſt always be obſerved, eſpecially for bulbous-rooted Flowers, which are deſigned to be planted therein: the Particulars of which are exhibited under the Articles of *Flowers*.

In this *Nurſery* ſhould be planted the Off-ſets of all your bulbous-rooted Flowers, where they are to remain until they become blowing Roots; when they ſhould be removed into the Pleaſure-Garden, and planted either in Beds or Borders, according to the Goodneſs of the Flowers, or the Management which they require.

You may alſo, in this Ground, raiſe the ſeveral Sorts of bulbous rooted Flowers from Seed, by which means new Varieties may be obtained: but moſt People are diſcouraged from ſetting about this Work, from the Length of Time before the Seedlings will come to flower; however, after a Perſon hath once begun, and conſtantly continued ſowing every Year, after the Parcel firſt ſown has flower'd, the regular Succeſſion of them coming annually to flower, will not render this Method ſo tedious as it at firſt appear'd.

The Seedling *Auricula's*, *Polyanthus's*, *Ranunculus's*, *Anemonies*, *Carnations*, &c. ſhould be raiſed in this *Nurſery*, where they ſhould be preſerved until they have flower'd; when you ſhould mark all ſuch as are worthy of being tranſplanted into the Flower-Garden; which ſhould be done in their proper Seaſons: for it is not ſo well to have all theſe ſeedling Flowers expoſed to publick View in the Flower-Garden, becauſe it always happens, that there are great numbers of ordinary Flowers produced amongſt them, which will make but an indifferent Appearance in the Pleaſure-Garden.

In this Place alſo ſhould be raiſed all the Sorts of Biennial or Perennial Flowers from Seeds, to ſupply the Borders of the Pleaſure-Garden as the old Roots decay; ſuch as *Stock-Gilliflowers*, *Canterbury-Bells*, *Fox-Gloves*, *French Honeyſuckles*, *Wall-flowers*, *Columbines*, *Hollyhocks*, *Campanula's*, and many other Sorts, which are all under their reſpective Articles treated of, with the Method of propagating each Kind: I ſhall therefore only add, that the Earth in this *Nurſery* ſhould be often changed, and freſh brought in; as alſo the ſeveral Sorts of Flowers which are there raiſed, ſhould be every Year ſhifted into different Places, and not the ſame Sorts raiſed two or three Years upon the ſame Spot of Ground, for the Reaſon before aſſigned.

NUX AVELLANA. *Vide* Corylus.

NUX JUGLANS, [of *Nux*, a *Nut*, and *Juglans*, as tho' *Jovis Glandis*; i. e. *Jupiter's Acorn*] The Wallnut.

The *Characters* are;

It hath Male Flowers (or Katkins) which are produced at remote Diſtances from the Fruit on the ſame Tree: the outer Cover of the Fruit is very thick and green, under which is a rough hard Shell, in which the Fruit is incloſed, ſurrounded with a thin Skin: the Kernel is deeply divided into four Lobes: and the Leaves of the Tree are pinnated, or winged.

The *Species* are;

1. Nux Juglans, *ſive Regia vulgaris.* *C. B. P.* The common Walnut.
2. Nux Juglans *fructu maximo.* *C. B. P.* The large French Walnut.
3. Nux Juglans *fructu tenero, & fragili putamine.* *C. B. P.* The thin-ſhell'd Walnut.
4. Nux Juglans *bifera.* *C. B. P.* The double Walnut.
5. Nux Juglans *fructu ſerotino.* *C. B. P.* The late-ripe Walnut.
6. Nux Juglans *fructu perduro.* *Tourn.* The hard-ſhell'd Walnut.
7. Nux Juglans *Virginiana nigra.* *H. L.* The Virginian black Walnut.
8. Nux Juglans *Virginiana, nigra, fructu oblongo, profundiſſime inſculpto.* *Rand.* Virginian black Walnut, with a long furrow'd Fruit.
9. Nux Juglans *Virginiana, foliis vulgari ſimilis, fructu ſubrotundo, cortice duriore lævi.* *Pluk. Alm.* The Hickery *or* White Virginian Walnut.
10. Nux Juglans *Virginiana, alba, minor, fructu nucis moſchatæ ſimilis, cortice glabro, ſummo faſtigio, veluti in aculeum producto.* *Pluk. Phyt.* The ſmall Hickery *or* White Virginian Walnut.

The ſix Sorts firſt mention'd are propagated promiſcuouſly in *England*, and I believe are all ſeminal Variations, and not diſtinct Species, as in moſt other Sorts of Fruit-trees; for it rarely happens, that the Trees raiſed from Seeds produce the ſame Sort of Fruit again: ſo that thoſe who would be ſure of their Fruit, ſhould either make Choice of ſuch Trees in the Nurſery which have produced Fruit, and do prove to be the Sort they would have, or elſe inarch the Sorts intended upon any common Walnut-ſtock; in which Method they will ſucceed; but theſe ſeldom make ſo good Trees, as thoſe which are raiſed from Seeds.

The ſecond and third Sorts are chiefly preferr'd for their Fruit, which are very large; and the Shells of the third Sort are ſo tender, as to be broken between the Fingers without any Difficulty; for which Reaſon it is eſteem'd the beſt worth propagating, for the Fruit, of any of the Sorts.

The *Virginian* Sorts are preſerved as Rarities, by ſuch Perſons who are curious in collecting the ſeveral Sorts of Trees; but theſe are all worth cultivating for their Timber, which is preferable to that of our common Walnuts, and theſe Trees are equally as hardy, and ſome of them of much quicker Growth than the common Sort, eſpecially the ſeventh and eighth Sorts; the latter of which produces great Quantities of Fruit annually in the Phyſick-Garden, but they are of no Uſe, except to propagate the Species; for their Shells are ſo hard as ſcarcely to be broken with a Mallet, and the Kernel is ſo ſmall that it is not worth the Trouble of coming at it.

All the Sorts of Walnuts which are propagated for Timber, ſhould be ſown in the Places where they are to remain; for the Roots of theſe Trees do always incline downward; which being ſtopp'd or broken, do prevent their aſpiring upward, ſo that they afterwards divaricate into Branches, and become low ſpreading Trees: but ſuch as are propagated for Fruit, are greatly mended by tranſplanting; for hereby they are render'd more fruitful, and their Fruit are generally larger and fairer: it being a common Obſervation, That down-right Roots do greatly encourage the luxuriant Growth of Timber in all Sorts of Trees; but ſuch Trees as have their Roots ſpreading near the Surface of the Ground, are always the moſt fruitful.

The Nuts ſhould be preſerved in their outer Covers in dry Sand until *February*; when they ſhould be planted in Lines, at the Diſtance you intend them to remain; but in the Rows they may be placed pretty cloſe, for fear the Nuts ſhould miſcarry; and the young Trees, where they are too thick, may be removed, after they have grown three or four Years, leaving the Remainder at the Diſtance where they are to ſtand.

In tranſplanting theſe Trees, you ſhould always obſerve, never to prune either their Roots or Branches, both which are very injurious to them; nor ſhould you be too buſy in lopping or pruning the Branches of theſe Trees; for it often cauſes them to decay: but when there is a Neceſſity of cutting any of their Branches off, it ſhould be done early in *September*, that the Wound may heal over before the Cold increaſes, and the Branches ſhould always be cut off quite cloſe to the Trunk, otherwiſe the Stump which is left will decay, and rot the Body of the Tree.

The beſt Seaſon for tranſplanting theſe Trees, is ſo ſoon as the Leaves begin to decay; at which time, if they are carefully taken up, and their Branches preſerved intire, there will be little Danger of their ſucceeding, altho' they are eight or ten Years old, as I have ſeveral times experienced.

This Tree delights in a firm rich loamy Soil, or ſuch as is inclinable to Chalk or Marle, and will thrive very well in ſtony Ground, and on chalky Hills, as may be ſeen by thoſe large Plantations near *Leatherhead*, *Godſtone*, and *Carſhalton* in *Surrey*, where are great numbers of theſe Trees planted upon the *Downs*, which annually produce great Quantities of Fruit, to the great Advantage of their Owners; one of which, I have been told, farms the Fruit of his Trees, to thoſe who ſupply the Markets, for Thirty Pounds *per Annum*.

The Diſtance theſe Trees ſhould be placed, ought not to be leſs than forty Feet, eſpecially if regard be had to their Fruit; tho' when they are only deſigned for Timber, if they ſtand near, it promotes their upright Growth. The Black *Virginian Walnut* is much more inclinable to grow upright than the common Sort, and the Wood being generally of a more beautiful Grain, renders it preferable to that, and better worth cultivating. I have ſeen ſome of this Wood which hath been beautifully vein'd with Black and White, which, when poliſh'd, has appear'd at a Diſtance like vein'd Marble. This Wood is greatly eſteem'd by the Cabinet-makers for Inlaying, as alſo for Bedſteads, Stools, Tables, and Cabinets, and is one of the moſt durable Woods for thoſe Purpoſes yet known, it being rarely infected with Inſects of any Kind, (which may proceed from its extraordinary Bitterneſs:) but it is not proper for Buildings of Strength, it being of a very brittle Nature, and mighty ſubject to break very ſhort, tho' it commonly gives Notice thereof, by its Crackling ſome Time before it breaks.

The general Opinion, That the beating of this Fruit improves the Trees, I do not believe, ſince in the doing of this, the younger Branches are generally broken and deſtroy'd: But as it would be exceeding troubleſome to gather it by Hand, ſo in beating it off, great Care ſhould be taken that it be not done with Violence, for the Reaſon before aſſigned. In order to preſerve the Fruit, it ſhould remain upon the Trees till it is thorough ripe; when it ſhould be beaten down, and laid in Heaps for two or three Days; after which they ſhould be ſpread abroad, when, in a little Time, their Huſks will eaſily part from the Shells: Then you muſt dry them well in the Sun, and lay them up in a dry Place, where Mice or other Vermin cannot come to them: In which Place they will remain good for four or five Months.

NUX VESICARIA. *Vide* Staphylodendron.

NYMPHÆA, [is ſo call'd, becauſe it grows in Water, which the Poets feign to be the Reſidence of the *Nymphs*] The Water-Lily.

The *Characters* are;

The Flower conſiſts of ſeveral Leaves, which expand in form of a Roſe; *out of the Flower-cup ariſes the Pointal, which afterwards becomes an almoſt globular Fruit, conſiſting of many Cells fill'd with Seeds, which are for the moſt part oblong.*

The *Species* are;

1. NYMPHÆA *alba major.* *C. B. P.* The great White Water-Lily.
2. NYMPHÆA *lutea major.* *C. B. P.* The great yellow Water-Lily.
3. NYMPHÆA *lutea minor, flore fimbriato.* *J. B.* The leſſer yellow Water-Lily, with a fringed Flower.

There are ſome other Species of this Plant, all of which are Natives of deep ſtanding Waters, and therefore not to be cultivated in any other Places.

The beſt Method to propagate theſe Plants, is, to procure ſome of their Seed-veſſels juſt as they are ripe, and ready to open: Theſe ſhould be thrown into Canals, or large Ditches of ſtanding Water, where the Seeds will ſink to the Bottom; and the following Spring the Plants will appear floating upon the Surface of the Water, and in *June* and *July* will produce their beautiful large Flowers: When they are once fix'd to the Place, they will multiply exceedingly, ſo as to cover the whole Surface of the Water in a few Years.

In ſome ſmall Gardens I have ſeen theſe Plants cultivated in large Troughs of Water, where they have flouriſh'd very well, and have annually produced great Quantities of Flowers: But as the Expence of theſe Troughs is pretty great, (their Inſides requiring to be lined with Lead, to preſerve them) ſo there are few People who care to be at that Charge.

O A

OAK. *Vide* Quercus.

OBELISCOTHECA; Dwarf *American* Sun-flower, *vulgo.*

The *Characters* are;

It hath radiated Flowers, having many Florets, which are fertile, but the half Florets are barren: The Placenta is commonly conical, and filled with chaffy Empalements, which appear folded up; in each of which is an Ovary, which is ſhaped like an Obeliſk reverſed, having a hollow Baſe. Theſe Parts are contained in one common Flower-cup, which is deeply cut into ſeveral Segments, and expands in form of a Star: To which may be added, The Leaves are placed alternately.

The *Species* are;

1. OBELISCOTHECA *integrifolia, radio aureo, umbone atro-rubente. Horth. Elth.* Dwarf Sun-flower, with intire Leaves, the Rays of the Flower of a Gold Colour, and a dark red Diſk.
2. OBELISCOTHECA *doronici folio, radio purpureo, umbone atro-rubente.* Dwarf Sun-flower, with Leaves like Leopards-bane, the Rays of the Flower purple, and a dark red Diſk.

Theſe Plants are both Natives of *America*; the firſt of them was brought from *Virginia*, and the other from *Carolina*. They may both be propagated by parting of their Roots in the Spring, planting the Heads into Pots filled with freſh rich Earth, placing them in an open Situation, where they may have the Benefit of Sun and Showers, in which Place they may remain during the Summer-ſeaſon; but in Winter they muſt be ſheltered under a Frame, to protect them from ſevere Froſt, obſerving to let them have as much free Air as poſſible in mild Weather. They muſt be frequently refreſhed with Water, eſpecially in Summer, when it ſhould be given them in Plenty; but in Winter they muſt have it more ſparingly. The firſt Sort increaſes pretty faſt in *England*; whereby it is become pretty common, and is preſerved for the ſake of its Flowers, which are produced in Plenty, and are of long Duration, each Flower continuing in Beauty five or ſix Weeks; and theſe being ſucceeded by new Flowers, the Plants are commonly furniſhed with them four or five Months.

The ſecond Sort is leſs common than the firſt, by reaſon of the few Off-ſets it produces from the Side; and the Seeds rarely being perfected in *Europe*, the Plants cannot be greatly increaſed; therefore, if a Perſon could procure the Seeds of this Plant from *Carolina*, it would be the ſureſt Method to obtain a Stock of the Plants. The Seeds of both theſe Plants ſhould be ſown on a moderate Hot-bed; and when the Plants are grown tolerably ſtrong, they ſhould be each planted into a ſeparate Pot, and inured to the open Air by degrees; after which they muſt be treated as hath been directed for the old Plants.

OCHRUS, Winged Pea.

The *Characters* are;

It hath a papilionaceous Flower, out of whoſe Empalement riſes the Pointal, which afterward becomes a Pod, for the moſt part round and cylindrical, filled with roundiſh Seeds. To theſe Notes muſt be added, That the Leaves are ſometimes ſimple, and ſometimes conjugated, ending in Tendrils.

The *Species* are;

1. OCHRUS *folio integro, capreolos emittente, ſemine ſubluteo.* *C. B. P.* Ochrus or Winged Pea, with an intire Leaf, ſending forth Tendrils, and a yellowiſh Seed.
2. OCHRUS *folio integro, capreolos emittente, ſemine pullo.* *C. B. P.* Ochrus or Winged Pea, with an intire Leaf, ſending forth Tendrils, and a brown Seed.
3. OCHRUS *folio integro, capreolos emittente, ſemine atro.* *C. B. P.* Ochrus or Winged Pea, with an intire Leaf, ſending forth Tendrils, and a black Seed.
4. OCHRUS *folio diviſo in capreolos abeunte.* *Inſt. R. H.* Ochrus or Winged Pea, with a divided Leaf ending in Tendrils.
5. OCHRUS *Americanus tomentoſus, floribus luteis.* *Plum.* Woolly Ochrus or Winged Pea of *America*, with yellow Flowers.

The three firſt Sorts are accidental Varieties, which differ in the Colour of their Flowers and Seeds, but in every other reſpect are the ſame, ſo that they may be deemed only ſeminal Variations. They are annual Plants, which muſt be ſown in the Spring of the Year, on an open Border or Bed of light freſh Earth, allowing them the ſame Diſtance, as is uſual for the middle Sort of Peaſe. So the better Way is to ſow them in Drills about two Feet aſunder; and when the Plants are come up, the Earth ſhould be drawn to them, in the ſame Manner as is practiſed for Peaſe: And when the Plants begin to riſe in Height, there ſhould be ſome Sticks put down by them, to which they will faſten their Tendrils, whereby they will be ſupported from trailing on the Ground, for want of which, in bad Seaſons, they do not ripen their Seeds kindly. The Ground between the Rows ſhould always be kept clean from Weeds, which, if permitted to grow, will ſoon overbear the Plants, and deſtroy them. About the Middle of *June*, the Plants will flower, and their Seeds will ripen the Beginning of *Auguſt*.

Theſe Plants grow wild in *Lombardy*, and in ſome Parts of *Spain*; but in *England* they are preſerved in the Gardens of ſome Perſons who are curious in Botany, for the ſake of Variety. The Seeds of theſe have been eaten in Times when there has been a Scarcity of other Proviſion, by the poor Inhabitants where they naturally grow; but they are bitter, and hard of Digeſtion, and do not afford good Nouriſhment.

The fourth Sort was diſcovered by Dr. *Tournefort* in the *Levant*, from whence he ſent the Seeds to the Royal Garden at *Paris*, where it flouriſhed, and has ſince been diſtributed to ſeveral Perſons who are curious in collecting of Plants. This is as hardy as the common Sort, ſo may be ſown and treated after the ſame Manner.

The fifth Sort was diſcovered by Father *Plumier* in *America*, and ſince by the late Dr. *William Houſtoun* at *Campechy*. The Seeds of this Sort muſt be ſown on a Hot-bed early in the Spring, and when the Plants come up, they ſhould be tranſplanted each into a ſeparate Pot, and plunged into a moderate Hot-bed; where they ſhould have a large Share of free Air in warm Weather, and muſt be frequently refreſhed with Water. About the Beginning of *July* theſe Plants will flower, and their Seeds will ripen in Autumn.

OCTOBER.

The Weather in this Month is often very favourable, which gives a great Opportunity to the Gardener for planting of Trees, and putting in his Flower-Roots for the ſucceeding Spring: But ſometimes it happens that the Froſt ſets in early in this Month, which occaſions a great deal of Trouble to get his tender Plants ſhelter'd, and his Winter Fruits gather'd, and laid up for Uſe; ſo that, in all theſe Particulars, the Gardener muſt be directed by the Difference of the Seaſons.

Work to be done in the KITCHEN GARDEN.

If your Aſparagus Beds were not dreſs'd in the former Month, they ſhould now be done, by cutting down the wither'd Haulm, and houghing the Weeds from off the Beds into the Alleys, then dig the Alleys, and caſt the Earth over the Beds, burying the Weeds in the Alleys; but where the Beds want manuring, you ſhould ſpread ſome very rotten Dung over them after the Weeds are clean'd off, and then ſpread the Earth of the Alleys thereon.

In dry Weather you ſhould continue to earth up Celery and Chardoons, to blanch them; and draw up ſome Endive, which is full grown, to plant down on the Sides of the Ridges to blanch, becauſe the Cold at this Seaſon increaſing, will injure it, where it remains above Ground tied up to blanch, as was directed in the former Months.

Tranſplant your brown Dutch and common Cabbage Lettuces upon warm Borders, near Walls, Pales, or Hedges, to abide the Winter; as you may alſo ſome Cos, Sileſia, and Imperial Lettuces; but it will be proper to plant theſe Sorts upon Beds, to be cover'd with Frames or Mats in Winter, becauſe if the Froſt ſhould be very ſevere, it will deſtroy theſe Sorts, where they are expoſed to the open Air.

Your Spinach, Carrots, Onions, *&c.* which were ſown the End of *July*, or in *Auguſt*, muſt now be kept clean from Weeds; for if they are permitted to grow, they will over-run and ſpoil your Crops, eſpecially the Spinach, which will rot off where-ever the Weeds ſpread over it.

Plant Beans, and ſow Peaſe upon dry Grounds, and in warm Situations, which ſhould be repeated twice this Month; the firſt at the Beginning, and the other at the End of this Month, becauſe if the firſt ſhould be too forward to ſtand the Winter, the other, being later ſown, may ſucceed.

About the Middle of this Month you ſhould tranſplant your Cauliflower Plants into the Places where they are to abide the Winter: ſome of which ſhould be put under Bell or Hand-Glaſſes, if you have any, obſerving to plant two Plants under each Glaſs; becauſe if one of them ſhould fail, the other will be ſufficient; for in the Spring, if they both live thro' the Winter, one Plant muſt be tranſplanted out. Theſe Plants which are put under Glaſſes, will come earlier than thoſe which are winter'd in Beds, and tranſplanted out in the Spring.

Your Cabbage Plants which were ſown in the Beginning of *Auguſt*, ſhould now be tranſplanted out for good, (eſpecially thoſe of the early *Batterſea* Kind;) but it will be proper to have ſome Plants in a warm Situation reſerved, leſt the Froſt ſhould deſtroy thoſe which are planted out for good. As to the long-ſided Cabbage, which is a later Sort, that need not be planted out for good till *February*.

If you have ſown any Beds of Welſh Onions, you ſhould clean them from Weeds; for at this Seaſon their Blades will intirely decay, ſo that many Perſons have ſuppoſed the Onions were dead; but in ſix Weeks or two Months after, they come up again very ſtrong, and will reſiſt the ſevereſt Froſt; ſo that when all the common Sort of Onions is deſtroy'd by the Cold, theſe will remain, which was the Occaſion of their being ſo much propagated in the Gardens near *London* ſome Years ſince; but their ſtrong Flavour renders them leſs eſteem'd at preſent.

You muſt now ſow all Sorts of Sallet-herbs upon moderate Hot-beds, either under Frames, or arch'd over with Hoops, where they may be cover'd with Mats or Cloths, to protect them from Froſt, otherwiſe they will be deſtroy'd thereby, as ſoon as they appear above Ground. But if you have many Bell or Hand-Glaſſes, you may ſow theſe Seeds under them, notwithſtanding the two Cauliflower Plants which are under each Glaſs; for if the Seeds are not ſown too near the Stems of the Plants, or the Salletting be not ſuffer'd to remain too long about them, it will not injure them; this being conſtantly practiſed by the Gardeners near *London* with good Succeſs.

Some of your Colewort Plants which were late ſown, ſhould now be planted out where they are to remain for Spring Uſe, that they may ſucceed thoſe which were planted out the former Month.

Your Cauliflowers which were ſown in *May* will now begin to ſhew their Heads; therefore you muſt diligently look over them two or three Times a Week, to break down ſome of the inner Leaves upon them, which will protect them from the Froſt or Wet, both which, as alſo their being expoſed to the Sun, will change their Colour, and cauſe them to be unſightly.

The Stems of your Broccoli Plants ſhould now be earth'd up, to protect them from Froſt; but you muſt be careful that the Earth be not drawn into the Hearts of the Plants; for that will deſtroy them.

Toward the End of this Month you ſhould cut down the Roots of your Artichokes cloſe to the Surface of the Earth, and trench the Ground between them, obſerving to lay a good Ridge of Earth over each Row of Plants, to protect them from Froſt; but by no means lay any new Dung about them, as is by ſome unſkilful Perſons too often practiſed, which renders the Plants hard and woody in the Spring, and cauſes them to produce ſmall and ill-nouriſh'd Heads; but where the Ground wants Amendment, you ſhould bury ſome very rotten Dung between the Rows when you trench the Ground, which will greatly ſtrengthen your Plants.

You may now ſow ſome Radiſhes upon warm Borders to come early in the Spring, and if you mix ſome Carrot-ſeed with the Radiſh-ſeed, if the Radiſhes ſhould be deſtroy'd, the Carrots may ſtand, and come early in *May*.

Make ſome moderate Hot-beds to plant Mint and Tanſey upon, that you may have both Sorts for Uſe ſoon after *Chriſtmas*, when they are often required at the Table; and theſe Beds will continue to produce until thoſe in the open Air come in.

You may alſo make Hot-beds for Aſparagus, which will come in *December*; but it is better to ſtay until *December* or *January*; for the Aſparagus will not be near ſo large nor well-colour'd, which is produced in the Middle of Winter, when there is little Sun, as thoſe which come in *February*.

Products of the KITCHEN GARDEN.

Cabbages, Savoys, late Cauliflowers, ſome Artichokes, Carrots, Parſnips, Turneps, Onions, Leeks, Potatoes, Rocambole, Shallots, Beets, Skirrets, Scorzonera, Salſafy, Celery, Endive, Chardoons, Chervil, Corn-ſallet, Rape, Radiſh, Muſtard, Creſſes, Lettuce, and all ſorts of young Sallet-herbs; and on warm Borders ſome Cabbage Lettuce, Spinach, Coleworts, Borecole, Muſhrooms, Sprouts, with Sage, Roſemary, Thyme, Winter Savory, and many other Aromatick Plants.

Work to be done in the FRUIT GARDEN.

The Beginning of this Month you may prune Peach-Trees, Nectarines, Apricocks, and Vines, which is a much better Time than to ſtay until the Spring, as is the common Practice; for if this Work be perform'd early in Autumn, the Wounds will heal over before hard Froſts come to injure the Shoots, and ſo will be in no Danger of decaying; and by cutting off all the uſeleſs Part of the Branches at this Seaſon, thoſe which are left will be the ſtronger, and the Bloſſom-buds will be better nouriſh'd; for when the Shoots are left to their full Length till Spring, the Buds upon the upper Part of the Branches will be larger than thoſe upon the lower Part, which are thoſe deſigned to be left in Pruning; beſides, by Pruning at this Seaſon, you may dig and clean your Borders before Winter, and ſo will have leſs Buſineſs to do in the Spring, when your Ground is to be cropt.

You may alſo continue to prune Pears, Apples, and Plums, until the Middle or latter End of the next Month, according as the Seaſon proves favourable; but you ſhould never perform this Work in froſty Weather, becauſe then the Shoots would periſh at the Place where they are cut.

If your Soil be dry, this is the beſt Seaſon for tranſplanting all ſorts of Fruit-trees; and if you provide yourſelf from the Nurſeries, you may have much greater Choice at this Seaſon, than in the Spring, when the Nurſeries are generally clear'd of the beſt Trees: But in Planting you ſhould not head down thoſe Trees which are deſigned for Walls or Eſpaliers until the Spring, the Roots only ſhould be pruned; and when the Trees are planted, their Branches ſhould be faſten'd to the Wall, Pale, Eſpalier, or Stakes, to prevent their being looſen'd by the Winds; and ſome Mulch ſhould be laid upon the Surface of the Ground about their Roots, to prevent the Froſt from penetrating to them.

Plant Gooſeberries, Currants, Raſpberries, and Strawberries, that they may take Root before Winter; for thoſe which are planted at this Seaſon will produce Fruit the following Summer, whereas thoſe planted in Spring, have ſeldom Strength enough to produce any (or at leaſt very few) until the ſecond Year.

You may now tranſplant Stocks of all Kinds of Fruits into the Nurſery, to graft or bud the more generous Kinds of Fruits upon; in doing of which, if you obſerve to mulch the Ground about their Roots, to keep the Froſt out, it will be of great Service to them.

Your Beds of Strawberries ſhould now be dreſſed; in doing of which, you muſt clear them from Weeds, and cut off their Strings; then dig up the Alleys, and, after breaking the Earth fine, you ſhould ſpread a little over the Beds, being careful not to bury the Plants. You ſhould alſo clear your Raſpberries of old Wood, and dig up the Ground between the Rows, which will make the Place neat, and greatly encourage the Plants.

Your Currant-buſhes may now be pruned, and then their Branches may be tied up with a Withy, and the Ground between them dug, which may be planted with Coleworts or Cabbage-Plants, to remain till Spring, in which Place they will ſometimes abide the Winter, when they are deſtroy'd in more open Situations; for the Currant-buſhes will prevent the Froſt from penetrating ſo deep into the Ground as it will where the Ground is intirely clear: You may alſo prune Gooſeberry-buſhes, and dig up the Ground between them; and where there is Room, you may plant ſome of the like ſort of Plants, which will be gone in the Spring, before the Buſhes do put out their Leaves.

Preſerve the Stones or Kernels of ſuch ſort of Fruit as you intend to propagate for Stocks, in Sand, until the Seaſon for ſowing of them; but you muſt place them out of the Way of Mice and Rats, which will deſtroy them, if they get to them: and whenever you put any of them into the Ground, the ſame Caution muſt be obſerved; for theſe Vermin will ſoon deſtroy all your Kernels, where they can come to them, if they are not prevented.

Fruits in prime, or yet laſting.

You have yet the Bloody, Malacoton, and ſome Katharine Peaches, Grapes, late Figs, Medlars, Services, Black and White Bullace, with Walnuts, Hazle-nuts, and Almonds.

Pears; The Doyenne or St. Michael, Beurre rouge, Swiſs Bergamot, Verte-longue, Long-ſtalk'd Muſcat, Monſieur Jean, Rouſſeline, Green Sugar, Beſidery, Swan's-egg, with ſome others of leſs Note.

Apples; Golden Rennet, Autumn Pearmain, Red Calville, White Calville, Rennet Griſe, Royal Ruſſet, Embroidered Apple, with ſome others.

Work to be done in the NURSERY.

The Beginning of this Month you ſhould continue to trench the Ground for planting out young Stocks, to graft and bud your ſeveral Sorts of Fruits upon; as alſo to plant out flowering Shrubs, and other Wilderneſs Trees. And about the Middle of the Month you may begin tranſplanting of them into Quarters, placing them in Rows, allowing them a proper Diſtance, according to their ſeveral Sorts.

This Month is the moſt proper Seaſon for tranſplanting all Sorts of hardy Trees, eſpecially in dry Soils; for at this Time they will ſoon puſh out new Roots, which will be eſtabliſhed before the Drought of the ſucceeding Summer, whereby the Trees will be in much leſs Danger of ſuffering than thoſe tranſplanted in the Spring. But you muſt be careful to ſtake all Standard Trees, and thoſe planted againſt Walls, Pales, or Eſpaliers, ſhould be faſten'd thereto, otherwiſe the Wind will turn them aſide, and thereby tear the tender Fibres, to the great Injury of the Trees.

In dry Weather carry Dung into ſuch Parts of the Nurſery where it is wanted, and ſpread it upon the ſurface of the Ground round the Stems of your young Trees; this will keep the Froſt out of the Ground, and the Rains of Winter will waſh in the Salts to the Roots of the Trees; and in the Spring, when the Ground is dug between the Trees, the Dung may be buried.

You may now put into Beds, the Stones of *Muſcle Plums* for Stocks, obſerving to cover them an Inch thick with light Earth, and then lay ſome light Mulch over the Surface of the Bed, to keep out the Froſt, and prevent the Mice from getting to them.

This is the proper Seaſon to ſow Acorns, which will ſprout if they are kept long out of the Ground, and are thereby ſpoiled. You may alſo ſow Beach-maſt ſo ſoon as it is ripe; for this will not keep long out of the Ground. Hawthorns of all ſorts, Yewberries, and Hips of Roſes ſhould now be ſown, obſerving to cover the Beds, as was directed for the Muſcle Plums; theſe Seeds, ſown at this Seaſon, will often come up the ſucceeding Spring, whereas thoſe ſown in the Spring, if they do grow, will not come up until the Spring following.

This is alſo the beſt Seaſon for ſowing Maple-ſeed; for thoſe which are kept out of the Ground till Spring, do rarely grow.

You may now make Layers of Elms, Limes, and all other hardy Trees which ſhed their Leaves; the doing of which at this Seaſon will greatly promote their taking Root; for their Moiſture in Winter will ſettle the Ground about them, and prepare them for puſhing out Roots early in the Spring.

Work to be done in the FLOWER-GARDEN.

The Beginning of this Month you ſhould finiſh planting all the ſorts of Flower-roots which you intend to put into the Ground before *Chriſtmas*; as Tulips, Anemonies, Ranunculus's, Crocus's, Jonquils, Hyacinths, and all ſuch as have been kept above Ground ſince their Leaves decay'd in Summer; for if any of the Roots are ſuffer'd to remain in the Ground a ſhort Time after their Leaves are decay'd, they will puſh out freſh Fibres, when it will be too late to take them up, or, if they are removed, they muſt be immediately planted again; for if they are kept out of the Ground, they will decay in a ſhort Time.

You may now tranſplant moſt ſorts of hardy tuberoſe-rooted or fibroſe-rooted Plants, ſuch as Hollyhocks, Canterbury-bells, French Honeyſuckles, Columbines, Monk's-hoods, Daizies, Buphthalmums, Polyanthus's, Sweet-Williams, London Pride, Campanula's, Aſter's, Golden Rods, Spiderwort, Lychnis Coronaria, Ragged Robin, with many other ſorts, which may be planted in the Borders of the Flower-Garden, obſerving to intermix them in ſuch a manner, that there may be a ſucceſſion of Flowers preſerved throughout the Seaſon.

Cleanſe all the Borders of the Flower-Garden from Weeds, and if you did not dig them the former Month, it muſt now be done, obſerving to renew them with freſh Earth, or ſome very rotten Dung, in the Manner directed in the former Month: You may alſo continue to plant Box-Edgings to Borders, where they are wanted, and repair thoſe which are decay'd.

Thoſe Borders which were dug and planted the Beginning of *September*, ſhould now be raked over again, which will deſtroy all young Weeds, and make the Borders clean and handſome all the Winter-ſeaſon.

Tranſplant Flag-leav'd Iris's, Peonies, and ſuch Geranium as have thick knobby Roots, which ſucceed better when they are planted at this Seaſon, than thoſe which are removed in the Spring.

Your Beds of ſeedling Hyacinths, Tulips, Fritillaria's, and other bulbous-rooted Flowers, which have remained in the Ground all the Year, muſt now be carefully clear'd from Weeds, and ſome freſh rich Earth ſifted over the Beds, about half an Inch thick, which will preſerve the Roots from Froſt, and greatly ſtrengthen them.

The Pots and Boxes of ſeedling Flowers ſhould now be removed out of their ſhady Situation, where they have remained during the Heat of Summer and Autumn, and placed in a warmer Poſition, where they may enjoy as much of the Benefit of the Sun as poſſible, and be ſcreen'd from cold Winds; they ſhould alſo be cleaned from Weeds, and have a little freſh Earth ſifted over them; but this muſt not be laid too thick, leſt the Roots ſhould be buried, and rot in the Ground.

Remove your Pots of choice Carnations under Cover, where they may be defended from violent Rains, Snow, and ſevere Froſt, all which are Enemies to theſe Flowers; therefore if you have planted them in ſmall Half-penny Pots, as was directed in the Month of *Auguſt*, they may be placed very cloſe together in a Garden Frame, or upon a Bed arch'd over with Hoops, that they may be cover'd with Mats in bad Weather; but in mild dry Weather they cannot have too much Air.

Your Pots of choice Auricula's ſhould have their decay'd Leaves taken off, and the Pots muſt be laid on one Side, to prevent their receiving too much Wet, which will be apt to rot them; but they will endure Cold very well.

You may now remove moſt ſorts of flowering Shrubs and Trees, as Roſes, Honeyſuckles, Spaniſh Broom, Cytiſſus's, Laburnums, *&c.* which, if planted at this Seaſon, will take Root before Winter, whereby they will be in leſs Danger of ſuffering from Drought the following Spring, and many of them will flower the next Summer; whereas thoſe which are removed in the Spring will require to be conſtantly water'd in dry Weather, and do rarely flower the ſame Year: But thoſe Shrubs which are planted at this Seaſon muſt have ſome Mulch laid upon the Surface of the Ground about their Stems, to prevent the Froſt from penetrating the Earth to their Roots.

Clean the Walks near your Wilderneſſes of the Leaves which have fallen from the Trees, for if they are ſuffered to rot upon Graſs Walks, they will greatly injure the Graſs; and if they remain upon Gravel Walks to rot, they will diſcolour the Gravel, and render it unſightly: And where you have large

Gravel Walks, which are ſeldom uſed in Winter, you may now break them up, and lay them in Ridges, which will prevent Weeds and Moſs from growing thereon in Winter, and preſerve the Gravel freſh.

Where you have any Ground which is deſign'd to be laid out for Pleaſure, either in a Flower-Garden or Wilderneſs, which you can't get ready for planting before Spring, you ſhould loſe no Time at this Seaſon in preparing of it, that it may be expos'd to the Froſt in Winter, which will mellow it; beſides, if the Froſt ſhould continue long, it may prevent your working till the Seaſon will be too far ſpent for planting, whereby a whole Seaſon will be loſt.

Plants now flowering in the PLEASURE-GARDEN.

Several ſorts of Starworts, Africans, French Marygolds, Marvel of Peru, four or five ſorts of Golden Rod, Autumnal Crocus's, Yellow Autumnal Narciſſus, Cyclamens, Colchicums, China Pinks, Sweet Sultans, Polyanthus's, Auricula's, Three-coloured Violet, or Heart's-eaſe, ſome ſingle Anemonies, Sun-flowers, Indian Scabious, with ſome others.

Hardy Trees and Shrubs now in Flower.

Arbutus, or the Strawberry Tree, late Honeyſuckles, Althæa frutex, Paſſion-flower, Cytiſſus lunatus, Ketmia Syriaca, Lauruſtinus's, Monthly Roſe, Muſk Roſe, Shrub Cinquefoil, with ſome others.

Work to be done in the GREEN-HOUSE *and* STOVE.

The Beginning of this Month you ſhould remove your Orange-trees into the Green-houſe, obſerving, as hath already been directed, to do it in a dry Day, as alſo to clean their Heads and Stems before they are houſed, and ſtir the Earth on the Top of the Tubs, adding a little very rotten Neat's Dung thereto; which will refreſh the Trees, and prevent Moſs from growing in the Tubs or Pots.

You muſt now alſo carry into the Conſervatory your tender Geraniums, Double Indian Naſturtium, Spaniſh Jaſmines, Azorian Jaſmines, Yellow Indian Jaſmines, Ficoides's, Sedums, Cotyledons, Amber Tree, with many other Sorts which are hardy enough to remain abroad until Morning Froſts begin to come on, when they ſhould be removed into Shelter; but theſe muſt have as much free Air as poſſible when they are in the Houſe; for if they are too cloſely ſhut up, their Leaves will decay and fall off; they muſt alſo be frequently refreſh'd with Water, and the decay'd Leaves conſtantly pick'd off.

If you have not already renew'd your Bark-beds in the Stove, it muſt now be no longer deferr'd, for the Cold increaſing will check your tender Exoticks, if they are not placed into new Beds; in doing of which you muſt be very careful not to plunge the Pots into the Bark until it begins to warm, nor ſhould they be put into the Bark if it be too hot, for if the Roots of the Plants are ſcorch'd with the Heat, they rarely recover again. You muſt alſo obſerve to waſh the Leaves and Stems of ſuch Plants as have contracted any Filth, or that are infeſted with Inſects, otherwiſe they will ſpread themſelves over whatever Plants are plac'd near them, and be very injurious to them.

Toward the Latter-end of the Month you ſhould remove your Myrtles, Oleanders, Lentiſcus's, and other hardy Exotick Plants into the Green-houſe, at which Time you ſhould put all the Plants into the Order they are to remain during the Winter, obſerving (if you have Room in the Green-houſe) to place them in ſuch a Manner that the Branches of the Plants may not interfere with each other, but that their Heads may ſtand ſingle, that the Air may freely paſs between them.

Your Anana's, or Pine Apples, muſt now be removed out of the Bark-bed, where they have remain'd the laſt Summer, and plac'd in the Stove near the Fire, that they may enjoy the Heat; but you muſt obſerve to refreſh them frequently with Water, which ſhould be plac'd in the Stove twenty-four Hours before it be uſed, that it may acquire a proportionable Warmth with the Air of the Houſe; for if you permit the Fibres of the Plants to grow dry, it will weaken the Plants, and cauſe many of your laſt Year's Crowns and Off-ſets to fruit, which were not deſigned for fruiting the following Year, and ſo conſequently their Fruit will be very ſmall, and of little Value.

Toward the End of the Month, as you find the Nights to grow cold, you muſt begin to make Fires in the Stoves; but this muſt be done with Caution, for if you make the Heat too great, it will cauſe the Plants to ſhoot, whereby they will be weaken'd, and the Seaſon being too far advanc'd to permit their Shoots to grow ſtrong, their Leaves will often decay and fall off. You muſt alſo obſerve to refreſh your Plants with Water pretty often, for when you begin to make Fires, it will dry the Air of the Houſe, and occaſion the Plants to perſpire more freely than before, whereby they will require more Water; but you muſt not give it to them in large Quantities, but rather frequently, and a little at each Time. When you obſerve the Leaves of any Plants decay, you ſhould pick them off, and keep the Stove conſtantly clear from any fallen Leaves, Cobwebs, or other Filth; which not only renders the Houſe neat, but is very neceſſary to preſerve your Plants in Health.

Plants now in Flower in the GREEN-HOUSE *and* STOVE.

The ſcarlet-flowering Geranium, Geranium with an Aſarabacca Leaf, Ficoides's of ſeveral ſorts, Cotyledons, Chryſanthemums, Spaniſh Jaſmine, Arabian Jaſmine, Ilex-leav'd Jaſmine, Indian yellow Jaſmine, Anemonoſpermos's, Perſian Cyclamens, Aloes of many Kinds, Canary Campanula, Caſſia Bahamenſis, Senſitive and Humble Plants, Guernſey Lily, Belladona Lily, Three-leav'd Paſſion-flower, Alaternoides ericæ folio, Leonurus, Euphorbium nerii folio, Alcea groſſulariæ folio, Double-flowering Myrtle, Yucca Indica, Polygala arboreſcens, Myrto-Ciſtus, Papaya, Ketmia ſemine moſchato, Senecio folio retuſo, Opuntia's, with ſome others.

OCULUS CHRISTI. *Vide* Horminum Sylveſtre.

OCYMUM, Baſil.

The *Characters* are;

It hath a labiated Flower, conſiſting of one Leaf, whoſe Creſt (or upper Lip) is upright, roundiſh, notched, and larger than the Beard, or lower Lip) which is generally curled, or gently cut. Out of the Flower-cup ariſes the Pointal, attended by four Embryo's, which afterwards become ſo many Seeds incloſed in a Huſk, which was before the Flower-cup; this Huſk is divided into two Lips, the upper one growing upright, and is ſplit into two; but the under one is cut into ſeveral Parts.

The *Species* are;

1. Ocymum *vulgatius. C. B. P.* Common Baſil.
2. Ocymum *vulgatius, foliis ex nigro-vireſcentibus, flore albo. H. R. P.* Common Baſil, with dark-green Leaves, and white Flowers.
3. Ocymum *minus anguſtifolium, foliis ſerratis. C. B. P.* Leſſer Baſil, with narrow ſerrated Leaves.
4. Ocymum *minus anguſtifolium, foliis bullatis. H. R. P.* Leſſer narrow-leaved Baſil, with warted Leaves.
5. Ocymum *minimum. C. B. P.* The leaſt Baſil, commonly called *Buſh-Baſil.*
6. Ocymum *minimum, foliis ex purpurâ nigricantibus. H. R. P.* The leaſt Baſil, with dark-purple Leaves.
7. Ocymum *citri odore. C. B. P.* Baſil with a citron Scent.
8. Ocymum *latifolium maculatum vel criſpum. C. B. P.* Broad-leav'd Baſil, with curled ſpotted Leaves.
9. Ocymum *folibrum fimbriis ad endiviam accedentibus, maximum. H. L.* The greateſt Baſil, with Leaves fringed like Endive.
10. Ocymum *foliis fimbriatis viridibus. C. B. P.* Baſil with fringed green Leaves.
11. Ocymum *caryophyllatum maximum. C. B. P.* The greateſt Baſil, ſmelling like Cloves.
12. Ocymum *aniſi odore. C. B. P.* Baſil ſmelling like Aniſe.
13. Ocymum *minus anguſtifolium, foliis ſerratis. C. B. P.* The ſmaller narrow-leaved Baſil, with ſawed Leaves.
14. Ocymum *tricolor. H. R. Par.* Three-coloured Baſil.
15. Ocymum *nigrum majus, acuto rutæ odore. H. L.* Greater black Baſil, with the quick Smell of Rue.
16. Ocymum *Campechianum odoratiſſimum. Houſt.* The moſt ſweet-ſmelling Baſil of *Campechy.*

Theſe Plants being annual, are propagated from Seeds, which ſhould be ſown in *March*, upon a moderate Hot-bed; and when the Plants are come up, they ſhould be tranſplanted into another moderate Hot-bed, obſerving to water and ſhade them until they have taken Root; after which they ſhould have Plenty of Air in mild Weather, otherwiſe they will draw up very weak; you muſt alſo water them frequently, for they love Moiſture. In *May* they ſhould be taken up with a Ball of Earth to their Roots, and tranſplanted either into Pots or Borders, obſerving to ſhade them until they have taken Root; after which they will require no farther Care, but to clear them from Weeds, and refreſh them with Water in dry Weather. Tho' theſe Plants are only propagated from Seeds, yet if you have any particular Sort which may ariſe from Seeds, which you are deſirous to increaſe, you may take off Cuttings any Time in *May*, and plant them on a moderate Hot-bed, obſerving to water and ſhade them for about ten Days; in which Time they will take Root, and in three Weeks Time will be fit to remove either into Pots or Borders, with the ſeedling Plants. In *Auguſt* theſe Plants will perfect their Seeds, when thoſe Sorts which appear the moſt diſtinct, ſhould have their Seeds preſerved ſeparate, for ſaving the following Spring.

The firſt Sort is what the College of Phyſicians have preſcribed for medicinal Uſe; but the fifth Sort is moſt eſteemed for its Beauty and Scent, by thoſe who cultivate them to adorn their Gardens.

The Seeds of theſe Plants are uſually brought from the South of *France*, or *Italy*, every Spring, becauſe they ſeldom ripen their Seeds in this Country, in the open Air. But whoever is curious to preſerve the Seeds of any of the Varieties, ſhould place them into an airy Glaſs-caſe or Stove, in the Autumn when the Weather begins to be cold or wet; and by ſupplying them with Water, and letting them have free Air every Day in mild Weather, they will perfect their Seeds very well in this Country.

The ſixteenth Sort is more tender than any of the other. This was diſcovered growing wild at *Campechy*, by the late Dr. *William Houſtoun*, who ſent the Seeds to *England*. This ſhould be ſown on a Hot-bed early in the Spring, and when the Plants are come up, they ſhould be tranſplanted on another very temperate Hot-bed, to bring them forward; and when they have obtained Strength, they ſhould be each tranſplanted into a ſeparate Pot, and placed either in the Stove, or on a moderate Hot-bed, where they may have a large Share of Air in warm Weather; but by being ſheltered from the Cold and Wet, the Plants will perfect their Seeds very well in *England*.

ŒNANTHE, [Οἰνάνθη, of οἴνη a *Vine*, and ἄνθος a *Flower*. The Ancients call'd any Plant *OEnanthe* that flower'd at the ſame Time with the Vine, or whoſe Flowers had the ſame Odour.] Water Dropwort.

The *Characters* are;

It is an umbelliferous Plant, whoſe Flower conſiſts of many Heart-ſhap'd Leaves, which expand in Form of a Roſe: The Ovary is fix'd to the Top of the Empalement, which turns to a Fruit compoſ'd of two oblong Seeds, that are gibbous and ſtreak'd on one Side, and plain on the other, ending, as it were, in ſome Prickles, the middlemoſt of which is ſtronger than the reſt.

The *Species* are;

1. Œnanthe *cicutæ facie Lobelli. Park. Theat.* Hemlock Dropwort.
2. Œnanthe *aquatica. C. B. P.* Water Dropwort.

There are ſeveral other Species of this Plant, ſome of which are Natives of *England*; but as they are not at preſent uſeful, nor of any Beauty, I ſhall omit enumerating them in this Place.

The firſt of thoſe here mention'd is very common by the Side of the *Thames* on each Side *London*, as alſo by the Sides of large Ditches and Rivers in divers Parts of *England*: This Plant commonly grows four or five Feet high with ſtrong-jointed Stalks, which being broke, do emit a yellowiſh fœtid Juice: The Leaves are ſomewhat like thoſe of the common *Hemlock*, but are of a lighter-green Colour: The Roots divide into four or five large taper ones, which, when ſeparated, have ſome Reſemblance to *Parſnips*; for which ſome ignorant Perſons have taken and boil'd them, whereby Themſelves and Family have been poiſon'd.

The poiſonous Quality of this Plant hath led ſome Perſons to believe it is the *Cicuta* of the Ancients: But, according to *Wepfer*, the *Sium alterum Oluſatri facie* of *Lobel* is what the Ancients call'd *Cicuta*, as may be ſeen at large in *Wepfer's* Book *de Cicuta*.

The ſecond Sort is very common in moiſt Soils, and by the Sides of Rivers in divers Parts of *England*: This is not ſuppos'd to be near ſo ſtrong as the firſt, but is of a poiſonous Quality.

All the Sorts of theſe Plants do naturally grow in moiſt Places; ſo that whoever hath a mind to cultivate them ſhould ſow their Seeds ſoon after they are ripe in Autumn, upon a moiſt Soil, where they will come up, and thrive exceedingly the following Summer, and require no farther Care but to clear them from Weeds.

OLDENLANDIA.

The *Characters* are;

It hath a roſe-ſhaped Flower, conſiſting of one Leaf, which is divided into four Parts almoſt to the Bottom, and reſts on the Empalement; which Empalement afterward becomes an almoſt globular Fruit, having two Cells, which contain many ſmall Seeds.

We have but one *Species* of this Plant, which is,

Oldenlandia *humilis hyſſopi folio. Plum. Nov. Gen.* Dwarf Oldenlandia, with a hyſſop Leaf.

This Plant was diſcovered in *America* by Father *Plumier*, who gave this Name to it in Honour to *Henry Bernard Oldenland* a *German*, who was a Diſciple of Dr. *Herman* at *Leyden*, and was a very curious Botaniſt.

The Seeds of this Plant were ſent into *England* by Mr. *Robert Millar*, who gathered them in *Jamaica*. It is a low annual Plant, which ſeldom riſes above three or four Inches high, and divides into many Branches, which ſpread near the Ground. Theſe Branches are furniſhed with long narrow Leaves, which are placed by Pairs oppoſite to each other. From the Wings of the Leaves ariſes the Flower-ſtalk, which grow about an Inch or a little more in Length, and divides into three or four ſmaller Foot-ſtalks: On the Top of each of theſe, ſtands one ſmall white Flower.

The Seeds of this Plant ſhould be ſown early in the Spring, on a Hot-bed; and when the Plants are come up, they ſhould be tranſplanted on another Hot-bed, or into ſmall Pots, and plunged into a moderate Hot-bed of Tanners-bark, obſerving to water and ſhade them until they have taken Root; after which Time, they muſt have a large Share of free Air in warm Weather, and muſt be frequently refreſhed with Water. With this Management the Plants will flower in *June*, and their Seeds will ripen ſoon after; ſo that the Seeds muſt be gathered from time to time as they ripen; for as the Branches grow larger, ſo there will be freſh Flowers produced until Autumn, when the Plants will periſh: But if the Seeds are permitted to ſcatter in the Pots, the Plants will ſoon after appear, which will live thro' the Winter, provided they are placed in the Stove; ſo will flower early the following Spring.

OLEA, [of 'Ελαία.] The *Olive*.

The *Characters* are;

The Leaves are, for the moſt part, oblong and ever-green; the Flower conſiſts of one Leaf; the lower part of which is hollow'd, but the upper part is divided into four Parts; the Ovary, which is fix'd in the Center of the Flower-cup, becomes an oval, ſoft, pulpy Fruit, abounding with a fat Liquor, incloſing a hard rough Stone.

The *Species* are;

1. Olea *ſativa. C. B. P.* The manur'd *Olive*.
2. Olea *Africana, folio longo lato ſupra atroviridi ſplendente, infra pallidè viridi. Boerh. Ind.* African Olive, with a broad long Leaf, of a ſhining dark-green Colour on the upper-ſide, but of a paler-green underneath.
3. Olea *Africana, folio buxi craſſo atroviridi lucido, cortice albo ſcabro. Boerh. Ind.* The African Box-leaved Olive.
4. Olea *minor Lucenſis, fructu odorato. Tourn.* The Luca Olive.
5. Olea *fructu majori, carne craſſa. Tourn.* Olive, with a larger Fruit, having a thicker Pulp.
6. Olea *ſylveſtris, folio molli incano. C. B. P.* The Oleaſter or Wild *Olive*, with ſoft hoary Leaves.

Theſe five firſt Sorts are preſerv'd in the Gardens of the Curious, where they are planted either in Pots or Caſes, and remov'd into the Green-houſe in the Winter, with *Oranges*, *Myrtles*, &c. but they are moſt of them hardy enough to endure the Cold of our ordinary Winters in the open Air, provided they are planted upon a dry Soil, and in a warm Situation; tho' in ſevere Winters they are often demoliſh'd, or at leaſt loſe their Heads, or are kill'd to the Surface; but this is what they are liable to in the South Parts of *France*, in which Country theſe Trees abound; and yet in very ſharp Winters are moſt of them deſtroy'd. There was a Parcel of theſe Trees growing in the Gardens of *Cambden-houſe* near *Kenſington* a few Years ſince, which were ſeven or eight Feet high, and in ſome good Seaſons did produce very good Fruit: Theſe were planted againſt a South-Wall, but were permitted to grow up rude without pruning, or faſtening to the Wall, (which they do by no means care for); and during the Time they were below the Top of the Wall, they throve very well; but after their Heads were gotten above the Wall, the North-Winds did uſually every Winter greatly prejudice them, and I believe the hard Winter [1709.] did intirely demoliſh them.

Theſe Plants may be propagated by laying down of their tender Branches, (in the manner practis'd for other Trees) which ſhould remain undiſturb'd two Years; in which Time they will have taken Root, and may then be taken off from the old Plants, and tranſplanted either into Pots fill'd with freſh light Earth, or into the open Ground in a warm Situation. The beſt Seaſon for tranſplanting them is the Beginning of *April*; when you ſhould, if poſſible, take the Opportunity of a moiſt Seaſon, and thoſe which are planted in Pots, ſhould be plac'd in a ſhady Part of the Green-houſe until they have taken Root; but thoſe planted in the Ground ſhould have Mulch laid about their Roots, to prevent the Earth from drying too faſt, and now and then refreſh'd with Water, but you muſt by no means let them have too much Moiſture, which will rot the tender Fibres of their Roots, and deſtroy the Trees. When the Plants have taken freſh Root, thoſe in the Pots may be expoſ'd to the open Air, with other hardy Exoticks, with which they ſhould be hous'd in Winter, and treated as *Myrtles* and other leſs tender Trees and Shrubs; but thoſe in the open Air will require no farther Care until the Winter following, when you ſhould mulch the Ground about their Roots, to prevent the Froſt from penetrating deep into it: And if the Froſt ſhould prove very ſevere, you ſhould cover them with Mats, which will defend them from being injur'd thereby; but you muſt be cautious not to let the Mats continue over them after the Froſt is paſt, leſt by keeping them too cloſe, their Leaves and tender Branches ſhould prove mouldy for want of free Air, which will be of as bad Conſequence to the Trees as if they had been expoſ'd to the Froſt, and many Times worſe; for it ſeldom happens, if they have taken much of this Mould, or have been long cover'd, ſo that it has enter'd the Bark, that they are ever recoverable again; whereas it often happens, that the Froſt only deſtroys the tender Shoots, but the Body and larger Branches remaining unhurt, do put out again the ſucceeding Spring.

Theſe Trees are generally brought over from *Italy* every Spring, by the Perſons who bring over the *Oranges*, *Jaſmines*, &c. from whom they may be procur'd pretty reaſonable, which is a better Method than to raiſe them from Layers in this Country, that being too tedious; and thoſe which are thus brought over, have many times very large Stems, to which Size young Plants in this Country would not arrive in ten or twelve Years Growth. When you firſt procure theſe Stems, you ſhould (after having ſoak'd their Roots twenty-four Hours in Water, and clean'd them from the Filth they have contracted in their Paſſage) plant them in Pots fill'd with freſh, light, ſandy Earth, and plung'd into a moderate Hot-bed, obſerving to ſcreen them from the Violence of the Sun in the Heat of the Day, and alſo to refreſh them with Water, as you ſhall find the Earth in the Pots dry. In this Situation they will begin to ſhoot in a Month or ſix Weeks after; when you ſhould let them have Air in Proportion to the Warmth of the Seaſon: And after they have made pretty good Shoots, you ſhould inure them to the open Air by degrees; into which they ſhould be remov'd, placing them in a Situation where they may be defended from ſtrong Winds: In this Place they ſhould remain till *October* following; when they muſt be remov'd into the Green-houſe, as was before directed. Having thus manag'd theſe Plants until they have acquir'd ſtrong Roots, and made tolerable good Heads, you may draw them out of the Pots, preſerving the Earth to their Roots, and plant them in the open Air in a warm Situation, where you muſt manage them as was before directed for the young ones, and theſe will in two or three Years produce Fruit, provided they do well. The *Luca* and *Box-leav'd Olives* are the hardieſt, for which Reaſon they ſhould be preferr'd to plant in the open Air, but the firſt Sort will grow to be the largeſt Trees.

The *Oleaſter* is very hardy, and will endure the ſevereſt Cold of our Climate, provided it have a dry Soil, and is not too much expoſ'd to the cold Winds. This will grow to the Height of ſixteen or eighteen Feet, and make a large Head; and if planted among other Exotick Trees in Wilderneſs-Quarters, will greatly add to their Variety by its Silver-colour'd Leaves; and during the Seaſon of its Flowering, (which is in *June*) it perfumes the circumambient Air to a great Diſtance, tho' the Flowers are very ſmall, and of little Beauty. This ſometimes produces Fruit in *England*, when the Trees are pretty old, but it often happens, that if they bear any Quantity of Fruit, they die ſoon after.

This Tree may be propagated by laying down the tender Branches, which will take Root in one Year's time; at which time they may be taken off from the old Plants, and plac'd where they are to remain, for they do not care to be often tranſplanted. The beſt Seaſon for removing them is the Latter-end of *March*, or the Beginning of *April*, juſt before the Leaves come out; when you ſhould alſo obſerve to mulch the Ground about their Roots, and refreſh them with Water, as they may require it; and after they have taken good Root in the Ground, they will grow very quick, and in two or three Years will produce Flowers.

OMPHALODES, [of ὀμφαλὸς, a *Navel*, and εἶδος *Shape*, becauſe the *Calyx* is hollow'd like the human Navel] Venus Navel-wort.

The *Characters* are;

The Flower conſiſts of one Leaf, which expands in a circular Order, and is cut into ſeveral Segments; the Pointal, which riſes in the Middle of the Flower, becomes a Fruit, compoſ'd of four hollow, umbilicated Capſules, ſomewhat reſembling a Baſket; in each of which is contain'd one almoſt flat Seed adhering to the Placenta, *which is pyramidal and four-corner'd.*

The *Species* are;

1. OMPHALODES *Luſitanica, lini folio. Tourn.* Venus Navel-wort, *vulgo*.
2. OMPHALODES *Luſitanica elatior, cynogloſſi folio. Tourn.* Taller Portugal Navel-wort, with a Hound's-tongue Leaf.
3. OMPHALODES *pumila verna, ſymphyti folio. Tourn.* Low Vernal Venus Navel-wort, with a Comfry-leaf, *or* Leſſer Borage.

The firſt of theſe Plants hath been a long Time in the *Engliſh* Gardens. The Seeds of this Kind are ſold in the *London* Shops, as a Dwarf annual Flower, to be uſ'd for Edgings; for which Purpoſe it is by no means proper, for it often happens, that not a tenth Part of the Seeds do grow, tho' they were ſav'd with all poſſible Care, ſo that the Plants will be very thin, and in Patches; but however, it is a pretty Ornament to the Borders of the Pleaſure-Garden, if ſown in Patches, as hath been directed for the *Dwarf Lychnis*, and other annual Plants of the ſame Growth; amongſt which this Plant makes a pretty Variety. The Seeds of it ſhould be ſown in Autumn, ſoon after they are ripe; at which Seaſon they will come up very well, (whereas thoſe ſown in the Spring do ſeldom ſucceed) and the Plants will abide the Cold of our ordinary Winters, and will flower early the ſucceeding Spring, from which Plants you will have good Seeds in *July*; but thoſe ſown in the Spring do very often fail of ripening Seeds.

The ſecond Sort is only in ſome curious Botanick Gardens at preſent, though it is equally as hardy as the firſt, and muſt be treated in the ſame Manner. This grows taller, and hath broader Leaves than the firſt, in which reſpects the only Difference between them conſiſts.

The third Sort is an abiding Plant, and multiplies very faſt by its trailing Branches, which take Root at their Joints as they lie upon the Ground, and may be taken off, and tranſplanted to make new Plants. Theſe require a moiſt Soil, and a ſhady Situation, where they will thrive exceedingly, and produce great Quantities of pretty blue Flowers early in the Spring, for which it is chiefly valued.

ONAGRA; Tree Primroſe, *vulgo*.

The *Characters* are;

It hath a Roſe-flower, conſiſting generally of four Leaves, placed orbicularly, and reſting on the Empalement; out of whoſe upper Part (which is fiſtulous) riſes the Pointal, the under Part turning to a Fruit which is cylindrical, gaping in four Parts, and divided into four Cells filled with Seeds, which are generally cornered, and adhere to the Placenta.

The *Species* are;

1. ONAGRA *latifolia. Inſt. R. H.* Broad-leaved Tree-Primroſe.
2. ONAGRA *latifolia, flore dilutiore. Inſt. R. H.* Broad-leaved Tree-Primroſe, with paler yellow Flowers.
3. ONAGRA *latifolia, floribus amplis. Inſt. R. H.* Broad-leaved Tree-Primroſe, with ample Flowers.
4. ONAGRA *anguſtifolia. Inſt. R. H.* Narrow-leaved Tree-Primroſe.
5. ONAGRA *anguſtifolia, caule rubro, flore minori. Inſt. R. H.* Narrow-leaved Tree-Primroſe, with red Stalks, and a ſmaller Flower.
6. ONAGRA *Americana, foliis perſicariæ amplioribus, parvo flore luteo. Plum.* American Tree-Primroſe, with ample arſmart Leaves, and a ſmall yellow Flower.
7. ONAGRA *Americana, foliis perſicariæ anguſtioribus, magno flore luteo. Plum. Cat.* American Tree-Primroſe, with narrower arſmart Leaves, and a large yellow Flower.
8. ONAGRA *Americana fruteſcens, nerii folio, magno flore luteo. Plum. Cat.* American Tree-Primroſe, with an Oleander Leaf, and a large yellow Flower.
9. ONAGRA *Americana, folio betonicæ, fructu hiſpido. Plum. Cat.* American Tree-Primroſe, with a betony Leaf, and a prickly Fruit.

10. **Onagra** *laurifolia, flore amplo pentapetalo. Feuillée.* Bay-leaved Tree-Primroſe, with a large five-leaved Flower.

11. **Onagra** *hyſſopifolia, flore amplo violaceo. Feuillée.* Hyſſop-leaved Tree-Primroſe, with a large violet-coloured Flower.

12. **Onagra** *linariæ folio, magno flore purpureo. Feuillée.* Tree-Primroſe, with a Toad-flax Leaf, and a large purple Flower.

13. **Onagra** *ſalicis anguſto dentatoque folio, vulgo Mithon. Feuillée.* Tree-Primroſe with narrow indented Willow Leaves, commonly called Mithon.

14. **Onagra** *ſalicis anguſto dentatoque folio, flore luteo, calyce prælongo. Feuillée.* Tree-Primroſe with narrow indented Willow Leaves, a yellow Flower, and a longer Cup.

The firſt Sort is very common in moſt *Engliſh* Gardens, where, when it has been ſuffered to ſcatter its Seeds, it will come up and flouriſh without any Care, and many Times becomes a troubleſome Weed: This will thrive in the Smoak of *London*, ſo that it is a very proper Plant to adorn the City Gardens; for it continues in Flower from the Beginning of *June* until *Auguſt*, and ſometimes in cold Seaſons until near *Michaelmas*. The Flowers of this Plant do not open in the Middle of the Day, when the Weather is warm; but in the Evening, after the Sun is gone off, they open, and continue ſo, until the Sun comes on them the next Day; in cloudy Weather the Flowers will continue open all Day, or when the Plants grow in the Shade. This Manner of the Flower opening in the Evening, has occaſioned the Name of *Night Primroſe*, by which ſome People call it. The four next mentioned are equally hardy, and will grow in almoſt any Soil or Situation. The Seeds of theſe Plants may be ſown in *March*, in an open Situation; and when the Plants come up, they ſhould be kept clean from Weeds; and where they come up too cloſe, ſome of them ſhould be pulled up, to allow Room for the others to grow. In this Place the Plants may remain till *Michaelmas*, when they ſhould be tranſplanted where they are to remain for flowering. Theſe Plants produce a great Quantity of Seed, which, if permitted to ſcatter, will ſufficiently ſtock the Garden with Plants; but the old Plants rarely continue after they have ſeeded.

Tho' theſe Plants will bear tranſplanting pretty well, if it be done at *Michaelmas*, yet it is the better Way to ſow the Seeds, where the Plants are deſigned to remain for flowering, becauſe they generally have a downright Root, which is often cut or broken by tranſplanting; and then the Plants never thrive ſo well, nor continue ſo long in Flower, as thoſe which remain undiſturbed.

The ſixth and ſeventh Sorts are much tenderer than the former, and require to be raiſed in a Hot-bed, where they muſt be treated as hath been directed for the *Balſamina* and *Amaranthus's*; to which I refer the Reader, to avoid Repetition. Theſe Plants ſhould be kept in a Stove or Glaſs-caſe, where they ſhould have a large Share of Air in warm Weather; but if they are expoſed in the open Air, they ſeldom continue long in Beauty, and rarely perfect their Seeds in *England*.

The eighth Sort is hardy, and will do very well in the open Air, provided it is ſown on a warm Soil, and in a ſheltered Situation. The Seeds of this Kind, if permitted to ſcatter, will come up the following Spring, and require no farther Care, but to keep them clear from Weeds. If ſome of theſe Plants are planted in Pots, and ſheltered in the Green-houſe in Winter, they will grow woody, and may be continued two Years or more. But as it is ſo hardy as to come up from the ſcattered Seeds, ſo few People care to have the Trouble of keeping the Plants over the Winter.

The ninth, tenth, eleventh, twelfth, thirteenth, and fourteenth Sorts, are more tender: Theſe ſhould be raiſed on a Hot-bed, and managed as the ſixth and ſeventh Sorts; by which Method good Seeds may be obtained, and the Kinds preſerved.

The tenth Sort was found in the Plains of *Lima*, by Father *Feuillée*: This Sort was alſo found near *Panama* by Mr. *Robert Millar*, Surgeon, who ſent the Seeds to *England*. The eleventh Sort was alſo found by Father *Feuillée* in *Chily*, as were the thirteenth and fourteenth by the ſame Perſon. But the twelfth Sort he found by the River of *Plate*. This grows about a Foot high, and produces large purple Flowers. The eleventh Sort grows fuller, and produces large violet-colour'd Flowers, which renders them more valuable than the other Sorts.

ONIONS. *Vide* Cepa.

ONOBRYCHIS; [of ὄνος an *Aſs*, and βρύχω to *make a Noiſe* or *Bray*, becauſe the Scent of this Plant makes *Aſſes bray*; or becauſe when *Aſſes* eat theſe Husks, they are ſaid always to *bray*] **Cock's Head, *or* Saint-Foin.**

The *Characters* are;

It hath a papilionaceous Flower, out of whoſe Empalement riſes the Pointal, which afterwards becomes a creſted Pod, which is ſometimes rough and full of Seeds, ſhap'd like a Kidney; to which may be added, the Flowers grow in a thick Spike.

The *Species* are;

1. **Onobrychis** *foliis viciæ, fructu echinato, major, floribus dilute rubentibus. C. B. P.* Greater Cock's-head, with Vetch Leaves, rough Fruit, and pale-red Flowers.

2. **Onobrychis** *foliis viciæ, fructu echinato, major, floribus eleganter rubentibus. C. B. P.* Greater Cock's head, with Vetch Leaves, rough Fruit, and beautiful red Flowers.

3. **Onobrychis** *fructu echinato, minor. C. B. P.* Smaller Cock's-head, with rough Fruit, *or* Medick Vetchling.

The two firſt are Varieties which only differ in the Colour of their Flowers, the ſame Seeds often producing both Sorts, tho' ſav'd from one Plant: as there is alſo another Variety with a white Flower, which doth come from the ſame Seed, ſo that they may paſs for one Plant.

This is an abiding Plant, which if ſown upon a dry, gravelly, or chalky Soil, will continue eighteen or twenty Years; but if it be ſown upon a deep, light, moiſt Soil, the Roots will run down into the Ground, and in the Winter Seaſon the Moiſture will rot the Roots, ſo that it ſeldom laſts above two Years in ſuch Places.

This is eſteem'd one of the beſt Sorts of Fodder for moſt Cattle, and is a great Improvement to ſhallow, chalky Hills, upon which it ſucceeds better than in any other Soil, and will continue many Years; and the Roots of this Plant, when plough'd in, do greatly inrich the Ground.

The beſt Seaſon for ſowing of this Seed is in the Beginning or Middle of *March*, (according as the Seaſon is early or late) obſerving always to do it in dry Weather, otherwiſe the Seed will be apt to burſt with Moiſture, and ſo never come up. Theſe Seeds being large, there will require a greater Quantity to ſow an Acre: The common Allowance is four Buſhels to an Acre, but I would not adviſe above three at moſt: And if this Seed were ſown in Rows, (in the manner directed for the *Medica*) it would be a great Improvement to the Plants; for when they have Room enough, they are very ſubject to branch out on every Side, and become very ſtrong; ſo that when they are in Rows, that the Ground between them can be ſtirr'd with a Hand-Plough, it will cauſe them to ſhoot much ſtronger than when they grow ſo cloſe that there can be no Culture beſtow'd on them.

I have taken up Roots of this kind, where they have grown ſingly, and kept clear from Weeds, whoſe Shoots have ſpread near two Feet wide, and were much ſtronger than thoſe which grew nearer together upon the ſame Soil.

There are ſome Perſons who recommend the ſowing *Oats* or *Barley* with this Seed, but that is a very bad Method, for what is gain'd from the Crop of *Corn* will be doubly loſt in the *Saint Foin*; and this generally holds true in moſt Sorts of Graſs-Seeds, for the Corn growing over it, doth ſo weaken the Crop beneath, that it ſcarcely recovers its Strength in a Year's Time after.

The Ground in which this Seed is ſown, ſhould be well ploughed and made very fine; and if you ſow it in Rows, the Drills ſhould be made eighteen Inches aſunder, and about an Inch deep, in which the Seed ſhould be ſown indifferently thick; for if the Plants come up too cloſe, it will be very eaſy to hough them out, ſo as to leave the remaining ones ſix or eight Inches aſunder; for the Ground ſhould be houghed, after the Plants are come up, to deſtroy the Weeds, which if ſuffer'd to grow, would ſoon over-bear the young ones, and deſtroy them; but when the Plants have obtain'd Strength, they will prevent the Weeds from growing up amongſt them.

The firſt Year after ſowing, you ſhould by no Means feed it down, for the Crown of the Roots being then young and tender, the Cattle would eat it ſo low as to intirely deſtroy the Roots; and if large Cattle were let in upon it, they would trample it down ſo much as to prevent its ſhooting again: Therefore the firſt Year it ſhould be mowed, which ſhould b done when it is in Flower, being careful to turn it often, th it may the ſooner dry and be remov'd; for while it continue upon the Ground, it greatly retards the Roots from ſhooting again.

The Time when this Crop will be fit to cut the firſt Year, i toward the Latter-end of *July* or the Beginning of *Auguſt* After this is clear'd off, the Roots will ſoon ſhoot again, an by the End of *September* (provided the Seaſon be favourable there will be a fine Crop fit for feeding: At which Time, o ſoon after, you may turn in Sheep, which will, in eatin

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down the Graſs, inrich the Ground with their Dung, whereby the Roots will be greatly ſtrengthened; but you ſhould not ſuffer them to remain too long upon it, leſt, as I before obſerv'd, they ſhould eat it down too low, which would deſtroy the Roots; nor ſhould they ever be ſuffer'd to remain upon it longer than the Middle of *March*; after which Time it ſhould be let grow for a Crop, which will be fit to cut the Latter-end of *May*; and if you do not feed it, there will be a ſecond Crop by the End of *July* following, ſo that you may have two Crops every Year, beſides the Advantage of feeding it down in Winter and Spring; and if you obſerve to ſtir the Ground betwixt the Rows, after every Cutting, (as was directed for the *Medica*) it will be of great Service to the Roots, and occaſion the Shoots to be much ſtronger than if wholly neglected, as is the common Practice.

This Sort of Hay is excellently good for Horſes, and is eſteem'd one of the beſt Sorts of Food for moſt Cattle, eſpecially in the Spring, there being no Danger attending it, as there is in *Clover*, and ſome other Sorts of Fodder; it breeds abundance of Milk; and the Butter that is made of it is very good.

And altho' it is ſo common in many Parts of *England*, yet a few Plants of the deep-red flower'd Sort, when diſpos'd in large Borders of the *Pleaſure-Garden*, do afford an agreeable Variety: The Flowers, which are of a beautiful red Colour, being collected into a long Spike, and continuing a long time in Beauty, do make a very pretty Mixture amongſt other Flowers in the Borders of large Gardens, where there is Room; and the Roots will abide ſeveral Years without renewing, requiring very little Culture, being extremely hardy, in reſpect to Heat or Cold, provided they are planted upon a dry Soil.

The third Sort is Annual; nor are the Flowers ſo beautiful as thoſe of the former Sort, for which Reaſon it is ſeldom cultivated, except in Botanick Gardens, for Variety: This may be ſown in the Beginning of *March* upon a light freſh Soil, where the Plants will come up in *April*, and will require no farther Care but to clear 'em from Weeds: The Seeds will ripen in *Auguſt*, when they ſhould be gather'd, and preſerv'd for ſowing the ſucceeding Spring.

OPHIOGLOSSUM, Adders-Tongue.

The *Characters* are;

It hath no viſible Flower, but the Seeds are produced on a Spike which reſemble a Serpent's Tongue; which Seed is contain'd in many longitudinal Cells, which open, and caſt forth the Seeds when ripe.

The *Species* are;

1. OPHIOGLOSSUM *vulgatum. C. B. P.* The common Adders-Tongue.
2. OPHIOGLOSSUM *anguloſo folio. C. B. P.* Adders-Tongue, with an angular Leaf.
3. OPHIOGLOSSUM *minus, ſubrotundo folio. C.B.P.* Leſſer Adders-Tongue, with a roundiſh Leaf.
4. OPHIOGLOSSUM *bilingue majus, folio acuto. Mentz. Pug.* Greater Adders-Tongue, with a pointed Leaf, and a double Tongue.
5. OPHIOGLOSSUM *bilingue medium, folio obtuſo. Mentz. Pug.* Middle Adders-Tongue, with a blunt Leaf, and a double Tongue.
6. OPHIOGLOSSUM *bilingue minimum. Mentz. Pug.* The leaſt Adders-Tongue, with a double Spike or Tongue.
7. OPHIOGLOSSUM *palmatum. Plum.* Handed Adders-Tongue.
8. OPHIOGLOSSUM *cordiforme & reticulatum. Plum.* Heart-ſhaped and netted Adders-Tongue.

The firſt Sort grows wild in moiſt Meadows in ſeveral Parts of *England*. This is directed to be uſed in Medicine by the College of Phyſicians, in their Diſpenſatory; but is ſeldom to be found in Gardens, being very difficult to tranſplant, and will not live long, where the Graſs doth not grow about it. The beſt Method to have it ſucceed, is, to dig up the Plants about the Beginning of *April*, with large Balls of Earth to them, being careful to dig ſo deep, as to get below their Roots; then plant theſe with the Turf about them, in a moiſt ſhady Place, where they will grow pretty well, and may continue for ſome Years.

The ſecond and third Sorts grow wild in *Germany*, and on the *Alpes*, but are not to be found in *England*.

The fourth, fifth, and ſixth Sorts, are alſo Varieties which have been found in ſome Parts of *Europe*; but it is not certain whether they are diſtinct Species, or only Variations from the common Sort.

Theſe are all as hardy as the common Sort; ſo, whenever they are found, may be tranſplanted and treated in the ſame Manner.

The ſeventh and eighth Sorts were diſcovered by Father *Plumier* in *America*. Theſe grow in moiſt ſwampy Places in *Jamaica*, and ſeveral other Places in the warmer Parts of *America*; but are difficult to remove ſo as to have them grow in other Countries.

OPHRIS, Tway-blade.

The *Characters* are;

It hath a polypetalous anomalous Flower, conſiſting of ſix diſſimilar Leaves, of which the five upper ones are ſo diſpoſed, as to repreſent in ſome meaſure an Helmet, the under one being headed and ſhaped like a Man. The Empalement becomes a Fruit, perforated with three Windows, to which adhere Valves, pregnant with very ſmall Seeds like Duſt.

The *Species* are;

1. OPHRIS *bifolia. C. B. P.* Common Tway-blade.
2. OPHRIS *bifolia bulboſa. C. B. P.* Bulbous rooted Tway-blade.
3. OPHRIS *paluſtris, radice repente. Inſt. R. H.* Marſh Tway-blade, with a creeping Root.
4. OPHRIS *minima. C. B. P.* The leaſt Tway-blade.

The firſt Sort is pretty common in moiſt Meadows, and in ſhady moiſt Woods, in diverſe Parts of *England*: It flowers the latter End of *May*, and in the Beginning of *June*. This Plant may be tranſplanted into Gardens, if the Roots are taken up with a Ball of Earth, ſoon after the Leaves decay. Theſe muſt be planted in a moiſt ſhady Border, where, if they are not diſturbed, they will remain many Years, and require no other Care but to keep them clear from Weeds.

The ſecond Sort doth not grow wild in *England*, but is frequently found in *Germany*, and on the *Alpes*; this may be tranſplanted and managed as the former Sort.

The third Sort grows plentifully in ſeveral of the Northern Counties of *England*; and the fourth Sort grows in *Cambridgeſhire*, in *Hertfordſhire* and *Kent*. Theſe two Sorts delight in cold moiſt Places, ſo are with great Difficulty preſerved in Gardens.

OPULUS: The Gelder Roſe.

The *Characters* are;

The Leaves are like thoſe of the Maple-Tree: *The Flowers conſiſt of one Leaf, which expands in a circular Roſe Form, and is divided at the Top into five Parts; theſe are collected (for the moſt part) in Form of an Umbel, the largeſt of which grow on the Outſide, and are barren; but thoſe in the Middle are fruitful, producing red Berries, in each of which is contain'd one flat Heart-ſhap'd Seed.*

The *Species* are;

1. OPULUS *Ruelli.* Marſh Elder, *or* Gelder Roſe, with flat Flowers.
2. OPULUS *flore globoſo. Tourn.* The Gelder, *or* Gelderland Roſe.
3. OPULUS *flore globoſo, folio variegato.* The Gelder Roſe, with ſtrip'd Leaves.

The firſt of theſe Plants is very common in moiſt Woods in divers Parts of *England*, but is ſeldom cultivated in Gardens; though, if the Soil be moiſt in which this Tree be planted, it will afford a very agreeable Proſpect, both in the Seaſon when it is in Flower, and alſo in the Autumn when the Fruit is ripe, which generally grows in large Cluſters, and is of a beautiful red Colour: So that where a Wilderneſs or other Plantation of flowering Trees is deſign'd, and the Ground be moiſt, this and the next are two of the moſt proper Trees for ſuch Purpoſes; theſe thriving much better, and will produce their Flowers larger and in greater Quantities, than when they are placed in a dry Situation.

The ſecond Sort is very common in old Gardens in moſt Parts of *England*: This produces only barren Flowers, which being all very large, are produced in a globular Form, ſo that, at a Diſtance, they reſemble Snow-balls; whence the People in ſome Countries give it the Name of *Snow-ball Tree*. This Difference was at firſt accidental, as is the Caſe of all double Flowers which commonly ariſe from Seeds; and tho' theſe are not productive of Fruit, yet for the Sake of their Flowers they are much more eſteem'd than the ſingle Sort by the Gardeners.

The ſtrip'd Sort is alſo an Accident, occaſion'd by an Obſtruction of the Juices, as is the Caſe of all variegated Plants:

This is preſerv'd as a Curioſity by ſuch as are Lovers of ſtrip'd Trees and Plants, but muſt not be planted in a rich Soil, which would cauſe them to grow vigorouſly, whereby they would be in Danger of becoming plain again.

All theſe Sorts may be propagated either from Suckers or by laying down their Branches, which will take Root in a Year's time ; when they may be taken off from the old Plants, and tranſplanted either into a Nurſery, where they may be train'd up for two or three Years, or plac'd where they may remain for good. The beſt Time to remove theſe Trees, is at *Michaelmas*, as ſoon as their Leaves begin to decay, that they may be well rooted before the Drought of the next Spring comes on, which is often deſtructive to ſuch as have been newly tranſplanted, if they are not carefully attended with Water.

They are extremely hardy, and will endure the ſevereſt Cold of our moſt Northern Situations, and are only impatient of great Heat and Drought, ſo that they are very proper to plant in very cold Soils and Places which are greatly expos'd to the North Winds, where few other Shrubs will thrive ſo well. They will grow to the Height of twelve or fourteen Feet, and if reduc'd to regular Heads, are very ornamental during the Seaſon of Flowering ; and their Flowers are very proper to intermix with *Peonies* and other large Flowers, for Baſons and Flower-pots to adorn Halls and Chimnies. Their Seaſon of Flowering is in *May*, though their Flowers do ſometimes continue in Beauty a great Part of *June*, eſpecially if the Weather prove cool and moiſt.

OPUNTIA : [This Plant is call'd *Opuntia*, becauſe *Theophraſtus* writes, that it grows about *Opuntium*] The *Indian* Fig.

The *Characters* are ;

The Flower conſiſts of many Leaves, which expand in Form of a Roſe, *having a great Number of Stamina in the Center, which grow upon the Top of the Ovary ; the Ovary afterwards becomes a fleſhy umbilicated Fruit, with a ſoft Pulp, incloſing many Seeds, which are, for the moſt Part, angular.*

The *Species* are ;

1. OPUNTIA *vulgo herbariorum. J. B.* The Common *Indian* Fig of the Botaniſts.
2. OPUNTIA *minima, folio ſubrotundo. Tourn.* Leaſt *Indian* Fig, with roundiſh Leaves.
3. OPUNTIA *folio oblongo, media. Tourn.* Middle *Indian* Fig, with an oblong Leaf, *commonly called*, The Cochineal Fig-tree.
4. OPUNTIA *folio minori, rotundiori & compreſſiori. Tourn. Indian* Fig, with a ſmaller, rounder, and flatter Leaf.
5. OPUNTIA *major, validiſſimis ſpinis munita. Tourn.* The greater *Indian* Fig, armed with very ſtrong Prickles.
6. OPUNTIA *maxima, folio ſpinoſo, latiſſimo & longiſſimo. Tourn.* The largeſt *Indian* Fig, with a very broad and long prickly Leaf.
7. OPUNTIA *folio ſpinoſo, longiſſimo & anguſto. Tourn. Indian* Fig, with a very long, narrow, prickly Leaf.
8. OPUNTIA *latifolia, craſſiori folio, ſpinis albis numeroſis armato. Boerh. Ind. Indian* Fig, with a broad thick Leaf arm'd with many white Spines.
9. OPUNTIA *Curaſſavica minima. H. Beaum.* The ſmalleſt *Indian* Fig from *Curacao*, *commonly called*, The Pin-Pillow.
10. OPUNTIA *Americana, arbor excelſa, foliis reticulatis, flore flaveſcente. Plum. American Indian* Fig, which grows to be a tall Tree, with netted Leaves, and a yellowiſh Flower.
11. OPUNTIA *folio plano glabro ſcolopendriæ. Boerh. Ind. Indian* Fig, with a plain ſmooth Leaf, like Spleenwort.
12. OPUNTIA *maxima, folio oblongo-rotundo majore, ſpinulis obtuſis mollibus & innocentibus obſito, flore ſtriis rubris variegato. Sloan. Cat.* The greateſt *Indian* Fig, with greater oblong roundiſh Leaves, and ſmall ſoft blunt Spines, with a Flower ſtriped with Red.
13. OPUNTIA *major ſpinoſa cauleſcens, flore minore rubro clauſo, fructu parvo coccineo. Houſt.* Greater ſtalky and prickly *Indian* Fig, with a ſmaller red Flower, which doth not expand, and a ſmall ſcarlet Fruit.
14. OPUNTIA *cauleſcens, foliis ampliſſimis tenuibus compreſſis, ſpinis longiſſimis confertiſſimis, gracilibus & albicantibus, armatis. Houſt.* Stalky *Indian* Fig, with large narrow compreſſed Leaves, which are cloſely armed with very long ſlender white Spines.

The firſt of theſe Plants hath been a long Time in *England*, and is the moſt common Sort in *Europe* : This, Mr. *Ray* and Dr. *Robinſon* obſerv'd growing wild in the Kingdom of *Naples*, by the Sides of the Highways, on the Sides of the Mountains, and among Rocks in great Abundance ; but in theſe Northern Parts of *Europe*, it is generally preſerv'd in Green-houſes with other Exotick Plants ; tho' I have planted it under a warm Wall in a very dry Soil, where it has continu'd for ſeveral Years, and endured the ſevereſt of our Cold without any Cover, and has produc'd a greater Quantity of Flowers and Fruit than thoſe which were hous'd : So that the Cold is not ſo great an Enemy to this Plant as Wet, which if ſuffer'd to lie long upon it, or given in too large Quantities to the Root, will deſtroy it in a ſhort Time.

The other Sorts are much tenderer, being all of them Natives of the warm Parts of the *Weſt-Indies*. Theſe are ſome of them ſo tender as not to preſerv'd without the Aſſiſtance of a Stove (eſpecially the ninth and eleventh Sorts) in any tolerable Degree of Health ; for if they have not ſome additional Warmth to the Air of the Houſe in Winter, their Stems will ſhrivel and look yellowiſh and wither'd.

Theſe Plants may all be propagated by cutting off their Branches at the Joints, during any of the Summer Months ; which ſhould be laid in a warm dry Place for a Fortnight, that the wounded Part may be heal'd over, otherwiſe they will rot with the Moiſture which they imbibe at that Part, as is the Caſe with moſt other ſucculent Plants. The Soil in which theſe Plants are planted, ſhould be compos'd after the following Manner, *viz.* One third of light freſh Earth from a Paſture, a third Part Sea-ſand, and the other Part ſhould be one half rotten Tan, and the other half Lime-rubbiſh : Theſe ſhould be well mix'd, and laid in a Heap three or four Months before it be us'd, obſerving to turn it over at leaſt once a Month, that the ſeveral Parts may be well united ; then you ſhould paſs it thro' a rough Screen, in order to ſeparate the largeſt Stones and Clods, but by no means ſift it too fine, which is a very common Fault : Then you ſhould reſerve ſome of the ſmaller Stones and Rubbiſh to lay at the Bottom of the Pots, in order to keep an open Paſſage for the Moiſture to drain off ; which is what muſt be obſerv'd for all ſucculent Plants, for if the Moiſture be detain'd in the Pots, it will rot their Roots, and deſtroy the Plants.

When you plant any of the Branches of theſe Plants, you ſhould plunge the Pots into a moderate Hot-bed, which will greatly facilitate their taking Root : You ſhould alſo refreſh them now and then with a little Water, but be very careful not to let them have too much, or be too often water'd, eſpecially before they are rooted : When the Plants begin to ſhoot, you muſt give them a large Share of Air by raiſing the Glaſſes, otherwiſe their Shoots will draw up ſo weak as not to be able to ſupport themſelves ; and after they have taken ſtrong Root, you ſhould inure them to the Air by degrees, and then remove them into the Stove where they ſhould remain, placing them near the Glaſſes, which ſhould always be open'd in warm Weather, ſo that they may have the Advantage of a free Air, and yet be protected from Wet and Cold.

During the Summer-ſeaſon, theſe Plants will require to be often refreſh'd with Water, but it muſt not be given to them in large Quantities, leſt it rot them ; and in Winter they ſhould have very little Water given to them, but that ſhould be proportion'd to the Warmth of the Stove, for if the Air be kept very warm, they will require to be often refreſh'd, otherwiſe their Branches will ſhrink ; but if the Houſe be kept in a moderate Degree of Warmth, they ſhould have very little, for Moiſture at that Seaſon will rot them very ſoon.

The Heat in which theſe Plants thrive beſt is the temperate Point, as mark'd on Mr. *Fowler's Thermometers* ; for if they are kept too warm in Winter, it cauſes their Shoots to be very tender, and thereby very liable to decay if not duly attended. Thoſe Sorts which are inclinable to grow upright, ſhould have their Branches ſupported with Stakes, otherwiſe their Weight is ſo great, that it will break them down.

Theſe Plants are by moſt People expos'd to the open Air in the Summer-ſeaſon, but they thrive much better if they are continu'd in the Stoves, provided the Glaſſes be kept open, ſo that they may have free Air ; for when they are ſet abroad, the great Rains which generally fall in Summer, together with the unſettled Temper of the Air in our Climate, does greatly diminiſh their Beauty by retarding their Growth, and ſometimes in wet Summers they are ſo replete with Moiſture as to rot in the ſucceeding Winter ; nor will thoſe Plants which are ſet abroad, (I mean the tender Sorts) produce their Flowers and Fruit in ſuch Plenty as thoſe which are conſtantly preſerv'd in the Houſe.

The third Sort is ſuppos'd to be the Plant upon which the *Cochineal Fly* breeds : Theſe depoſite their Eggs in the Center of the Flowers, upon the Crown of the Ovary ; and when they are hatch'd, the young Inſects feed upon the Fruit, which is of a deep-red Colour within, and if eaten by Men, colours their Urine as red as Blood ; which has often frighted Strangers who have eaten of the Fruit, when they have thought it was real Blood which they voided, tho' there are no ill Effects attend it.

The ninth and eleventh Sorts are leſs common than the others, and are rarely ſeen but in very curious Gardens: Theſe are the tendereſt of them all, and ſhould be placed in a warm Part of the Stove in Winter, but muſt have very little Water given them at that Seaſon, and in Summer muſt always be kept in the Houſe, for they will not bear the open Air in the Heat of Summer, which is ſeldom very regular in this Country.

The twelfth Sort grows commonly to the Height of eight or nine Feet, has large Leaves, which are not prickly. The Flowers are ſtriped with Red, and the Fruit is not ſo palatable as moſt of the other Sorts. This is by many ſuppoſed to be the Sort which the Cochineel feeds on; but the third Sort is what the late Dr. Houſtoun brought from *La Vera Cruz*, with the Inſects upon it. This Sort hath very large yellow Flowers, and the Fruit, when ripe, is of a fine purple Colour, and ſmooth, having no Spines on the Outſide, which moſt of the other Sorts have.

The thirteenth Sort commonly grows to the Height of fifteen or ſixteen Feet, and hath a thick woody Stem. This grows very common on the Hills, and by the Road Sides in moſt Places in *Jamaica*.

The fourteenth Sort was obſerved in great Plenty near the Head of *Kingſtoun Harbour* in *Jamaica*, by the late Dr. *Houſtoun*, but without Flower or Fruit. This is by ſome Perſons called *Robinſon Cruſoe's Coat*, but for what Reaſon I cannot imagine.

The three laſt Sorts may be cultivated in the ſame Manner as hath been above directed, only obſerving to let theſe remain conſtantly in the Stove, otherwiſe they will not produce either Fruit or Flowers in this Country.

ORANGE. *Vide* Aurantium.

ORCHARD: In planting of an *Orchard*, great Care ſhould be had to the Nature of the Soil, that ſuch Sorts of Fruit as are adapted to grow upon the Ground intended to be planted, may be choſen, otherwiſe there can be little Hopes of their ſucceeding; and it is for want of rightly obſerving this Method, that we ſee in many Countries, *Orchards* planted which never arrive to any tolerable Degree of Perfection, their Trees ſtarving, and their Bodies are either cover'd with Moſs, or the Bark cracks and divides, both which are evident Signs of the Weakneſs of the Trees; whereas, if inſtead of *Apples*, the *Orchard* had been planted with *Pears*, *Cherries*, or any other Sort of Fruit to which the Soil had been adapted, the Trees might have grown very well, and produc'd great Quantities of Fruit.

As to the Poſition of an *Orchard*, (if you are at full Liberty to chooſe) a riſing Ground, open to the South-Eaſt, is to be preferr'd; but I would by no means adviſe to plant upon the Side of a Hill, where the Declivity is very great, for in ſuch Places the great Rains do commonly waſh down the better Part of the Ground, whereby the Trees would be depriv'd of proper Nouriſhment: But where the Riſe is gentle, it is of great Advantage to the Trees, by admitting the Sun and Air between them better than it can upon an intire Level, which is an exceeding Benefit to the Fruit, by diſſipating Fogs, and drying up the Damps, which when detain'd amongſt the Trees, do mix with the Air and render it rancid: If it be defended from the Weſt, North, and Eaſt Winds, it will alſo render the Situation ſtill more advantageous; for it is chiefly from thoſe Quarters that Fruit-Trees receive the greateſt Injury: Therefore, if the Place be not naturally defended from theſe by riſing Hills, (which is always to be preferr'd); then you ſhould plant large-growing Timber-Trees at ſome Diſtance from the *Orchard*, to anſwer this Purpoſe.

You ſhould alſo have a great Regard to the Diſtance of planting the Trees, which is what few People have rightly conſidered; for if you plant them too cloſe, they will be liable to Blights, and the Air being hereby pent in amongſt them, will cauſe the Fruit to be ill-taſted, having a great Quantity of damp Vapours from the Perſpiration of the Trees, and the Exhalations from the Earth mix'd with it, which will be imbib'd by the Fruit, and render their Juices crude and unwholſome.

Wherefore I can't but recommend the Method which has been lately practiſ'd by ſome particular Gentlemen with very good Succeſs; and that is, To plant the Rows of Trees fourſcore or a hundred Feet aſunder, and the Diſtance of the Trees in the Rows threeſcore Feet: The Ground between the Trees they plough and ſow with Wheat and other Crops, in the ſame manner as if it were clear from Trees, and they obſerve their Crops to be full as good as thoſe quite expos'd, (except juſt under each Tree when they are grown large and afford a great Shade); and by thus ploughing and tilling the Ground, the Trees are render'd more vigorous and healthy, ſcarcely ever having any Moſs or other Marks of Poverty, and will abide much longer, and produce better Fruit.

If the Ground in which you intend to plant an *Orchard* has been Paſture for ſome Years, then you ſhould plough in the *Green-ſward*, the Spring before you plant the Trees; and if you will permit to lie a Summer fallow, it will greatly mend it, provided you ſtir it two or three Times, to rot the Sward of Graſs, and prevent Weeds growing thereon.

At *Michaelmas* you ſhould plough it pretty deep, in order to make it looſe for the Roots of the Trees, which ſhould be planted thereon in *October*, provided the Soil be dry; but if it be moiſt, the Beginning of *March* will be a better Seaſon.

When you have finiſh'd planting the Trees, you ſhould provide ſome Stakes to ſupport them, otherwiſe the Wind will blow them out of the Ground; which will do them much Injury, eſpecially if they have been planted ſome Time; for the Ground at that Seaſon being warm, and for the moſt part moiſt, the Trees will very ſoon puſh out a great Number of young Fibres, which, if broken off by their being diſplaced, will greatly retard the Growth of them.

In the Spring following, if the Seaſon ſhould prove dry, you ſhould cut a Quantity of green Turf, which muſt be laid upon the Surface of the Ground about their Roots, turning the Graſs downward, which will prevent the Sun and Wind from drying the Ground, whereby the Expence of Watering will be ſav'd; and after the firſt Year they will be out of Danger, provided they have taken well.

Whenever you plough the Ground betwixt theſe Trees, you muſt be careful not to go too deep amongſt their Roots, leſt you ſhould cut them off, which would greatly damage the Trees; but if you do it cautiouſly, the ſtirring of the Surface of the Ground will be of great Benefit to them: Tho' you ſhould obſerve, never to ſow too near the Trees, nor ſuffer any great-rooting Weeds to grow about them, which would exhauſt the Goodneſs of the Soil, and ſtarve 'em.

If, after the Turf which was laid round the Trees be rotted, you dig it in gently about their Roots, it will greatly encourage them.

There are ſome Perſons who plant many Sorts of Fruit together in the ſame *Orchard*, mixing the Trees alternately: But this is a Method which ſhould always be avoided; for hereby there will be a very great Difference in the Growth of the Trees, which will not only render 'em unſightly, but alſo render the Fruit upon the lower Trees ill-taſted, by the tall ones over-ſhadowing them. So that if you are determin'd to plant ſeveral Sorts of Fruit on the ſame Spot, you ſhould obſerve to place the largeſt-growing Trees backward, and ſo proceed to thoſe of leſs Growth, continuing the ſame Method quite thro' the whole Plantation; whereby it will appear at a Diſtance in a regular Slope, and the Sun and Air will more equally paſs throughout the whole *Orchard*, that every Tree may have an equal Benefit therefrom.

The Soil of your *Orchard* ſhould alſo be mended once in two or three Years with Dung, or other Manure, which will alſo be abſolutely neceſſary for the Crops ſown between: So that where Perſons are not inclinable to help their *Orchards*, where the Expence of Manure is pretty great; yet as there is a Crop expected from the Ground beſides the Fruit, they will the more readily be at the Charge upon that Account.

In making Choice of Trees for an *Orchard*, you ſhould always obſerve to procure them from a Soil nearly akin to that where they are to be planted, or rather poorer; for if you have them from a very rich Soil, and that wherein you plant them is but indifferent, they will not thrive well, eſpecially for four or five Years after planting: So that 'tis a very wrong Practice to make the Nurſery, where young Trees are rais'd, very rich, when the Trees are deſign'd for a middling or poor Soil. The Trees ſhould alſo be young and thriving; for whatever ſome Perſons may adviſe to the contrary, yet it has always been obſerv'd, that tho' large Trees may grow and produce Fruit after being remov'd, they never make ſo good Trees, nor are ſo long-liv'd, as thoſe which are planted while young.

Theſe Trees, after they are planted out, will require no other pruning but only to cut out dead Branches, or ſuch as croſs each other ſo as to render their Heads confuſ'd and unſightly: The too often pruning them, or ſhortening their Branches, is very injurious, eſpecially to *Cherries* and Stone-Fruit, which will gum prodigiouſly, and decay in ſuch Places where they are cut: And the *Apples* and *Pears* which are not of ſo nice a Nature, will produce a greater Quantity of lateral Branches, which will fill the Heads of the Trees with weak Shoots whenever their Branches are thus ſhorten'd; and many Times the Fruit is hereby cut off, which, on many Sorts of Fruit-Trees, is firſt produc'd at the Extremity of their Shoots.

It may perhaps ſeem ſtrange to ſome Perſons, that I ſhould recommend the allowing ſo much Diſtance to the Trees in an *Orchard*, becauſe a ſmall Piece of Ground will admit of very few Trees when planted in this Method; but they'll pleaſe to obſerve, that when the Trees are grown up, they will produce a great deal more Fruit, than twice the Number when planted cloſe, and will be vaſtly better taſted; the Trees, when placed at a large Diſtance, being never ſo much in Danger of Blighting as in cloſe Plantations, as hath been obſerv'd in *Herefordſhire*, the great County for *Orchards*, where they find that *Orchards* ſo planted, or ſo ſituated, as that the Air is pent up amongſt the Trees, the Vapours which ariſe from the Damp of the Ground, and the Perſpiration of the Trees, collect the Heat of the Sun, and reflect it in Streams ſo as to cauſe what the call a *Fire-blaſt*, which is the moſt hurtful to their Fruits; and this is moſt frequent where the *Orchards* are open to the South-Sun.

But as *Orchards* ſhould never be planted, unleſs where large Quantities of Fruit are deſired, ſo it will be the ſame thing to allow twice or three times the Quantity of Ground; ſince there may be a Crop of Grain of any Sort upon the ſame Place as was before ſaid); ſo that there is no Loſs of Ground: And for a Family only it is hardly worth while to plant an *Orchard*; ſince a Kitchen-Garden well planted with Eſpaliers will afford more Fruit than can be eaten while good, eſpecially if the Kitchen-Garden be proportion'd to the Largeneſs of the Family: And if *Cyder* be required, there may be a large Avenue of *Apple-trees* extended croſs a neighbouring Field, which will render it pleaſant, and produce a great Quantity of Fruit; or there may be ſome ſingle Rows of Trees planted to ſurround Fields, *&c.* which will fully anſwer the ſame Purpoſe, and be leſs liable to the *Fire-blaſts* before-mentioned.

ORCHIS, ὄρχις a *Teſticle*, becauſe the Root of this Plant reſembles the Teſticles of a Man; or of ὀρέγω, *to have an Appetite after*, on account of its being a Provocative to Venery: It is alſo called κυνοσόρχις, of κύνος a *Dog*, and ὄρχις a *Teſticle.*] Satyrion or Fool-ſtones.

The *Characters* are;

It hath an anomalous Flower, conſiſting of ſix diſſimilar Leaves, the five uppermoſt of which are ſo diſpos'd as to imitate in ſome manner a Helmet; the under one being of many Shapes, headed for the moſt part, and tail'd, ſometimes repreſenting a naked Man, ſometimes a Butterfly, a Drone, a Pigeon, an Ape, a Lizard, a Parrot, a Fly, and other Things: but the Empalement afterwards becomes a Fruit divided into three Cells, in which are contain'd many ſmall Seeds. To theſe Notes ſhould be added, The Flowers are collected into a Spike; and the Roots are fleſhy, ſometimes roundiſh and double like Teſticles, ſometimes flat, and in a manner ſhap'd like a Hand.

The *Species* are;

1. ORCHIS *morio mas, foliis maculatis. C. B. P.* The Male Fool-ſtones.
2. ORCHIS *morio fœmina. Park. Theat.* The Female Fool-ſtones.
3. ORCHIS *barbata fœtida. J. B.* The Lizard Flower, or Great Goat-ſtones.
4. ORCHIS *Pannonica.* 4 *Cluſ. Hiſt.* Little Purple-flower'd Orchis.
5. ORCHIS *obſcure purpurea odorata. Tourn.* Sweet-ſmelling dark-purple Orchis.
6. ORCHIS *purpurea ſpica congeſta pyramidali. Raii Syn.* Purple late-flowering Orchis.
7. ORCHIS *odorata moſchata ſive monorchis. C. B. P.* The yellow ſweet or Muſk Orchis.
8. ORCHIS *ſpiralis alba odorata. J. B.* Triple Ladies Traces.
9. ORCHIS *latifolia, hiante cucullo major. Tourn.* The Man Orchis.
10. ORCHIS *anthropophora Orcades. Col. Ec.* Man Orchis, with a ferrugineous, and ſometimes a green Colour.
11. ORCHIS *myodes, galea & alis herbidis. J. B.* The common Fly Orchis.
12. ORCHIS *myodes major. Park. Theat.* The Greater Fly Orchis.
13. ORCHIS *fuſciflora, galea & alis purpuraſcentibus. J. B.* The Common Humble Bee Satyrion, or Bee-flower.
14. ORCHIS *ſive Teſticulus Sphegodes hirſuto flore. J. B.* Humble Bee Satyrion, with green Wings.
15. ORCHIS *hermaphroditica bifolia. J. B.* Butter-fly Satyrion.
16. ORCHIS *alba bifolia minor, calcari oblongo. C. B. P.* The Leſſer Butter-fly Satyrion.
17. ORCHIS *palmata pratenſis latifolia, longis calcaribus. C. B. P.* The Male-handed Orchis, or Male Satyrion Royal.
18. ORCHIS *palmata pratenſis maculata. C. B. P.* The Female-handed Orchis, or Female Satyrion Royal.
19. ORCHIS *palmata minor, calcaribus oblongis. C. B. P.* Red-handed Orchis, with long Spurs.
20. ORCHIS *palmata minor, flore luteo-viridi. Raii Syn.* Handed Orchis, with a greeniſh Flower, *by ſome call'd* The Frog Orchis.

All theſe Sorts of *Orchis* grow wild in ſeveral Parts of *England*; but, for the extreme Oddneſs and Beauty of their Flowers, deſerve a Place in every good Garden: And the Reaſon for their not being cultivated in Gardens, proceeds from their Difficulty to be tranſplanted: Tho' this, I believe, may be eaſily overcome, where a Perſon has an Opportunity of marking their Roots in their Time of flowering, and letting them remain until their Leaves are decay'd, when they may be tranſplanted with Safety: For it is the ſame with moſt Sorts of bulbous or fleſhy-rooted Plants, which, if tranſplanted before their Leaves decay, ſeldom live, notwithſtanding you preſerve a large Ball of Earth about them; for the extreme Part of their Fibres extend to a great Depth in the Ground, from whence they receive their Nouriſhment; which if broken or damag'd by taking up their Roots, they ſeldom thrive after; for tho' they may ſometimes remain alive a Year or two, yet they grow weaker, until they quite decay: ſo that whoever would cultivate them, ſhould ſearch them out in their Seaſon of flowering, and mark 'em; and when their Leaves are decay'd the Roots ſhould be taken up, and planted in a Soil and Situation as nearly reſembling that wherein they naturally grow as poſſible, otherwiſe they will not thrive: So that they cannot be plac'd all in the ſame Bed; for ſome are only found upon chalky Hills, others in moiſt Meadows, and ſome in ſhady Woods, or under Trees: But if their Soil and Situation be adapted to their various Sorts, they will thrive and continue ſeveral Years, and, during their Seaſon of flowering, will afford as great Varieties as any Flowers which are at preſent cultivated.

The firſt Sort flowers in *April*, and is very common in Paſtures and buſhy Places in moſt Parts of *England*.

The ſecond Sort flowers in *May*: This is common in Paſtures almoſt every-where.

The third Sort is more rare than the former: This is found in a Lane near *Dartford* in *Kent*, and is one of the largeſt of all the Kinds: It flowers at the Latter-End of *May*.

The fourth Sort grows upon dry barren Hills, particularly between *Northfleet* and *Graveſend*: This flowers at the Latter-end of *April*.

The fifth Sort is found in great Plenty in *Weſtmorland*, but particularly in the Meadows, upon both the Banks of *Eden*, throughout ſeveral Pariſhes: It flowers in *May*.

The ſixth Sort grows upon dry, barren, or chalky Hills in divers Parts of *England*: This flowers in *June*.

The ſeventh Sort grows upon chalky Hills, but is pretty rare; it is particularly found upon the Hills near *Cawſham* in *Berkſhire*, and upon *Gogmagog* Hills in *Cambridgeſhire*: It flowers in *May*.

The eighth Sort flowers in *Auguſt*: This grows upon dry ſtony Places, as alſo in moiſt Paſtures in the North Parts of *England*.

The ninth Sort grows upon *Cawſham* Hills, as alſo upon the dry Banks on the Road-ſide between *Greenhith* and *Northfleet* in *Kent*; and flowers in *May*.

The tenth Sort is found about *Northfleet* with the former, and flowers about the ſame Time, as doth alſo the eleventh and twelfth.

The thirteenth Sort flowers in *June*: This grows upon dry Places in many Parts of *England*, as doth the fourteenth Sort, which flowers in *April*.

The fifteenth and ſixteenth Sorts grow in ſhady Places in divers Parts of *England*: They both flower in *May*.

The ſeventeenth and eighteenth Sorts grow in moiſt Paſtures very plentifully; the firſt flowering in *May*, the other in *June*.

The nineteenth Sort grows in moiſt Paſtures, and flowers in *June*.

The twentieth Sort grows in dry Paſtures, and flowers in *May*.

Thus having mention'd the ſeveral Places of Growth, and the Times of theſe Plants flowering, it will be no very difficult Taſk for a Perſon to ſearch them out; which, if it happens to be in a Place where the Roots may be mark'd, and taken up after their Leaves are decay'd, (as I ſaid before) there will be little Hazard of their ſucceeding: But if you are oblig'd to take 'em up in Flower, you muſt be very careful to preſerve a much Earth as poſſible to their Roots, otherwiſe there can be little Hopes of their living. Nor ſhould they be kept out of the Ground longer than till you can conveniently get them Home; for if the Air dries the Earth about 'em, they will ſhrink, and be good for nothing; and if the Earth be water'd, the Roots of ſuch as grow upon dry Soils will rot and periſh; therefore you ſhould be very careful in this Particular.

OREOSELINUM, Mountain Parſley.

The *Characters* are;

It hath a roſe-ſhaped umbellated Flower, conſiſting of ſeveral Leaves, placed in a circular Order, reſting on the Empalement, which afterward becomes a Fruit, compoſed of two Seeds, which are oval, plain, large-ſtreaked and bordered, and ſometimes caſt off their Cover. To theſe Notes muſt be added, That the Leaves are like Parſley.

The *Species* are;

1. Oreoselinum *apii folio, majus. Inſt. R. H.* Greater Mountain Parſley, with a parſley Leaf.

2. Oreoselinum *apii folio, minus. Inſt. R. H.* Smaller Mountain Parſley, with a parſley Leaf.

3. Oreoselinum *pratenſe, cicutæ folio. Inſt. R. H.* Meadow Mountain Parſley, with a hemlock Leaf.

4. Oreoselinum *Orientale, ſeſeleos Maſſilienſis folio. Tourn. Cor.* Eaſtern Mountain Parſley, with a Leaf like the Hartwort of *Marſeilles*.

The firſt and ſecond Sorts grow in the mountainous Paſtures, and Vineyards on the *Rhine* in *Germany*, as alſo on the Hills in the Neighbourhood of *Geneva*.

The third Sort grows in the Meadows, and low Paſtures, in ſeveral Parts of *Germany*, but particularly in the *Palatinate*.

The fourth Sort was diſcovered by Dr. *Tournefort* in the *Levant*, from whence he ſent the Seeds to the Royal Garden at *Paris*.

The Seeds and Roots of the two firſt Sorts are commonly uſed in Medicine by the Phyſicians of *Germany*, but are never preſcribed in *England*. They are eſteemed cleanſing and opening, and very good for the Stone and Gravel. From ſome Species of this Genus, Dr. *Boerhaave* conjectures that ſome of the Gums of *Aſia* and *Africa* are produced: as the *Ammoniac*, *Sagapenum*, *Opopanax*, and *Galbanum*.

Theſe Plants are propagated by Seeds, which ſhould be ſown in Autumn, as ſoon as poſſible after they are ripe; for if they are kept out of the Ground until the Spring, they ſeldom grow. Theſe Seeds ſhould be ſown in the Places where they are deſigned to remain; for as they have downright carroty Roots, ſo they do not bear tranſplanting well. They require a moiſt light Soil, and thrive beſt in a ſhady Situation. The beſt Method is, to ſow the Seeds in Rills, which ſhould be made about eighteen Inches aſunder, and about half an Inch deep. In the Spring, when the Plants come up, they ſhould be carefully cleared of Weeds; and where the Plants are too cloſe, they ſhould be thinned, leaving them about ſix or ſeven Inches apart, that they may have room to grow; but the firſt Sort ſhould be allowed a greater Share of Room, becauſe it grows very large, often riſing to the Height of ſix or ſeven Feet, and ſpreads its Leaves near two Feet each way.

In two Years after the Seeds are ſown, the Plants (if they have thriven well) will be ſtrong enough to produce their Flower-ſtems, when they will begin to ſhoot up in *April*, and their Flowers will appear in *June*, but their Seeds will not ripen till the End of *Auguſt* or *September*. Theſe Plants will continue ſome Years, and will annually produce Seeds; ſo the Ground ſhould be carefully dug between the Plants every Spring, and conſtantly kept clean from Weeds, which is all the Culture the Plants will require.

ORIGANUM, [of 'Ορίγανον, of ὄρος a *Mountain*, and γάνυμαι to *rejoyce*, q. d. a *Plant that delights to grow upon Mountains.*] Origany, or Baſtard Marjoram.

The *Characters* are;

It hath a labiated Flower, conſiſting of one Leaf, whoſe Upper Lip is erect, roundiſh, and divided into two; but the Under Lip is cut into three Segments: Out of the Flower-cup ariſes the Pointal, attended, as it were, by four Embryo's, which afterward become ſo many roundiſh Seeds inclos'd in the Flower-cup: To which ſhould be added, The Flowers grow in ſcaly Spikes, ſomewhat reſembling thoſe of the Muſcary.

The *Species* are;

1. Origanum *vulgare ſpontaneum. J. B.* Wild Marjoram.

2. Origanum *onites. C. B. P.* Pot Marjoram.

3. Origanum *heracleoticum cunila gallinacea Plinii. C. B. P.* Winter Sweet Marjoram, *vulgo*.

4. Origanum *ſylveſtre humile. C. B. P.* Dwarf wild Origany.

5. Origanum *ſylveſtre, foliis variegatis. Hort. Ed.* Wild Marjoram, with variegated Leaves.

6. Origanum *Orientale, folio brunellæ glauco, flore albo. Vaill.* Oriental Wild Marjoram, with a Self-heal Leaf, and white Flowers.

There are ſeveral other Species of this Plant preſerv'd in curious Botanick Gardens, for Variety: But as they are never propagated for Uſe, ſo I ſhall not enumerate them in this Place.

The firſt Sort here mention'd grows wild upon dry chalky Hills, and on gravelly Soils, in divers Parts of *England*, and is gather'd by the People who ſupply the Markets with Medicinal Herbs; ſo that it is rarely cultivated in Gardens.

The ſecond Sort was formerly more cultivated than at preſent: This was us'd as a Pot-herb for Soups, &c. but of late Years it has been almoſt neglected: It is ſaid to grow wild in ſome Parts of *England*.

The third Sort has the Appearance of common *Sweet Marjoram*; and having a ſweet Smell, is cultivated in many Gardens near *London*, and brought to the Markets to ſupply the Want of *Sweet Marjoram* early in the Seaſon, before the *Marjoram* (which is an annual Plant) can be procured, and is us'd by the People who make up Noſegays.

The fourth and fifth Sorts are preſerv'd as Varieties by ſome People, who uſe the fourth, many times, as a Pot-herb, inſtead of the ſecond.

The ſixth Sort was brought from the *Levant*, but is hardy enough to endure the ſevereſt Cold of our Climate in the open Air, provided it be planted upon a dry Soil.

Theſe Plants may be all propagated by ſowing their Seed in the Manner directed for *Marjoram*, and the Plants ſhould be treated in the ſame Way, therefore I ſhall forbear repeating it in this Place: They may alſo be propagated by parting their Roots, or planting Cuttings in the Spring, which, if water'd and ſhaded, will take Root in a few Days, and multiply exceedingly.

Their Roots will abide ſeveral Years, and require no farther Culture but to keep them clear from Weeds, and tranſplant them every Year, otherwiſe they will grow ſo large as to rot in the Middle for want of Air.

ORNITHOGALUM, ['Ορνιθόγαλον, of ὄρνις a *Bird*, and γάλα *Milk*, i. e. a Plant whoſe Flowers are as white as the white Plumes of feather'd Animals.] Star of Bethlehem.

The *Characters* are;

It hath a Lily Flower, compoſed of ſix Petals (or Leaves) ranged circularly, whoſe Center is poſſeſs'd by the Pointal, which afterwards turns to a roundiſh Fruit, which is divided into three Cells, and fill'd with roundiſh Seeds: To which muſt be added, It hath a bulbous or tuberoſe Root, in which it differs from Spiderwort.

The *Species* are;

1. Ornithogalum *anguſtifolium majus, floribus ex albo vireſcentibus. C. B. P.* Spiked Star of Bethlehem, with a greeniſh Flower.

2. Ornithogalum *umbellatum medium anguſtifolium. C. B. P.* Common Star of Bethlehem.

3. Ornithogalum *luteum. C. B. P.* Yellow Star of Bethlehem.

4. Ornithogalum *majus ſpicatum, flore albo. C. B. P.* The Great White Star of Bethlehem.

5. Ornithogalum *Neapolitanum. J. B.* Star of Naples, *vulgo*.

6. Ornithogalum *anguſtifolium ſpicatum maximum. C. B. P.* The greateſt narrow-leaved ſpiked Star of Bethlehem.

7. Ornithogalum *ſpicatum ſeu comoſum, flore lacteo. C. B. P.* Spiked or branchy Star of Bethlehem, with a milk-white Flower.

8. Ornithogalum *majus ſpicatum alterum. C. B. P.* Another great ſpiked Star of Bethlehem, commonly called the Star of *Conſtantinople*.

9. Ornithogalum *ſpicatum, flore viridi lacteſcente. C. B. P.* Spiked Star of Bethlehem, with a whitiſh green Flower.

10. Ornithogalum *ſpicatum album. C. B. P.* White ſpiked Star of Bethlehem.

11. Ornithogalum *luteum ſive pallidum majus. C. B. P.* Greater yellow or pale Star of Bethlehem.

12. Ornithogalum *luteum, magno flore. C. B. P.* Yellow Star of Bethlehem, with a large Flower.

13. Ornithogalum *luteum minus. C. B. P.* Smaller yellow Star of Bethlehem.

14. Ornithogalum *Luſitanicum, capillaceo folio, luteum. Inſt. R. H.* Yellow *Portugueſe* Star of Bethlehem, with a capillaceous Leaf.

15. ORNITHOGALUM *ſpicatum unifolium, flore niveo odorato. Vir. Luſit.* Spiked Star of Bethlehem, with one Leaf, and a ſweet-ſmelling ſnowy Flower.

16. ORNITHOGALUM *umbellatum maximum. C. B. P.* The greateſt umbellated Star of Bethlehem, commonly called the Star of *Alexandria.*

17. ORNITHOGALUM *umbellatum majus anguſtifolium. C. B. P.* Greater narrow-leaved Star of Bethlehem, with umbellated Flowers.

18. ORNITHOGALUM *umbellatum album medium latifolium. C. B. P.* White middle broad-leaved umbellated Star of Bethlehem.

19. ORNITHOGALUM *album minus. C. B. P.* Smaller white Star of Bethlehem.

20. ORNITHOGALUM *umbellatum, floſculis ex albo ſubcæruleis. C. B. P.* Umbellated Star of Bethlehem, with whitiſh blue Flowers.

21. ORNITHOGALUM *latifolium & maximum. C. B. P.* The greateſt broad-leaved Star of Bethlehem.

22. ORNITHOGALUM *latifolium alterum. C. B. P.* Another broad-leaved Star of Bethlehem.

23. ORNITHOGALUM *Orientale villoſum, flore luteo magno. Tourn. Cor.* Eaſtern hairy Star of Bethlehem, with a large yellow Flower.

24. ORNITHOGALUM *Samium villoſum umbellatum album. Tourn. Cor.* Hairy white umbellated Star of Bethlehem of *Samos.*

25. ORNITHOGALUM *Africanum luteum odoratum, foliis cepaceis, radice tuberoſo. H. L.* Yellow ſweet-ſmelling *African* Star of Bethlehem, with Onion Leaves, and a tuberoſe Root.

The firſt five Sorts are propagated by Off-ſets, which their Roots do commonly produce in great Plenty. The beſt Time to tranſplant their Roots is in *July*, when their Leaves are decay'd; for if they be removed late in Autumn, their Fibres will be ſhot out, when they will be very apt to ſuffer, if diſturb'd. They ſhould have a light ſandy Soil; but it muſt not be overdung'd, which would cauſe their Roots to decay. They may be intermix'd with other bulbous-rooted Flowers in the Borders of the Pleaſure-Garden, where they will afford an agreeable Variety, and continue in Flower a long Time. Their Roots need not be tranſplanted oftener than every other Year; for if they be taken up every Year, they will not increaſe ſo faſt; but when they are ſuffer'd to remain too long unremov'd, they will have ſo many Off-ſets about them as to weaken their blowing Roots. Theſe may alſo be propagated from Seeds, which ſhould be ſown and managed as moſt other bulbous-rooted Flowers, and will produce their Flowers in three or four Years after ſowing.

The ſixth, ſeventh, eighth, ninth, tenth, eleventh, twelfth, thirteenth, fourteenth, and fifteenth Sorts, are all of them very hardy, and may be propagated by Off-ſets, which are ſent out from their Roots in great Plenty. They grow wild in *Spain*, *Portugal*, and *Italy*, from whence their Roots have been obtained by thoſe Perſons who are curious in collecting of Flowers.

The five following Sorts are alſo very hardy, and may be treated as the former; theſe produce their Flowers in form of an Umbrella, on the Top of their Stalks, whereas the other Sorts grow on Spikes. They are all of them very pretty Flowers, and are proper to adorn the open Borders of the Flower-Garden, becauſe they require very little Care to preſerve them, and make an agreeable Variety when they are intermixed with other hardy Flowers.

The firſt, ſecond, and third Sorts grow wild in ſeveral Places in the North of *England*, from whence their Roots may be procured. Theſe will thrive very well in ſhady Borders, and do require a pretty ſtrong Soil, in which they will flower much ſtronger, than when they are planted in a rich warm Soil.

The fifth Sort is the leaſt to be valued of all the Kinds; for the Flowers are large, and have no Beauty; and ſo ſoon as the Seed-veſſels begin to ſwell, their Weight breaks down the Stalks; ſo that where they are not ſupported with Sticks, they fall to the Ground, and make a bad Appearance. This Sort ſends forth ſuch Numbers of Off-ſets, that when it hath been a very few Years an Inhabitant in any Garden, it will be very difficult to root out again, ſo that it ſhould never have room in the Borders amongſt other valuable Flowers. *Cluſius*, in his Hiſtory of Plants, ſays, he never ſaw one of them in Flower, unleſs the Root was brought freſh from *Conſtantinople*; for he obſerves, that unleſs the Root have conceived a Flower in the Womb, they will never produce any, when they are tranſplanted to colder Countries.

The ſixteenth Sort is very common in many Gardens near *London*, but it rarely produces any Flowers. This multiplies very faſt by Off-ſets, ſo as in few Years to ſtock a whole Garden. The Leaves and Bulbs, of this Plant are very like to thoſe of the Hyacinth of *Peru*, ſo that many Perſons have taken it for one of that Kind. Theſe Roots have been brought over from *Italy* in great Plenty of late Years, by the Perſons who import Orange-trees; but I have not yet heard that any of them have produced Flowers in *England.*

The twenty-firſt, twenty-ſecond, twenty-third, and twenty-fourth Sorts, are as yet very rare in *England:* Theſe grow in the *Archipelago*; and I have been informed by a very curious Gentleman, that they grow in great Plenty in the *Iſland* of *Zant*, from whence their Roots may be eaſily obtained, by the Ships that bring over the Currans. The beſt Method to bring them over, would be to have the Roots taken out of the Ground, ſoon after their Flower-ſtems and Leaves decay, and dry them in a ſhady Place. Then they may be hung up in the Ship, in Nets, (as is practiſed for Onions) to prevent their rotting by Moiſture, and to ſecure them from Vermin: and if they are four Months or longer out of the Ground, they will do very well, provided the Roots are ſound.

All theſe Sorts may be cultivated by Seeds, by which Method there may be ſome new Varieties obtained; but there are very few Perſons who are curious to propagate them this way, becauſe they multiply ſo faſt by Off-ſets. But whoever is willing to try this Method, they may follow the Directions given for raiſing Narciſſus's.

The twenty-fifth Sort was formerly more common in the *Engliſh* Gardens than at preſent. This Kind is more tender than either of the former; ſo ſhould be planted in Pots filled with freſh light Earth, and in Winter muſt be placed in an airy Glaſs-caſe, amongſt Sedums, Ficoides's, and ſuch other pretty hardy ſucculent Plants, which require a large Share of Air in mild Weather; and in Summer they may be removed out of the Houſe, and placed in a warm ſheltered Situation; obſerving never to give theſe Plants much Water when they are not in a growing State, leſt it rot their Roots; but when they are growing freely, they muſt be frequently refreſhed with Water. Theſe Roots ſhould be tranſplanted every Year; the beſt Time to perform this Work, is ſoon after their Flower-ſtems are decayed, when the Roots will be in the moſt inactive State. When this is done, the Off-ſets ſhould be carefully taken off, and each tranſplanted into a ſeparate ſmall Pot filled with light freſh Earth, and may be treated as the old Roots.

ORNITHOPODIUM, [of ὄρνις a *Bird*, and ποῦς ποδὸς a *Foot*, becauſe the Huſk of this Plant reſembles the Foot of a ſmall Bird.] Bird's-Foot.

The *Characters* are;

It hath a papilionaceous Flower, out of whoſe Empalement riſes the Pointal, which afterwards becomes a hooked jointed Pod, for the moſt part waved, containing in each Joint one roundiſh Seed: To which muſt be added, That ſeveral Pods grow together in ſuch a manner as to reſemble the Foot of a Bird.

The *Species* are;

1. ORNITHOPODIUM *radice tuberculis nodoſa. C. B. P.* Bird's-Foot, with a knobbed Root.

2. ORNITHOPODIUM *majus. C. B. P.* The Greater Bird's-Foot.

3. ORNITHOPODIUM *ſcorpioides, ſiliqua compreſſa. Tourn.* Caterpillar Bird's-Foot, with a flat Pod.

4. ORNITHOPODIUM *portulacæ folio. Tourn.* Bird's-Foot, with a Purſlane Leaf.

Theſe Plants are propagated by ſowing their Seeds in the Spring upon a Bed of light freſh Earth, where they are to remain; (for they ſeldom do well when they are tranſplanted); and when the Plants come up, they muſt be carefully clear'd from Weeds; and where they are too cloſe, ſome of the Plants ſhould be pull'd out, ſo as to leave the remaining ones about ten Inches aſunder. In *June* theſe Plants will flower, and the Seeds will ripen in *Auguſt*. There is no great Beauty in them; but, for the Variety of their jointed Pods, they are preſerv'd by ſome curious Perſons in their Pleaſure-Gardens; where, if their Seeds be ſown in Patches in the Borders, each Sort diſtinctly by itſelf, and the Plants thinn'd, leaving only two at each Patch, they will require no farther Care; and will add to the Variety, eſpecially where the *Snail* and *Caterpillar* Plants are preſerv'd, which are very proper to intermix with them. They are all annual Plants, which periſh ſoon after their Seeds are ripe.

OROBUS, [ὄροβος, of ἐρέπτω to *eat*, and βοῦς an *Ox*, q. d. an Herb with which *Oxen* are fed, becauſe the Antients us'd to fatten their *Oxen* with a like Herb] Bitter Vetch.

The *Characters* are;

It hath a papilionaceous Flower, conſiſting of the Standard, the

the Keel, and the Wings ; out of whoſe Empalement riſes the Pointal wrapt up in the Membrane, which afterward becomes a round Pod, full of Oval-ſhap'd Seeds : To which muſt be added, That two Leaves join'd together grow upon a Rib that ends in a Point.

The *Species* are ;

1. Orobus *ſylvaticus purpureus vernus. C. B. P.* Vernal Purple-Wood Bitter-Vetch.

2. Orobus *ſylvaticus noſtras. Raii Syn.* Engliſh Wood Bitter-Vetch.

3. Orobus *ſylvaticus, foliis oblongis glabris. Tourn.* Wood or Heath Peas.

4. Orobus *ſylvaticus, foliis viciæ. C. B. P.* Wood Orobus, with Vetch-Leaves.

5. Orobus *latifolius repens, ſiliqua parva. Boerh. Ind.* Broad-leav'd creeping Orobus, with a ſmall Pod, *commonly call'd,* Venetian Vetch.

6. Orobus *ſylveſtris anguſtifolius, aſphodeli radice. C. B. P.* Narrow-leaved wild Bitter-vetch, with an aſphodel Root.

7. Orobus *ſylvaticus, foliis nervoſis. Inſt. R. H.* Wild or wood Bitter-vetch, with Leaves full of Nerves.

8. Orobus *Creticus latifolius incanus. Inſt. R. H.* Broad-leaved hoary Bitter-vetch of Candy.

9. Orobus *Orientalis latifolius villoſus, flore croceo. Tourn. Cor.* Broad-leaved hairy Eaſtern Bitter-vetch, with a ſaffron-coloured Flower.

10. Orobus *Americanus, fructu coccineo, nigrâ maculâ notato. Inſt. R. H.* American Bitter-vetch, with ſcarlet Fruit, mark'd with a black Spot, commonly called wild Liquorice by the Inhabitants of America.

11. Orobus *Americanus erectus, foliorum pinnis anguſtis & ſubtus incanis, ſiliquis glabris. Houſt.* Upright *American* Bitter-vetch, with narrow Leaves, which are hoary underneath, and ſmooth Pods.

12. Orobus *Americanus latifolius argenteus, flore purpureo. Houſt.* Broad-leaved ſilvery American Bitter-vetch, with a purple Flower.

13. Orobus *Americanus procumbens & hirſutus, flore purpureo. Houſt.* Trailing hairy American Bitter-vetch, with a purple Flower.

14. Orobus *Americanus procumbens minimus anguſtifolius, flore coccineo. Houſt.* The leaſt narrow-leaved trailing Bitter-vetch of America, with a ſcarlet Flower.

The firſt of theſe Plants was brought from *Germany,* where it grows in the Foreſts in great Plenty, as alſo about *Geneva,* but it is hardy enough to endure the Cold of our Climate in the open Air, provided it be planted in a dry Soil. This may be propagated either from Seeds or by parting the Roots in the Spring. If you ſow the Seeds, you ſhould obſerve to put them pretty early into the Ground before the dry Weather comes on, otherwiſe the Seeds will not come up : As you ſhould alſo tranſplant the Roots juſt before they begin to ſhoot, or elſe their Flowers will be very weak. The Roots of this Plant will abide many Years, and ſpring up freſh every Year, and in *April* produce fine Spikes of purple Pea-bloom Flowers, which are ſucceeded by ſtrait black Pods two Inches long, containing ſeveral roundiſh bitter Seeds.

The ſecond and third Sorts grow wild in Woods and ſhady Places in divers Parts of *England,* where, during their Seaſon of Flowering, they make a handſome Appearance ; and when tranſplanted under Hedges in a Garden, they will thrive extreamly well, and produce great Quantities of Flowers every Spring.

Theſe were formerly recommended by Dr. *Liſter,* to be ſown for Fodder, as a great Improvement ; but I believe them not very proper for that Purpoſe, ſince they ſeldom thrive well when expos'd to the Sun, nor will they ever riſe to any conſiderable Height, their Branches trailing upon the Ground, unleſs they are ſupported, ſo that in a wet Seaſon they would be apt to rot.

The fourth Sort riſes to be two or three Feet high, and hath ſtrong upright Stalks ; upon which, in *May,* are produc'd great Quantities of purple Flowers, which are ſucceeded by long ſtrait Pods, containing oblong bitter Seeds. The Root of this Plant will abide many Years ; the Stalks decaying in Winter, but do ſpring up again the ſucceeding Year : It delights in a dry freſh Soil, and deſerves a Place in large Borders under the Shade of Trees, where it will thrive well, and make a handſome Appearance.

The fifth Sort was formerly preſerv'd in the Green-houſe as a tender Plant, but will endure the Cold of our Climate very well, if planted in a dry Soil ; and thoſe Roots which are planted in the full Ground, will produce much ſtronger Flowers than thoſe preſerv'd in Pots. This Plant flowers in *April,* but ſeldom produces good Seeds in this Country.

The firſt five Sorts may be propagated either from Seeds, or by parting of their Roots, in the manner directed for the firſt Sort ; and if rightly diſpos'd in the Borders of a Garden, do afford an agreeable Variety : And ſince they are hardy, requiring but little Culture, they deſerve a Place in every good Garden.

The ſixth, ſeventh, eighth, and ninth Sorts are very hardy Plants : theſe may be propagated by ſowing of their Seeds in the Spring, on a Border of freſh Earth, expoſed only to the Morning Sun ; and when the Plants come up, they ſhould be carefully cleared from Weeds, and thinned where they are too cloſe. The *Michaelmas* following, they ſhould be taken up and tranſplanted where they are deſigned to remain, which ſhould be in a ſhady Place, or under Trees in wilderneſs Quarters, where theſe Plants will thrive exceeding well, and when they flow in the Spring, will make an agreeable Variety, in ſuch Places where better Plants will not live, which renders them worthy of a Place in large Gardens.

The tenth Sort is very common in the warmeſt Parts of *America, Aſia,* and *Africa.* The Seeds of this Sort are frequently brought to *England* from the *Weſt-Indies* for their Beauty ; being round and hard, and of a bright ſcarlet Colour, with a black Eye, and are ſomewhat leſs than Peas. Theſe Seeds are by the Inhabitants of the Countries, where they naturally grow, ſtrung, and wore about their Necks for Ornament. And the Leaves of the Plant are ſometimes uſed inſtead of Liquorice, being eſteemed good for the dry Gripes.

This Plant twiſts itſelf round whatever Trees or Shrubs grow near it, and will riſe to the Height of ten or twelve Feet, and will continue ſeveral Years. The Flowers are produced on ſlender Foot-ſtalks, growing in a cloſe Spike or Bunch, which are ſhaped like thoſe of the Kidney-bean, and are of a pale purple Colour ; theſe are ſucceeded by ſhort thick Pods, in which are contained the Seeds.

The eleventh Sort was diſcovered by the late Dr. *Houſtoun* in *Jamaica,* and the twelfth, thirteenth, and fourteenth Sorts, were diſcovered by the ſame Gentleman, at *La Vera Cruz* in the *Spaniſh Weſt-Indies.* Theſe five laſt-mentioned Sorts, being Natives of warm Countries, are very tender ; ſo muſt be preſerved in Stoves, otherwiſe they will not live in *England.* Theſe are propagated by Seeds, which ſhould be ſown early in the Spring, in ſmall Pots, filled with light rich Earth, and plunged into a Hot-bed of Tanners-bark, obſerving frequently to moiſten the Earth, otherwiſe the Seeds will not grow (eſpecially thoſe of the tenth Sort, which are very hard, and will ſometimes remain a whole Seaſon in the Ground, where they are kept dry). When the Plants come up, they ſhould be carefully taken out of the Pots, and each tranſplanted into ſeparate ſmall Pots, filled with rich Earth, and then plunged again into the Tan-bed, obſerving to ſhade them until they have taken Root ; after which Time they ſhould have freſh Air admitted to them every Day in warm Weather, and muſt be frequently water'd. With this Management the Plants will make a great Progreſs, and in a few Weeks thoſe of the tenth Sort will reach the Glaſſes of the Hot-bed, unleſs the Frame be very high ; ſo theſe ſhould then be taken out, and plunged into the Bark-bed in the Stove, where they may have room to grow. Theſe Plants ſhould be ſupported by Sticks, or placed near a Trellaſe, to which they ſhould be faſtened, otherwiſe they will trail about whatever Plants grow near them.

The other Sorts being of humbler Growth, may be kept in the Hot-bed until *Michaelmas,* when the Nights begin to be cold ; at which Time they ſhould be removed into the Stove, and plunged into the Bark-bed, where they muſt be treated as other tender exotick Plants ; by which Method they may be preſerved thro' the Winter, and the following Summer they will produce Flowers. Theſe Plants are perennial, ſo that if they ſhould not perfect their Seeds, the Plants may be maintained for ſeveral Years.

ORYZA ; [ὀρυζα, of ὀρυσσω, to *dig,* becauſe the Earth muſt be dug before the Seeds are ſown]. Rice.

The *Characters* are ;

It hath its Grains diſpos'd into a Panicle, which are almoſt of an oval Figure, and are cover'd with a thick Huſk, ſomewhat like Barley.

There is but one *Species* of this Plant ; *viz.*

Oryza. *Matth.* Rice.

This Grain is greatly cultivated in moſt of the Eaſtern Countries, where it is the chief Support of the Inhabitants ; and great Quantities of it are brought into *England* and other *European* Countries every Year, where it is in great Eſteem for Puddings, *&c.* it being too tender to be produc'd in theſe Northern Countries, without the Aſſiſtance of artificial Heat : But from ſome Seeds which were formerly ſent to *South-Carolina,* there have been great Quantities produc'd, and it is found to ſucceed equally as well there as in its native Country, which is a very great Improvement to our *American* Settlements.

This Plant grows upon moiſt Soils, where the Ground can be flow'd over with Water after it is come up; ſo that whoever would cultivate it in *England* for Curioſity, ſhould ſow the Seeds upon a Hot-bed: And when the Plants are come up, they ſhould be tranſplanted into Pots fill'd with rich light Earth, and placed in Pans of Water, which ſhould be plunged into a Hot-bed, and as the Water waſtes, ſo it muſt, from Time to Time, be renew'd again: In *July* theſe Plants may be ſet abroad in a warm Situation, ſtill preſerving the Water in the Pans, otherwiſe they will not thrive; and towards the latter End of *Auguſt* they will produce their Grain, which will ripen tolerably well, provided the Autumn proves favourable.

OSIER. *Vide* Salix.

OSMUNDA, The Oſmund Royal, or flowering Fern.

This is one of the Kinds of Fern which is diſtinguiſhed from the other Sorts, by its producing Flowers on the Top of the Leaves, whereas the others for the moſt part produce them on the Back of their Leaves.

There is but one Kind of this Plant, which grows wild in *England*; but there are ſeveral Sorts of them which grow in *America*; but as they are ſeldom kept in Gardens, ſo I ſhall not enumerate their Species.

The common Sort grows on Bogs in ſeveral Parts of *England*; ſo whoever hath an Inclination to tranſplant it into Gardens, ſhould place it in a moiſt ſhady Situation, otherwiſe it will not thrive.

OX-EYE. *Vide* Buphthalmum.

OXYACANTHA. *Vide* Berberris.

OXYS; Wood-ſorrel.

The *Characters* are;

It hath a bell-ſhaped Flower, conſiſting of one Leaf, having its Brim wide expanded, and cut into ſeveral Diviſions: The Pointal, which riſes from the Flower-cup, becomes an oblong, membraneous Fruit, divided into five ſeminal Cells, opening outward from the Baſe to the Top, and incloſing Seeds which ſtart from their Lodges, by reaſon of the elaſtic Force of the Membrane which involves them.

The *Species* are;

1. Oxys *flore albo. Tourn.* Common Wood-ſorrel, with a white Flower.
2. Oxys *flore purpuraſcente. Tourn.* Wood-ſorrel, with a purpliſh Flower.
3. Oxys *lutea. J. B.* Wood-ſorrel, with a yellow Flower.
4. Oxus *lutea Americana erectior. Tourn.* Upright yellow Wood-ſorrel of *America*.
5. Oxys *bulboſa Africana rotundifolia, caulibus & floribus purpureis amplis. Hort. Amſt.* Round-leav'd *African* Wood-ſorrel, with large purple Flowers.
6. Oxys *bulboſa Æthiopica minor, folio cordato, flore ex albido purpuraſcente. Hort. Amſt.*
7. Oxys *Americana, flore rubro, fibroſa radice. Inſt. R. H.* *American* Wood-ſorrel, with a red Flower, and a fibroſe Root.
8. Oxys *lutea fruteſcens Americana, trifolii bituminoſi facie. Plum. Cat.* Yellow ſhrubby *American* Wood-ſorrel, with the Face of ſtinking Trefoil.
9. Oxys *purpurea Virginiana, radice ſquammata. Inſt. R. H.* Purple Wood-ſorrel of *Virginia*, with a ſcaly Root.
10. Oxys *bulboſa Africana rotundifolia, caulibus virentibus, floribus amplis purpureis. Breyn. Cent.* Bulbous-rooted *African* Wood-ſorrel, with round Leaves, green Stalks, and large purple Flowers.
11. Oxys *lutea annua, floribus dentatis. Feuillée. Obſ.* Yellow annual Wood-ſorrel, with indented Flowers.
12. Oxys *roſeo flore, erectior, vulgo Cullè. Feuillée. Obſ.* Upright Wood-ſorrel, with a Roſe-colour'd Flower, vulgarly call'd Cullé.
13. Oxys *ampliſſimo flore luteo. Feuillée. Obſ.* Wood-ſorrel with the largeſt yellow Flower.
14. Oxys *luteo flore, radice craſſiſſimâ. Feuillée. Obſ.* Wood-ſorrel with yellow Flowers, and a very thick Root.

The firſt Sort grows wild in Woods, and other ſhady Places, in divers Parts of *England*, and flowers in *April* and *May*. This is the Sort which is directed by the College of Phyſicians of *London* to be uſed in Medicine; but the Markets are generally ſupplied with the fourth Sort, which is not near ſo good, having very little Taſte: But the People who cultivate medicinal Plants for the Market, have propagated this Plant in their Gardens, becauſe it grows tall, and branches out greatly; ſo that they can readily gather and tie it up in Bunches for Sale: Whereas the true Sort grows cloſe to the Ground, and each Leaf riſes with a Foot-ſtalk from the Root, which renders it troubleſome to gather in Quantities; but thoſe who uſe it in Medicine ſhould be careful to have the true Sort; the Time for which is always in the Spring, whereas the other Kind is never brought to Market till the Middle of the Summer.

The ſecond Sort is a Variety of the firſt, differing only in the Colour of the Flower. This is found wild in the North of *England*, and is preſerved as a Variety by thoſe Perſons who are curious in Botany; but there is no Difference in the Taſte of this from the common Sort. Theſe two Sorts are abiding Plants, and multiply greatly by their creeping Roots, as alſo by Seeds. They ſhould be planted in a moiſt ſhady Border, either early in the Spring or at *Michaelmas*, that they may be rooted before the Froſt comes on. When the Plants are once eſtabliſhed in the Border, they will ſcatter their Seeds, and increaſe greatly. This common Wood-ſorrel is a much more grateful Acid in Sallads, than the common Sorrel; for which Purpoſe a Border of it ſhould not be wanting in the Kitchen-garden.

The third Sort is an abiding Plant, and increaſes greatly by its trailing Branches, which put out Roots at every Joint; as alſo by its Seeds, which are caſt abroad when ripe by the Elaſticity of the Veſſels in which they are contained, which renders it difficult to ſave the Seeds; for when they are ripe, on the firſt Touch, the Pods burſt, and throw out the Seeds. This is tender, and muſt be ſheltered under a Frame in Winter; otherwiſe it will not abide the Froſts, when they are very ſevere.

The fourth Sort is an annual Plant. This was originally brought from *North-America*; but where-ever it is introduced, and permitted to ſcatter its Seeds, it will maintain itſelf without any further Care, it being a very hardy Plant; and is now become more common than our own Sort in the *London* Markets.

The fifth and ſixth Sorts are preſerved in ſome curious Gardens for Variety. The fifth Sort produces large purple Flowers, which make a very pretty Appearance, and continue in Beauty a long Time, which renders it worthy of a Place in every Collection of Plants. The ſixth Sort hath not much Beauty in its Flowers, but is planted in curious Gardens for Variety. Theſe two Sorts have bulbous Roots, which increaſe pretty faſt, (eſpecially the ſixth) by which they are eaſily propagated. Theſe muſt be planted in Pots filled with freſh light Earth; and in Winter they ſhould be placed under a common Hot-bed Frame, where they ſhould have as much free Air as poſſible in mild Weather; but they muſt be ſheltered from Froſt, otherwiſe they will not live in this Country. In Summer they muſt be expoſed in a ſhady Situation, and in dry Weather muſt be often refreſhed with Water.

The ſeventh, ninth, and tenth Sorts may be treated in the ſame Manner as the former; theſe are preſerved in curious Gardens for the ſake of Variety.

The eighth Sort was diſcovered by Father *Plumier* in ſome of the *French* Settlements in *America*; it was alſo found by the late Dr. *Houſtoun* near *La Vera Cruz*, where it was growing in great Plenty. This Sort riſes to the Height of two Feet or more, and becomes a little Shrub, but it hath little Acidity in the Leaves. This is tenderer than either of the former Sorts, ſo ſhould be kept warmer in Winter, otherwiſe it will not live in this Country.

The eleventh Sort is an annual Plant, which is cultivated in all the Gardens of *Lima* and *Peru* in the *Spaniſh Weſt-Indies*, for its grateful acid Taſte, it being much uſed by the Inhabitants of thoſe Places in all their Sauces. This Sort grows larger than the common upright *American* Kind; the Flowers are yellow edged with purple.

The twelfth Sort grows plentifully in *Chili* in the *Spani* *Weſt-Indies*. It hath beautiful roſe-coloured Flowers, an grows about the ſame Height as the common upright *America* Sort.

The thirteenth Sort ſeldom riſes above two Inches high, an doth not branch as do the former Kinds; this hath very larg yellow Flowers: It grows plentifully on the Borders of th River of *Plate*.

The fourteenth Sort hath very large thick Roots, out o which come up the Leaves, which are of a bright green Colou on their upper Side, and of a Violet-Colour underneath. Th grows on all the Mountains of *Peru*.

All theſe Sorts, being Natives of warm Countries, are ſomewhat tenderer than thoſe before-mentioned, ſo muſt be place in a warm Green-houſe in Winter; but in Summer they ma be expoſed to the open Air, and muſt be plentifully watered i dry Weather. Theſe Plants will all of them produce Seeds i this Country, by which they may be propagated.

P A

PADUS, *vide* Ceraſus.

PÆONIA; [ſo call'd of *Pæon* the Phyſician, becauſe he is ſaid to have cured *Pluto*, being wounded by *Hercules*, with this Herb] The Peony.

The *Characters* are;

It hath a Flower compos'd of ſeveral Leaves, which are plac'd orbicularly, and expand in Form of a Roſe; *out of whoſe Empalement riſes the Pointal, which afterwards becomes a Fruit, in which ſeveral little Horns, bent downwards, are gather'd, as it were, into a little Head, cover'd with Down, opening lengthwiſe, containing many globular Seeds.*

1. Pæonia *folio nigricante ſplendido, quæ mas.* C. B. P. The Male *Peony.*
2. Pæonia *mas major, flore incarnato.* *Hort. Eyſt.* The greater Male *Peony*, with a Fleſh-colour'd Flower.
3. Pæonia *communis vel fæmina.* C. B. P. The female *Peony.*
4. Pæonia *fæmina, flore pleno rubro majore.* C. B. P. Female *Peony*, with a large, double, red Flower.
5. Pæonia *pleno flore rubro, minor.* J. B. *Peony*, with a leſſer, double, red Flower.
6. Pæonia *flore exalbido pleno, major.* C. B. P. Greater *Peony*, with a double, whitiſh Flower.
7. Pæonia *Luſitanica, flore ſimplici odorato.* Portugal *Peony*, with a ſingle ſweet-ſcented Flower.
8. Pæonia *mas, foliorum ſegmentis amplioribus.* C. B. P. Male Piony, with Leaves having broader Segments.
9. Pæonia *tenuius laciniata, ſubtus pubeſcens, flore purpureo.* C. B. P. Piony with narrow jagged Leaves, which are downy underneath, and a purple Flower.
10. Pæonia *aquilinæ foliis.* C. B. P. Piony with a columbine Leaf.
11. Pæonia *flore variegato.* C. B. P.
12. Pæonia *folio ſubtus incano, flore albo vel pallido.* C. B. P. Piony with Leaves hoary underneath, and white or pale Flowers.

The firſt of theſe Sorts is chiefly propagated for the Roots, which are us'd in Medicine; for the Flowers being ſingle, do not afford near ſo much Pleaſure as thoſe with double Flowers, nor will they abide near ſo long in Beauty.

The ſecond Sorts hath larger ſingle Flowers than the firſt, but they are of a paler Colour: This is preſerv'd by Perſons who are curious in collecting the various Kinds of Flowers, but is not ſo much eſteem'd as thoſe which follow.

All the Sorts with double Flowers are preſerv'd in curious Gardens for the Beauty of their Flowers; which, when intermix'd with other large growing Plants in the Borders of large Gardens, do add to the Variety, and the Flowers are very ornamental in Baſons or Flower-pots, when plac'd in Rooms.

They are all extreamly hardy, and will grow in almoſt any Soil or Situation, which renders them more valuable, for they will thrive under the Shade of Trees; and in ſuch Places they will continue much longer in Beauty.

They are propagated by parting their Roots, which multiply very faſt. The beſt Seaſon for tranſplanting them, is towards the Latter end of *Auguſt*, or the Beginning of *September*; for if they are remov'd after their Roots have ſhot out new Fibres, they ſeldom flower ſtrong the ſucceeding Summer.

In parting of theſe Roots, you ſhould always obſerve to preſerve a Bud upon the Crown of each Off-ſet, otherwiſe they will come to nothing; nor ſhould you divide the Roots too ſmall, (eſpecially if you have regard to their blowing the following Year;) for when their Off-ſets are weak, they many times don't flower the ſucceeding Summer, or at leaſt produce but one Flower upon each Root: But where you would multiply them in Quantities, you may divide them as ſmall as you pleaſe, provided there be a Bud to each Off-ſet; but then they ſhould be planted in a Nurſery-bed, for a Seaſon or two, to get Strength, before they are plac'd in the Flower Garden.

The ſingle Sorts may be propagated from Seeds (which they generally produce in large Quantities, where the Flowers are permitted to remain;) which ſhould be ſown in the Middle of *Auguſt* upon a Bed of light freſh Earth, covering them over about half an Inch thick with the ſame light Earth: The Spring following the Plants will come up; when they ſhould be carefully clear'd from Weeds, and in very dry Weather refreſh'd with Water, which will greatly forward their Growth. In this Bed they ſhould remain two Years before they are tranſplanted, obſerving in *Autumn*, when the Leaves are decay'd, to ſpread ſome freſh rich Earth over the Beds about an Inch thick, and conſtantly to keep them clear from Weeds.

When you tranſplant them, (which ſhould be done in *September*) you muſt prepare ſome Beds of freſh light Earth, which ſhould be dug and well cleans'd from the Roots of all noxious Weeds; then plant the Roots therein ſix Inches aſunder, and about three Inches deep. In theſe Beds they may remain untill they flower; after which they may be tranſplanted where you deſign they ſhould grow. It is very probable there may be ſome Varieties obtained from the Seeds of theſe Plants, as is common in moſt other Flowers; ſo that thoſe which produce beautiful Flowers may be plac'd in the Flower-garden, but ſuch as continue ſingle or ill-colour'd, may be planted in Beds to propagate for medicinal Uſe.

The *Portugal Peony* may alſo be propagated either by Seeds or parting of the Roots in the ſame Manner as the other Sorts, but ſhould have a lighter Soil, and a warmer Situation. The Flowers of this kind are ſingle, but do ſmell very ſweet, which renders it worthy of a Place in every good Garden.

PALIURUS: Chriſt's Thorn.

The *Characters* are;

It hath long ſharp Sines; the Flower conſiſts of five Leaves, which expand in Form of a Roſe; *out of the Flower-cup (which is divided into ſeveral Segments) riſes the Pointal, which becomes a Fruit ſhap'd like a Bonnet, having a Shell almoſt globular, which is divided into three Cells, in each of which is contain'd one roundiſh Seed.*

We have but one *Species* of this Plant; *viz.*

Paliurus. *Dod.* Chriſt's Thorn.

This is by many Perſons ſuppos'd to be the Plant from which the Crown of Thorns which was put upon the Head of our Saviour, was compos'd: The Truth of which is ſupported by many Travellers of Credit, who affirm, That this is one of the moſt common Shrubs in the Country of *Judea*; and from the Pliableneſs of its Branches, which may be eaſily wrought into any Figure, it may afford a Probability.

It may be propagated by laying down its tender Branches in the Spring of the Year; which if carefully ſupply'd with Water in dry Weather, will take Root in a Year's time, and may then be taken off from the old Plant, and tranſplanted where it is to remain.

The beſt Time for tranſplanting this Plant is in the Beginning of *April*, juſt before it begins to ſhoot, obſerving to lay ſome Mulch upon the Ground about their Roots to prevent 'em from drying, as alſo to refreſh them now and then with a little Water until they have taken freſh Root, after which they will require but very little Care. They are very hardy, and will grow to be ten or twelve Feet high, if planted in a dry Soil, and a warm Situation. There is little Beauty in this Plant, but it is kept in Gardens as a Curioſity.

PALMA; The Palm-Tree.

The *Characters* are;

It hath a ſingle unbranch'd Stalk; the Leaves are diſpos'd in a circular Form on the Top, which when they wither, or fall off with Age, new ones always ariſe out of the Middle of the remaining ones; among which, certain Sheaths or plain Twigs break forth, opening from the Bottom to the Top, very full of Flowers and Cluſters of Embryo's.

The *Species* are;

1. Palma *major.* C. B. P. The greater *Palm* or *Date-tree.*
2. Palma *minor.* C. B. P. The Dwarf *Palm*, with prickly Footſtalks.
3. Palma *Braſilienſis prunifera, folio plicatili ſeu flabelliformi, caudice ſquamato. Raii Hiſt.* The Palmetto-tree.
4. Palma *altiſſima non ſpinoſa, fructu pruniformi minore racemoſo ſparſo. Sloan. Cat.* The Cabbage-tree.
5. Palma *foliorum pediculis ſpinoſis, fructu pruniformi luteo oleoſo. Sloan. Cat.* The oily *Palm-tree.*
6. Palma *tota ſpinoſa major, fructu pruniformi. Sloan. Cat.* The great Macaw-tree.

7. PALMA *humilis dactylifera radice repentiſſima ſobolifera, folio flabelliformi, pedunculo vix ſpinoſo. Boerh. Ind.* The Dwarf *Palm*, with ſcarcely any Prickles upon the Footſtalks.

8. PALMA *foliis longiſſimis pendulis, abſque ullo pedunculo ex caudice glabro enatis. Boerh. Ind.* The Dragon-tree.

9. PALMA *Japonica, ſpinoſis pediculis, polypodii folio. Par. Bat.* The *Palm-tree* from *Japan*, with prickly Footſtalks, and a Leaf like *Polypody*.

Theſe are all the Sorts of Palms I have obſerv'd now growing in the *Engliſh* Gardens.

Theſe Plants may be eaſily produc'd from the Seeds (provided they are freſh); which ſhould be ſown in Pots fill'd with light rich Earth, and plung'd into a Hot-bed of Tanners Bark; which ſhould be kept in a moderate Temper, and the Earth frequently refreſh'd with Water.

When the Plants are come up, they ſhould be each planted into a ſeparate ſmall Pot fill'd with the ſame light rich Earth, and plung'd into a Hot-bed again, obſerving to refreſh 'em with Water, as alſo to let them have Air in Proportion to the Warmth of the Seaſon, and the Bed in which they are plac'd: During the Summer-time they ſhould remain in the ſame Hot-bed, but in *Auguſt* you ſhould let them have a great Share of Air to harden them againſt the Approach of Winter; for if they are too much forc'd, they will be ſo tender as not to be preſerv'd through the Winter without much Difficulty, eſpecially if you have not the Conveniency of a Bark-Stove to keep them in.

The Beginning of *October*, you muſt remove the Plants into the Stove, placing them where they may have a great Share of Heat (theſe being ſomewhat tenderer, while young, than after they have acquir'd ſome Strength); tho' indeed, they may be ſometimes preſerv'd alive in a cooler Situation, yet their Progreſs would be ſo much retarded, as not to recover their Vigour the ſucceeding Summer: Nor is it worth the Trouble of raiſing theſe Plants from Seeds, where a Perſon has not the Conveniency of a good Stove to forward their Growth; for where this is wanting, they will not grow to any tolerable Size in eight or ten years.

Whenever theſe Plants are remov'd, (which ſhould be done once a Year) you muſt be very careful not to cut or injure their large Roots, which is very hurtful to them, but you ſhould clear off all the ſmall Fibres which are inclinable to Mouldineſs; for if theſe are left on, they will, in time, decay, and hinder the freſh Fibres from coming out, which will greatly retard the Growth of the Plants.

The Soil in which theſe Plants ſhould be plac'd, muſt be compos'd in the following manner; viz. A third Part of light freſh Earth taken from a Paſture-ground, a third part Sea-ſand, and the other part rotten Dung, or Tanners Bark: Theſe ſhould be carefully mix'd, and laid in a Heap three or four Months at leaſt before it is us'd, but ſhould be often turn'd over, to prevent the Growth of Weeds, and to ſweeten the Earth.

You ſhould alſo obſerve to allow them Pots proportionable to the Sizes of the Plants, but you muſt never let them be too large, which is of worſe Conſequence than if they are too ſmall. During the Summer-ſeaſon, they ſhould be frequently refreſh'd with Water, but you muſt be careful not to give it in too great Quantities; and in Winter they muſt be now and then refreſh'd, eſpecially if they are plac'd in a warm Stove, otherwiſe they will require very little Water at that Seaſon.

Theſe Plants are moſt of them very ſlow Growers even in their Native Countries, notwithſtanding they do arrive to a great Magnitude; for it has been often obſerv'd by ſeveral of the old Inhabitants of thoſe Countries, that the Plants of ſome of theſe Kinds, have not advanc'd two Feet in Height in twenty Years; ſo that when they are brought into theſe Countries, it can't be expected they ſhould advance very faſt, eſpecially where there is not due Care taken to preſerve them warm in Winter: But however ſlow of Growth theſe Plants are in their Native Countries, yet they may be with us greatly forwarded by placing the Pots in a Hot-bed of Tanners Bark; which ſhould be renew'd as often as is neceſſary, and the Plants always preſerv'd therein both Winter and Summer, obſerving to ſhift them into larger Pots as they advance in Growth, as alſo to ſupply them with Water: In which Management I have had ſeveral of them come on very faſt; for I obſerve the Roots of theſe Plants are very apt to root into the Bark (if their Pots remain a conſiderable Time without ſhifting) where they meet with a gentle Warmth, and the Moiſture ariſing from the Fermentation of the Bark, doth preſerve their Fibres plump and vigorous.

The *Date Palm* is of very ſlow Growth with us, but is eaſily produc'd from Seeds, taken out of the Fruit, which are brought into *England* in great Plenty; but there are very few of theſe Plants of any conſiderable Size at preſent in the *Engliſh* Gardens.

The *Dwarf Palm*, with prickly Footſtalks, as alſo that with few Prickles, are of humble Growth in their Native Countries, ſeldom riſing above four or five Feet high, but do extend their Roots very far, and increaſe thereby in the ſame ſame Manner as the common Fern doth, ſo that the waſte Ground which is not cultivated, is over-run with the Plants; the Leaves of which the Inhabitants cut, and ſend into theſe Countries to make Flag-Brooms. Theſe grow in *Spain*, *Portugal* and *Italy*, and are much hardier than any of the other Sorts.

The *Palmetto-Tree* is brought from the *Weſt-Indies*, where it grows to be a very large Tree; the Leaves of which the Inhabitants thatch their Houſes withal, for which Purpoſe they are very uſeful in thoſe Countries: Theſe Leaves, before they are expanded, are cut, and brought into *England* to make Womens plaited Hats, which were, a few Years ſince, greatly in Faſhion; and the Berries of theſe Trees were formerly much in Uſe in *England* for Buttons. Theſe were ſome of the chief Commodities which the *Bermuda Iſlands* did afford for Manufactory, but, at preſent, they are both diſus'd in *England*.

The *Cabbage-Tree* is very common in the *Caribbee Iſlands*, where it grows to a prodigious Height; *Ligon*, in his *Hiſtory of Barbados*, ſays, There are ſome of theſe Trees above two hundred Feet high, and that it is commonly a hundred Years before they arrive at Maturity enough to produce Fruit: The Leaves of this Tree envelope each other, ſo that thoſe which are inclos'd, being depriv'd of the Air, are blanch'd, which is the Part the Inhabitants cut for Plait for Hats, *&c.* and the *Gemma* or young Shoots are pickled, and ſent into *England* by the Name of *Cabbage*: But whenever this Part is cut out, the Trees are deſtroy'd, nor do they riſe again from the old Roots, ſo that there are very few Trees left remaining near Plantations, except for Ornament; for their Stems being exceeding ſtrait, and their Leaves being produc'd very regularly at Top, do afford a moſt beautiful Proſpect; for which Reaſon the Planters generally ſpare two or three of them near their Habitations.

The *Oily Palm* grows in great Plenty on the Coaſt of *Guiney*, as alſo on *Cape Verd* Iſland, where they grow as high as the Main-Maſt of a Ship: But theſe Trees have been tranſplanted to *Jamaica* and *Barbadoes*, in both which Places they thrive very well. The Inhabitants make an Oil from the Pulp of the Fruit, and draw a Wine from the Body of the Trees, which inebriates; and with the Rind of theſe Trees they make Mats to lie upon. This Sort will eaſily riſe from Seeds, and if kept warm, will grow much faſter than the *Date Palm*.

The *Macaw-Tree* is very common in the *Caribbee Iſlands*, where the *Negroes* pierce the tender Fruit, from whence flows out a pleaſant Liquor, which they are very fond of; and the Body of the Tree affords a ſolid Timber, with which they make *Javelins*, *Arrows*, &c. and is by ſome ſuppos'd to be a Sort of *Ebony*. This Tree grows very ſlow, and requires to be kept very warm in Winter.

The *Dragon Tree* is very common in the *Madera's* and the *Canary Iſlands*, where they grow to be large Trees; from the Bodies of which it is ſuppos'd the Dragon's Blood doth flow. This Plant ariſes very eaſily from the Seeds, and when it has acquir'd ſome Strength, is pretty hard.

The *Japan Palm Tree* is, at preſent, very rare in *England*, being only in two or three curious Gardens: It will come up from Seeds, if they are freſh, but the Plants muſt be kept very warm, eſpecially while young, otherwiſe they will not live through our Winters.

All ſorts of *Palms* are worthy of being preſerv'd by thoſe who are curious in maintaining *Exotick* Plants, for the ſingular Structure of their Parts and Beauty of their Leaves, which make an agreeable Variety amongſt other curious Plants.

To this *Article* muſt be added;

1. PALMA *cujus fructus ſeſſilis Fauſel dicitur. C. B. P* The Palm-tree whoſe Fruit is called Fauſel.

2. PALMA *altiſſima non ſpinoſa, fructu oblongo. Houſt* The talleſt ſmooth Palm-tree, with oblong Fruit, calle Mountain *Cabbage*.

3. PALMA *coccifera, complicato folio, fructu minore. H. L* The nut-bearing Palm, with a folded Leaf, and ſmalle Fruit.

4. PALMA *Malabarica, floſculis ſtellatis, fructu long ſquammato. Plum.* Palm-tree of *Malabar*, with ſmall ſtarr Flowers, and a long ſcaly Fruit.

5. PALM

5. Palma *dactylifera, fructu acerrimo. Plum.* Date-bearing Palm-tree, with a ſharp Fruit.

6. Palma *montana Malabarica, folio magno complicato acuto, flore albo racemoſo, fructu rotundo. Plum.* Mountain Palm-tree of *Malabar*, with a large ſharp folded Leaf, white Flowers growing in Bunches, and a round Fruit.

7. Palma *prunifera Japonenſis. H. L. B.* Plum-bearing Palm of *Japon*.

8. Palma *dactyliſera & vinifera. Plum.* Date and Wine-bearing Palm-tree.

9. Palma *dactyliſera aculeata minima. Plum.* The leaſt prickly Date-bearing Palm-tree.

10. Palma *coccifera, coſtarum lateribus aculeatis. Plum.* Nut-bearing Palm-tree, with Spines growing on the Stalks.

11. Palma *dactyliſera latifolia. Plum.* Broad-leaved Date-bearing Palm-tree.

12. Palma *Indica coccifera anguloſa. C. B. P.* The Cocoa Nut *vulgò*.

The firſt Sort here mentioned is a Native of the *Eaſt-Indies*: The Fruit of this Kind is directed by the College of Phyſicians to be uſed in Medicine, but it is rarely brought to *England*. The ſecond Sort was diſcovered by the late Dr. *Houſtoun*, growing on the Hills near *La Vera Cruz*; the Fruit of this Kind is about an Inch and half in Length, and near two Inches in Circumference. The Flower-buds, which are produced in the Centre of the Plants, are by the Natives cut, and boiled to eat with their Meat, and are by them called the Mountain *Cabbage*.

The third Sort grows plentifully in ſeveral Parts of the *Spaniſh Weſt-Indies*, from whence I have received the Fruit. Theſe Fruit are ſhaped exactly like the Cocoa-nut, and are incloſed in a Shell in the ſame Manner as that; but theſe are not ſo large as a Man's Fiſt, whereas the Cocoa-nuts are larger than a Man's Head.

The fifth, ſixth, eighth, ninth, tenth and eleventh Sorts, grow in ſeveral Places in the *Eaſt* and *Weſt-Indies*; for by ſeveral Writers they are mentioned to grow in the *Eaſt*, and I have received Fruit of all theſe Sorts from the *Weſt Indies*.

The ſeventh Sort is a Native of the *Eaſt-Indies*, from whence the Fruit have been brought to *England*; but I have not heard that this Kind grows in any Part of *America*. This is one of the moſt beautiful Plants, of all the Kind of *Palms*, and deſerves a Place in every good Stove. It is alſo of quicker Growth than moſt of the other Sorts; for I have known a Plant of this Kind, riſe to have a fine Stem, in eight or nine Years from the ſowing; whereas ſome of the other Kinds will not form a Stem in twenty Years.

Theſe Sorts may be all propagated by their Fruit, which ſhould be put into Pots early in the Spring of the Year, and plunged into a Hot-bed of Tanners-bark; and when the Plants are come up, they ſhould be treated in the ſame Manner as is directed in the former Part of this Article; but muſt take Notice, that ſome of theſe Sorts, whoſe Fruit have hard Shells, will remain in the Ground a whole Year before the Plants will come up, ſo that the Fruit ſhould not be thrown out of the Pots, unleſs they are rotten.

The Cocoa-nut is cultivated in moſt of the inhabited Parts of the *Eaſt* and *Weſt-Indies*, but is ſuppoſed a Native of the *Maldives*, and the deſart Iſlands of the *Eaſt-Indies*: From whence it is ſuppoſed it hath been tranſported to all the warm Parts of *America*: for it is not found in any of the inland Parts, nor any where far diſtant from Settlements. It is one of the moſt uſeful Trees to the Inhabitants of *America*, who have many of their common Neceſſaries of Life from it. The Bark of the Nut is made into Cordage, the Shell of the Nut into Drinking-bowls; the Kernel of the Nut affords them a wholſome Food, and the Milk contained in the Shell a cooling Liquor. The Leaves of the Trees are uſed for thatching their Houſes, and are alſo wrought into Baſkets, and moſt other Things which are made of Oſiers in *Europe*.

This Tree is propagated by planting of the Nuts, which in ſix Weeks or two Months after planting will come up, provided they are freſh, and thoroughly ripe, which is what few of them are, which are brought to *England*; for they always gather them before they are ripe, that they may keep during their Paſſage. So that the beſt way to bring the Nuts to *England* for planting, would be to take ſuch of them as are fully ripe, and put them up in dry Sand in a Tub, where the Vermin may not come to them; and theſe will often ſprout in their Paſſage, which will be an Advantage, becauſe then they may be immediately planted in Pots of Earth, and plunged into the Bark-bed.

Theſe Plants, in the hot Iſlands of *America*, make conſiderable Progreſs in their Growth; in which Places there are ſome Trees of very great Magnitude; but in *Europe*, this Plant is of much ſlower Growth, being many Years before it advances to any conſiderable Height; but as the young Leaves of theſe Plants are pretty large, ſo they make a good Appearance amongſt other tender exotic Plants, in one or two Years time. This Plant is preſerved in ſome curious Gardens in *England*, for Variety, where it muſt be placed in the Bark-ſtove, and managed as hath been directed for for the other Kinds of Palms; obſerving, as often as they are tranſplanted, not to cut their ſtrong Roots, which is generally Death to moſt of the Palm-kind. Theſe Plants muſt not be too much confined in their Roots; for if they are, they will make but little Progreſs: Therefore, when the young Plants have filled the Pots with their Roots, they ſhould be ſhifted into Tubs of a moderate Size, that their Roots may have room to extend: but theſe Tubs muſt be kept conſtantly plunged into the Bark-bed, otherwiſe the Plants will not thrive. The Method of raiſing theſe Plants from the Nuts, when they are planted before they have ſprouted, is fully deſcribed under the Article of raiſing exotic Seeds, in the former Part of this Work, to which the Reader is deſired to turn, to avoid Repetition.

All the Sorts of Palm-trees are Male and Female in different Trees, and it hath been always ſuppoſed neceſſary, that the two ſhould grow near each other, that the Male-tree might impregnate the Female, in order to render the Female fruitful: and where it has ſo happened that a Female Tree grew ſingly, it has been aſſerted that the Inhabitants have carried Branches of the Male-flowers, taken from Trees which grew at a Diſtance, and have faſtened them to the Female Trees, without which they have inſiſted, that the Female Trees would not produce any Fruit. But this is refuted by Father *Labat*, who affirms, that he knew a ſingle Tree of the Date-bearing Palm, which grew by the Side of an antient Convent in *Martinico*, which produced a large Quantity of fair Fruit annually; tho' there was not any other Palm-tree which grew within two Leagues of this: But he alſo affirms, that the Stones of theſe Dates would not grow; for they had planted many of them for ſeveral Years ſucceſſively, without ever raiſing a ſingle Plant; and were afterwards obliged to procure ſome Dates from *Barbary*, in order to propagate them. So that he conjectures, that all the Female Trees may produce Fruit, which may appear very fair to the Eye; but upon Examination they will be found to want the Gem or Bud, which is the Embryo of the future Plant.

This may account for the Fruit of the different Sorts of Palms not growing when they are brought to *England*; for if they are gathered from a Tree growing ſingly, having no Male Tree near it to impregnate the Ovary, it may be the true Cauſe why they do not ſucceed. Therefore thoſe Perſons who collect theſe Fruit to propagate them, ſhould always obſerve to take them from ſuch Trees as grow in the Neighbourhood of the Male.

PANCRATIUM, Sea-daffodil.

The *Characters* are;

It hath a tubulous lily-ſhaped Flower, conſiſting of one Leaf, which is deeply cut into ſix Parts; in the Middle is a Cup, which is bell-ſhaped and ſix-cornered, having a Chive proceeding from each Corner, and is joined thereto as a Part of the Cup, being of the ſame Colour at Bottom; but the Part immediately under the Apex is green: In the Centre riſes the Pointal, which extends beyond the Chives. The Empalement afterwards becomes a roundiſh Fruit, which is triangular, and divided into three Parts containing many flat or roundiſh Seeds.

The *Species* are;

1. Pancratium *Monſpeſulanum, multis Scilla alba parva. J. B.* Sea-daffadil of *Montpelier*, by many called the leſſer white Squill.

2. Pancratium *floribus rubris. Lob. Pan.* Sea-daffodil with red Flowers.

3. Pancratium *Illyricum, floribus albis.* Sea-daffodil of *Illyricum*, commonly called the third *Narciſſus* of *Matthiolus*.

4. Pancratium *Americanum, floribus niveis, odore balſami Peruviani. American* Sea-daffodil, with ſnowy Flowers, ſmelling like the Balſam of *Peru*.

5. Pancratium *Americanum, foliis latiſſimis, floribus niveis majoribus, odore balſami Peruviani. American* Sea-daffodil, with very broad Leaves, and large ſnowy Flowers, ſmelling like the Balſam of *Peru*.

6. Pancratium *alterum vernum Indicum. J. B.* Another *Indian* Sea-daffodil of the Spring.

7. Pancratium *Zeylanicum, flore albo odorato.* Sea-daffodil of *Ceylon*, with white ſweet-ſmelling Flowers.

The firſt Sort is very common on the Sea-coaſts of the *Mediterranean*, where it grows in the Sands. The ſecond is a Variety of the firſt, differing only in the Colour of its Flower. The third Sort grows plentifully on the Sands near *Naples*, and in *Sicily*, as alſo in ſeveral Iſlands of the *Archipelago*, but particularly in *Zant*, where all the Ditches are ſtored with it.

Theſe Plants are very hardy in reſpect to Cold, and may be propagated by Off-ſets from the Roots: for though they produce ripe Seeds in *England*, yet as the ſeedling Plants are many Years before they come to flower, ſo they are ſeldom propagated that Way. Theſe Roots ſhould be tranſplanted in *July*, after the Leaves and Flower-ſtems are decayed; they ſhould be planted in an Eaſt Border, where they will thrive very well, and continue longer in Flower than when they are more expoſed to the Sun; but in every other reſpect they may be treated as hath been directed for the better Sort of *Narciſſus*.

The other four Sorts are very tender, and will not live in *England*, unleſs they are preſerved in the warmeſt Stoves. Theſe may be procured from the Countries of their natural Growth, from whence their Bulbs may be eaſily brought, if they are taken out of the Ground when their Leaves begin to decay; and after drying them in the Shade, they ſhould be put up in Nets or Bags, and hung up, that the Vermin may not come to them.

The fourth Sort is very common in *Jamaica*, and moſt of the Iſlands of *America*: The fifth Sort was brought from the *Bahama-Iſlands*; the ſixth is very common in the *Spaniſh Weſt-Indies*: and the ſeventh is a Native of the Iſland of *Ceylon*.

All theſe Plants increaſe by Off-ſets from their Roots, and flower extremely well, if they are planted in Pots filled with light rich Earth, and plunged into the Bark-bed in the Stove, and managed as hath been directed for the tender Sorts of Lilio-Narciſſus.

PANICLE: A *Panicle* is a Stalk diffuſed into ſeveral Pedicles, or Foot-ſtalks, ſuſtaining the Flowers or Fruits, as in *Oats*, &c.

PANICUM, Panic.

The *Characters* are;

It is a Plant of the millet Kind, differing from that, by the Diſpoſition of the Flowers and Seeds, which, of this, grow in a cloſe thick Spike.

The *Species* are;

1. Panicum *Germanicum, ſive paniculâ minore flaviâ. C. B. P.* Yellow *German* Panic, with a ſmaller Spike.
2. Panicum *Germanicum, ſive paniculâ minore albâ. C. B. P.* White *German* Panic, with a ſmaller Spike.
3. Panicum *Germanicum, ſive paniculâ minore purpureâ. C. B. P.* Purple *German* Panic, with a ſmaller Spike.
4. Panicum *Italicum, ſive paniculâ majore. C. B. P. Italian* Panic, with a larger Spike.
5. Panicum *Indicum, ſpicâ obtuſâ cœruleâ. C. B. P. Indian* Panic, with a blue obtuſe Spike.
6. Panicum *Indicum, ſpicâ longiſſimâ. C. B. P. Indian* Panic, with a very long Spike.
7. Panicum *Americanum, ſpicâ obtuſâ brevi Inſt. R. H. American* Panic, with a ſhort obtuſe Spike.
8. Panicum *Americanum, ſpicâ longiore acutâ. Inſt. R. H. American* Panic, with a longer pointed Spike.
9. Panicum *Indicum altiſſimum, ſpicis ſimplicibus, mollibus, in foliorum alis longiſſimis pediculis inſidentibus. Inſt. R. H.* The talleſt *Indian* Panic, with a ſoft ſingle Spike, which is produced on a long Foot-ſtalk from the Wing of the Leaf.

The three firſt Sorts are only Varieties, which differ in the Colour of the Grain. Theſe are ſowed in ſeveral Parts of *Europe*, in the Fields, as Corn, for the Suſtenance of the Inhabitants; but it is reckoned not to afford ſo good Nouriſhment as *Millet*; however it is frequently uſed in ſome Parts of *Germany*, to make Puddings, Cakes and Bread. This is not ſo much eſteemed as the *Italian* Sort; but as it will ripen better in cold Countries than that, ſo it is generally cultivated, where a better Sort of Grain will not ſucceed.

The Seeds of theſe Sorts may be ſown in the Spring, at the ſame Time as *Barley* is ſown, and may be managed exactly in the ſame Way: but this ſhould not be ſown too thick; for theſe Seeds are very ſmall, and the Plants grow ſtronger, therefore require more Room. The *German* Sort doth not grow above three Feet high, unleſs it is ſown on very rich Land, in which Caſe it will riſe to be four Feet high; but the Leaves and Stems of this Corn are very large, ſo require to ſtand four or five Inches apart, otherwiſe they will grow up weak, and come to little. Theſe large growing Corns ſhould be ſown in Drills at about eighteen Inches apart, ſo that the Ground may be houghed between the Rows of Corn, to keep them clear from Weeds, and the ſtirring of the Ground will greatly improve the Corn. In *July* the Corn will ripen, when it may be cut down and dried, and then ſhould be houſed.

The *Italian* Panic grows much larger than the *German*, and produces much larger Spikes; ſo this ſhould be allowed more Room to grow, and otherwiſe it will come to little. This is alſo later before it ripens, ſo is not very proper for cold Countries.

The other Sorts are Natives of very warm Countries, where they are uſed by the Inhabitants to make Bread. Theſe grow very large, and require a good Summer, otherwiſe they will not ripen in this Country. The Seeds of theſe Kinds ſhould be ſown the latter End of *March*, or the Beginning of *April*, on a Bed of light rich Earth, in a warm Situation. They ſhould be ſown in Drills about three Feet aſunder, and when the Plants come up, they muſt be kept clear from Weeds, and thinned where they are too cloſe. When the Plants are grown pretty tall, they ſhould be ſupported by Stakes, otherwiſe the Winds will break them down; and when the Corn begins to ripen, the Birds muſt be kept from it, otherwiſe they will ſoon deſtroy it. Theſe Sorts are preſerved in ſome curious Gardens for the ſake of Variety, but they are not worth cultivating for Uſe in *England*.

PANSIES, *vide* Viola *Tricolor*.

PAPAVER. Poppy.

The *Characters* are;

The Flower, for the moſt Part, conſiſts of four Leaves, which are plac'd orbicularly, and expand in Form of a Roſe out of whoſe Flower-cup (which conſiſts of two Leaves) riſes the Pointal, which afterwards becomes a Fruit or Pod, which is oval or oblong, and adorn'd with a little Head; under which, in ſome Species, is open'd a Series of Holes quite round, into the Cavity of the Fruit, which is defended lengthwiſe with various Leaves or Plates, to which a great Number of very ſmall Seeds adhere.

The *Species* are;

1. Papaver *hortenſe, ſemine albo, ſativum Dioſcoridis, album Plinio. C. B. C.* Garden Poppy, with white Seeds.
2. Papaver *hortenſe, ſemine nigro, ſylveſtre Dioſcoridis, nigrum Plinio. C. B. P.* Garden Poppy, with black Seeds.
3. Papaver *flore pleno, rubrum. Hort. Eyſt.* Double Red Poppy.
4. Papaver *flore pleno, album. C. B. P.* Double White Poppy.
5. Papaver *flore pleno purpureo. C. B. P.* Double Purple Poppy.
6. Papaver *pleno flore, nigrum. C. B. P.* Black Double-flower'd Poppy.
7. Papaver *laciniatis floribus. C. B. P.* Poppy with jagged Flowers.
8. Papaver *flore pleno laciniato eleganter ſtriato. Hort. Ed.* Double jagged Poppy, with beautiful ſtrip'd Flowers.
9. Papaver *Orientale hirſutiſſimum, flore magno. T. Cor.* Very rough Oriental Poppy, with a large Flower.
10. Papaver *erraticum majus*, ῥοιὰς *Dioſcoridi Plinio, Theophraſto. C. B. P.* Red Poppy, *or* Corn Roſe.
11. Papaver *erraticum majus, foliis florum variegatis. H. R. Par.* Great Wild Poppy, whoſe Flower-leaves are variegated.
12. Papaver *erraticum, flore pleno. C. B. P.* Double Wild Poppy, *commonly called* The Dwarf Poppy.
13. Papaver *erraticum, flore pleno miniato. H. R. Par.* Wild Poppy, with a double Vermilion-colour'd Flower.
14. Papaver *erraticum, flore pleno igneo. H. R. Par.* Wild Poppy, with a double fiery Flower.
15. Papaver *erraticum, flore pleno igneo, marginibus candidis. H. L.* Wild Poppy, with a double fiery Flower, edg'd with white.
16. Papaver *erraticum, flore pleno Phœnicio, unguibus albis. H. R.* Wild Poppy, with a double purple Flower and white Bottom.

17. Papaver *erraticum minus. C. B. P.* Leſſer Wild Poppy, *or* Dwarf Poppy.

18. Papaver *luteum perenne, laciniato folio, Cambro-Britannicum. Raii Syn.* Welſh, *or* Yellow Wild Baſtard Poppy.

The firſt Sort is cultivated in Gardens for medicinal Uſe, and is by ſome ſuppos'd to be the Plant from whence the *Opium* is procured: Of this there are ſeveral Varieties, which chiefly differ in the Colour of their Flowers; but they are no more than ſeminal Variations, and therefore not worth enumerating in this Place.

The *Black Poppy* grows wild in divers Parts of *England*: The Seeds of this Kind are ſold to feed Birds, by the Name of *Maw Seed*. Of this Sort there are a vaſt Number of Varieties ſome of which produce exceeding large Double Flowers of various Colours, and beautifully ſtrip'd: but theſe are apt to vary from Seed; therefore you ſhould never ſave the Seeds of any but ſuch as are very double, and well-colour'd, from which you may always expect to have good Sorts produc'd.

The *Oriental Poppy* is an abiding Plant, which produces a large ſingle Flower in *May*, which makes a beautiful Appearance: This may be propagated from Seeds, or by parting their Roots; the beſt time to tranſplant them is at the Beginning of *March*: This muſt have a light Soil, and a warm Situation.

The *Red Poppy*, or *Corn Roſe*, is never propagated in Gardens, but is very common upon chalky dry Soils in almoſt every Part of *England*, where the Plants come up amongſt the Corn, and are very troubleſome. The Flowers of this Kind are brought into the Markets for Medicinal Uſe. There are many Varieties of this Plant with double Flowers, which are cultivated in the Flower Garden, but eſpecially the Dwarf Sort, of which there are ſome with very double Flowers, which are beautifully edged with white; theſe are by many Perſons ſown for Edgings to the large Borders of the Pleaſure-garden; tho' I think them no ways proper for this, ſince their Flowers are but of a ſhort Duration; and the Plants, when their Seeds are perfected, do immediately decay, ſo that they appear unſightly. Beſides, where they grow very cloſe, the Flowers are generally ſmall: but if they are ſown in Patches upon the Borders, and when the Plants come up, are thinned out, ſo as to leave but three or four in each Place, they will flower very well, and look very beautifully.

All the Sorts of *Poppies* ſhould be ſown in *Autumn*; (for when they are ſown in the *Spring*, the Plants have not Time enough to get Strength before the hot Weather cauſes them to run up to flower; ſo that their Flowers are never ſo large or double as thoſe ſown in the *Autumn*). When the Plants come up, they ſhould be carefully clear'd from Weeds, which is all the Culture they require, (except to pull them up where they are too thick); for they thrive better when they are ſuffer'd to remain where they were ſown, than if they were tranſplanted: but you ſhould obſerve to let them have Room in Proportion to the Growth of the Plants. This Sort firſt mention'd grows very large, and tall, therefore ſhould be not cloſer than eight or ten Inches. But the *Black* Sort, may ſtand ſomewhat nearer; tho' this appears handſomer when the Plants ſtand ſingle; therefore it is the better way to ſcatter the Seeds of thoſe which have beautiful Flowers very thin over the Borders of the Flower-garden: and when the Plants come up they may be pull'd out where they are not well ſituated, leaving here and there a Plant, as the other Flowers in the Borders will admit, where, at the Seaſon of their Flowering, they will make a pretty Variety amongſt the Flowers: but they are of ſhort Duration; and having an ill Scent, they are leſs eſteem'd of late Years, ſince the Plenty of other more valuable Flowers.

PAPAVER CORNICULATUM: *vide* Glaucium.

PAPAVER SPINOSUM: *vide* Argemone.

PAPAYA, Papaw-Tree.

The *Characters* are;

It hath a ſimple Stalk: the Flowers are Male and Female in different Plants; the Male Flowers (which are barren) are tubulous, conſiſting of one Leaf, and expand in the form of a Star: the Female Flowers conſiſt of ſeveral Leaves, which expand in form of a Roſe, *out of whoſe Flower-cup riſes the Pointal, which afterwards becomes a fleſhy Fruit, ſhaped like a* Cucumber *or* Melon, *containing many ſmall oblong furrow'd Seeds.*

The *Species* are;

1. Papaya *fructu Melopeponis effigie. Plum.* The Female Papaw-Tree, bearing a Fruit like the *Melopepo*.

2. Papaya *fructu maximo, Peponis effigie. Plum.* The Female Papaw-Tree, bearing a Fruit like the *Pumkin*.

3. Papaya *mas. Boerh. Ind.* The Male Papaw-Tree.

Theſe Plants are very common in the *Caribbee Iſlands*, where they ariſe from Seeds, and will produce Fruit in eight or ten Months after.

The Fruit is cut before it is ripe, and afterwards ſliced and ſoak'd in Water until the milky Juice be out, and then boil'd and eat as *Turneps*, or baked as *Apples*; and when ripe, it is eaten as *Melons* with Pepper and Sugar, by the Inhabitants of thoſe Countries.

The Flowers of the Male Sort, as alſo the Fruit of the Female, are preſerved, and ſent over as a Sweetmeat to *Europe*, and are ſaid to be very cooling and cordial.

In *England* theſe Plants are preſerved as Curioſities, by ſuch as delight in Exoticks: they are eaſily raiſed from the Seeds, (which are generally brought from the *Weſt Indies* in Plenty every Year) which ſhould be ſown upon a Hot-bed in *February* or *March*; and when the Plants are come up, they ſhould be planted each in a ſeparate ſmall Pot fill'd with rich light Earth, and plunged into a moderate Hot-bed of Tanners-bark, obſerving to water and ſhade them until they have taken Root; after which, you ſhould let them have Air in Proportion to the Warmth of the Seaſon, by raiſing the Glaſſes with Bricks, &c. and you muſt often refreſh them with Water.

When the Plants have grown ſo as to fill the Pots with their Roots, they muſt be ſhaken out of them, preſerving the Earth as intire as poſſible to their Roots, and placed in larger Pots, which ſhould be fill'd with the ſame light Earth, and plunged again into the Hot-bed, obſerving to give them Air and Water, as was before directed: and thus from time to time, as the Plants increaſe their Stature, you ſhould ſhift them into larger Pots, which will cauſe them to be very ſtrong; and if you keep them in the Hot-bed all the *Summer*, and give them due attendance, they will riſe to ſix or ſeven Feet High before *Winter*.

In *October* they ſhould be placed into a new Hot-bed in the Bark-ſtove with other tender Exotick Plants, where, during the Winter Seaſon, they muſt be carefully look'd after, to water and cleanſe them well from Vermin and Filth; and the Stove ſhould be kept nearly to the *Anana's* Heat, as mark'd on Mr. *Fowler's Thermometers*, in which they will thrive and retain their beautiful large Leaves all the *Winter*: and the Male Sort will often continue to produce freſh Flowers all that Seaſon, provided you do not keep them too dry. The ſecond Year the Female Sort will flower, and, if duly attended, will perfect the Fruit the following *Spring*.

Theſe Plants make a very beautiful Appearance (when grown large) amongſt other curious Exoticks in the Stove, and deſerve a Place in every good Collection of rare Plants.

PAPILIONACEOUS: A *Papilionaceous* (or *Pea-bloom*) *Flower*, is ſo call'd, becauſe, in ſome meaſure, it reſembles a Butterfly with its Wings expanded: it always conſiſts of theſe four Parts; the *Vexillum* or Standard, which is a large erect Segment or Petal; the *Alæ* or two Wings, which compoſe the Sides; and the *Carina* or Keel, which is a concave Petal or Segment, reſembling the lower Part of a Boat; this Keel is ſometimes intire, and ſometimes it conſiſts of two Petals or Segments adhering pretty cloſely together: Of this Tribe are *Peas*, *Beans*, *Kidney-Beans*, *Vetches*, and other Leguminous Plants.

PAPPOSE PLANTS, are ſuch as have their Seeds cover'd with a Down, which adheres to the upper Part of the Seed, and are of Uſe to ſpread them when ripe, by ſuſtaining them in the Air, ſo that they may be convey'd to a great Diſtance: Of this Kind are the *Sow-thiſtles*, *Hawkweeds*, *Dandelion*, *Starworts*, &c.

PARASITICAL PLANTS, are ſuch as are produced out of the Trunk or Branches of other Plants, from whence they receive their Nouriſhment, and will not grow upon the Ground, as the *Miſletoe*, &c.

PARIETARIA, [ſo called of *Paries*, Lat. a *Wall*, becauſe it grows on old Walls] Pellitory.

The *Characters* are;

It hath an apetalous Flower, whoſe Flower-cup is divided into four Parts, which is ſometimes Bell-ſhaped, and at other *times ſhaped like a Funnel, with four* Stamina *(or Threads) ſurrounding the Pointal; which Pointal becomes, for the moſt part, an oblong Seed, ſurrounded by the Flower-cup: to which may be added, the Flowers are produced from the Wings of the Leaves.*

The *Species* are;

1. PARIETARIA *officinarum, & Dioſcoridis. C. B. P.* Pellitory of the Wall.
2. PARIETARIA *minor, Ocymi folio. C. B. P.* Leſſer Pellitory, with a Baſil Leaf.

The firſt of theſe Plants is ſuppoſed to be the true Sort which is recommended by *Dioſcoridis* for Medicinal Uſe: this is the moſt common in *Germany*, and ſome other Countries; but it is very different from that which grows wild in *England*, which is more like the ſecond Sort, tho' I can't poſitively affirm it to be the ſame.

Theſe Plants grow wild upon old Walls and Buildings in great Plenty; but may be cultivated by ſowing their Seeds in *Autumn*, upon a dry gravelly or ſtony Soil, where they will thrive much better than in a richer Soil, and are preferable for Uſe to thoſe which grow in a moiſt rich Ground; for tho' in ſuch Places they will often be very rank, yet they are not near ſo ſtrongly ſcented.

PARKINSONIA.

The *Characters* are;

It hath a polypetalous anomalous Flower, conſiſting of five diſſimilar Leaves, from whoſe Cup ariſes the Pointal, which afterward becomes a rough jointed Point, each Knot or Joint containing one kidney-ſhaped Seed.

We know but one *Species* of this Plant, which is;

PARKINSONIA *aculeata, foliis minutis, uni coſtæ adnexis. Plum. Nov. Gen.* Prickly Parkinſonia, with very ſmall Leaves, faſtened to one Middle Rib.

This Plant was diſcovered by Father *Plumier* in *America*, who gave it this Name in Honour to the Memory of Mr. *John Parkinſon*, who publiſhed a univerſal Hiſtory of Plants in *Engliſh*, in the Year 1640.

It is very common in the *Spaniſh Weſt-Indies*, but of late Years it has been introdued into the *Engliſh* Settlements in *America*, for the Beauty and Sweetneſs of its Flowers. This in the Countries where it grows, naturally riſes to be a Tree of twenty Feet high or more, and bears long ſlender Bunches of yellow Flowers, which hang down after the ſame Manner as the *Laburnum*. Theſe Flowers have a moſt agreeable ſweet Scent, ſo as to perfume the Air to a conſiderable Diſtance round about the Trees; for which Reaſon the Inhabitants of the *Weſt-Indies* plant them near their Habitations. And tho' this Plant has not been introduced many Years into the *Engliſh* Settlements, yet it is now become ſo common in all the Iſlands, that but few Houſes are without ſome of the Trees near it; for it produces Flowers and Seeds in Plenty, in about two Years, from Seed; ſo that it may ſoon be made common in all hot Countries: but in *Europe* it requires a Stove, otherwiſe it will not live thro' the Winter.

This Plant is propagated by Seeds, which ſhould be ſown in ſmall Pots filled with light freſh Earth early in the Spring, and the Pots muſt be plunged into a Hot-bed of Tanners-bark, where, in about three Weeks or a Month's Time, the Plants will come up; when they ſhould be kept clear from Weeds, and frequently refreſhed with Water. In a little Time theſe Plants will be fit to tranſplant; which ſhould be done very carefully, ſo as not to injure their Roots. They muſt be each planted into a ſeparate halfpenny Pot filled with light freſh Earth, and then plunged into the Hot-bed again, obſerving to ſtir up the Tan; and if it hath loſt its Heat, there ſhould be ſome freſh Tan added, to renew the Heat again. Then ſhade the Plants from the Heat of the Sun, until they have taken new Root; after which Time they ſhould have freſh Air admitted to them every Day, in proportion to the Warmth of the Seaſon, by raiſing of the Glaſſes of the Hot-bed with bricks or Stones; and they muſt be conſtantly ſupplied with Water every other Day, in warm Weather. With this Management the Plants will grow ſo faſt, as to fill the Pots with their Roots by the Beginning of *July*. At which Time they ſhould be ſhifted into Pots a little larger than the former, and plunged again into the Bark-bed, provided the Plants are not too tall to remain under the Frame, without Danger of being ſcorched by the Glaſſes; in which Caſe they muſt be plunged into the Bark-bed in the Stove, where they may have Room to grow.

As theſe Plants are very tender, ſo they ſhould be conſtantly kept in the Bark-ſtove, with other tender exotic Plants of the ſame Country, obſerving in the Winter Seaſon to refreſh them two or three times a Week with Water, but it ſhould be given to them ſparingly in cold Weather. In Summer they muſt be ſupplied more plentifully with Water, and ſhould have a large Share of free Air in hot Weather. The Plants muſt alſo be ſhifted every Year, and as they grow in Magnitude, ſo they ſhould be allowed larger Pots, being careful not to over-pot them; which is very injurious to moſt Plants, but eſpecially to theſe very tender ones. If the Plants thrive, they will produce Flowers the third Year, when they will make a fine Appearance in the Stove.

PARNASSIA, Graſs of *Parnaſſus.*

The *Characters* are;

It hath a roſe-ſhaped Flower, conſiſting of five Leaves, at the bottom which are ſmall, fringed, and noted leaves, of a greeniſh Colour, and placed orbicularly; out of the Flower-cup riſes the Pointal, which afterward turns to a membranaceous Fruit, which is oval, having but one Cell, which is filled with Seeds, that for the moſt part adhere to a four-fold Placenta.

The *Species* are;

1. PARNASSIA *paluſtris & vulgaris. Inſt. R. H.* Common Marſh-graſs of *Parnaſſus.*
2. PARNASSIA *vulgaris, flore pleno.* Common Graſs of *Parnaſſus*; with a double Flower.

The former of theſe Sorts grows wild in moiſt Meadows, in ſeveral Parts of *England*, but particularly in the *North*; but it doth not grow in the Neighbourhood of *London*, any nearer than on the other Side of *Watford*, in the low Meadows by *Caſſioberry*, where it is in pretty great Plenty.

The other Sort is an accidental Variety of the former, which has been diſcovered wild, and tranſplanted into Gardens. This is but rarely to be found, being in very few Gardens at preſent.

Theſe Plants may be taken up from the natural Places of their Growth, with Balls of Earth to their Roots, and planted into Pots filled with pretty ſtrong freſh undunged Earth, and placed in a ſhady Situation, where, if they are conſtantly watered, they will thrive very well, and flower every Summer. But if the Plants are planted in the full Ground, it ſhould be in a very moiſt ſhady Border, otherwiſe they will not live; and theſe ſhould be as duly watered, as thoſe in the Pots in dry Weather, to make them produce ſtrong Flowers.

They may be propagated by parting of their Roots, which ſhould be done in *March*, before they put out new Leaves; but the Roots ſhould not be divided too ſmall, for that will prevent their Flowering the following Summer; theſe Roots ſhould always be planted in pretty ſtrong freſh Earth, for they will not thrive in a light rich Soil. In the Spring they muſt be conſtantly watered, if the Seaſon ſhould prove dry, otherwiſe they will not flower, nor ſhould they be parted oftener than every other Year, to have them ſtrong. Theſe Plants flower in *July*, and their Seeds are ripe the latter End of *Auguſt*.

It is called *Parnaſſia*, from *Mount Parnaſſus*, on which it was ſuppoſed to grow; and from the Cattle feeding on it, it was called a Graſs, tho' the Plant has no Reſemblance to any of the Graſs-kind, but is more like to the *Ranunculus* in Flower, and the Leaves are pretty broad, oblong and ſmooth.

PARONYCHIA, Mountain Knot-graſs.

The *Characters* are;

It hath an apetalous Flower, conſiſting of ſeveral Chives, which riſe from the Flower-cup, which is ſhaped like the Pelvis, and cut into five Parts for the moſt part like a Crown; the Pointal afterwards becomes a round Seed, wrapt up in a five-cornered Huſk, which was before the Flower-cup.

The *Species* are;

1. PARONYCHIA *Hiſpanica. Cluſ. Hiſp.* Spaniſh Mountain Knot-graſs.
2. PARONYCHIA *Narbonenſis erecta. Inſt. R. H.* Upright Mountain Knot-graſs of *Narbonne.*
3. PARONYCHIA *Hiſpanica ſupina Alſine folia, capitulis minus compactis. Inſt. R. H.* Low *Spaniſh* Mountain Knot-graſs,

graſs, with a thickweed Leaf, and the Heads leſs compact.

4. PARONYCHIA *Hiſpanica fruticoſa, myrti folio. Inſt. R. H.* Shrubby *Spaniſh* Mountain Knot-graſs, with a myrtle Leaf.

5. PARONYCHIA *Luſitanica, polygoni folio, capitulis echinatis. Inſt. R. H. Portugal* Mountain Knot-graſs, with prickly Heads.

6. PARONYCHIA *Orientalis humifuſa, ſerpilli folio. Tourn. Cor.* Dwarf Eaſtern Mountain Knot-graſs, with a Mother of Thyme-leaf.

The five Sorts firſt mentioned grow wild in *Spain, Portugal* and the *South* of *France*, where they generally are found near the Sea, on the Sides of Banks; but the ſixth Sort was diſcovered by Dr. *Tournefort* in the *Levant*. They are all (except the ſecond and fourth Sorts) low Plants, which trail on the Ground, in the ſame Manner as our common Knot-graſs, but continue ſeveral Years.

Theſe Plants are preſerved by thoſe who are curious in Botany, for the ſake of Variety; but are ſeldom admitted into other Gardens: tho' the firſt Sort may have Room in every good Garden, for the fine Appearance it makes in Autumn, when the ſilvery ſcaly Heads, which are produced at every Joint of the Branches, make a goodly Shew.

They may all be propagated by ſowing of their Seeds on a Bed of light freſh Earth, in an open Situation, about the Middle or latter End of *March*; and when the Plants come up, they ſhould be carefully weeded; and if the Seaſon ſhould prove dry, they muſt be now and then watered. When the Plants are large enough to tranſplant, they ſhould be carefully taken up, and ſome of them planted in Pots, and the others on a warm Border, where they may be ſheltered in Winter, otherwiſe they will not live in this Country. Thoſe which are planted in Pots, ſhould be placed under a Hot-bed Frame, where they may be ſcreened from hard Froſts, but ſhould have as much free Air as poſſible in mild Weather. With this management the Plants may be preſerved many Years, and will flower every Seaſon; but they rarely produce any Seeds in this Country.

PARSLEY: *vide* Apium.

PARSNIP: *vide* Paſtinaca.

PARTERRE, is a level Diviſion of Ground, which, for the moſt part, faces the South and beſt Front of an Houſe, and is generally furniſh'd with *Greens, Flowers*, &c.

There are ſeveral Sorts of *Parterres*, as *Bowling-green* or *Plain, Parterres* of *Embroidery*, &c.

Plain Parterres are more beautiful in *England* than in any other Countries, by reaſon of the Excellency of our Turf, and that Decency and unaffected Simplicity that it affords to the Eye of the Spectator.

Others are cut into Shell and Scroll-work, with Sand-Alleys between them, which are the fineſt *Parterre* Works eſteem'd in *England*.

As to the general Proportion of *Parterres*, an Oblong or Long Square is accounted the moſt proper Figure for a *Parterre*; becauſe by the Rules of *Perſpective*, or the natural Declenſion of the viſual Rays in *Opticks*, a long Square ſinks almoſt to a Square, and an exact Square appears much leſs than it really is; therefore a *Parterre* ſhould not be leſs than twice as long as it is broad; twice and a half is accounted a very good Proportion, and it is very rare that three times is exceeded.

As to the Breadth of a *Parterre*, it is to take its Dimenſions from the Breadth of the Front of the Houſe: if it be not above an hundred Feet, it will be too narrow; and if the Front be two hundred Feet, the *Parterre* muſt be of the ſame Breadth.

Some do not approve of making *Parterres* very broad, becauſe it makes them appear too ſhort; when nothing is more pleaſing to the Eye, than a contracted regular Conduct and View, as ſoon as a Perſon goes out of an Houſe or Building: and a forward direct View is the beſt, whether it be either *Parterre* or *Lawn*, or any other open Space, either two, three, or four-fold to the Width: and for that Reaſon, thoſe Deſigns may juſtly be diſapproved, by which the Nobleneſs of the View is marred at the immediate Entrance into the Garden, the Angle of Light being broken and confuſed.

The making of *Parterres* too large, cauſes a great Expence, and at the ſame time occaſions a Dimunition of Wood, which is conſequently the moſt valuable Part of a Garden.

There ſhould be a Terraſs Walk on each Side the *Parterre*, for an Elevation proper for View; and therefore there ſhould never be the Flat of a *Parterre* between Terraſs Walk and Terraſs Walk above three hundred Feet; nor can it be well made leſs than an hundred and forty; and then the Length, at twice and a half the Breadth, would be three hundred and fifty Feet, which ſome account a handſome proportion.

As to the adorning and furniſhing theſe *Parterres*, whether it be plain, or with Embroidery, that depends much upon the Form of them, and therefore muſt be left to the Judgment and Fancy of the Deſigner.

PARTHENIASTRUM, Baſtard Feaverfew.

The *Characters* are:

It hath a radiated diſcous Flower, conſiſting of ſeveral Florets, which occupy the Diſk, but are barren; the half Florets, which are ſhaped like a Heart, are ſucceeded by black Seeds, which are naked, having no Down adhering to them: To which may be added, The Flower-cup is ſimple, and cut into five Parts to the Bottom.

The *Species* are;

1. PARTHENIASTRUM *artemiſiæ folio, flore albo. Acad. Reg. Scien.* Baſtard Feaverfew, with a Mugwort Leaf, and a white Flower.

2. PARTHENIASTRUM *helenii folio. Hort. Elth.* Baſtard Feaverfew, with an Elecampane Leaf.

The firſt Sort grows wild in great plenty in the Iſland of *Jamaica*, and in ſome other of the *Engliſh* Settlements in the *Weſt-Indies*, where it is called Wild Wormwood, and is uſed by the Inhabitants as a vulnerary Herb.

The ſecond Sort grows plentifully in ſeveral Parts of the *Spaniſh Weſt-Indies*, from whence the Seeds have been brought to *Europe*.

Theſe are both annual Plants, which may be propagated by ſowing of their Seeds on a Hot-bed early in the *Spring*, and when the Plants are come up, they ſhould be tranſplanted on another Hot-bed, at about five or ſix Inches Diſtance; obſerving to water and ſhade them until they have taken new Root; after which Time they muſt have a pretty large Share of freſh Air in warm Weather, by raiſing of the Glaſſes of the Hot-bed every Day; and they muſt be duly watered every other Day at leaſt. When the Plants have grown ſo as to meet each other, they ſhould be carefully taken up, preſerving a Ball of Earth to their Roots, and each planted into a ſeparate Pot, filled with light rich Earth; and if they are plunged into a moderate Hot-bed, it will greatly facilitate their taking freſh Root; but where this Convenience is wanting, the Plants ſhould be removed to a warm ſheltered Situation, where they muſt be ſhaded from the Sun until they have taken new Root; after which Time they may be expoſed, with other tender annual Plants, in a warm Situation, where they will flower in *July*, and their Seeds will ripen in *Auguſt*. But if the Seaſon ſhould prove cold and wet, it will be proper to have a Plant or two in Shelter, either in the Stove or under tall Frames, in order to have good Seeds, if thoſe Plants which are expoſed ſhould fail, whereby the *Species* may be preſerved.

PASQUE FLOWER: *vide* Pulſatilla.

PASSION FLOWER: *vide* Granadilla.

PASTINACA, [of *Paſtus*, Lat. *ſed*, becauſe it is a Plant whoſe Root is edible] Parſnip.

The *Characters* are;

It is a Plant with Roſe and umbellated Flowers, conſiſting of many Petals or Leaves placed orbicularly, and reſting on the Empalement, which turns to a Fruit, compoſed of two Seeds, which are oval, large, thin, border'd, and generally caſting off their Cover: To theſe Marks muſt be added, that the Leaves are winged and large.

The *Species* are;

1. PASTINACA *ſativa, latifolia. C. B. P.* Garden Parſnip.

2. PASTINACA *ſylveſtris, latifolia. C. B. P.* Wild Parſnip.

3. PASTINACA *ſylveſtris, altiſſima. Tourn.* The talleſt Wild Parſnip, or *Hercules*'s All-heal.

The firſt Sort grows wild in divers Parts of *England*, upon the Sides of dry Banks, and is by ſome affirmed to be no ways different from the ſecond Sort, but by Cultivation. Which is a very great Miſtake; for I have ſown the Seeds of both Sorts in the ſame Bed for ſeveral Years, but could not find that either Sort alter'd in the leaſt, the firſt ſtill retaining the ſame Smoothneſs in the Leaf, and the ſame pale Colour and Largeneſs of Root; as did the ſecond its uſual Roughneſs, dark green Colour, and ſlender Roots: Nor do I believe either Sort will alter, if they were cultivated ever ſo long.

The Root and Seed of the firſt Sort is ſometimes uſed in Medicine; but it is ſeldom cultivated in Gardens, the Markets being ſupplied from the Fields; yet the Druggiſts do commonly ſell the Seeds of the Garden Kind for it, which they may purchaſe at an eaſy Price, when it is too old to grow.

The ſecond Sort is cultivated in Kitchen Gardens, the Roots of which are large, ſweet, and accounted very nouriſhing: They are propagated by Seeds, which ſhould be ſown in *February* or *March*, in a rich mellow Soil, which muſt be well dug, that the Roots may run downward; their greateſt Excellency being the Length and Bigneſs of the Roots. Theſe may be ſown alone, or with *Carrots*, as is practiſed by the Kitchen-Gardeners near *London*, ſome of whom do alſo mix *Leeks*, *Onions* and *Lettuce* with their *Parſnips*: But this I think very wrong; for it is not poſſible that ſo many different Sorts can thrive well together, except they are allowed a conſiderable Diſtance; and if ſo, it will be equally the ſame to ſow the different Sorts ſeparate. However, *Carrots* and *Parſnips* may be ſown together very well, eſpecially where the *Carrots* are deſigned to be drawn off young; becauſe the *Parſnips* do generally ſpread moſt towards the latter End of Summer, which is after the *Carrots* are gone; ſo that there may be a double Crop upon the ſame Ground.

When the Plants are come up, you ſhould hough them out, leaving them about ten Inches or a Foot aſunder; obſerving at the ſame time to cut up all the Weeds, which, if permitted to grow, would ſoon over-bear the Plants, and choak them: This muſt be repeated three or four times in the *Spring*, according as you find the Weeds grow: But in the latter Part of *Summer*, when the Plants are ſo ſtrong as to cover the Ground, they will prevent the Growth of Weeds; ſo that after that Seaſon they will require no farther Care.

When the Leaves begin to decay, the Roots may be dug up for Uſe, before which Time they are ſeldom well-taſted; nor are they good for much late in the *Spring*, after they are ſhot out again: So that thoſe who would preſerve thoſe Roots for *Spring* Uſe, ſhould dig them up in the Beginning of *February*, and bury them in Sand, in a dry Place, where they will remain good until the Middle of *April*, or later.

If you intend to ſave the Seeds of this Plant, you ſhould make choice of ſome of the longeſt, ſtraiteſt and largeſt Roots, which ſhould be planted about two Feet aſunder, in ſome Place where they may be defended from the ſtrong South and Weſt Winds; for the Stems of theſe Plants do commonly grow to a great Height, and are very ſubject to be broken by ſtrong Winds, if expoſed thereto: They ſhould be conſtantly kept clear from Weeds; and if the Seaſon ſhould prove very dry, you muſt give them ſome Water twice a Week, which will cauſe them to produce a greater Quantity of Seeds; which will be much ſtronger than if they were wholly neglected. Toward the latter End of *Auguſt*, or the Beginning of *September*, the Seeds will be ripe, at which Time you ſhould carefully cut off the Heads, and ſpread them upon a coarſe Cloth for two or three Days, to dry; after which the Seeds ſhould be beaten off, and put up for Uſe: But you muſt never truſt to theſe Seeds after they are a Year old; for they will ſeldom grow beyond that Age.

The third Sort is preſerved in Botanic Gardens, among ſome other Sorts of theſe Plants, for Variety, but is ſeldom propagated for Uſe: This is by many ſuppoſed to be the *Panaces Syriacum* of the Antients, from whence the *Opoponax* is taken, which is ſuppoſed to be the concrete Juice of this Plant: As is the *Aſſa Fœtida* ſuppoſed to be the concrete Juice of one Species of this Plant.

All theſe Sorts may be cultivated by ſowing their Seeds early in the *Spring*, or in *Autumn*, ſoon after they are ripe, and ſhould be managed as the Garden Kind, with this difference, *viz.* the Plants ſhould not ſtand nearer than two Feet and an half Diſtance; but then they need not be reduced to this until the ſucceeding *Spring*. Theſe Roots are perenniel, and may be removed with Safety at any time after their Leaves are decayed: They ſeldom produce Seeds until the third Year after they are ſown.

PASTURE.

Paſture Ground is of two Sorts, the one is Low Meadow-land, which is often overflowed, and the other is Up-land Paſture, which lies high and dry. The firſt of theſe will produce a much greater Quantity of Hay than the latter, and will not require manuring or feeding ſo often: But then the Hay produced on the Upland is much preferable to the other, as is alſo the Meat which is fed on the Upland, more valued than that which is fatted in rich Meadows: Though the latter will make the fatter and larger Cattle, as is ſeen by thoſe which are brought from the low rich Lands of *Lincolnſhire*. But where People are nice in their Meat, they will give a much larger Price for ſuch as hath been fed on the Downs, or in ſhort Up-land Paſture, than for the other, which is much larger. Beſides this, dry Paſtures have an Advantage over the Meadows, that they may be fed all the Winter: and are not ſo ſubject to poach in wet Weather; nor will there be ſo many bad Weeds produced, which are great Advantages, and do in a great meaſure recompenſe for the Smallneſs of the Crop.

I have already mentioned the Advantages of Meadow-land, or ſuch as is capable of being overflowed with Water, and given Directions for draining and improving low Paſture-land, under the Article of Land; ſo ſhall not repeat that here, but ſhall juſt mention ſome Methods for improving of Up-land Paſture.

The firſt Improvement of Up-land Paſture, is by fencing of it, and dividing it into ſmall Fields, of four, five, ſix, eight or ten Acres each, planting of Timber-trees in the Hedge-rows, which will ſcreen the Graſs from the drying pinching Winds of *March*, which prevents the Graſs from growing in large open Lands; ſo that if *April* proves a dry Month, the Land produces very little Hay; whereas in the ſheltered Fields, the Graſs will begin to grow early in *March*, ſo will cover the Ground, and prevent the Sun from parching the Roots of the Graſs, whereby it will be kept growing ſo as to afford a tolerable Crop, if the *Spring* ſhould prove dry. But in fencing of Land, it muſt be obſerved (as was before directed) not to make the Incloſures too ſmall, eſpecially where the Hedge-rows are planted with Trees; becauſe when the Trees are advanced to a conſiderable Height, they will ſpread over the Land; and where they are cloſe, will render the Graſs ſour, ſo that, inſtead of being an Advantage, it will greatly injure the Paſture.

The next Improvement of Up-land Paſtures, is to make the Turf good, where either from the Badneſs of the Soil, or for want of proper Care, the Graſs hath been deſtroyed by Ruſhes, Buſhes, or Mole-hills. Where the Surface of the Land is clayey and cold, it may be improved by paring of it off, and burning it in the Manner before directed; but if it is a hot ſandy Land, then *Chalk*, *Lime*, *Marle* or *Clay* are very proper Manures to lay upon it; but this ſhould be laid in pretty good Quantities, otherwiſe it will be of little Service to the Land.

If the Ground is over-run with Buſhes or Ruſhes, it will be a great Advantage to the Land to grub them up toward the latter Part of the *Summer*; and after they are dried, to burn them, and ſpread the Aſhes over the Ground juſt before the Autumnal Rains; at which Time the Surface of the Land ſhould be levelled, and ſown with Graſs-ſeed, which will come up in a ſhort time, and make good Graſs the following *Spring*. So alſo, where the Land is full of Mole-hills theſe ſhould be pared off, and either burnt for the Aſhes, or ſpread immediately on the Ground, when they are pared off, obſerving alſo to ſow the bare Patches with Graſs-ſeed, juſt as the Autumnal Rains begin.

Where the Land has been thus managed, it will be o great Service to roll the Turf, in the Months of *February* and *March*, with a heavy Wood-roller, always obſerving t do it in moiſt Weather, that the Roll may make an Impreſſion. This will render the Surface level, and make it much eaſier to mow the Graſs, than when the Ground lies i Hills; and will alſo cauſe the Turf to thicken, ſo as t have what the People uſually term a good Bottom. Th Graſs will alſo be the ſweeter for this Huſbandry, and it wil be a great Help to deſtroy bad Weeds.

Another Improvement of Up-land Paſtures, is the feeding of them; for where this is not practiſed, the Land mu be manured at leaſt every third Year; and where a Farme hath much arable Land in his Poſſeſſion, he will not care t part with his Manure to the Paſture. Therefore every Fa mer ſhould endeavour to proportion his Paſture to h arable Land, eſpecially where Manure is ſcarce, otherwi he will ſoon find his Error; for the Paſture is the Foundatio of all the Profit, which may ariſe from the arable Land.

Whenev

Whenever theſe Up-land paſtures are mended by Manure, there ſhould be a Regard had to the Nature of the Soil, and a proper Sort of Manure applied: as for Inſtance, all hot ſandy Lands ſhould have a cool Manure; Neats-dung and Swines-dung, are very proper for ſuch Lands: but for cold Lands, Horſe-dung, Aſhes, and other warm Manures are proper. And when theſe are applied, it ſhould be done in *Autumn*, before the Rains have ſoaked the Ground, and rendered it too ſoft to cart on; and it ſhould be carefully ſpread, breaking all the Clods as ſmall as poſſible, and then harrowed with Buſhes, to let it down to the Roots of the Graſs. When the Manure is laid on at this Seaſon, the Rains in *Winter* will waſh down the Salts, ſo that the following Spring the Graſs will receive the Advantage of it.

There ſhould alſo be great Care had to the deſtroying of Weeds in the paſture every *Spring* and *Autumn*; for where this is not practiſed, the Weeds will ripen their Seeds, which will ſpread over the Ground, and thereby fill it with ſuch a Crop of Weeds, as will ſoon over-bear the Graſs, and deſtroy it; and it will be very difficult to root them out, after they have gotten ſuch poſſeſſion: eſpecially Ragwort, and ſuch other Weeds as have Down adhering to their Seeds.

Theſe Up-land paſtures ſeldom degenerate the Graſs which is ſown on them, (if the Land is tolerably good) whereas the low Meadows which are overflowed in *Winter*, do in few Years turn to a harſh ruſhy Graſs, tho' the Up-land will continue a fine ſweet Graſs for many Years without renewing.

The Graſſes proper to ſow on theſe Up-land paſtures, are, *Rye-graſs*, *Clover*, *Trefoil*, *Nonſuch*, *Spurrey*, *St. Foyn* and *La Lucern*. The Manner of ſowing and cultivating all theſe, is exhibited under their proper *Articles*.

PAVIA, The Scarlet Flowering Horſe Cheſnut: *vulgo*.

The *Characters* are;

The Leaves are like thoſe of the Horſe-Cheſnut: *the Flower is of an anomalous Figure, and conſiſts of five Leaves, which are ſo diſpoſed as to reſemble a Lip Flower; the two uppermoſt are united, and form a ſort of Helmet; the three undermoſt appear ſomewhat like a Mouth gaping: theſe Flowers are diſpoſed into a Spike, and are of a beautiful ſcarlet Colour: the Ovary, which riſes in the Center of the Flower-cup, afterwards becomes an oblong pyramidal Fruit, divided into three Cells, in each of which is lodged one globular Seed.*

There is but one *Species* of this Tree, *viz.*

Pavia. *Boerh. Ind.* The Scarlet Flowering Horſe-Cheſnut: *vulgo*.

This Tree is a Native of *America*, from whence the Seeds were firſt brought into *Europe*: it grows in great Plenty in the Woods of *South Carolina*, but is very hardy, enduring the ſevereſt Cold of our Climate in the open Air.

It may be propagated by ſowing the Seeds in the *Spring*, upon a warm Border of light ſandy Earth; and when the Plants come up, they ſhould be carefully clear'd from Weeds: but they muſt not be tranſplanted until the *Spring* following, when they ſhould be removed juſt before they begin to ſhoot, and placed either in a Nurſery to be train'd up, or elſe into the Places where they are to remain; obſerving, if the Seaſon be dry, to water them until they have taken Root, as alſo to lay ſome Mulch upon the Surface of the Ground, to prevent the Sun and Wind from drying it too faſt: and as the Plants advance, ſo the lateral Branches ſhould be pruned off, in order to reduce them to regular Stems.

You muſt alſo obſerve to dig the Ground about their Roots every *Spring*, that it may be looſe, to admit the Fibres of the Roots, which, while young, are too tender to penetrate the Ground, if it be very hard.

With this Management the Plants will greatly advance, and in four or five Years will produce Flowers and Fruits, which in warm Seaſons are perfected enough to grow, ſo that the Plants may be multiplied therefrom very faſt.

This Tree may alſo be propagated by budding or inarching it upon the common *Horſe-Cheſnut*: but the Trees thus raiſed will never arrive to near the Size of thoſe which are produced from Seeds; nor will they grow near ſo faſt.

Such of theſe Trees as are raiſed from Seeds, if planted in a good Soil, will grow to be twenty-five or thirty Feet high, and produce great numbers of beautiful red Flowers, which commonly appear the Beginning of *June*; at which Seaſon it makes a beautiful Appearance amongſt other hardy Trees.

PEACH: *vide* Perſica.

PEAR: *vide* Pyrus.

PEASE: *vide* Piſum.

PEASE EVERLASTING: *vide* Lathyrus.

PEDICLE, is that Part of a Stalk which immediately ſuſtains the Leaf, a Flower, or a Fruit, and is commonly call'd a Foot-ſtalk.

PEDICULARIS, Rattle, Cocks-comb or Louſewort.

There are four different Kinds of this Plant, which grow wild in Paſtures in ſeveral Parts of *England*, and in ſome low Meadows are very troubleſome to the Paſtures; eſpecially one Sort with yellow Flowers, which riſes to be a Foot high or more, and is often in ſuch Plenty, as to be the moſt predominant Plant; but this is very bad Food for Cattle, and when it is mowed with the Graſs for Hay, renders it of little Value. The Seeds of this Plant are generally ripe by the Time the Graſs is mowed, ſo that whenever a Perſon takes Graſs-ſeed for ſowing, they ſhould be very careful, that none of this Seed is mixed with it. As theſe Plants are never cultivated, ſo I ſhall not trouble the Reader with their ſeveral Varieties.

PELECINUS.

The *Characters* are;

It hath a papilionaceous (or pea-bloom) Flower, out of whoſe Empalement riſes the Pointal, which afterward becomes a plain bicapſular and bivalve Pod, indented on each Side like a Saw, and filled with plain kidney-ſhaped Seeds.

We know but one *Species* of this Plant; (*viz.*)

Pelecinus *vulgaris. Inſt. R. H.* Common Pelecinus.

This plant is preſerved in Botanic Gardens, for the ſake of Variety: it is an annual Plant, ſo the Seeds ſhould be ſown early in *April*, on a Bed of light freſh Earth, in Drills about eighteen Inches aſunder; and when the Plants are come up, they ſhould be carefully cleared from Weeds; and where they are too cloſe, they ſhould be thinned, leaving them ſix or eight Inches Diſtance in the Rows, and obſerve always to keep them clear from Weeds, which is all the Culture they require. Theſe Plants ſpread on the Ground, and from the Wings of the upper Leaves; the Flowers are produced on ſlender Foot-ſtalks, which are ſmall, and of a dirty red Colour; theſe are ſucceeded by Pods, which are flat, and indented on both Sides, reſembling the Saw of the Saw-fiſh.

PELLITORY OF THE WALL: *vide* Parietaria.

PENDULOUS HEADS OF FLOWERS, are ſuch as hang downward.

PENNATED: A Pennated Leaf (call'd in *Latin*, *Folium Pennatum*) is a compound Leaf, divided into ſeveral Parts, (each of which is call'd a *Lobe*) placed along the middle Rib, either alternately, or by Pairs. When the middle Rib is terminated by an odd Lobe, it is ſaid to be unequally pennated; and equally pennated, when it is not terminated by an odd Lobe. When the Lobes are all nearly of the ſame Form and Bigneſs, it is call'd, an Uniform pennated Leaf; when they are not ſo, it is ſaid to be Difform. Examples of pennated Leaves, are the *Aſh*, *Walnut*, &c.

PENNY-ROYAL: *vide* Pulegium.

PENTAPETALOUS FLOWEFS, are ſuch as have five Leaves.

PENTAPHYLLOIDES, [of πέντε, *five*, φύλλον, a *Leaf*, and εἶδος, *Form*] Baſtard Cinquefoil.

The *Characters* are;

It hath pennated Leaves, conſiſting of ſeveral Lobes placed along the middle Rib, and terminated by an odd Lobe, in which it differs from the Cinquefoil; *the Flower conſiſts of five Leaves, which expand in form of a* Roſe, *and are ſucceeded by Hemiſpherical Seed-veſſels, which contain many ſmall Seeds.*

The *Species are* ;

1. PENTAPHYLLOIDES *Argentina dicta. Raii Syn.* Wild Tanſey *or* Silver-weed.
2. PENTAPHYLLOIDES *fruticoſum. Raii Syn.* Shrub Cinquefoil.

The firſt of theſe Plants is very common in moiſt Meadows, and by the Sides of Ditches, in divers Parts of *England*, and is rarely cultivated in Gardens ; for the Branches of theſe Plants trail upon the Ground, and take Root at their Joints, ſo that in a ſhort time, a few of theſe Plants would over-run a whole Garden. This Herb is uſed in Medicine ; for which purpoſe it is gather'd in the Fields, and brought to Market, by ſuch Perſons who make it their Buſineſs to gather wild Plants.

The ſecond Sort grows to be four or five Feet high, and may be train'd to a regular Head. This is a very proper Shrub to intermix with others of the ſame Growth, in ſmall Wilderneſs Quarters, where it will make a pretty Diverſity, and continues flowering a long time.

This is propagated either by Suckers or Layers, which may be obtain'd in great Plenty ; for it generally produces a great number of Shoots from the Bottom, which when they come out near the Ground, may be earth'd up, or laid down therein ; and if they are water'd in dry Weather, will take Root in a ſhort time ; when they may be taken off, and tranſplanted where they are to remain. The beſt Time to tranſplant them is in *October* or *February :* they delight in a moiſt Soil ; tho' they will grow in almoſt any Soil or Situation.

There are ſeveral other *Species* of this Plant, which are preſerved in ſeveral curious *Botanick* Gardens for Variety ; but as they are Plants of little Beauty or Uſe, ſo I ſhall not enumerate them here.

PEONY : *vide* Pæony.

PEPO, [takes its Name of πεπαίνεσθαι to *ripen*, becauſe the Fruit of this Plant ripens very readily] Pumpion.

The *Characters* are ;

The Flower conſiſts of one Leaf; which is Bell-ſhaped, expanded at the Top, and cut into ſeveral Segments : of theſe Flowers ſome are Male, and ſome are Female, as in the Cucumbers *and* Melons : *The Female Flowers grow upon the Top of the* Embryo, *which afterwards becomes an oblong or round fleſhy Fruit, having ſometimes a hard, rugged, or uneven Rind, with Knobs and Furrows, and is often divided into three Parts, incloſing flat Seeds, that are edged or rimmed about as it were with a Ring, and fix'd to a ſpungy* Placenta.

The *Species* are ;

1. PEPO *oblongus. C. B. P.* The greater oblong Pumpion.
2. PEPO *vulgaris. Raii Hiſt.* The common Pumpion.
3. PEPO *rotundus Aurantii forma. C. B. P.* Orange-ſhaped Pumpion.
4. PEPO *fructu parvo, pyriformi. Tourn.* Pear-ſhaped Pumpion.
5. PEPO *fructu minimo ſphærico. Tourn.* Pumpion, with a very ſmall ſpherical Fruit.

There are ſeveral other Varieties of theſe Fruits, which ſeem to be only ſeminal Variations ; ſo that it would be needleſs to mention them all in this Place, ſince the Seeds taken from any one of the Sorts will not continue the ſame three Years together, if ſown in the ſame Garden, as I have ſeveral times experienced.

The two firſt Sorts are by ſome Perſons cultivated for their Fruit ; which, when ripe, they cut open, and take out the Seeds, and then ſlice ſome Apples into the Shell, mixing them with the Pulp of the Fruit and Sugar : this they bake in an Oven, and afterwards eat it ſpread upon Bread ; but it is too ſtrong for Perſons of weak Stomachs, and only proper for Country People, who uſe much Exerciſe.

The Seeds of theſe Plants are uſed as one of the four cold Seeds in Medicine.

The other Sorts are preſerved by ſome curious Perſons, for Variety, but are of little Uſe, being good for nothing when grown old ; but while they are very ſmall, ſome Perſons gather and boil them, like *Turnips*, or as they do the *Squaſhes*, and are very fond of them.

Theſe may be propagated in the ſame Manner as was directed for the *Gourds*, to which I ſhall refer the Reader, to avoid Repetition.

PERENNIAL PLANTS, are ſuch whoſe Roots will abide many Years, whether they retain their Leaves in Winter or not : thoſe which do retain their Leaves, are call'd *Evergreens* ; but ſuch as caſt their Leaves, are call'd *Deciduous* or *Perdiſols*.

PERESKIA, Gooſeberry *vulgò*.

The *Characters* are ;

It hath a roſe-ſhaped Flower conſiſting of ſeveral Leaves, which are placed orbicularly ; whoſe Cup afterward becomes a ſoft fleſhy globular Fruit, beſet with Leaves ; in the Middle of the Fruit, are many flat roundiſh Seeds, included in a Mucilage.

We know but one *Species* of this Plant ; *(viz.)*

PERESKIA *aculeata, flore albo, fructu flaveſcente. Plum. Nov. Gen.* Prickly *Pereskia*, with a white Flower, and a yellowiſh Fruit.

This Plant grows in ſome Parts of the *Spaniſh-Weſt-Indies*, from whence it was brought to the *Engliſh* Settlements in *America*, where it is called a Gooſeberry, and by the *Dutch* it is called Blad-Apple. This Plant hath many ſlender Branches, which will not ſupport themſelves, ſo muſt be ſupported by Stakes, otherwiſe they will trail on whatever Plants grow near them. Theſe Branches, as alſo the Stem of the Plant, are beſet with long whitiſh Spines, which are produced in Tufts. The Leaves are roundiſh, very thick and ſucculent, and the Fruit is about the Size of a Walnut, having Tufts of ſmall Leaves on it, and hath a whitiſh mucilaginous Pulp.

It may be propagated by planting of the Cuttings during any of the *Summer* Months : theſe Cuttings ſhould be planted in Pots filled with freſh light Earth, and plunged into a moderate Hot-bed of Tanners-bark, obſerving to ſhade them from the Sun in the Heat of the Day, as alſo to refreſh them every third or fourth Day with Water. In about two Months the Cuttings will have made good Roots, when they may be carefully taken out of the Pots, and each planted in a ſeparate Pot filled with freſh Earth, and then plunged into the Hot-bed again, where they may remain during the *Summer* Seaſon ; but at *Michaelmas*, when the Nights begin to be cold, they ſhould be removed into the Stove, and plunged into the Bark-bed. During the *Winter* Seaſon, the Plants muſt be kept warm, and ſhould be watered twice a Week ; but in cold Weather it ſhould not be given to them in large Quantities. In *Summer* they muſt have a large Share of Air, and muſt be more plentifully watered : but they ſhould conſtantly remain in the Stove ; for tho' they will bear the open Air in *Summer*, in a warm Situation, yet they will make no Progreſs, if they are placed abroad ; nor do they thrive ſo well in the Dry-ſtove, as when they are plunged in the Tan : ſo that the beſt Way is to ſet them next a Trellice, at the Back of the Tan-bed, to which their Branches may be faſtened, to prevent their trailing on other Plants. This Plant has not as yet produced either Flowers or Fruit in *England* ; but as there are ſeveral Plants pretty well grown, in the Gardens of the Curious, ſo we may expect ſome of them will flower in a ſhort Time.

PERICLYMENUM [Περικλύμενον, of περὶ, *about*, and κυλίω, to *roll*, becauſe the Branches of theſe Plants roll or twiſt themſelves round ſuch Plants as grow near them] Trumpet-Honeyſuckle : *vulgo*.

The *Characters* are ;

It hath the whole Appearance of the Honeyſuckle, *(from which it differs in the Shape of the Flower) which is tubuloſe or Bell-ſhaped, and expands at the Top, where it is cut into ſeveral almoſt equal Segments.*

PERICLYMENUM *Virginianum, ſemper-virens & florens. H. L.* Virginian Scarlet Honeyſuckle : *vulgo*.

This Shrub is greatly eſteem'd for the Beauty of its Flowers, which are of a fine Scarlet Colour ; the Leaves continue all the Year green, and it continues flowering moſt Par of the *Summer*.

It may be propagated by laying down the tender Branch in the *Spring*, obſerving in dry Weather to refreſh them wit Water, which will greatly facilitate their Rooting : th *Spring* following, they will be fit to tranſplant ; when the ſhould be cut off from the old Plants, and carefully take up, ſo as not to injure their Roots. The beſt Time to r move them is in *March*, juſt before they ſhoot out ; but yo muſt obſerve, if the Seaſon ſhould prove dry, to water them an and lay a little Mulch upon the Surface of the Ground near their Stems, to prevent their Ground from drying too faſt. It ſhould have a ſtrong Soil, and be expoſed to the South-Eaſt Sun, but muſt have the Aſſiſtance of a Wall or Pale to ſupport the Branches, otherwiſe they will trail upon the Ground.

This Plant, altho' a Native of *Virginia*, yet if planted in a clear Air, will endure the ſevereſt Cold of our Climate very well; but it will not thrive in cloſe Places, or too near the City, the Smoak ariſing from the Sea-coal Fires being very pernicious to it.

To this *Article* muſt be added,

1. Periclymenum *racemoſum, flore flaveſcente, fructu niveo. Plum. Tab. Hort. Elth.* Branching Trumpet Honey-ſuckle, with a yellowiſh Flower, and a ſnowy Fruit, commonly called in *Barbadoes*, Snowberry-buſh.

2. Periclymenum *arboreſcens, ramulis inflexis, flore luteo. Plum. Cat.* Tree-like Trumpet Honey-ſuckle, with a yellow Flower.

3. Periclymenum *aliud arboreſcens, ramulis inflexis, flore corallino. Plum. Cat.* Tree like Trumpet Honey-ſuckle, with a coralline Flower.

The firſt of theſe Plants is pretty common in *Barbadoes* and *Jamaica*, where the Inhabitants give it the Name of Snowberry-buſh, from the extreme Whiteneſs of the Fruit. The ſecond and third Sorts where diſcovered by Father *Plumier* in ſome of the *French* Settlements in *America*; and ſince by the late Dr. *Houſtoun* at *La Vera Cruz*.

Theſe are all of them very tender Plants, ſo muſt conſtantly remain in the Bark-ſtove, otherwiſe they will not thrive in this Country. They may be propogated by Seeds, which ſhould be brought over either in Sand or Earth, otherwiſe they ſeldom ſucceed; when they arrive, the Tubs of Earth, in which the Seeds were ſown, ſhould be plunged into a Hot-bed of Tanners-bark, obſerving frequently to water them: and when the Plants are come up, they ſhould be carefully tranſplanted into ſeparate ſmall Pots filled with rich freſh Earth, and plunged into the Hot-bed again; where they may remain till about *Michaelmas*, when they ſhould be plunged into the Bark-bed in the Stove, and treated as other tender exotic Plants from the ſame Countries; and in two or three Years the Plants will flower, when they will make an agreeable Variety.

PERIPLOCA, [Περιπλοκὴ, of περὶ, *about*, and πλοκη a *knitting* or *plaiting*, becauſe this Plant entangles itſelf with itſelf, or any other neighbouring Plants] Virginian Silk or climbing Dog's bane: *vlgo.*

The *Characters* are;

The Flower conſiſts of one Leaf, which is more expanded at the Brim than thoſe of the Apocynum; *che Pointal which riſes in the Center of the Flower-cup, becomes a Fruit ſo nearly reſembling that of the* Apocynum, *as not to be diſtingniſh'd therefrom, but by very curious Obſervers: to which ſhould be added, it hath climbing Stalks.*

The *Species* are;

1. Periploca *foliis oblongis. Tourn.* Periploca with oblong Leaves.

2. Periploca *Monſpeliaca, foliis rotundioribus. Tourn.* Periploca of *Montpellier*, with rounder Leaves.

3. Periploca *foliis oblongis anguſtioribus. Inſt. R. H.* Longer and narrower-leaved *Virginian* Silk, or Climbing Dogs-bane.

4. Periploca *Monſpeliaca, foliis acutioribus. Inſt. R. H.* Climbing Dogs-bane of *Montpelier*, with ſharp pointed Leaves.

5. Periploca *Americana, fructu molliter echinato. Inſt. R. H. American* Climbing Dogs-bane, with a prickly Fruit.

6. Periploca *Americana latifolia, ſiliqua dura oblonga, tumida & glabra. Inſt. R. H.* Broad-leaved *American* Climbing Dogs-bane, with a long hard ſmooth ſwelling Pod.

7. Periploca *Americana ſcandens, ſalicis anguſtiſſimo folio, flore albo. Plum.* Climbing *American* Dogs-bane, with a narrow willow Leaf, and a white Flower.

8. Periploca *Americana repens umbellata, foliis citri, flore coccineo. Plum.* Creeping *American* Dogs-bane, with a citron Leaf, and ſcarlet Flowers, growing in an Umbel.

9. Periploca *Americana ſcandens, folio citri, fructu maximo. Plum.* Climbing *American* Dogs-bane, with a citron Leaf, and a large Fruit.

10. Periploca *Americana ſcandens, folio convolvuli, fructu alato. Plum. American* climbing Dogs-bane, with a convolvulus Leaf, and a winged Fruit.

The two firſt are all I have obſerved in the *Engliſh* Gardens: the firſt is very common in *England*, but the latter is, at preſent, pretty rare.

Theſe may be propagated by laying down their Branches in the Spring, which will take Root in a Year's time; when they may be taken off, and tranſplanted where they are to remain: which ſhould be either againſt a lofty Wall or Building, or elſe placed in Wilderneſs Quarters amongſt other tall Flower-trees, where they ſhould be ſupported by ſtrong Poles, about which theſe Plants will twine, and riſe to a great Height. Theſe two Sorts are hardy, and will endure the Cold of our Winters very well, provided they are planted in a dry Soil.

They produce their Flowers in *June* and *July*, but do rarely perfect their Seeds in *England*. Their Flowers are not very beautiful; but, for their Oddneſs, may have a Place amongſt other hardy Shrubs in every good Garden.

The third and fourth Sorts are hardy Plants, which will live in the open Air in this Country. Theſe may be propagated by laying down of their Branches (for they very rarely produce good Seeds in *England*;) theſe may be treated in the ſame Manner as the two firſt.

The ſix laſt Sorts are tender, being Natives of the warm Parts of *America*. The Seeds of all theſe Sorts were ſent to *England* by the late Dr. *Houſtoun*, who collected them in *Jamaica*, at *Campechy*, and *Carthagena*; where they grow in great Plenty, and twiſt themſelves round whatever Trees grow near them, and ſome of them riſe to the Height of forty or fifty Feet or more. Some of theſe Sorts produce very large warted Pods, which are full of oblong flat Seeds, to which is faſtened a very long ſoft white Down, which helps to convey the Seeds to a great Diſtance when ripe. This Down, as alſo that of the *Apocynum*, have of late Years been uſed to ſtuff Pillows, Matraſſes and Quilts, for which Purpoſes there is nothing ſo proper; for it is ſo exceedingly light, that a Quilt of great Thickneſs is hardly to be felt, when ſpread over a Bed; which is of great Advantage to thoſe Perſons who are troubled with the Gout, and cannot bear any Weight on the Part affected. It hath alſo a very great Elaſticity, ſo that it is not apt to ſtick together. This Down is called in *French*, *de la Wadde*, and is greatly in uſe amongſt the Quality in *France*.

All theſe Plants may be propagated by Seeds, which ſhould be ſown on a Hot-bed early in the Spring; and when the Plants are fit to tranſplant, they ſhould be each planted into a ſeparate Pot filled with freſh Earth, and plunged into a moderate Hot-bed of Tanners-bark, obſerving to ſhade them from the Sun every day, until they have taken new Root; after which Time, they ſhould have a large Share of Air in warm Weather, and muſt have Plenty of Water. In about ſix Weeks or two Months after planting, the Plants will get up to reach the Glaſſes of the Hot-bed; when they would be ſhifted into larger Pots, and plunged into the Bark-bed in the Stove; where they muſt be ſupported by an Eſpalier, otherwiſe they will twiſt themſelves round whatever Plants grow near them.

Theſe Plants will bear the open Air in Summer, but they never make any Progreſs, when they are expoſed, and rarely flower; therefore in order to have theſe Plants in Beauty, they ſhould conſtantly remain in the Stove, and muſt have a large Share of free Air in mild Weather. When they are thus managed, they will riſe to the Height of thirty Feet or more, and will produce Flowers every Summer.

PERIWINCLE: *vide* Pervinca.

PERSEA, The Avocado or Avogato Pear.

The *Characters* are;

It hath a roſe-ſhap'd Flower, conſiſting of ſeveral Leaves, which are ranged in a Circle; from whoſe Middle riſes the Pointal, which afterwards becomes a ſoft fleſhy pear-ſhaped Fruit, in which is a hard Stone or Seed, having two Lobes, which is included in a Membrane or Pericardium.

We know but one *Species* of this Plant; (*viz.*)

Persea. *Cluſ. Hiſt.* The Avocado or Avogato Pear.

This Tree grows in great Plenty in the *Spaniſh Weſt-Indies*, as alſo in the *Iſland* of *Jamaica*, and hath been tranſplanted into moſt of the *Engliſh* Settlements in the *Weſt-Indies*, on account of its Fruit, which is not only eſteemed ed by the Inhabitants as a Fruit to be eaten by way of Deſert, but is very neceſſary for the Support of Life. The Fruit is of itſelf very inſipid, for which Reaſon they generally eat it with the Juice of Lemons and Sugar to give it a Piquancy. It is very nouriſhing, and is reckoned a great Incentive to Venery. Some People eat this Fruit with Vinegar and Pepper.

This Tree in the warm Countries, where it is planted, grows to the Height of thirty Feet or more, and has a Trunk as large as our common Apple-trees; the Bark is ſmooth, and of an Aſh-colour. The Branches are beſet with pretty large oblong ſmooth Leaves, which are of a deep green Colour, and continue on the Tree throughout the Year. The Flowers and Fruit are, for the moſt part, produced toward the Extremity of the Branches.

In *Europe* this Plant is preſerved as a Curioſity, by thoſe Perſons who are ſkilful in collecting exotic Plants: and tho' there is little Hope of its producing Fruit, yet for the Beauty of its ſhining green Leaves, which continue thro' the Winter, it deſerves a Place in every curious Collection of Plants.

It is propagated by Seeds, which ſhould be obtained as freſh as poſſible from the countries of its Growth; and if they are brought over in Sand, they will be more likely to grow, than ſuch as are brought over dry. Theſe Nuts or Seeds ſhould be planted in Pots, filled with light rich Earth, and plunged into a Hot-bed of Tanners-bark, which ſhould be kept pretty warm, by covering of the Glaſſes of the Bed every Night with Mats or Straw, eſpecially when the Nights are cold. The Pots ſhould alſo be frequently watered, when the Earth appears dry, which will greatly facilitate the Vegetation of the Seed, provided the Water is not given in large Quantities, which would rot them. In about a Month or five Weeks the Plants will come up, when they muſt be treated very tenderly; for the Bed muſt be kept in a due Temperature for Heat; and when the Days prove warm, the freſh Air ſhould be admitted to the Plants, by raiſing of the Glaſſes a little. The Plants muſt alſo be frequently watered. When the Plants have grown about four Inches high, they ſhould be carefully tranſplanted; and where there are ſeveral Plants in one Pot, they muſt be parted, being careful to preſerve a Ball of Earth to the Root of each, and planted into ſeparate ſmall Pots filled with light rich Earth, and then plunged into a Hotbed of Tanners-Bark; obſerving to ſhade them until they have taken new Root; after which Time they ſhould have freſh Air admitted to them, in proportion to the Warmth of the Seaſon, and they muſt be duly watered. Towards *Michaelmas* the Plants muſt be removed into the Stove, and plunged into the Bark-bed, where, during the winter Seaſon, they ſhould be kept very warm, and muſt be gently watered twice a Week. In the Spring the Plants ſhould be ſhifted into Pots a Size larger than the former, and the Bark-bed ſhould be then renewed with freſh Tan, which will ſet the Plants in a growing State early, whereby they will make a fine Progreſs the following Summer. The Plants muſt be conſtantly kept in the Stove, for they are too tender to bear the open Air in this Country at any Seaſon.

PERSICA, [ſo call'd of *Perſia* in *Aſia*, from whence this kind of Plant was brought into our Climate] The Peach-Tree.

The *Characters* are;

It hath long narrow Leaves; the Flower conſiſts of ſeveral Leaves, which are placed in a circular Order, and expand in form of a Roſe; *the Pointal which riſes from the Center of the Flower-cup, becomes a roundiſh fleſhy Fruit, having a longitudinal Furrow, incloſing a rough rugged Stone, which is deeply furrow'd, by which it is diſtinguiſh'd from the* Almond.

There are a great Variety of theſe Trees, which are cultivated in the Gardens of thoſe who are curious in collecting the ſeveral Sorts of Fruit in the different Parts of *Europe*: I ſhall therefore firſt beg Leave to mention two or three Sorts, which are cultivated for the Beauty of their Flowers: after which, I ſhall enumerate the ſeveral Sorts of good Fruit which have come to my Knowledge.

1. Persica *vulgaris, flore pleno. Tourn.* Peach-Tree, with double Flowers.
2. Persica *Africana nana, flore incarnato ſimplici. Tourn.* Dwarf-Almond, with ſingle Flowers: *vulgo.*
3. Persica *Africana nana, flore incarnato pleno. Tourn.* Double-flowering Dwarf-Almond; *vulgo.*

The firſt of theſe Trees is a very great Ornament in a Garden early in the Spring, the Flowers being very large, double, and of a beautiful red or purple Colour. This may be planted in Standards, and if intermix'd amongſt other Flowering-Trees of the ſame Growth, makes a very agreeable Variety: or it may be planted againſt the Walls of the Pleaſure-Garden, where the beautiful Appearance of its Flowers early in the Spring will be more acceptable in ſuch Places than the choiceſt Fruits, which muſt be expoſed to Servants, and others, ſo that they ſeldom can be preſerved in large Families until they are ripe. This Tree may be propagated by budding it on the *Almond* or *Plum* Stocks, in the ſame Manner as the other Sort of *Peaches*, and ſhould be planted in a good freſh Soil that is not over-moiſt.

The other two Sorts are of humbler Growth, ſeldom riſing above five Feet high: theſe may be budded upon *Almond-Stocks*, or propagated by *Layers*; they will alſo take upon *Plum-Stocks*; but they are very apt to canker, after they have ſtood four or five Years upon thoſe Stocks, eſpecially that with double Flowers, which is tenderer than the other.

Theſe Shrubs make a very agreeable Variety amongſt low Flowering-Trees, in ſmall Wilderneſs Quarters. The ſingle Sort flowers in the Beginning of *April*, and the double is commonly a Fortnight later.

I ſhall now proceed to mention the ſeveral Sorts of good *Peaches* which have come to my Knowledge; and tho', perhaps, a greater number of Sorts may be found in ſome Catalogues of Fruits, yet I doubt whether many of them are not the ſame Kinds call'd by different Names: for, in order to determine the various Sorts, it is neceſſary to obſerve the Shape and Size of the Flowers, as well as the different Parts of the Fruit; for this does ſometimes determine the Kind, when the Fruit alone is not ſufficient: beſides, there is a vaſt Difference in the Size and Flavour of the ſame *Peach*, when planted on different Soils and Aſpects; ſo that it is almoſt impoſſible for a Perſon who is very converſant with theſe Fruits to diſtinguiſh them, when brought from various Gardens.

The preſent Confuſion of the Names of Fruits hath been many times owing to the bringing over Trees from *France*; for the Perſons who are generally employed to bring over thoſe Trees for Sale, are intirely ignorant of their various Sorts, and do themſelves take them upon Truſt, from the Perſons who make it their Buſineſs to propagate great Quantities, to ſupply the Markets of *France*, whither they are brought in Waggons, and ſold out in Parcels to thoſe Perſons who bring them into *England*. It alſo happens many times, if they are received by right Names, that theſe, in Length of Time, are loſt, or the Trees come into the Poſſeſſion of other Perſons, who not knowing the true Name of the Fruit, do often give them new Names, whereby there is ſuch a Confuſion in the Names of Fruit, as is impoſſible to rectify: And hence ſome Perſons have ſuppoſed a much greater Variety of *Peaches* than there is in Reality; tho' as the greateſt Part of theſe have been obtained from Seeds, ſo their Varieties may be multiplied annually, until there be no End of the Sorts. However, I ſhall content myſelf with enumerating the principal Sorts not known in *England*, which are ſufficient for any Gentleman to make a Collection to continue thro' the whole Seaſon of Fruit.

1. The *White Nutmeg* (called by the *French Petit-avant-peſche)* is the firſt ripe *Peach*; its Juice is muſky, if well expoſed, and is ripe the Beginning of *July*; it is a great Bearer, and if planted in two different Aſpects, the Fruit may be continued three Weeks in Perfection, otherwiſe it is ſoon gone after it is ripe, as is the Caſe with moſt other *Summer* Fruits. This ſhould have a *South Eaſt* and *South Weſt* Aſpect.

2. The *Red Nutmeg* (or *La Peſche de Troy)* is ripe towards the End of *July*. This is a great Bearer, and, if well expoſed, is an extraordinary good Fruit; it is ſomewhat larger than the White, and is of a beautiful red Colour towards the Sun.

3. The *Yellow Alberge* ripens ſoon after the *Red Nutmeg*, but is not eſteemed ſo good a Fruit; it is generally a good Bearer; the Fleſh is yellow within; and for Variety, there may be one Tree planted, where there is Room enough.

4. The *Red Magdalaine* (or *Magdalene Rouge)* is a middle-ſized Fruit; the Fleſh or Pulp is very delicious; it parts from the Stone where the Fleſh is red, and the Tree is a good Bearer. This ripens the Beginning of *Auguſt*, and ſhould have a *South* or *South-Eaſt* Aſpect.

5. The *White Magdalaine* (or *Magdalene Blanche)* is a fine large Fruit, when planted in a good Soil; the Fleſh is white, except near the Stone, where it is of a reddiſh Co-

lour; it is very full of a rich viny Juice, and eaſily melts in the Mouth; it is a great Bearer, but is very ſubject to drop its Fruit, and is often invaded by Inſects, as are many other Sorts of rich *Peaches*. This ripens the Beginning of *Auguſt*.

6. The *Mignonne* (or, as it is commonly called, *Minion*) *Peach*, is an excellent fine Fruit; the Side next the Sun is of a beautiful red Colour, as is alſo the Fleſh next the Stone; the Pulp is very firm, and full of a rich Juice; it is a plentiful Bearer, and ripens the Beginning of *Auguſt*.

7. The *Italian Peach* (or *Peſche d' Italie*) is of an oval Shape, ſomewhat pointed; the Fleſh is very delicate, and full of Juice, and red towards the Stone, which is flat, and ſharp-pointed; it is a good Bearer, a hardy *Peach*, and ripens the Middle of *Auguſt*.

8. The *Early Newington* (or *Smith's Newington*) is a very good *Peach*; the Pulp is firm, of a rich ſugary Flavour, and cloſely adheres to the Stone: this is very red on the Side next the Sun, as is alſo the Fleſh near the Stone. This ripens the Beginning of *Auguſt*.

9. *Les Druſelles* (or *Druſel Peach*) is of an oval Shape; the Skin is of a ſoft purple Colour next the Sun; the Fleſh is red and dry, but of a very agreeable Flavour. This ripens the End of *Auguſt*.

10. The *Nobleſs* (or *Nobleſt*) is a fair large *Peach*; the Fleſh comes clean from the Stone; the Pulp is melting, and full of a delicious Juice, and is of a reddiſh Colour next the Stone: It is a good Bearer, and ripens the Beginning of *Auguſt*.

11. *La Chevreuſe* (or *Belle Chevreuſe*) is of a bright red Colour next the Sun; the Fruit is longiſh, and pretty large; the Pulp is full of a delicate ſweet Juice, and ripens the latter End of *Auguſt*.

12. The *Chancellor* (or *Peſche Chanceliere*) was raiſed from the Stone of the *Chevreuſe Peach*, in the Gardens of the Chancellor *Seguire* in *France*, from whence it had its Name: It is a very large fair Fruit, full of a delicate ſugary Juice, and is eſteemed among the beſt Sort of *Peaches* in *France*. It ripens the End of *Auguſt*.

13. The *Montauban* is a fair handſome *Peach*, of a deep red Colour on the Side next the Sun, but of a pale green next the Wall; the Fleſh is melting, and parts from the Stone, where it is of a faint red Colour. This is a very good Bearer, and ripens the Beginning of *Auguſt*.

14. The *Royal George Peach*: this is a middle-ſized Fruit, pretty round, with a deep Furrow running Lengthwiſe: It is of a dark red Colour on the Side next the Sun, and of a paler Colour next the Wall; the Skin is covered over with a downy Subſtance, and is full of red Spots; the Fleſh is melting, of a delicate Flavour, and of a yellowiſh Caſt; the Stone is large, and of a deep red Colour. This ripens the latter End of *Auguſt*.

15. The *Nivette Peach* is of a middling Size, of an oval or oblong Shape, a little compreſſed on the Sides; it is of a yellowiſh Colour, marbled with red, and covered with a ſoft downy Subſtance; the Fleſh is ſoft, melting, of a yellow Colour, and parts from the Stone; the Juice is very rich: It ripens the Beginning of *September*.

16. The *Violet Peach* (or *Peſche Violette*) is ſomewhat long, of a middle Size; the Pulp is melting, and its Juice of a vinous Flavour. This is by the *French* eſteemed the Queen of Fruits. It ripens towards the End of *Auguſt*, and is a plentiful Bearer.

17. The *Portugal Peach* is a fair, large, beautiful Fruit, of a deep red Colour towards the Sun, which fades off to a light green next the Wall; the Skin has a ſoft Down upon it, and is pretty full of red Spots; the Fleſh is very firm, of a rich vinous Flavour, and adheres cloſely to the Stone, which is ſmall for the Size of the Fruit, but very rough. This ripens the Beginning of *September*.

18. The *Purple Alberge* (or *La Peſche Alberge Violette*) is a middle-ſized Fruit, of a dark purple or Violet Colour on the Side next the Sun, which goes off to a dark red next the Wall; the Fleſh is yellow, and parts from the Stone, where it is red; it is full of a rich vinous Juice, and ripens towards the End of *Auguſt*.

19. The *Old Newington* is eſteemed one of the beſt *Peaches* in *England*; it is a fair large Fruit, of a lively red Colour next the Sun, which goes off to a yellowiſh green next the Wall; the Fleſh is firm, and cloſely adheres to the Stone; it is full of a delicious rich Juice, and of a deep red next the Stone. This is accounted an indifferent Bearer, which is wholly owing to its Management in pruning; for I have had it bear extremely well in a Standard, and the Fruit has been deeper coloured, and of richer Flavour than thoſe againſt Walls.

20. *La Teton de Venus* (or *Venus's Breaſt*) is a middle-ſized Fruit, rather long than round, having a very deep Sulcus or Furrow, which divides it like a double Fruit; the two Sides of which riſe ſomewhat like a Woman's Breaſt, from whence it had its Name; the Fleſh is very white, with a little Bluſh of red next the Sun; it is melting, and full of a high-flavoured Juice. This ripens the latter End of *Auguſt*.

21. *La Peſche pourpree* (or *purple Peach*) is a fair round Fruit, of a dark red Colour next the Sun, which goes off to a paler red next the Wall; the Fleſh next the Stone is very red; the Juice is of a moſt delicious Flavour, when the Fruit is full ripe. This ripens the Beginning of *September*.

22. The *Pavy Royal* (or *Peſche Royale*) is a large round Fruit, of a dark red or black Colour next the Sun, which goes off to a paler red next the Wall; the Fleſh comes from the Stone, where it is very red; the Juice is exquiſitely rich, and equal to, if not exceeding, all other *Peaches* yet known, provided it grows upon a Soil rather dry than moiſt, and is expoſed to a good Aſpect. This ripens the Beginning of *September*.

23. The *Admirable* is a large round Fruit, of a fine red Colour next the Sun, which goes off to a greeniſh yellow next the Wall; the Fleſh is firm, and full of rich ſugar'd Juice; it parts from the Stone, where it is of a deep red Colour. This is a great Bearer, and ripens toward the End of *Auguſt*, or the Beginning of *September*.

24. *La Pavie Rouge de Pompone, ou Monſtreux* (or the *Monſtrous Pavy of Pompone*) is the largeſt *Peach* yet known; it is of a globular Shape, deeply divided into two Parts, of a beautiful red next the Sun, which goes off to a bright yellow next the Wall; the Fleſh is melting, and of a rich vinous Flavour; it ripens the Middle of *September*. This ſhould have a *South Eaſt* Aſpect, and the Shoots ſhould be laid very thin againſt the Walls; for if there are many Fruit upon a Tree, they ſeldom ripen, or are well-flavour'd.

25. The *Catherine Peach* is a fine large Fruit, (eſpecially when not left too thick upon the Trees;) the Skin is covered with a ſoft Down, and is of a dull red Colour next the Sun, which goes off to a whitiſh green next the Wall; the Fleſh is full of a rich vinous Juice, and in a good Seaſon, comes neareſt to the *Old Newington Peach* of any other Sort. This is a great Bearer, but ſhould be planted in a warm Soil, and to a *South-Eaſt* Aſpect. It ripens in the Middle of *September*.

26. The *Rambouillet*, or, as it is commonly called, *Rumbullion*, is a middle-ſized Fruit, rather round than long, deeply divided by a Sulcus or Furrow in the Middle; of a pleaſant red Colour next the Sun, but of a light yellow next the Wall; the Fleſh is of a bright yellow, and parts from the Stone, where it is of a deep red Colour. The Juice is of a rich vinous Flavour. It is a good Bearer, and ripens the Middle of *September*.

27. The *Malacoton* (or *Cotton-Apple*) is a large fair *Peach*; the Skin is covered over with a thick downy Subſtance, from whence it took its Name: it is of a beautiful red Colour next the Sun, but of a light yellow next the Wall; the Fleſh is firm, and full of a rich vinous Juice, and, when duly ripen'd, is an excellent Fruit. This ripens towards the latter End of *September*. It ſhould have a warm Soil, and the Branches muſt be laid very thin againſt the Wall, otherwiſe the Fruit ſeldom comes to any Thing.

28. *La Sanguinolle* (or the *Bloody*) *Peach*, is a middle-ſized Fruit, whoſe Fleſh is of a deep red Colour within, from whence it had its Name; it parts from the Stone; the Outſide next the Sun is of a deep red, but the Side next the Wall is of a greeniſh yellow Colour. This ripens in *October*; ſo that unleſs the *Autumn* proves very favourable, it is not good for any thing.

There are ſeveral other Sorts of *Peaches*, which are very good, in the South of *France*, and other warm Countries, which with us do rarely ripen ſo as to be eatable, for which Reaſon they are not worth cultivating; ſuch are, the *Violette Tardive*, or *Late Violet*; *La Corbeil*; *La Peſche Noix*; the *Double-flower'd*, &c. which ſeldom ripen in *France* until the latter End of *October*, when the Nights are long and froſty, the Seaſon often very wet and cold; ſo that theſe Fruits will be watery, inſipid, and very unwholeſome in this Country.

The *French* diſtinguiſh thoſe we call *Peaches* into two Sorts, *viz.* *Pavies*, and *Peaches*; thoſe are called *Peaches* which quit the Stone; and thoſe whoſe Fleſh cloſely adheres to the Stone are called *Pavies*; theſe are much more eſteemed in *France* than the *Peaches*; tho' in *England* the latter are preferred to the former by many Perſons.

The *French* do alſo diſtinguiſh them into *Male* and *Female*; the *Pavies* they make to be the *Male*, and the *Peaches* the *Female*: But this Diviſion is without Foundation, ſince the Kernels of both Sorts will produce Trees equally; for the Flowers of *Peach-trees* are generally hermaphrodite, and have all the Parts of Generation in them; ſo that there is no Neceſſity of ſuppoſing any of them to be intirely *Male* or *Female*: But it is likely that this Diſtinction is of long ſtanding, before Perſons had a perfect Notion of *Male* and *Female* in Plants, or at leaſt they did not know how to diſtinguiſh them aſunder.

The *Nectarines* (as I have in another Place ſaid) are by the *French* called *Brugnons*, which differ from the other two Sorts, in having a firm hard Fleſh, and the Skins quite ſmooth, without any Down upon them. The Sorts of theſe I have already mentioned under the Article *Nectarines*, to which the Reader may readily turn, therefore I ſhall not repeat them in this Place.

I ſhall now ſet down the good Qualities of *Peaches*, by which any Perſon may judge of their Worth.

A good *Peach* ought to have a firm Fleſh; the Skin ſhould be thin, of a deep or bright red Colour next the Sun, and of a yellowiſh Caſt next the Wall; the Fleſh ſhould be of a yellowiſh Colour, full of Juice, which ſhould be high-flavoured, the Stone ſmall, and the Pulp or Fleſh very thick. When a *Peach* hath all theſe Qualities, it may be eſteemed a valuable Fruit.

All the different Sorts of *Peaches* have been originally obtained from the Stones, which being planted do produce new Varieties, as do the Seeds of all other Fruits; ſo that where Perſons have Garden enough to allow Room for propagating theſe Fruits from Seeds, there is no doubt but many good ſorts may be obtained, which will be better adapted to our Climate than ſuch as are brought from warmer Countries; though, it is true, that there will be many of them good for nothing, as is the Caſe of moſt Fruits and Flowers which are produced from Seeds, amongſt which there may be ſome valuable Kinds, ſuperior to thoſe from whence the Seeds were taken; yet there is always a great Number which are little worth; but if we can obtain only two or three valuable Sorts, it is ſufficient to make Amends for the Trouble of raiſing them; but where Perſons are ſo curious as to plant the Stones of theſe Fruits, great Regard ſhould be had to the Sorts; and if the Fruit were permitted to remain upon the Trees until they dropped off, the Kernels would be fitter for planting, and more likely to grow. The beſt Sorts for ſowing are thoſe whoſe Fleſh is firm, and cleaves to the Stone; and from amongſt theſe you ſhould chuſe ſuch as ripen pretty early, and have a rich vinous Juice; from which Sorts ſome good Fruit may be expected.

Theſe Stones ſhould be planted in *Autumn*, on a Bed of light dry Earth, about three Inches deep, and four Inches aſunder; and in the Winter the Bed ſhould be covered, to protect them from the Froſt, which, if permitted to enter deep into the Ground, will deſtroy them: In the *Spring*, when the Plants come up, they ſhould be carefully cleared from the Weeds, which ſhould alſo be obſerved throughout the *Summer*; and if the *Spring* ſhould prove very dry, if you refreſh them now and then with a little Water, it will greatly promote their Growth: In this Bed they ſhould remain until the following *Spring*, when they ſhould be carefully taken up, ſo as not to break their tender Roots, and tranſplanted into a Nurſery, in Rows three Feet aſunder, and eighteen Inches diſtant Plant from Plant in the Rows, obſerving to lay a little Mulch upon the Surface of the Ground about their Roots, to prevent its drying too faſt: And if the *Spring* ſhould prove very dry, you ſhould give them a little Water once a Week, until they have taken Root; after which they ſhould be conſtantly kept clear from Weeds, and the Ground between the Rows carefully dug every *Spring*, to looſen it, ſo as that the tender Fibres may ſtrike out on every Side.

In this Nurſery they may continue two or three Years; after which they ſhould be tranſplanted, where they are to remain, to produce Fruit.

In removing theſe Trees, you ſhould obſerve to prune their downright Roots (if they have any) pretty ſhort, and to cut off all bruiſed Parts of the Roots, as alſo all the ſmall Fibres, which do generally dry, and when left upon the Roots, after planting again, grow mouldy, and decay; ſo that they are injurious to the new Fibres which are ſhot out from the Roots, and very often prevent the Growth of the Trees: but you ſhould by no means prune their Heads; for the Plants which are produced from Stones, are generally of a more ſpongy Texture, and ſo more liable to decay when cut, than thoſe which are budded upon other Stocks. Beſides, as theſe Trees are deſigned for Standards, (for it is not proper to plant them againſt Walls, until you ſee the Produce of their Fruit, to ſhew which of them deſerves to be cultivated;) ſo they will never require any other pruning, but only to cut out decayed Branches, or ſuch as ſhoot out very irregular from the Sides; for more than this, is generally very injurious to them.

In planting theſe Trees, it will be the better Way to diſpoſe them ſingly in the Quarters of the Kitchen-Garden, where they will thrive and produce Fruit much better, than if they are planted pretty near each other in Rows; and as they are thus ſingly diſpoſed, they will not do much Injury to the Crops which grow under them.

When they have produced Fruit, you will ſoon be a Judge of their Goodneſs: therefore ſuch of them as you diſlike, may be deſtroy'd; but thoſe which are good may be propagated, by inoculating them upon other Stocks, which is the common Method now practiſed to propagate theſe Fruits: therefore I ſhall now proceed to treat of that more particularly; in the doing of which, I ſhall ſet down the Method now commonly practiſed by the Nurſery Gardeners; and then propoſe ſome few Things of my own, as an Improvement thereon, for ſuch Perſons who are very curious to have good Fruit. But firſt,

You ſhould be provided with Stocks of the *Muſcle* and *White-Pear-Plums*, which are generally eſteem'd the two beſt Sorts of *Plums* for Stocks, to inoculate *Peaches* and *Nectarines* upon; as alſo ſome *Almond* and *Apricock* Stocks, for ſome tender Sorts of *Peaches*, which will not grow upon *Plum* Stocks: theſe ſhould be all produced from the Stone, (as hath been already directed in the Article of a *Nurſery*) and not from Suckers, for the Reaſons there laid down.

When theſe Stocks have grown in the Nurſery two Years, they will be ſtrong enough to bud, the Seaſon for which is commonly about *Midſummer*; when you ſhould make choice of ſome good Cuttings of the Sorts of Fruit you intend to propagate, always obſerving to take them from healthy Trees, and ſuch as do generally produce a good Quantity of well-taſted Fruit; for it is very certain, that any Sort of Fruit may be ſo far degenerated, where this Caſe is wanting, as not to be like the ſame Kind. Beſides, whenever a Tree is unhealthy, the Buds taken from that Tree will always retain the Diſtemper, in a greater or leſs Degree, according as it hath imbibed a greater or leſs Quantity of the diſtemper'd Juice. Thus, for Inſtance, where a *Peach* or *Nectarin* Tree hath been greatly blighted, ſo as that the Shoots have grown buſled, and the Leaves curled up to a great degree, that Diſtemper is ſeldom recover'd again by the greateſt Art, or at leaſt not under ſeveral Years Management; for let the Seaſons prove ever ſo favourable, yet theſe Trees will continually ſhew the ſame Diſtemper: which many Perſons are ſo weak as to ſuppoſe a freſh Blight: whereas in reality it is no other but the Remains of the former Sickneſs, which are ſpread and intermix'd with all the Juices of the Tree; ſo that whatever Buds are taken from ſuch Trees, will always retain a Part of the Diſtemper.

The Cuttings with which you are thus to be provided, ſhould always be taken from the Trees either in a Morning or Evening, or elſe in a cloudy Day; for if they are cut off when the Sun is very hot, the Shoots will perſpire ſo freely, as to leave the Buds deſtitute of Moiſture, which is often the Cauſe of their miſcarrying; and the ſooner theſe are uſed when cut from the Trees, the better they will take. The Manner of this Operation being fully explain'd under the Article of *Inoculation*, I ſhall not repeat it in this Place. The Management of theſe Trees during their remaining Time in the *Nurſery*, is likewiſe fully ſet down under that Article. I ſhall therefore proceed to the Planting of theſe Trees, either againſt Walls, Eſpaliers, or for Standards. But as the future Succeſs of theſe Trees doth in a great meaſure depend upon the Soil in which they are planted; ſo I ſhall briefly ſet down the Method of Preparing the Earth for the Borders where they are deſigned to grow.

The beſt Earth for *Peach-Trees*, is ſuch as is taken from a Paſture Ground, that is neither too ſtiff and moiſt, nor over-dry, but of a middling Nature: this ſhould be dug from th Surface of the Ground about ten Inches deep, taking th Turf with it; and ſhould be laid in Heaps eight or te Months before it be uſed, during which Time it ſhould b often turned, to rot the Turf, and break the Clods, where by it will be render'd very light, and eaſy to work; and a bout the Beginning of *September* you ſhould carry it into th Garden, and make the Borders, which muſt be raiſed i Height proportionable to the Moiſture of the Garden; f if the Ground be very wet, it will be adviſeable to lay ſom Rubbiſh in the Bottom of the Border, to drain off the Mo ſture, and to prevent the Roots of the Trees from runni downwards; then raiſe the Border of Earth at leaſt Foot above the Level of the Ground, ſo that the Roots of t Trees may always remain dry: but if the Ground be pret dr dry, the Borders ſhould not be raiſed above four or five Inches higher than the Surface, which will be ſufficient to allow for their ſinking.

As to the Breadth of theſe Borders, that can't be too great; but they ſhould never be leſs than ſix Feet broad where Fruit-Trees are planted; for when the Borders are made very narrow, the Roots of the Trees will be ſo confined in four or five Years time, that they will ſeldom thrive well after. The Depth of theſe Borders ſhould not be greater than two Feet; for where they are prepared to a great Depth, it only intices the Roots of the Trees downward, which may be the Cauſe of their future Barrenneſs; for their Roots being got down below the Influences of the Sun and Showers, do imbibe a great Quantity of crude Juices; which only add to the luxuriant Growth of the Trees, and deſtroy their Fruitfulneſs: beſides whatever Fruit are produced from ſuch Trees, are not near ſo well-taſted, as are thoſe which grow upon thoſe Trees whoſe Roots lie near the Surface, and enjoy the kindly Benefit of the Sun's Heat, to correct and digeſt whatever Crudities there may be in the Earth.

Your Borders being thus prepared, ſhould lie about three Weeks or a Month, to ſettle, by which time the Seaſon for Planting will be come, which ſhould be perform'd as ſoon as the Leaves begin to decay, that the Trees may take Root before the Froſt comes on to prevent them: then you ſhould carefully take up the Trees out of the Nurſery, ſo as not to break or bruiſe their Roots; and with a ſharp Knife you muſt prune the extreme Parts of them, and cut off ſmooth any broken or bruiſed Roots; as alſo all the ſmall Fibres ſhould be taken off, for the Reaſons before given.

And having thus prepared your Trees, you ſhould meaſure out their Diſtance, which ought never to be leſs than fourteen Feet; but where the Ground is very good, they ſhould be planted ſixteen Feet aſunder. This, I doubt not, will be thought too great a Diſtance by many Perſons, eſpecially ſince it is contrary to the general Practice at this Time: but I am ſatisfied, whoever ſhall try the Experiment, will find it no more than is ſufficient for theſe Trees, where they are rightly managed; for if they do take kindly to the Soil, their Branches may be ſo train'd, as to furniſh all the lower Part of the Wall in a few Years: which is what ſhould be principally regarded, and not, as is too often the Practice, run up the Shoots in Height, and leave all the lower Part of the Tree deſtitute of bearing Wood; ſo that, in a few Years, there will not be any Fruit but upon the upper Part of the Trees: which alſo muſt be the Caſe where they are planted too cloſe; becauſe there being no Room to extend the Branches on either Side, they are obliged to lead them upright, which produces the before-mention'd ill Effect.

And here I can't help taking notice of another very great Error in planting Wall-Fruit; which is, the placing Standard or Half-Standard Trees between the others, to cover the upper Part of the Wall, and to produce Fruit, until the Trees underneath are grown up ſufficient to furniſh the Walls, when the Standards are to be taken away: this is done, without conſidering that the greater Number of Trees are planted in a ſmall Compaſs, the leſs Nouriſhment they can receive, and ſo, conſequently, muſt be the weaker; for the ſame Space of Ground can't nouriſh twenty Trees equally as well as it could ten: ſo that whatever Strength the Standard-Trees may have, the Dwarfs will be proportionably weaker: and it is a common Obſervation, that moſt Trees extend their Roots as far under Ground, as their Branches ſpread above Ground; ſo that there ſhould always be the ſame Allowance given to the Wall-Trees, if we would have them ſtrong and vigorous; therefore the building very high Walls for Fruit is to no Purpoſe; for a ten or twelve Foot Wall will be ſufficient for moſt Sorts of Fruit.

But to return to Planting: After you have mark'd out the Places where each Tree is to ſtand, you muſt with your Spade make a Hole wide enough to receive the Roots of the Tree; then you ſhould place it down, obſerving to turn the Bud outwards, that the wounded Part of the Stock may be hid, and let the Stem of the Tree be placed about four or five Inches from the Wall, with its Head inclining thereto; then fill in the Earth with your Hands, obſerving to break the Clods, that the Earth may fall in between the Roots, ſo as no void Spaces may be left about them. You ſhould alſo gently ſhake the Tree with your Hands, to ſettle the Earth down the better; then with your Foot gently preſs down the Earth about the Stem; but do not tread it down too hard, which is many times a very great Fault; for when the Ground is inclinable to bind, the treading of it cloſe doth often render the Ground ſo hard, as that the tender Fibres of the Roots can't ſtrike into it, whereby the Trees remain at a Stand for ſome time; and if the Earth be not looſen'd in Time, it frequently dies: ſo that whenever you obſerve the Earth of your Borders to be bound, either by great Rains, or from any other Cauſe, you ſhould dig and looſen it again, obſerving always to do it in dry Weather, if in *Winter* or *Spring*; but in *Summer* it ſhould be done in a moiſt Seaſon.

After you have thus planted your Trees, you ſhould faſten their Heads to the Wall, to prevent their being ſhaken by the Wind, which would diſturb their Roots, and break off the tender Fibres ſoon after they were produced, to the no ſmall Prejudice of the Trees: You ſhould alſo lay ſome Mulch upon the Surface of the Ground about their Roots, to prevent the Froſt from penetrating the Ground, which would injure, if not deſtroy the ſmall Fibres.

Theſe Things being duly obſerved, they will require no farther Care till the *February* following; towards the latter End of which Month, or the Beginning of *March*, according as the Seaſon is earlier or later, you muſt cut off the Heads of the new-planted Trees, leaving only four or five Eyes above the Bud; in doing of which, you muſt be very careful not to diſturb their Roots; to prevent which, you ſhould place your Foot down cloſe to the Stem of the Tree, and take faſt hold of that Part of the Stock below the Bud with one Hand, to hold it ſteady, while with the other Hand you gently ſlope off the Head of the Tree with a ſharp Knife at the intended Place, which ſhould always be juſt above an Eye: this ſhould always be done in dry Weather; for if there ſhould be much Rain ſoon after it is done, the Wet will enter the wounded Part, and damage the Tree: nor ſhould it be done in froſty Weather, for the ſame Reaſon; for that would enter the wounded Part, and prevent its healing over. After you have headed the Trees, you ſhould gently looſen the Earth of the Borders, to admit the Fibres of the Roots: but you muſt be very careful, in doing of this not to cut or bruiſe their new Roots, which would alſo damage them: and if the Mulch which was laid about their Roots in *Autumn* be rotted, you may dig it into the Border at ſome Diſtance from the Roots of the Trees; and when the dry Weather comes on, you ſhould pare off ſome Turf from a Paſture Ground, which ſhould be laid upon the Surface of the Border about the Roots of the Trees, turning the Graſs downwards, which will preſerve a gentle Moiſture in the Earth better than any other ſort of Mulch; and this will not harbour Inſects, as do moſt ſorts of Dung and Litter, to the no ſmall Detriment of the Trees.

In watering of theſe Trees, you ſhould obſerve to do it with a Noſſel upon the Watering-Pot, ſo as to let it out in Drops; for when it is haſtily pour'd down, it cauſes the Ground to bind; and if you water over the Head of the Tree, it will be of great Service to it. Your Waterings ſhould not be repeated too often, nor ſhould it be given them in great Quantity, both which are very injurious to new-planted Trees.

In the Middle of *May*, when theſe Trees will have ſeveral Shoots ſix or eight Inches in Length, you ſhould nail them to the Wall, obſerving to train them horizontally, rubbing off all fore-right Shoots, or ſuch as are weak, whereby thoſe which are preſerved will be much ſtronger: but if there are not more than two Shoots produced, and thoſe very ſtrong, you ſhould at the ſame time nip off their Tops, which will cauſe each of them to puſh out two or more Shoots, whereby the Wall will be better ſupplied with Branches: you muſt alſo continue to refreſh them with Water in dry Weather, during the whole Seaſon, otherwiſe they will be apt to ſuffer; for their Roots having but little Hold of the Ground the firſt year after tranſplanting, if the Seaſon ſhould prove very dry, it will greatly retard their Growth, if due Care be not taken to water them.

In the Beginning of *October*, when you obſerve the Trees have done ſhooting, you ſhould prune them; in doing of which, you muſt ſhorten the Branches in proportion to the Strength of the Tree; which, if ſtrong, may be left eight Inches long; but if weak, ſhould be ſhorten'd to four or five: then you ſhould train them horizontally to the Wall, (as was before directed;) ſo that the Middle of the Trees may be void of Branches; for that Part of the Tree will be eaſily furniſh'd with Wood afterwards; whereas if the Shoots are train'd perpendicularly to the Wall, thoſe which are the ſtrongeſt will draw the greateſt Share of the Sap from the Roots, and mount upwards; ſo that the Side-Branches will be deprived of their Nouriſhment, and grow weaker, until they, many times, decay; and this is the Reaſon that we ſee ſo many *Peach-Trees* with one upright Stem in the Middle, and the two Sides wholly unfurniſh'd with Branches, whereby the Middle of each Tree cannot produce any Fruit, that being fill'd with large Wood, which never produces any Bearing Shoots: nor can the two Sides of the Trees be regularly fill'd with fruitful Branches, when this Defect happens to them; therefore this Method ſhould be carefully obſerved in the training up young Trees; for when they are permitted to run into Diſorder at firſt, it will be impoſſible to reduce them into a regular healthful State afterwards, the Wood of theſe Trees being too ſoft and pithy to admit of being cut down again, (as may be practiſed on many other hardy Fruit-trees, which will ſhoot out vigorouſly again;) whereas theſe will gum at the Places where they are wounded, and in a few Years intirely decay.

The Summer following, when the Trees begin to ſhoot, you ſhould carefully look over them, to rub off all fore-right Buds, or ſuch as are ill placed, and train thoſe which are deſign'd to remain horizontally to the Wall, in their due Order as they are produced; for this is the principal Seaſon when you can beſt order the Trees as you would have them; whereas if they are neglected until *Midſummer*, as is the common Practice, a great part of the Nouriſhment will be exhauſted by foreright Shoots, and other uſeleſs Branches, which muſt afterwards be cut off; and hereby the remaining Shoots will be render'd very weak, and perhaps ſome Part of the Wall be intirely unfurniſh'd with Branches; which might have been eaſily ſupplied in the Beginning of *May*, by ſtopping ſome of the ſtronger Shoots in ſuch Parts of the Tree where there is a Neceſſity for more Branches, which would cauſe each of them to ſhoot out two or more Side-Branches below the Ends of the Shoots, which may be guided into the vacant Parts of the Tree, as they are produced, ſo as that every Part may be regularly furniſhed with proper Wood, which is the greateſt Beauty and Excellency of Wall-Trees: but you ſhould always forbear ſtopping the Shoots in *Summer*, where there is not a Neceſſity for Branches to fill the Wall; for there cannot be a greater Fault committed, than that of multiplying the Number of Shoots, ſo as to cauſe a Confuſion, whereby the Branches will be too weak to produce good Fruit: beſides, when they are too cloſely laid in upon the Wall, the Air is excluded from the Shoots by the great number of Leaves, ſo that they are never duly ripen'd, and, conſequently, what Fruit is produced thereon can't be ſo well-taſted as thoſe which are produced upon ſuch Trees where the Shoots receive all the Advantages of Sun and Air to maturate them.

Thus having ſet down the Method of Training up young Trees, I ſhall now proceed to their Pruning, and future Management; which being the ſame as with full-grown Trees, will ſerve for general Directions how to manage theſe Sorts of Fruit.

In the Pruning of *Peach* and *Nectarine*-Trees, (which require the ſame Culture) the two following Rules ſhould be ſtrictly obſerved; *viz.* *1ſt*, That every part of the Tree be equally furniſh'd with Bearing-Wood; and, *2dly*, That the Branches are not laid in too cloſe to each other, for the Reaſons before laid down, (with ſome others, which will be hereafter inſerted.) As to the firſt, it muſt be obſerv'd, that all theſe Trees do produce their Fruit upon the young Wood, either of the preceding Year, or at moſt the two Years Shoots, after which Age they do not bear: therefore the Branches ſhould be pruned ſo as to cauſe them to produce new Shoots annually in every Part of the Tree; which cannot be done in the ordinary Method of Pruning, where Perſons neglect their Trees at the Seaſon when they are moſt capable of Management, which is in *May*, at which Time the luxuriant Growth of Branches may be check'd by pinching, and new Shoots produced where they are wanting, by ſtopping the neighbouring branches; which Shoots being produced at that Seaſon, will have Time enough to ripen and gain Strength before the *Autumn* comes on; whereas all thoſe Shoots which are produced after the Beginning of *June*, will be crude and pithy; and tho' they may ſometimes produce a few Bloſſoms, yet thoſe do rarely bring Fruit; nor are the future Branches good which are produced from ſuch Wood, the Veſſels being too large to ſtrain the Juices, ſo that they eaſily admit of great Quantities of crude Nouriſhment to paſs thro' them. Therefore thoſe Perſons who only regard their Wall-Trees at two different Seaſons, *viz.* the *Winter* and *Midſummer* Pruning, can't poſſibly have them in good Order; for when all the Branches which were produced in the *Spring* are permitted to remain until the Middle or latter End of *June*, (as is the common Practice) ſome of the moſt vigorous will draw the greateſt Part of the Nouriſhment from the weaker Branches, which, when the ſtrong ones are taken off, will be too weak to produce fair Fruit; and hereby the Strength of the Trees is exhauſted, to nouriſh the uſeleſs Branches, which are annually cut off again: and thus are too many Trees managed, and at the ſame time Complaints made of their Luxuriancy; becauſe two or three Shoots, by drawing in the greateſt Share of the Nouriſhment, grow very ſtrong and woody: (whereas if the Nouriſhment had been equally diſtributed to a regular Quantity of Branches, there would be no Sign of their too great Strength,) untill by often cutting off theſe vigorous Branches, the Trees are either intirely deſtroy'd, or at leaſt render'd ſo weak as not to be able to produce Fruit: for altho' by thus weakening the Branches it is often the Means to produce a good number of Bloſſoms, (as may many times be obſerved alſo upon Autumnal Shoots,) yet the utmoſt of their Strength is ſpent in expanding the Flowers, ſo that they rarely produce Fruit, and very often the greateſt Part of the Branches die ſoon after, which is ſuppoſed to be occaſion'd by a Blight, (as I have elſewhere ſaid) when in reality it is nothing leſs than the Fault of thoſe who have the Management of the Trees. It is therefore of the greateſt Conſequence to Wall-Trees, eſpecially of theſe Sorts, to go over them two or three times in the Month of *May*, to rub off all irregular Shoots, and to train in the Branches that are left in due Order to the Wall, that each Shoot may have an equal Advantage of Sun and Air, both of which are abſolutely neceſſary to ripen and prepare the Wood for the next Year's Bearing.

And by duly obſerving the Trees at this Seaſon, there will not be Occaſion for ſo much Cutting, as is often practiſed on *Peach-Trees*, to their great Injury; for their Wood-Branches are generally ſoft, tender, and pithy, which, when greatly wounded, are not heal'd over again ſo ſoon as many other Sorts of Trees; and the Wet inſinuating into the wounded Parts, doth often cauſe the Branches to canker and die; which may be intirely avoided, by the gentle, eaſy Method of pinching and rubbing off the Buds in the *Spring* Seaſon, which never makes any Wounds on the Tree; and hereby a vaſt deal of Labour is ſaved; for one Perſon, who is ready at this Buſineſs, will go over a great Quantity of Walling in a Day; whereas if the Trees are permitted to grow rude all the *Spring*, they will require ſix times the Labour to reduce them into Order. Beſides, it is a great Diſadvantage to the Fruit, in permitting the Branches of the Trees to extend from the Wall, and ſhade them; and when they have grown under the Shelter of theſe Branches and Leaves all the *Spring*, until *Midſummer*, then by pruning off ſome of theſe Shoots, and nailing the others cloſe to the Wall, the Fruits are ſuddenly expoſed to the Sun and Air, whereby they receive a very great Check, and are not only retarded in their Growth, but often render'd ill-taſted, and have tough Skins.

The Diſtance which the Branches of theſe Trees ſhould be allow'd againſt the Wall, muſt be proportion'd to the Size of the Fruit, or the Length of the Leaves: for if we obſerve how the Branches of Trees are naturally diſpoſed to grow, we ſhall always find them placed at a greater or leſs Diſtance, as their Leaves are larger or ſmaller, (as I have already obſerved under the Articles of *Leaves*:) and there is no ſurer Guide to a curious Artiſt than Nature, from whence a Gardener ſhould always be directed in every Part of his Profeſſion; ſince his Buſineſs is to aid and aſſiſt Nature, where ſhe is not capable of bringing her Productions to Maturity, or where there is Room to make conſiderable Improvements by Art; which cannot be any otherwiſe effected, than by gently aſſiſting her in her own Way.

But to return to Pruning of theſe Trees: The Branches being carefully train'd in, as before directed in the *Spring* and *Summer* Seaſons, we come now to treat of the *Winter* Pruning, which is commonly perform'd in *February* or *March*: but the beſt Seaſon for this Work is about *Michaelmas*, when their Leaves begin to fall, which will be early enough for their Wounds to heal, before the Froſt comes on, ſo that there will be no danger of their being hur thereby: and the Branches of the Trees being proportion' to the Strength of the Roots at that Seaſon, all the aſcending Sap in the *Spring* will be employed to nouriſh only thoſ uſeful Parts of the Branches which are left; whereas if they are left unpruned till *February*, the Sap in the Branches being then in Motion, as may be obſerv'd by the ſwelling o the Buds, the greateſt Part of it will be drawn up to th extreme Parts of the Branches, to nouriſh ſuch Bloſſoms muſt be afterwards cut off: and this may be eaſily known by obſerving the ſtrongeſt Shoots at that Seaſon, when yo will find the extreme Buds to ſwell faſter than moſt of th lower ones; for there being no Leaves then upon th Branches, to detain the Sap to nouriſh the lower Buds, th upper ones will always draw from thoſe below.

But it is a conſtant Practice amongſt Gardeners, founde upon long Experience, to prune weak Trees early in th *Winter*, and luxuriant Trees late in the *Spring* in order check their Luxuriancy. Now it is evident, that this Chec does not proceed from any conſiderable Loſs of Sap at th

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Wounds of the pruned Tree, (excepting a few of the bleeding Trees, when cut at that Seaſon,) but muſt ariſe from ſome other Cauſe; for by ſeveral Experiments made by the Rev. Dr. *Hales*, in fixing Mercurial Gages to the Stems of freſh-cut Trees, he found thoſe Wounds were conſtantly in an imbibing State, except the Vine in the bleeding Seaſon.

When a weak Tree is pruned early in the Beginning of *Winter*, the Orifices of the Sap-veſſels are cloſed up long before the *Spring*; and conſequently, when in the *Spring* and *Summer*, the warm Weather advancing, the attracting Force of the perſpiring Leaves is not then weaken'd by many Inlets from freſh Wounds, but is wholly exerted in drawing Sap from the Root: whereas, on the other hand, when a luxuriant Tree is pruned late in the *Spring*, the Force of its Leaves to attract Sap from the Root will be much ſpent and loſt, at the ſeveral freſh-cut Inlets.

Beſides, if it were no Advantage to the Trees to prune them at this Seaſon, (which I think, no one will have Reaſon to doubt, after making the Trial,) but that it only ſucceeds as well as the *Spring* Pruning, yet there is a great Advantage in doing of it at *Michaelmas*; for that being a much more Leiſure Seaſon with Gardeners than the *Spring*, they will have more Time to perform it carefully; and then they will not have too many Things come together, which may require to be immediately executed: for the *Spring* being the principal Seaſon for Cropping their Kitchen-Gardens, and attending their Hot-beds, if they are diſingaged from the Buſineſs of Pruning at that Time, it will be of great Advantage, eſpecially where there is a great Quantity of Walling. And here is alſo another Benefit in Pruning at this Seaſon, which is, the having the Borders at liberty to dig and make clean before the *Spring*, ſo that the Garden may not appear in Litter at that Seaſon.

Having ſaid thus much concerning the Time of Pruning, I ſhall now proceed to give ſome general Directions how it is to be perform'd on *Peach* and *Nectarine* Trees, which require a very different Management from moſt other Sorts of Fruits.

In Pruning of theſe Trees, you ſhould always obſerve to cut them behind a Wood-bud, (which may be eaſily diſtinguiſh'd from the Bloſſom-buds, that are ſhorter, rounder, and more turgid than the Wood-buds;) for if the Shoot have not a leading Bud where it is cut, it is very apt to die down to the next leading Bud; ſo that what Fruit may be produced above that, will come to nothing, there being always a Neceſſity of a leading Bud to attract the Nouriſhment; for it is not ſufficient that they have a Leaf-bud, as ſome have imagined, ſince that will attract but a ſmall Quantity of Nouriſhment; the great Uſe of the Leaves being to perſpire away ſuch crude Juices as are unfit to enter the Fruit: the Length you ſhould leave theſe Branches, ſhould be proportion'd to the Strength of the Tree, which, in a healthy ſtrong Tree may be left ten Inches or more; but in a weak one, they ſhould not be more than ſix Inches; however, in this you muſt be guided by the Poſition of a leading Bud; for it is better to leave a Shoot three or four Inches longer, or to cut it two or three Inches ſhorter, than we would chuſe to do, provided there be one of theſe Buds, it being abſolutely neceſſary, for the future Welfare of the Tree: you ſhould alſo cut out intirely all weak Shoots, tho' they may have many Bloſſom-buds upon them; for theſe have not Strength enough to nouriſh the Fruit, ſo as to give it a kindly Flavour; but they will weaken the other Parts of the Tree.

In nailing the Shoots to the Wall, you muſt be careful to place them at as equal Diſtances as poſſible, that their Leaves, when come out, may have Room to grow, without ſhading the Branches too much; and you ſhould never nail them upright, if it can be prevented; for when they are thus train'd, they are very ſubject to ſhoot from the upper-moſt Eyes, and the lower Part of the Shoots will thereby become naked.

There is not any thing in the Buſineſs of Gardening, which has more exerciſed the Thoughts of the Curious, than how to preſerve their tender Sorts of Fruit from being blighted in the *Spring* of the Year; and yet there has been little wrote upon this Subject, which is worth Notice: Some have propoſed Mattreſſes of Straw or Reeds to be placed before the Fruit-Trees againſt Walls, to prevent their being blaſted: Others have directed the fixing horizontal Shelters in their Walls, to prevent the perpendicular Dew or Rain from falling upon the Bloſſoms of the Fruit-Trees, which they ſuppoſed to be the chief Cauſe of their Blighting: but both theſe Contrivances have been far from anſwering the Expectations of thoſe Perſons who have put them in Practice, (as I have elſewhere ſhewn;) therefore it may not be improper to repeat ſome Things in this Place, which I have before mentioned, in relation to this Matter. And,

1ſt, I have already ſaid, that the Blights, which are ſo often complained of, do not proceed from any external Cauſe or Inclemency in the Seaſon, ſo often as from a Diſtemper or Weakneſs in the Trees; for if we obſerve the Trees at that Seaſon, where they are the moſt ſubject to what is call'd a Blight, we ſhall find the Branches very ſmall, weak, and not half ripened, as alſo trained in very cloſe to each other; theſe Branches are, for the moſt part, full of Bloſſom-buds (which is chiefly occaſioned by their want of Strength.) Theſe Buds do indeed open, and to Perſons not ſkilled in Fruit-trees, ſhew a great Proſpect of a plentiful Crop of Fruit; whereas the whole Strength of the Branches is ſpent in nouriſhing the Flowers, and being unable to do any more, the Bloſſoms fall off, and the ſmall Efforts of the Leaf-buds are checked, ſo that, many times, the greateſt Part of the Branches die away; and this is called a great Blight: Whereas at the ſame time it may be often obſerv'd, that ſome Trees of a different Sort, nay, even ſome of the ſame Sort, which were ſtronger, tho' placed in the ſame Soil, expoſed to the ſame Aſpect, and ſubject to the ſame Inclemency of Air, have eſcaped very well, when the weak Trees have appeared to be almoſt dead: which is a plain Indication that it proceeds from ſome Cauſe within the Tree, and not from any external Blight. All this will therefore be remedied, by obſerving the foregoing Directions in the Pruning and Management of the Trees, ſo as never to overburden them with Branches, nor to ſuffer any Part of the Trees to exhauſt the whole Nouriſhment from the Root, ſo as to cauſe the other Parts to be very weak; but to diſtribute the Nouriſhment equally to every Shoot, ſo that there may be none too vigorous, at the ſame Time that others are too weak; and by continually rubbing off uſeleſs or fore-right Shoots, as they are produced, the Strength of the Trees will not be ſpent, to nouriſh ſuch Branches as muſt be afterwards cut out, which is too often ſeen in the Management of theſe Trees. And,

2dly, It ſometimes happens that the Roots of theſe Trees are buried too deep in the Ground, which, in a cold or moiſt Soil, is one of the greateſt Diſadvantages that can attend theſe tender Fruits; for the Sap which is contained in the Branches, being by the Warmth of the Sun put ſtrongly into Motion early in the *Spring*, is exhauſted in nouriſhing the Bloſſoms, and a Part of it is perſpired thro' the Wood-branches, ſo that its Strength is loſt before the Warmth can reach to their Roots, to put them into an equal Motion in ſearch of freſh Nouriſhment, to ſupply the Expence of the Branches; for want of which the Bloſſoms fall off and decay, and the Shoots ſeem to be at a ſtand, until the farther Advance of the Warmth penetrates to the Roots, and ſets them in Motion; when ſuddenly after the Trees, which before looked weak and decaying, do make prodigious Progreſs in their Shoots, and before the *Summer* is ſpent, are furniſh'd with much ſtronger Branches than thoſe Trees which have the full Advantage of Sun and Showers, and that are more fruitful and healthy; which muſt certainly be owing to the former Obſervation, as alſo to their drawing in a great Quantity of crude Moiſture, which, tho' productive of Wood, is yet unkindly for Fruit. If, therefore, this be the Caſe, there is no Way of helping this but by raiſing up the Trees, if they are young; or, if they are too old to remove, it is the better Way to root them out, and make new Borders of freſh Earth, and plant down young Trees; for it is a great Vexation to be at the Trouble and Expence of pruning and managing theſe Trees, without having the Pleaſure of reaping any Advantage from them. Which will always be the Caſe, where the Trees are thus injudiciouſly planted. Or,

3dly, This may proceed from the Trees wanting Nouriſhment, which is many times the Caſe where they are planted in a hard gravelly Soil, in which it is the common Practice to dig Borders three or four Feet wide, and three Feet deep into the Rock of Gravel, which is filled with good freſh Earth, into which the Trees are planted, where they will thrive pretty well for two Years, until their Roots reach the Gravel, where they are confined, as if planted in a Pot, and for want of proper Nouriſhment the Branches do continually decay every Year. This cannot be helped, where the Trees have been growing ſome Years, without taking them intirely up, or by digging away the Gravel from their Roots and adding a large Quantity of freſh Earth, that may afford them a Supply of Nouriſhment. But where a Perſon intends to plant Fruit-trees upon ſuch a Soil, I would adviſe him never to dig into the Gravel, but, on the contrary, to raiſe the Borders at leaſt two Feet above it, with good freſh Earth, which, if made of a conſiderable Width, ſo that their Roots may have Room to extend themſelves upon the

Gravel, they will enjoy the kindly Influences of the Sun and Showers, and produce delicate well-flavoured Fruit in plenty.

But if the Unfruitfulneſs of the Trees do not proceed from any of the before-mentioned Cauſes, and is the Effect of unkindly Seaſons, then the beſt Method yet known, is in froſty dry Weather, when little Dew falls, to ſprinkle the Branches of the Trees gently with Water in the bloſſoming Seaſon; and while the young-ſet Fruit is tender, (which ſhould always be done before Noon, that the Moiſture may evaporate before the Night comes on) and if in the Night you carefully cover the Trees with Mats, Canvas, or ſome ſuch light Covering, it will be of great Service to them: However, where the Trees are ſtrong and vigorous, they are not ſo liable to ſuffer by a ſmall Inclemency as are thoſe which are weak; ſo that there will be few Seaſons in which there may not be Hopes of a moderate Quantity from them, tho' there ſhould be no Covering uſed.

When your Fruit is ſet, and grown to the Bigneſs of a Small-nut, you ſhould go over the Trees and thin them, leaving them at leaſt five or ſix Inches aſunder; for when they are permitted to remain in Bunches, as they are often produced, the Nouriſhment which ſhould be employ'd wholly to the Fruits deſigned to ſtand, will be equally ſpent amongſt the whole Number, a great Part of which muſt be afterwards pulled off; ſo that the ſooner this is done, the better it will be for the remaining Fruit: And if it ſhould ſometimes happen that a Part of thoſe left, by any Accident ſhould be deſtroyed, yet the remaining ones will be much the larger and better taſted for it, and the Trees will gain more Strength; for a moderate Quantity of Fruit is always preferable to a great Crop; the Fruit, when but few, will be much larger, better taſted, and the Trees in a Condition to bear well the ſucceeding Years; whereas when they are overcharged with Fruit, it is always ſmall, ill-taſted, and the Trees are generally ſo much weakened thereby, as not to be in a Condition for bearing well for three or four Years after. So that, upon the whole, it is much better to have a leſſer Number of Fruit than is commonly eſteemed a Crop, than to have too many, ſince the Fruit and alſo the Trees are benefited thereby.

The farther Management of *Peach-trees* in *Summer* I have already mentioned, and ſhall only add a Word or two more upon that Head in this Place.

1ſt, That the Shoots being regularly trained to the Wall as they are produced, the Fruit will always be equally expoſed to the Sun and Air, by which it will be kept in a conſtant and equal State of Growing; whereas when they are over-ſhadowed by luxuriant Branches for ſome time, and afterwards expoſed to the Sun, by cutting off thoſe Branches, their Skins will grow tough, and the Fruit be greatly retarded in its Growth.

2dly, By rubbing off and diſplacing irregular Shoots as they are produced, there will be no need to uſe a Knife to theſe Trees in *Summer*, which is what they are often greatly injured by; for when there are large Wounds made on theſe Trees, eſpecially in *Summer*, it weakens them very much. Beſides (as I before ſaid) by doing this early, the Sap of the Trees is not employed to nouriſh uſeleſs Branches.

3dly, I would adviſe, never to ſhorten any of the Branches in *Summer*, unleſs it be to procure ſome ſide Shoots to fill up a Vacancy of the Wall; and this ſhould never be done after *May*, becauſe the Shoots produced after that Time are never duly ripened, and ſo are no better than Autumnal Branches.

When theſe Rules are duly executed, there will be no Occaſion to pull off the Leaves of the Trees, to admit the Sun to the Fruit, which is too often practiſed; for if we conſider, that the Leaves are abſolutely neceſſary to cheriſh the Bloſſom-buds, which are always formed at the Foot-ſtalks of the Leaves, ſo by pulling them off before they have performed the Office aſſigned them by Nature, is doing great Injury to the Trees; therefore I caution every one againſt that Practice.

PERSICARIA, [ſo called, becauſe its Leaves reſemble a *Peach*: It is alſo called *Hydro-piper*, of ὕδωρ, *Water*, and ϖέπερι, *Pepper*, becauſe it is an Aquatick Plant, and has the Taſte of Pepper] Arſmart.

The *Characters* are;

It is a Plant with an apetalous Flower, having ſeveral Stamina (or Chives) which ariſe from the multifid Calyx: The Pointal afterwards becomes an oval-pointed ſmooth Seed, incloſed in the Capſule, which was before the Flower-cup: To which may be added, it hath jointed Stalks, and the Flowers are produced in Spikes.

The *Species* are;

1. PERSICARIA *mitis maculoſa. C. B. P.* Dead *or* Spotted Arſmart.

2. PERSICARIA *vulgaris acris, ſeu Hydro-piper. J. B.* Water-pepper, Lake-weed, *or* Arſmart.

3. PERSICARIA *major, lapathi foliis, calyce floris purpureo. Tourn.* Great Arſmart, with Dock-leaves, and a purple Flower-cup.

4. PERSICARIA *Orientalis, Nicotianæ folio, calyce florum purpureo. T. Cor.* Eaſtern Arſmart, with a Tobacco-leaf, and a purple Flower-cup.

There are ſeveral other Species of this Plant, which grow wild upon moiſt Soils and Dunghills in divers Parts of *England*; but as they are rarely cultivated in Gardens, and being Plants of no Uſe at preſent, ſo I omit enumerating of them in this Place.

The two firſt ſorts here mentioned are ſometimes uſed in Medicine; the latter of which is a very ſharp acrid Plant, from whence it had its Name of *Water-pepper* and *Arſmart*: This is a perennial Plant, which grows in great Plenty on the Sides of Ditches, and in moiſt Places, almoſt in every Part of *England*, and is a very bad Weed, if once it gets Poſſeſſion in a Garden; for the Roots extend themſelves greatly under Ground, and ariſe from every Joint (as doth *Couch-graſs)* ſo that it is with great Difficulty extirpated.

The firſt is an annual Plant, that propagates itſelf in great plenty from Seeds, which falling upon the Ground, riſe the ſucceeding *Spring*, and ſpread over the Ground, wherever they are permitted to grow; ſo that they ſhould not be ſuffered to remain in Gardens: Theſe are both gathered in the Fields in *Autumn* for medicinal Uſe, when they are in Perfection.

The third Sort is cultivated in ſome curious Gardens for Variety, it making a handſome Appearance during the Seaſon of its Flowering: This may be propagated by ſowing the Seeds upon a Bed of rich moiſt Earth in *Autumn*, ſoon after they are ripe, and the Plants will come up the *Spring* following, when they may be tranſplanted into the Borders where they are to remain: This is alſo an annual Plant, which requires to be ſown every Year, or the Seeds permitted to shed, which will grow better than thoſe which are ſown by Art.

The fourth Sort was brought from the Eaſtern Country by Monſ. *Tournefort*, to the *Royal Garden* at *Paris*, from whence it hath been ſince communicated to ſeveral Parts of *Europe*. This Plant (though but an Annual) doth grow to be ten or twelve Feet high, and divides into ſeveral Branches, each of which produces a beautiful Spike of purple Flowers at their Extremities in the *Autumn*; which, together with its large green Leaves, and jointed Stalks, do make a very grand Figure in the Borders of large Gardens, late in the Seaſon, when few other Plants are in Beauty.

The Seeds thereof ſhould be ſown in *Autumn*, as ſoon as they are ripe; or if they are permitted to fall on the Ground, the Plants will come up the *Spring* following better than when they are ſown by Art, as was before obſerved: for if the Seeds are ſown in the *Spring*, it is very rare that any of them ſucceed; and if ſome few Plants do come up from thoſe Seeds ſown at that Seaſon, they ſeldom grow near ſo ſtrong as thoſe which are produced from the Seeds which fell in *Autumn*; ſo that there is no other Culture required to this Plant but to tranſplant them out in the *Spring*, where they are deſigned to ſtand, which ſhould be in large Gardens, giving them great Space; for if they are placed near other Plants, they will ſhade them intirely from the Sun, and by continual dripping upon them, will greatly injure them; and if they ſtand too cloſe their Beauty is greatly diminiſhed.

When the Plants begin to aſpire upwards (which is commonly in *July)* their ſide Shoots ſhould be pruned off, to make them advance in Height, and preſerve them within Compaſs; otherwiſe they are very ſubject to branch out widely on every Side, ſo as to become troubleſome in a Garden; but when they are pruned up regularly five or ſix Feet high, they may afterwards be permitted to ſhoot out ſide Branches; ſince thoſe which are produced above that Height will never be very long or troubleſome, but will add to the Beauty of the Plant; This delights in a rich moiſt Soil, upon which it will grow to a prodigious Height; it produces its Flowers in *September*, which continue in Beauty until the Froſt deſtroys them.

PERVINCA, [ſo called of *pervincere*, Lat. to *overcome thoroughly*, becauſe it reſiſts the *Winter*'s Cold: It is alſo called *Clematis*, of Κλῆμα, to *climb*, becauſe this Plant climbs upon thoſe Plants which grow near it. It is alſo called *Daphnoides*, of *Daphne*, a *Laurel*, becauſe its Leaves reſemble the Laurel. It was called *Vinca*, becauſe Girdles were made of it at Weddings, or becauſe it is good for Virgins. It is called *Chamædaphne*, of χαμαὶ, *on the Ground*, and Δάφνη, *a Laurel*, q. d. *little Laurel*; becauſe it lies on the Ground, and its Leaves reſemble a Laurel.] Periwinkle.

The *Characters* are;

The Flower-cup conſiſts of one Leaf, which is divided into five long narrow Segments: The Flower alſo conſiſts of one Leaf, which expands in the Form of a Salver, and is cut into five broad Segments; the Pointal, which ariſes from the Center of the Flower-cup, becomes a Fruit, compoſed of two Huſks (or Pods) which contain oblong cylindrical furrow'd Seeds: To which may be added, that this Plant ſhoots out many long creeping Branches, which ſtrike out Roots at their Joints.

The *Species are*;

1. Pervinca *vulgaris anguſtifolia, flore cœruleo. Tourn.* Common *or* Narrow-leav'd Periwinkle, with a blue Flower.
2. Pervinca *vulgaris anguſtifolia, flore albo. Tourn.* Common Periwinkle, with a white Flower.
3. Pervinca *vulgaris latifolia, flore cœruleo. Tourn.* Greater Periwinkle, with a blue Flower.
4. Pervinca *vulgaris anguſtifolia, flore rubente. Tourn.* Common Periwinkle, with a reddiſh Flower.
5. Pervinca *vulgaris anguſtifolia, flore pleno, ſaturate purpureo. Tourn.* Common Periwinkle, with a double Flower, of a deep purple Colour.
6. Pervinca *anguſtifolia vulgaris variegate ex aureo & viridi. Boerh. Ind.* Common Periwinkle, with yellow ſtriped Leaves.
7. Pervinca *anguſtifolio vulgaris variegata ex argenteo & viridi. Boerh. Ind.* Common Periwinkle, with Silver-ſtrip'd Leaves.

The firſt Sort grows wild in divers Parts of *England*, and is not ſo much cultivated in Gardens at preſent as it was formerly, when it was planted for edging of Borders; but the Shoots being very apt to root at their Joints, rendered it very difficult to preſerve in any tolerable Order; and the Plants rooting deep in the Ground, do greatly exhauſt the Goodneſs of the Soil; ſo that it is now almoſt wholly caſt out of Gardens.

The ſecond and fourth Sorts are Varieties from the firſt, differing only in the Colour of their Flowers; as are alſo the ſixth and ſeventh, which differ in their variegated Leaves, for which they are preſerved in the Gardens of thoſe who admire ſtriped Plants.

The fifth Sort produces fine double Flowers, which makes a very handſome Appearance during its Seaſon of Flowering, which renders it worthy of a Place in every good Garden.

The third Sort grows much larger than the former, and produces large blue Flowers: This is found in Woods and ſhady Places in divers Parts of *England*.

All theſe Plants multiply exceedingly by their Shoots from the old Roots, which trailing upon the Ground do ſtrike out Roots in a ſhort Time, and may be taken off and tranſplanted where they are to remain; and tho' they are not ſo proper for a Flower-garden, yet a few Roots of each Sort may be planted in ſhady Borders under Trees, where few other Plants will thrive, or in ſmall Wilderneſſes; in which Places, if they are kept within Compaſs, they make a pretty Variety. The large Sort may be planted under Hedges, in Woods, *&c.* where it will grow four or five Feet high, and continue a long time in Flower.

Theſe Plants propagate themſelves by Roots ſo plentifully, that they ſeldom produce Fruit.

Monſ. *Tournefort* ſays, He could never obſerve any Fruit upon them either in the Country adjoining to *Paris*, or in *Provence* or *Languedoc*, where they are very common, or in the Neighbourhood of *Liſbon*.

Of all the Botanical Writers before *Tournefort*, *Cæſalpinus* is the only Perſon who found and deſcribed this Fruit; which, he ſays, is oblong, being two forked Huſks, arched and conjoined at their Extremities, containing, for the moſt part, two oblong Seeds in each.

To have this Plant produce Fruit, Monſ. *Tournefort* adviſes its being planted in a Pot that contains but a ſmall Quantity of Earth; ſo that the Sap being prevented from diſſipating and ſpending itſelf upon nouriſhing new Shoots, will mount the Stems, and ſwell the Pointal, which becomes the Fruit; and this, he ſays, was the Method whereby he obtained the Fruit of this Plant, of which he has given a Figure in his *Elements of Botany*.

But notwithſtanding what Monſ. *Tournefort* has related concerning this Matter, yet I have often obſerved the Fruit upon ſuch Plants as have grown ſingly on a good Soil; tho' where their Shoots are permitted to entangle with each other, and grow very cloſe, there is ſeldom any Fruit produced.

PETALS, are the fine-coloured Leaves which compoſe the moſt conſpicuous Parts of a Flower: Theſe are called in *Latin*, *Petala*, to diſtinguiſh them from the Leaves of Plants, which are called *Folia*.

PETASITES, [it takes its Name of πεταίω, to *extend*, becauſe its Leaves are very broad, or of πετάσυς, a *Cap*, becauſe its Leaves may ſerve inſtead of a Cap; for it has a certain Hollow in the Middle, and a hollow Expanſion round that; ſo that it reſembles a Bonnet] Butter-bur.

The *Characters* are;

It is a Plant with a floſculous Flower, conſiſting of many Florets, divided into many Parts, ſitting on the Embryo, and contained in a cylindrical Empalement, divided alſo into many Parts; the Embryo afterwards becomes a Seed furniſhed with Down: To which may be added, the Flowers appear before the Leaves.

The *Species* are;

1. Petasites *major & vulgaris. C. B. P.* Common Butter-bur, *or* Peſtilent-wort.
2. Petasites *major, floribus pediculis longis inſidentibus. Raii Syn.* Greater Butter-bur, with long Foot ſtalks to the Flowers.
3. Petasites *albus, anguloſo folio. J. B.* White Butter-bur, with angular Leaves.
4. Petasites *minor alter, tuſſilaginis folio. H. R. Par.* Leſſer Butter-bur, with a Colt's-foot Leaf.

The firſt Sort here mentioned is uſed in Medicine: This grows wild in great Plenty by the Sides of Ditches, and in moiſt Soils, in divers Parts of *England*. The Flowers of this Plant appear in the Beginning of *March*; and after they are paſt, the green Leaves come up, and grow to be very large.

The ſecond Sort was found by Mr. *Jacob Bobart* in *Oxfordſhire*, and ſent to the *Phyſic Garden* at *Chelſea*: This differs greatly from the former in its manner of Flowering; for the Flower-ſtems of this Sort riſe near two Feet high, and the Flowers grow upon long Foot-ſtalks; whereas the Stems of the common Sort do ſeldom riſe above eight or ten Inches high, and the Flowers do cloſely ſurround the Stalks.

The other two Sorts are preſerved in Botanick Gardens for Variety; but as they have little Beauty, ſo they are ſeldom propagated in other Gardens: They do all of them increaſe greatly by their creeping Roots, and, if placed in a moiſt Soil, will in a ſhort Time over-run a large Compaſs of Ground.

PETIVERIA, Guinea Henweed *vulgo*.

The *Characters* are;

It hath a Flower conſiſting of four Leaves, which are placed almoſt in the Form of a Croſs, from whoſe Cup riſes the Pointal, which afterward becomes the Fruit, which is bordered and cut at the Top, reſembling an inverſed Shield containing oblong Seeds.

We know but one *Species* of this Plant, *viz.*

Petiveria *ſolani foliis, loculis ſpinoſis. Plum. Nov. Gen.* Petiveria with Nightſhade Leaves, and prickly Seed-veſſels, commonly called *Guinea* Henweed.

This Name was given to this Plant, by Father *Plumier*, who diſcovered it in *America*; in Honour to Mr. *James Petiver* an Apothecary, who was a curious Botaniſt.

It is a very common Plant in *Jamaica*, *Barbadoes*, and moſt of the other Iſlands in the *Weſt-Indies*, where it grows in ſhady Woods, and all the *Savannas*, in ſuch Plenty, as to become a very troubleſome Weed; and as this Plant will endure a great deal of Drought, ſo it remains green, when other Plants are burnt up, which occaſions the Cattle to brouze on it; and having a moſt unſavoury ſtrong Scent, ſomewhat like wild Garlick, it gives the Cows Milk the ſame Flavour; and the Cattle which are killed ſoon after feeding on this Plant, have a moſt intolerable Scent, ſo that their Fleſh is good for little.

In *Europe* this Plant is preſerved in the Gardens of thoſe Perſons who are curious in Botany, but there is little Beauty in it; and having ſo ſtrong rank a Scent upon being handled renders it leſs valuable. It is propagated by Seeds, which muſt be ſown in a Hot-bed early in the Spring; and when the Plants are come up, they ſhould be each tranſplanted into a ſeparate Pot, and plunged into a moderate Hot-bed to bring them forward. When the Plants have obtained a good Share of Strength, they ſhould be inured to bear the open Air by degrees; into which they may be removed toward the latter End of *June*, placing them in a warm Situation, where they may remain till *Autumn*, when they ſhould be removed into the Stove, and in Winter muſt have a moderate Degree of Warmth, otherwiſe they will not live in this Country.

Theſe Plants will grow woody, and ſhoot out many Side-branches, but ſeldom riſe above two Feet high. They will produce Flowers and Seeds every Summer, and will continue ſeveral Years, remaining conſtantly green throughout the Year.

PETROSELINUM: *vide* Apium.

PEUCEDANUM [Πευκέδανον, of Πεύκη, the *Pine-tree*, becauſe the Leaves ſeem to reſemble the Pine-tree.] Hogs-fennel.

The *Characters* are:

It is a Plant with a Roſe and umbellated Flower, conſiſting of many Petals placed orbicularly, and reſting on the Empalement, which becomes a Fruit compoſed of two Seeds, which are almoſt plain, oval, gently ſtreak'd, and border'd: to theſe Marks muſt be added, that the Leaves are winged, narrow, graſſy, and divided into three Segments.

The *Species* are;

1. PEUCEDANUM *majus, Italicum. C. B. P.* Greater Hogs-fennel.
2. PEUCEDANUM *minus Germanicum. J. B.* Leſſer *German* Hogs-fennel *or* Sulphur-wort.

There are ſeveral other *Species* of this Plant, which are preſerv'd in ſome curious Botanick Gardens; but as they are Plants of little Beauty or Uſe, ſo it would be needleſs to enumerate their ſeveral Varieties in this Place.

The firſt Sort here mention'd is not very common in *England*, being only to be found in ſome curious Gardens: but the ſecond Sort (which is directed to be uſed in Medicine) is found wild in watery Places, in ſeveral Parts of *England*.

Theſe Plants may be cultivated by ſowing their Seeds on a moiſt Soil in the *Autumn*, ſoon after they are ripe, in which Place they will come ſtrong the ſucceeding *Spring*, when they ſhould be carefully weeded, and drawn out, where they are too cloſe, otherwiſe they will draw each other up very weak; and the *Autumn* following they may be taken up, and tranſplanted where they are to remain, in which Place they ſhould be planted at leaſt two Feet aſunder; for their Roots will grow very large, and branch out greatly, when they have acquired Strength. The ſecond Year after ſowing, they will produce Flowers and Seeds; but the Roots will abide many Years.

PHALANGIUM, [this Plant is ſo call'd, becauſe the Ancients uſed it in curing the pricking or ſtinging of Spiders, *Tarantula*] Spider-wort.

The *Characters* are;

It is a Plant with a Lily Flower, compoſed of ſix Petals, from whoſe Center riſes the Pointal, which afterwards becomes a roundiſh Fruit, divided into three Cells, and full of angular Seeds: to theſe Marks muſt be added, a fibroſe Root, in order to diſtinguiſh it from the Ornithogalum.

The *Species* are;

1. PHALANGIUM *parvo flore, ramoſum. C. B. P.* Branched Spider-wort, with a ſmall Flower.
2. PHALANGIUM *parvo flore, non ramoſum. C. B. P.* Unbranch'd Spider-wort, with a ſmall Flower.
3. PHALANGIUM *Africanum, floribus luteis parvis. Raii Hiſt.* African Spider-wort, with ſmall yellow Flowers.
4. PHALANGIUM *parvo flore, ramoſum, foliis fiſtuloſis, annuum. H. L.* Annual-branching Spider-wort, with fiſtulous Leaves, and a ſmall Flower.
5. PHALANGIUM *Africanum, foliis cepaceis, floribus ſpicatis aureis. Boerh. Ind.* African Spider-wort, with Onion Leaves, and Golden Flowers, growing in Spikes, *falſely call'd* an Aloe.
6. PHALANGIUM *Æthiopicum, ramoſum, floribus albis, petalis reflexis. Hort. Amſt.* Branchy *Ethiopian* Spider-wort, with white Flowers, whoſe Petals are turn'd backward.

The firſt and ſecond Sorts are abiding Plants, which are propagated in curious Gardens, for the ſake of their Flowers; and tho' they are not very beautiful, yet for their long Continuance in Flower, they deſerve a Place in the open Borders of every curious Flower-Garden.

Theſe may be propagated either from Seeds, or by parting their Roots. The beſt Time to ſow the Seeds is in *Autumn*, ſoon after they are ripe, in the Manner directed for bulbous-rooted Flowers, with which theſe Plants do agree in their Culture, and the ſecond Year after ſowing they will produce Flowers. The Seaſon for parting their Roots is in *September*; in doing of which, you muſt obſerve to preſerve a good Head to each Off-ſet, and not to divide them too ſmall, which will cauſe them to flower weak the following *Summer*: they delight in a freſh light Earth, and an open Situation.

The third Sort is an annual Plant, which ſhould be ſown on a Bed of light Earth, in *March*; and when the Plants are come up, they muſt be tranſplanted where they are to remain, in which Place they muſt be kept clear from Weeds, which is all the Culture they require: they produce their Flowers in *July*, and their Seeds are perfected in *Auguſt*.

The fourth Sort is alſo annual, but grows very large, in compariſon to the laſt: this commonly riſes two Feet high, and divides into many Branches, each of which produces a Spike of Flowers: it is a very hardy Plant; and if the Seeds are permitted to fall in *Autumn*, they will come up in the *Spring*, and produce much ſtronger Plants, than if ſown at that Seaſon, and will flower much ſooner: this muſt have a light dry Soil.

The fifth Sort is preſerv'd in Green-houſes, with other ſucculent Plants, amongſt which it makes a pretty Variety, there being ſcarcely a Month in the Year when there are not ſome of the Spikes of Flowers in Beauty. This was formerly call'd an *Aloe*, which Name is ſtill retain'd by unſkilful Perſons, tho' it is vaſtly different therefrom, in its whole Appearance. This Plant multiplies very faſt by Off-ſets, which, tho' produced at ſome Diſtance from the Earth, yet do emit Roots of a conſiderable Length; and when planted, do immediately take in the Earth: they ſhould be planted in Pots of light ſandy Earth, and houſed in Winter, with *Ficoides's*, and other hardy ſucculent Plants, where they may have free open Air; for they are hardy, and require only to be protected from Froſt.

The ſixth Sort is alſo preſerved in ſome curious Gardens, with other Exotick Plants, in the Green-houſe: this is multiplied by parting the Roots; the beſt Seaſon for doing this is in *Auguſt*, when the Leaves are decay'd; they ſhould be planted in Pots fill'd with light ſandy Earth, and houſed in Winter with the laſt: this produces large-branching Stems, which are thinly beſet with Flowers, that have their Petals reflex'd, and are of a whitiſh Colour, but continue a long time in Beauty.

PHASEOLOIDES, [of *Phaſeolus*, Lat. and εἶδος, *Shape*] Kidney-bean Tree: *vulgo*.

The *Characters* are;

It hath a papilionaceous Flower, out of whoſe Empalement riſes the Pointal, which afterwards becomes a long Pod, incloſing ſeveral Seeds, which are ſhaped almoſt like a Kidney: to which muſt be added, that it hath pennated Leaves, conſiſting of an unequal Number of Lobes, which diſtinguiſhes it from Phaſeolus.

We have but one *Species* of this Plant, at preſent, in *England*; which is,

PHASEOLOIDES *Carolinianum fruteſcens ſcandens, foliis pinnatis, floribus cœruleis ſpicatis.* Carolina Kidney-bean Tree: *vulgo*.

The Seeds of this Plant were ſent from *Carolina* by Mr. *Catesby*, in the Year 1724. and diſtributed to ſeveral curious Perſons in *London*; from which many Plants have been raiſed, which are very hardy, and propagate very eaſily by laying down the tender Branches, or from Suckers, which are ſent from the Root in great Plenty.

The beſt Seaſon for tranſplanting theſe Plants is in the *Spring*, juſt before they ſhoot: they will grow in almoſt any Soil, but thrive beſt in a rich light Earth.

This Plant is very proper to place among other climbing Shrubs in ſmall Wilderneſs Quarters, where, if it be ſupported with ſtrong Stakes, it will riſe twelve or fourteen Feet high, and produce many Spikes of fine blue Flowers; and if the Seaſon prove favourable, the Seeds will ripen very well: it is extreme hardy, enduring the ſevereſt Cold of our Climate in the open Air, provided it be not too much expoſed to the cold Winds.

PHASEOLUS, [takes its Name from φάσηλος, a *long ſwift Ship*, becauſe the Huſk of this Plant reſembles ſuch a Ship] Kidney-bean.

The *Characters* are;

It is a Plant with a papilionaceous Flower, out of whoſe Empalement riſes the Pointal, which afterwards becomes a long Pod, pregnant with Seeds, for the moſt part ſhaped like a Kidney or Oval: to theſe Notes are to be added, Leaves growing by Three's on each Pedicle, and the Plant for the moſt part climbing.

It would be to little Purpoſe to enumerate all the Varieties of this Plant which have come to Knowledge, in this Place; ſince *America* does annually furniſh us with new Sorts, ſo that there is no knowing what Varieties there may be produced in *England:* beſides, as they are not likely to be much cultivated here, ſince the old Sorts are preferable to any of the new ones, for the Kitchen; therefore I ſhall only firſt ſet down a few Sorts which are cultivated for their Flowers, or as Curioſities, and then mention thoſe which are moſt eſteem'd for the Table.

1. PHASEOLUS *Indicus, flore coccineo, ſeu puniceo. Mor. Hiſt.* The Scarlet Bean.
2. PHASEOLUS *Americanus perennis, flore cochleato odorato, ſeminibus fuſcis orbiculatis, Caracalla dictus. H. L.* Perennial American Kidney-bean, with ſweet-ſmelling cochleated Flowers, *commonly call'd* Caracalla.
3. PHASEOLUS *Americanus, ſtrumoſa radice, flore purpureo, ſiliqua anguſtiſſima. Plum.* American Kidney-bean, with a ſtrumoſe Root, a purple Flower, and a very narrow Pod.
4. PHASEOLUS *Canadenſis purpureus minor, radice vivaci. Schol. Bot.* Small purple Kidney-bean, with a perennial Root.
5. PHASEOLUS *arbor Indica incana, ſiliquis toroſis, Kayan dicta. Raii Hiſt.* Indian Hoary-Tree Kidney-bean, with ſwelling knotted Pods, *commonly call'd* Pigeon-Pea.

The firſt of theſe Plants is very common in the *Engliſh* Gardens, being planted for the Beauty of its ſcarlet Flowers: this Plant ſpreads itſelf very far, ſo that it ſhould be allow'd Room, otherwiſe it will over-run whatever Plants grow near it. The Seaſon for planting the Seeds of this Plant is in the Beginning of *April*, obſerving always to do it in dry Weather, otherwiſe the Seeds will burſt and rot: they will produce their Flowers by the Beginning of *July*, and will continue flowering until the Froſt prevents them; and their Seeds will ripen in *September*, when they ſhould be gather'd, and preſerv'd in a dry Place until the ſucceeding *Spring*, in order to be ſown. This Plant being annual, periſhes with the firſt Approach of *Winter:* it will thrive very well in the City, the Smoak of the Sea-coal being leſs injurious to this Plant than moſt others, ſo that it is often cultivated in Balconies, &c. and being ſupported either with Sticks or Strings, grows up to a good Height, and produces its Flowers very well: it is alſo planted in ſome Gardens, to cover Arbors and other Seats in the *Summer* Seaſon, to afford Shade, for which Purpoſe it will do very well: but the Seeds muſt be put in where they are to remain; for the Plants don't bear to be tranſplanted well.

The ſecond Sort is an abiding Plant, which may alſo be propagated by Seeds, which ſhould be ſown in a moderate Hot-bed in the *Spring*; and when they come up, they muſt be carefully tranſplanted into Pots fill'd with light freſh Earth, which muſt be plung'd into a Hot-bed, to facilitate their taking Root; after which, they ſhould be inured to bear the open Air by Degrees, into which they ſhould be removed when the Seaſon is warm, placing them in a ſhelter'd Situation; and as they advance, ſo ſhould they be removed into larger Pots, which muſt be fill'd up with freſh light Earth.

During the *Summer* Seaſon it muſt be frequently refreſh'd with Water; but in *Winter* it muſt be removed into the Green-houſe, and ſhould have but little Water during that Seaſon. It requires only to be ſcreen'd from Froſt; but muſt have open free Air whenever the Weather will permit, otherwiſe the Leaves will grow mouldy, and decay the tender Shoots: it produces its ſcarlet Flowers in *July* and *Auguſt*, but ſeldom perfects its Seeds in this Country. This Plant is very common in *Portugal*, where it is planted to cover Arbors and Seats in Gardens, for which it is greatly eſteem'd by the Inhabitants of that Country, and for its beautiful ſweet-ſmelling Flowers; and in that Country it thrives very well in the open Air.

The third Sort is preſerv'd in ſome curious Gardens for Variety; but is a Plant of no great Beauty: this may be propagated by ſowing the Seeds in the *Spring* upon a Hot-bed, and when they come up, they muſt be planted in Pots, and treated as the former Sort: it produces its Flowers in *July*, and the Seeds ripen in *September*.

The fourth Sort was brought from *America*, and is preſerv'd in curious Gardens, for the ſake of its long Flowering: this is an abiding Plant, and ſhould be managed as was directed for the third Sort; and if guarded from Froſt will continue to produce Flowers all the *Winter* Seaſon: it ripens Seeds very well, from which the Plants may be eaſily propagated.

The fifth Sort is preſerv'd as a Curioſity in *England:* but in the *Weſt-Indies* it is frequenly planted by the Sides of Alleys in Gardens, to form a Hedge, where they will laſt many Years without decaying; and will thrive on barren Land which has been worn out, where ſcarcely any thing elſe will proſper, and produce a great Quantity of Fruit, which are ſometimes eaten by the Inhabitants; but their chief Uſe is to feed Pigeons, from whence this Plant had its Name. The Branches, with the ripe Peas and Leaves, are given to Hogs, Horſes, and moſt other Cattle, which fattens them very much. In *England* it is preſerv'd in Stoves, being too tender to be kept without artificial Heat in this Climate: it may be propagated from Seeds, (which are generally brought from the *Weſt-Indies* every Year in great Plenty;) and when the Plants come up, they ſhould be planted into Pots fill'd with light ſandy Earth, and plunged into a Hot-bed, to promote their Growth: but when they have acquired ſtrength, they ſhould be gradually inured to the open Air, into which they may be removed in *July*, and may remain abroad until the Beginning of *September*, when they muſt be removed into the Stove, placing them where they may have a moderate Heat, obſerving to refreſh them now and then with a little Water; but be very careful not to give it to them in great Quantities, (eſpecially at that Seaſon) which will be very apt to rot their Roots: the ſecond Year theſe Plants will flower early in the *Spring*, and do many times produce ripe Fruit.

There are at preſent but three Sorts of *Kidney-beans*, which are cultivated for the Table in *England:* which are;

1. The Common White *or* Dutch Kidney-bean.
2. The Leſſer Garden Kidney-bean, *commonly call'd*, The *Batterſea* Bean.
3. The Upright *or* Tree Kidney-bean.

The firſt of theſe was formerly more cultivated in *England* than at preſent; but is the chief Sort now cultivated in *Holland*, from whence, probably, it had the Name of *Dutch Kidney-bean:* This Sort riſes to a very great Height, and requires to be ſupported by tall Stakes, otherwiſe they will ſpread upon the Ground, and rot; ſo that where this Care is wanting, the Fruit ſeldom comes to good: which Trouble renders it difficult to cultivate this Sort in Plenty; and the Beans being much broader than the ſmall Sort, render them leſs valuable in the *London* Markets; which, I ſuppoſe, occaſion'd their being neglected in *England:* but this is by far the beſt Sort for Eating yet known.

The ſecond Sort is that which is moſt commonly cultivated in the Gardens near *London*, and is by far the beſt Sort we yet know; for the Plant never rambles too far, but is always of moderate Growth, ſo that the Air can eaſily paſs between the Rows, and keep them from rotting: it is alſo a plentiful Bearer, and the beſt Bean, except the laſt, for Eating.

The third Sort is alſo a plentiful Bearer, and never rambles, growing upright in form of a Shrub; but the Beans are much larger than the laſt, and are not ſo well colour'd, nor do they eat near ſo firm and criſp; for which Reaſons they are not ſo generally eſteem'd.

Theſe Plants are propagated from Seeds, which muſt be ſown in the Place where they are to remain; for they will not bear tranſplanting, except it be done while they are very young; and this being pretty troubleſome, is very ſeldom practiſed, unleſs for a few early Plants under warm Hedges or Walls; but it is not worth while for the general Crops.

The Seaſon for putting theſe Seeds in the Ground, is the latter End of *March*, or the Beginning of *April*, for an early Crop; but theſe ſhould have a warm Situation, and a dry Soil, otherwiſe they will not ſucceed: you ſhould alſo obſerve to put them into the Ground at a dry Seaſon; for Wet ſo early in the Seaſon will rot the Seeds in the Ground. The Manner of planting them, is, to draw ſhallow Furrows with a Hough, at about two Feet and an half Diſtance from each other, into which you ſhould drop the Seeds about two Inches aſunder; then with the Head of a Rake draw the Earth over them, ſo as to cover them about an Inch deep.

If the Seaſon be favourable, the Plants will begin to appear in about a Week's time after ſowing, and ſoon after will raiſe their Heads upright; therefore if the Stems thereof are pretty tall above Ground, you ſhould gently draw a little Earth up to them, obſerving to do it when the Ground is dry, which will preſerve them from being injured by ſharp Winds: but you ſhould be careful not to draw any of the Earth over their Leaves, which would rot them, or at leaſt greatly retard their Growth. After this, they will require no farther Care but to keep them clear from Weeds until they produce Fruit, when they ſhould be carefully gather'd two or three times a Week; for if they are permitted to remain upon the Plants a little too long, the Beans will be too large for eating, and the Plants wou'd be greatly weaken'd thereby.

This firſt Crop of *Kidney Beans* will continue a Month in good Order, during which time they will produce great Plenty of Beans; therefore, in order to have a Succeſſion of them throughout the Seaſon, you ſhould ſow at three different Times, *viz.* in *March* or *April*, in *May*, and toward the Latter-end of *June*; which laſt Crop will continue until the Froſt comes on, and deſtroys 'em.

There are ſome Perſons who raiſe theſe in Hot-beds, in order to have them very early: The only Care to be taken in the Management of theſe Plants, when thus rais'd, is to allow them Room, and give 'em as much Air as can be conveniently, when the Weather is mild; as alſo to let 'em have but a moderate Heat; for if the Bed be over-hot, they will either burn, or be drawn up ſo weak as never to come to good.

The Manner of making the Hot-bed being the ſame as for *Cucumbers*, &c. need not be repeated in this Place: but only obſerve, when the Dung is equally levell'd, to lay the Earth about four or five Inches thick; and let the great Steam of the Bed paſs off before you ſow the Seeds: The Time for doing this, muſt be proportion'd to the Seaſon when you would have the Beans for the Table; but the ſureſt Time for a Crop, is about a Week in *February*.

It is alſo a good Method which ſome uſe, to have *French Beans* earlier than they can be obtain'd in the common Ground, To make a gentle Hot-bed about the Middle of *March*, which may be arched over with Hoops, and cover'd with Mats; in this they ſow their *Kidney Beans* in Rows pretty cloſe together, ſo that a ſmall Bed will contain a great Number of Plants; theſe they bring up hardily, inuring 'em to the open Air by Degrees; and in the Beginning of *April*, when the Weather is ſettled, they prepare ſome warm Borders under Walls or Hedges; then they take them up from the Hot-bed, preſerving as much Earth as poſſible to their Roots, and plant them in the Borders at the Diſtance they are to remain: Theſe, if they take Root kindly, will produce Beans at leaſt a Fortnight before thoſe ſown in the common Ground.

The Manner of ſaving the Seeds of theſe Plants, is to let a few Rows of them remain ungather'd in the Height of the Seaſon; for if you gather from the Plants for ſome time, and afterwards leave the Remaining for Seed, their Pods will not bear ſo long and handſome, nor will the Seed be ſo good: In the *Autumn*, when you find they are ripe, you ſhould in a dry Seaſon pull up the Plants, and ſpread them abroad to dry; after which, you may threſh out the Seed, and preſerve it in a dry Place for Uſe.

PHILLYREA; [φιλύρα] Mock-privet.

The *Characters* are;

The Leaves grow by Pairs oppoſite to each other, and are Ever-green; the Flower conſiſts of one Leaf, is Bell-ſhap'd, and divided into four Parts at the Top; the Pointal, which riſes from the Center of the Flower-cup, afterwards becomes a ſpherical Flower containing one round Seed.

The *Species* are;

1. PHILLYREA *latifolia lævis. C. B. P.* The Broad-leav'd true *Phillyrea*.

2. PHILLYREA *latifolia ſpinoſa. C. B. P.* Ilex-leafed *Phillyrea*, vulgo.

3. PHILLYREA *folio alaterni. J. B. Phillyrea*, with an Alaternus Leaf.

4. PHILLYREA *folio liguſtri. C. B. P.* Privet-leafed *Phillyrea*.

5. PHILLYREA *anguſtifolia prima. C. B. P.* Narrow-leafed *Phillyrea*.

6. PHILLYREA *anguſtifolia ſecunda. C. B. P.* Roſemary-leafed *Phillyrea*, vulgo.

7. PHILLYREA *oleæ Epheſiacæ folio. Hort. Chelſ. Pluk. Phyt.* Olive-leafed *Phillyrea*.

8. PHILLYREA *latifolia lævis, foliis ex luteo variegatis. Cat. Plant. Hort.* The true *Phillyrea*, with ſtrip'd Leaves.

9. PHILLYREA *longiore folio, profunde crenato. H. R. Par. Phillyrea* with a longer Leaf, which is deeply crenated.

10. PHILLYREA *folio buxi. H. R. Par.* Box-leafed *Phillyrea*.

11. PHILLYREA *Hiſpanica, lauri folio ſerrato & aculeato. Inſt. R. H. Spaniſh Phillyrea*, with a prickly and ſawed Bay-leaf.

12. PHILLYREA *Hiſpanica, nerii folio. Inſt. R. H. Spaniſh Phillyrea*, with an oleander Leaf.

13. PHILLYREA *Capenſis, folio celaſtri. Hort. Elth. Phillyrea* of the *Cape of Good Hope*, with a Staff-tree Leaf, commonly called by the *Dutch*, *Lipplehout*.

14. PHILLYREA *Americana humilis, radice craſſâ luteâ, foliis acuminatis. Plum. Cat.* Dwarf *American Phillyrea*, with a thick yellow Root, and pointed Leaves.

15. PHILLYREA *Americana humilis, radice craſsâ roſeâ, foliis rotundioribus. Plum. Cat.* Dwarf *American Phillyrea*, with a thick roſe-coloured Root, and rounder Leaves.

The firſt eight of theſe Plants are moſt of them Natives of the Southern Parts of *France*, *Spain* and *Italy*, but are hardy enough to endure the Cold of our Climate in the open Air: They have been formerly in great Requeſt for Hedges, and to cover Walls, for both which Purpoſes they are very improper; becauſe they ſhoot ſo faſt in the *Spring* and *Summer* Months that it is very troubleſome to keep ſuch Hedges in Order; beſides, all theſe Sorts with broad Leaves do naturally produce their Branches ſo far aſunder, that they can never be reduced to a thick handſome Hedge; for although by frequently clipping the extreme Parts of the Shoots you force out ſome ſide Branches, which render it thick on the Outſide, yet the inner Branches are very far aſunder, and being of a pliable Nature are often diſplaced by ſtrong Winds; or if there happen to fall much Snow in *Winter*, ſo as to lie upon theſe Hedges, it often diſplaces them ſo much as not to be recovered again in ſome Years; for which Reaſons they are not ſo much in uſe for Hedges as they were ſome Years paſt: Nor are they ſo often planted to cover Walls; for it is a very difficult Taſk to keep them cloſe to the Wall; for their Branches being vigorous, do commonly grow to ſome Diſtance from the Wall, and harbour all Sorts of Inſects and Filth: Beſides, their Leaves being large, and growing pretty far aſunder upon the Branches, they appear naked, eſpecially when they are kept cloſely clipt.

But all theſe Sorts of Trees are very proper to intermix with other Ever-greens, to form Clumps, Amphitheatres, or to plant round the Sides of Wilderneſſes of Ever-green Trees, where being placed among other Trees of the ſame Growth, they will afford a pleaſing Variety.

The three firſt Sorts will grow to the Height of twenty Feet or more, and may be trained up to regular Heads; but the narrow-leafed Sorts ſeldom riſe above fourteen or ſixteen Feet high with us; ſo that they will be of a proper Size to place in a Line before the broad-leafed Sorts, where being intermixed with *Hollies*, *Alaternus's*, *Arbutus's*, and ſome other Sorts, they will make a beautiful Proſpect.

Theſe Plants are propagated either from Seeds or Layers; but the latter being the moſt expeditious Method in *England*, is chiefly preferred: The beſt Time to lay them down is in *March*, when you ſhould dig the Ground round the Plants intended to lay, making it very looſe; then making choice of a ſmooth Part of the Shoot, you ſhould make a Slit upwards (in the manner as is practiſed in laying of *Carnations*) and then bend the Branch gently down to the Ground, making a hollow Place with your Hand to receive it, and having placed the Part which was ſlit in the Ground, ſo as that the Slit may be open, you ſhould faſten it down with a forked Stick, that it may remain ſteady, covering that Part of the Branch with Earth about three Inches thick, obſerving to keep the upper Part erect. In dry Weather theſe Layers ſhould be watered, which will greatly facilitate their rooting; you muſt alſo keep them clear from Weeds, which if ſuffered to grow up amongſt them, will prevent their taking Root.

The *March* following many of theſe Plants will be rooted, at which time they may be taken off, and carefully planted in a Nurſery, where they may be trained up three or four Years in the manner you intend them to grow; during which time you ſhould dig the Ground between the Rows, and cut about the Roots of the Plants every Year, which will cauſe them to ſtrike out ſtrong Fibres, ſo as to ſupport a good Ball of Earth when they are removed; you ſhould alſo ſupport their Stems with Stakes, in order to make them ſtrait, otherwiſe they are very apt to grow crooked and unſightly.

When the Plants have been thus managed three or four

Years, you may tranſplant them into the Places where they are deſigned to remain: The beſt Time for this Work is the latter End of *March* or the Beginning of *April*, juſt before the Plants begin to ſhoot; but in removing them you ſhould dig round their Roots, and cut off all downright or ſtrong Roots which have ſhot out to a great Diſtance, that you may the better preſerve a Ball of Earth to each Plant, otherwiſe they are ſubject to miſcarry: And when you have placed them in their new Quarters, you ſhould lay ſome Mulch upon the Surface of the Ground, to prevent its drying; and give them ſome Water twice a Week in very dry Weather; but do not repeat it too often when the Seaſon is favourable, nor give it to them in too great Quantities, which will rot the new Fibres and prevent their Growth. You ſhould alſo ſupport the Plants with Stakes until they have taken faſt hold of the Earth, to prevent their being turned out of the Ground, or diſplaced by the Winds, which will deſtroy the Fibres that were newly put out, and greatly injure the Plants. Theſe Trees delight in a middling Soil, which is neither too wet and ſtiff, nor too dry; tho' the latter is to be preferred to the former, provided it be freſh.

The Sort with ſtriped Leaves is at preſent pretty rare, and ſomewhat tenderer than the others, as are moſt Sorts of variegated Plants leſs capable to endure the Cold, than thoſe of the ſame Kinds which are plain; the ſtriping of Plants always proceeding from their Weakneſs: This is preſerved in ſome Gardens as a Curioſity, but may be propagated in the ſame manner with the former.

Thoſe Sorts with ſmall Leaves are commonly two Years before they take Root when layed, therefore they ſhould not be diſturbed ſooner; for the raiſing them out of the Ground does greatly retard their rooting.

The ninth, tenth, eleventh and twelfth Sorts are hardy Shrubs, which will thrive in the open Air in *England*. Theſe may be propagated by laying down of their Branches, after the manner directed for the firſt eight, and may afterward be managed in the ſame way.

The thirteenth Sort is very common in ſeveral Gardens in *Holland*, but is at preſent pretty rare in *England*. This Sort will not live abroad thro' the *Winter* in this Climate, ſo is always preſerved in Pots or Tubs, and removed into the Green-houſe in *Winter*, where if it is treated after the manner directed for the *Alaternoides*, they will thrive very well. This Sort is alſo propagated by laying down the tender Branches in the Spring of the Year, which muſt be duly watered in dry Weather; and by the following *Spring* they will have taken Root; when they ſhould be ſeparated from the old Plant, and planted in Pots filled with freſh Earth, and placed in the Shade until they have taken new Root; after which Time they may be expoſed during the *Summer* Seaſon, with other pretty hardy exotic Plants, in a ſheltered Situation, where they remain till *Autumn*, when they muſt be removed into the Green-houſe. Theſe Plants are ever-green, ſo that they make a pretty Variety in the Green-houſe, during the *Winter* Seaſon.

The fourteenth Sort grows plentifully in ſeveral Parts of the *Spaniſh Weſt-Indies:* The Seeds of this Kind were ſent to *England* by Mr. *Robert Millar*, who gathered them near *Carthagena* in *America*. The fifteenth Sort was diſcovered by Father *Plumier* in *America*, and ſince by Mr. *Millar* in the Iſland of *Tabago*, from whence he ſent ſome Seeds, but they did not ſucceed in *England*.

Theſe two Sorts are tender Plants, which muſt be kept in a warm Stove in *Winter*, otherwiſe they will not live in this country. They may be propagated by Seeds, which ſhould be obtained as freſh as poſſible from the Countries of their Growth, and muſt be ſown in Pots of freſh light Earth, and plunged into a Hot-bed of Tanners-bark, where they ſhould remain until the Plants come up, which is many times a Year from the Time of ſowing; ſo whenever the Seeds remain ſo long in the Ground, the Pots muſt be frequently watered in *Summer*, and in *Winter* the Glaſſes of the Hot-beds ſhould be covered with Mats, when the Weather is cold, to prevent the Froſt from entering of the Bed, which would deſtroy the Seeds.

When the Plants are come up, they ſhould be each tranſplanted into a ſmall Pot filled with freſh Earth, and then plunged into the Hot-bed again, obſerving to ſhade them from the Sun in the Heat of the Day, until they have taken new Root; after which Time they muſt have free Air admitted to them every Day, in Proportion to the Warmth of the Seaſon, and ſhould be conſtantly watered three or four times a Week in warm Weather. In this Bed the Plants may remain till *Autumn*, when they ſhould be removed into the Stove, and plunged into the Bark-bed, where, during the *Winter* Seaſon they ſhould be kept pretty warm, and muſt be frequently watered. Theſe Plants may remain in the Bark-ſtove for two Years or leſs, according as they acquire Strength; for when they are pretty ſtrong, they may be treated leſs tenderly, expoſing them in the middle of the Summer to the open Air, in a ſheltered Situation; and in Winter they may be placed in a dry Stove, where they ſhould have a moderate Degree of Warmth, in which they will thrive very well. Theſe Plants retain their Verdure throughout the Year, for which they are chiefly eſteemed.

PHLOMIS; [Φλομὶς, ſo call'd, of Φλέγω to *burn*, becauſe in old Time the Peaſants us'd to burn theſe Plants to enlighten their Chambers: It is alſo call'd *Herba Venti*; becauſe growing in Mountains, the Leaves of it are torn by the Wind] The Sage-Tree, *or* Jeruſalem-Sage.

The *Characters* are;

It hath a labiated Flower conſiſting of one Leaf, whoſe Upper-lip (or Helmet) which is creſted, does wholly reſt upon the Under-lip (or Beard,) which is divided into three Parts, and extends a little beyond the Upper-lip; the Pointal riſes out of the Flower-cup, accompany'd with four Embryo's, which afterwards become ſo many oblong Seeds, ſhut up in a Huſk, or a pentagonal Tube, which was before the Flower-Cup.

The *Species* are;

1. PHLOMIS *fruticoſa, ſalviæ folio latiore & rotundiore. Tourn.* Broad-leav'd Sage-tree, *vulgo.*
2. PHLOMIS *fruticoſa, ſalviæ folio longiore & anguſtiore. Tourn.* Narrow-leav'd Sage-tree, *vulgo.*
3. PHLOMIS *fruticoſa humilis latifolia candidiſſima, floribus luteis. Act. Phil.* Low Shrubby Sage-tree, with broad hoary Leaves, and yellow Flowers.
4. PHLOMIS *Narbonenſis, hormini folio, flore purpuraſcente. Tourn.* Narbon Jeruſalem Sage, with a Clary Leaf, and purpliſh Flower.
5. PHLOMIS *Hiſpanica candidiſſima herbacea. Tourn.* Spaniſh Jeruſalem Sage, with very hoary Leaves.
6. PHLOMIS *lychnitis. Cluſ. Hiſt.* Narrow-leav'd Jeruſalem Sage.
7. PHLOMIS *Samia herbacea, lunariæ folio. T. Cor.* Herbaceous Samian Jeruſalem Sage, with a Moonwort Leaf.
8. PHLOMIS *Orientalis, foliis laciniatis. T. C.* Eaſtern *Jeruſalem* Sage, with jagged Leaves.
9. PHLOMIS *Orientalis lutea herbacea latifolia verticillata. Act. Phil.* Broad-leav'd herbaceous Jeruſalem Sage from the *Levant*, with yellow Flowers growing in Whorles.
10. PHLOMIS *fruticoſa, flore purpureo, foliis rotundioribus. Inſt. R. H.* Shrubby *Jeruſalem* Sage, with a purple Flower, and rounder Leaves.
11. PHLOMIS *fruticoſa Luſitanica, flore purpuraſcente, foliis acutioribus. Inſt. R. H.* Shrubby *Jeruſalem* Sage of *Portugal*, with a purpliſh Flower, and ſharp-pointed Leaves.
12. PHLOMIS *Hiſpanica fruticoſa candidiſſima, flore ferrugineo. Inſt. R. H.* The whiteſt *Spaniſh* Shrub *Jeruſalem* Sage, with an iron-coloured Flower.
13. PHLOMIS *Orientalis lutea anguſtifolia, cymis fulveſcentibus, D. Sherard. Act. Phil. N.* 376. Yellow Eaſtern *Jeruſalem* Sage, with a narrow Leaf, and yellow Tops.

The three firſt-mention'd Sorts grow to be Shrubs of a middling Size, and are proper to intermix with other Sorts of Plants which are of the ſame Growth in ſmall Wilderneſs Quarters, where, by the Diverſity of their hoary Leaves, their large Spikes of yellow Flowers, and their long Continuance in flower, they make an agreeable Variety.

Theſe Plants have been preſerv'd in Pots, and placed in the Green-houſe in Winter among other tender Exoticks: but they are hardy enough to endure the Cold of our ordinary Winters in the open Air, provided they are planted in a dry Soil, and have a warm Situation; and are rarely injured by Cold, unleſs in a very ſevere Froſt.

They are propagated by Cuttings in this Country; for their Seeds do ſeldom ripen well in *England*, except in very warm dry Seaſons. The beſt time to plant theſe Cuttings is in *May*, that they may have good Roots before Winter: They ſhould be planted in a Bed of freſh light Earth, and ſhaded from the Sun until they have taken Root; after which, they will require no farther Care, but only to keep them clear from Weeds until the following *Spring*, when they may be removed to the Places where they are deſign'd to be continu'd.

The beſt Seaſon for tranſplanting them is in *March*, before they begin to ſhoot, obſerving to preſerve a Ball of Earth to the Root of each Plant, as alſo to water 'em until they have taken Root: And in order to form them into a regular Shape, they ſhould be ſtak'd, and their Stems kept conſtantly faſten'd thereto, until they arrive at the Height you deſign 'em; then you may ſuffer their Branches to ſhoot out on every Side, to make a handſome Head; in order to which, you ſhould prune off ſuch Branches as grow irregular to either Side, which muſt always be perform'd in *Summer*: for if they are wounded in *Winter*, the Cold does often injure the Plants, by entering the Wounds.

The Soil in which they are placed ſhould not be dung'd, for that cauſes them to grow too faſt, whereby their Shoots are too replete with Moiſture, and ſo leſs capable to endure the Cold; whereas if they are planted upon a dry, barren, rocky Soil, they are ſeldom injured by Cold, which is the Caſe of moſt of the ſame Claſs of Plants with Lip-flowers.

The other Sorts are all of them propagated by parting of their Roots, which ſhould be done in the *Spring* of the Year, obſerving to preſerve a leading Bud to each Off-ſet: Theſe ſhould alſo be placed in a dry, rocky, or gravelly Soil, in which they will thrive much better than if planted in a richer Ground, and will endure the Cold of our ordinary Winters extremely well in the open Air.

Theſe are Plants of no great Beauty, but are preſerved in the Gardens of thoſe who are fond of Variety. A *Tea* made with the Leaves of theſe Plants, is accounted very good for ſore Throats.

The four laſt ſorts grow to the Height of five or ſix Feet, and become ſhrubby: they are all of them pretty hardy, ſo will bear the Cold of our ordinary Winters in the open Air, provided they are planted on a dry Soil, and in a warm Situation: but as they are ſometimes deſtroyed by ſevere Froſts, ſo it is proper to keep a Plant of each Sort in Pots, which may be removed into Shelter in the Winter, in order to preſerve the Kinds. Theſe may be placed with Bays, and other hardy Plants, which only require to be defended from very hard Froſts, but muſt have as much free Air as poſſible in mild Weather; and ſhould be treated as hath been directed for the Sorts before enumerated. Theſe may be propagated by Cuttings, as the common Sort.

PHYTOLACCA, [This Plant is ſo call'd, of Φυτον a *Plant*, and *Lacca* a *Colour*, becauſe a Red Colour like *Lacca* is made thereof] American Night-ſhade.

The *Characters* are;

The Flower conſiſts of ſeveral Leaves, which are placed in a circular Order, and expand in form of a Roſe; out of whoſe Centre riſes the Pointal, which afterwards becomes a ſoft Fruit, or almoſt globular Berry full of Seeds, placed orbicularly: To which ſhould be added, that the Flowers and Fruit are produced on a Bunch like Currants.

The *Species* are;

1. PHYTOLACCA *Americana, majori fructu. Tourn.* American Nightſhade, with large Fruit, *commonly call'd* Virginian Poke *or* Porke Phyſick.
2. PHYTOLACCA *Americana, minori fructu. Tourn.* American Nightſhade, with leſſer Fruit.
3. PHYTOLACCA *Mexicana, baccis ſeſſilibus. Hort. Elth.* Branching Nightſhade of *Mexico*, with flatter Berries growing cloſe to the Stalk.

The firſt of theſe Plants is very common in *Virginia*, *New-England*, and *Maryland*, where the Inhabitants take a ſpoonful or two of the Juice of the Root, as a familiar Purge: The Berries thereof are full of a purple Juice, which gives a fine Tincture to Paper, from whence it hath the Name; but it will not abide long.

It may be propagated by ſowing the Seeds in the *Spring* upon a Bed of light rich Earth, and when they come up, they ſhould be tranſplanted into a Bed of rich dry Earth about two Feet aſunder; for they grow to be very large, eſpecially if the Soil be good. When they have taken Root, they will require no farther Care but only to clear 'em from Weeds, and in the *Autumn* they will produce their Flowers and Fruit: but when the Froſt comes on, it will cut down the Tops of theſe Plants, which conſtantly decay in Winter; but their Roots will abide in the Ground, and come up again the ſucceeding *Spring*. There is no great Beauty in this Plant; but, for Variety, a few of them may be placed in the Borders of large Gardens, ſince they require but little Culture.

The Sort with leſſer Fruit is tenderer than the former, and requires to be placed in an artificial Heat in *Winter*, otherwiſe they will not endure the Cold of our *Winters* in *England*: This is alſo propagated from the Seeds, which ſhould be ſown upon a moderate Hot-bed in the *Spring*; and when the Plants come up, they ſhould be tranſplanted each into a ſeparate ſmall Pot fill'd with light freſh Earth, and plung'd into another moderate Hot-bed to bring them forward: but when they have acquired ſome Strength, they ſhould be inured to bear the open Air by Degrees, into which they may be removed in *July*, obſerving to ſhift them into larger Pots, as their Roots ſhall require, and place them where they may be ſhelter'd from ſtrong Winds.

In this Situation they may remain 'till the Beginning of *September*, when they ſhould be remov'd into the Stove, placing them where they may have a temperate Warmth; and during the *Winter* Seaſon you ſhould frequently refreſh them with Water, but they muſt not have it in too great Quantities.

Theſe Plants will grow to be three Feet high, and may be train'd up with regular Stems and Heads; they will continue three or four Years, if carefully preſerv'd, and continue to produce Bunches of ſmall ſcarlet Berries throughout the whole Year; which affords a pleaſing Variety, amongſt other Exoticks in Winter, when few other things are in Beauty: The berries thereof are full of a beautiful red Juice, which will ſtain Paper extremely fine, but will not continue.

The third ſort grows in divers parts of *America*: the late Dr. *Houſton* obſerved it in great Plenty about *La Vera Cruz*, where the Sailors uſed to gather the Leaves of the Plant, and boil it inſtead of Spinach, which they eat without any ill Effects, tho' by moſt People theſe Plants were thought to have a poiſonous Quality.

It may be propagated by Seeds, which ſhould be ſown in the Spring on a moderate Hot-bed; and when the Plants are come up, they ſhould be tranſplanted on another Hot-bed, about four Inches aſunder, where they may grow till the Plants are pretty ſtrong, when they ſhould be carefully tranſplanted into Pots and plunged into a moderate Hot-bed, obſerving to ſhade them in the middle of the Day, until they have taken new Root; after which Time they ſhould have a large Share of freſh Air in warm Weather, and muſt be plentifully watered: with this Management the Plants will flower in *July*, and their Seeds will ripen in *September*. The Plants will continue two or three Years, provided they are placed in a Stove, and kept in a moderate Degree of Warmth, otherwiſe they will periſh in *Autumn*. The Berries of this Sort, when bruiſed, have a fine purple Juice, with which the Inhabitants make a fine Colour, but it is very apt to fade. The Juice of theſe Berries, mixt with Water in ſuch Proportion as to make a ſtrong Tincture, will tinge ſome white Flowers, ſo as to make them beautifully ſtriped; but eſpecially the Tuberoſe, whoſe Flowers when fully blown, ſhould be cut off, and the Stem ſet into a Phial of this Tincture, which in one Night will be drawn up into the Flower, and appear in beautiful purple Stripes by the next Day.

PILOSELLA, *vide* Hieracium.

PIMPINELLA, [This Plant is called *Pimpinella* for *Bipinella*, becauſe its Leaves grow or adhere to the Stalks by Pairs, and are diſpos'd like Feathers; it is alſo called *Sanguiſorba*, becauſe it ſtanches Blood] Burnet.

The *Characters* are;

The Flower conſiſts of one Leaf, which expands in a circular Form, and is generally cut into four Segments, to the Centre, accompanied with many Chives, or a tufted Pointal; the Flower-cup afterwards becomes a Fruit, for the moſt part ſharp-pointed and quadrangular; having ſometimes but one Cell, and at other times two Cells, which are full of oblong Seeds.

The *Species* are;

1. PIMPINELLA *ſanguiſorba minor lævis. C. B. P.* Common or leſſer Burnet.
2. PIMPINELLA *ſanguiſorba major. C. B. P.* Great Burnet.
3. PIMPINELLA *major præalta auriculata Sabauda. Bocc. Muſ.* Great rigid tall Burnet, with auriculated Leaves.
4. PIMPINELLA *maxima Canadenſis. Corn.* Greateſt Canada Burnet.

There are ſome other Species of this Plant, which are preſerved in curious Botanick Gardens for Variety: But thoſe here mentioned are what I have obſerved in the *Engliſh* Gardens.

The common *Burnet* is found wild in great Plenty upon dry chalky Hills, in divers Parts of *England*: yet is often cultivated in Gardens for medicinal Uſes; though the Herb gather'd on its native Place of Growth, is much ſtronger, and fitter for ſuch Purpoſes.

The ſecond Sort is found growing in moiſt Meadows, and other wet Soils in divers Parts of *England*, and is rarely cultivated in Gardens.

The other two Sorts are Strangers to our Country, but are hardy enough to endure the Cold of our Climate in the open Air. Theſe may be propagated either by ſowing of the Seeds, or parting their Roots.

The beſt Time for parting their Roots, is in the *Autumn*, that they may take good Root before the Drought of the *Spring* hinders their Growth. They ſhould be planted in Beds of light dry Earth, about ten Inches or a Foot aſunder, for if they have not Room to ſpread, they will rot each other. In *May* they will ſhoot up to flower; but if you would preſerve the Roots, the Stems ſhould be conſtantly cut off, for if they are permitted to ſeed, they ſeldom remain long after.

They may alſo be propagated by ſowing their Seeds upon a Bed of light Earth in the *Spring*, and when the Plants are come up, they ſhould be tranſplanted out into a Bed of freſh Earth, at the Diſtance before-mention'd, obſerving to water and ſhade them until they have taken Root, after which they will require no farther Care, but to keep them clear from Weeds. The firſt Sort is what ſhould be uſed in Medicine, and the Leaves of that are alſo put into cool Tankards in the Heat of Summer, as a Cordial Herb.

To this *Article* muſt be added;

1. PIMPINELLA *major Hiſpanica, ſpicâ dilutè rubente. H. R. Par.* Greater *Spaniſh* Burnet, with a pale red Spike.
2. PIMPINELLA *major Hiſpanica altera, conglomerato flore. H. R. Par.* Another large *Spaniſh* Burnet, with a conglomerated Flower.
3. PIMPINELLA *Canadenſis, ſpicâ longâ rubente. H. R. Par.* *Canada* Burnet, with a long red Spike.
4. PIMPINELLA *agrimonoides odorata. H. R. Par.* Sweet-ſcented Burnet, with the Appearance of Agrimony.
5. PIMPINELLA *ſanguiſorba minor hirſuta. C. B. P.* Leſſer rough Burnet.
6. PIMPINELLA *ſanguiſorba inodora. C. B. P.* Unſavory Burnet.
7. PIMPINELLA *ſanguiſorba minor, ſemine majore & craſſiore. Bot. Monſp.* Smaller Burnet, with a larger and thicker Seed.
8. PIMPINELLA *ſpinoſa, ſeu ſempervirens. Mor. Umb.* Prickly ever-green Burnet.

The firſt, ſecond, third, fifth, ſixth and ſeventh Sorts, are hardy Plants, which continue ſeveral Years, and will live in the open Air. Theſe may be propagated after the ſame manner as the common Sort, either by parting of the Roots in Autumn, or by Seeds, as hath been directed in the former part of this Article.

The fourth Sort is a biennial Plant, which is only cultivated by Seeds. The Seeds of this Sort ſhould be ſown in *March*, on a Bed of light freſh Earth in an open Situation; and when the Plants are come up, they ſhould be carefully cleared from Weeds, and thinned where they are too cloſe; and as the Plants increaſe in Size, ſo they ſhould be reduced to leave them about a Foot apart, and many times the Plants will flower the ſame Year they were ſown; but they always flower the ſecond Year, and produce ripe Seeds, but ſeldom continue long after. The Leaves of this Plant, when rubbed, emit a grateful Odour.

The eighth Sort is an abiding Plant, which riſes to the Height of two Feet or more, and becomes ſhrubby. The ſlender Branches of this Plant are beſet with Thorns, at the Joints where the Leaves are produced; the Flowers are very ſmall, and of an herbaceous Colour, which are ſeldom ſucceeded by Seeds in this Country.

This is propagated by Cuttings, which ſhould be planted in the ſummer Months, on a Bed of freſh light Earth, and ſhould be ſhaded either with Mats or oiled Paper, until they have taken Root, which will be in about ſix Weeks, or two Months, if they are carefully watered. When the Cuttings are rooted, they ſhould be carefully taken up, and planted into ſeparate Pots, filled with light freſh Earth, and placed in a ſhady Situation, until they have taken new Root; after which Time they may be expoſed in a ſheltered Situation, till the middle or latter End of *October*, when they ſhould be placed under a Frame, to defend them from the hard Froſt in Winter; but they muſt have as much free Air as poſſible in mild Weather; and in the Spring they ſhould be placed abroad with Myrtles, and other hardy Plants, obſerving to water them duly in dry Weather. With this Management the Plants will thrive very well, and may be continued ſeveral Years.

PINASTER, *vide* Pinus Sylveſtris.

PINUS, The Pine-tree.

The *Characters* are;

It hath amentaceous Flowers, (or Catkins) which are produced at remote Diſtances from the Fruit on the ſame Tree; the Seeds are produced in ſquamous Cones; to which ſhould be added, that the Leaves are longer than thoſe of the Firr-tree, *and are produced by Pairs out of each Sheath.*

The *Species* are;

1. PINUS *ſativa. C. B. P.* The manured *Pine*.
2. PINUS *ſylveſtris. C. B. P.* The Pinaſter or wild *Pine*.
3. PINUS *ſylveſtris foliis brevibus glaucis, conis parvis albentibus. Raii Hiſt.* The Scotch *Pine*, *commonly call'd* the Scotch Firr.
4. PINUS *Americana, foliis prælongis, ſubinde ternis, conis plurimis confertim naſcentibus. Rand.* American *Pine*, with longer Leaves coming out by Threes, and many Cones growing in a Cluſter, *commonly called* The Cluſter Pine.
5. PINUS *Americana, ex uno folliculo, ſetis longis tenuibus triquetris, ad unum angulum, per totam longitudinem, minutiſſimis crenis aſperatis. Pluk. Amalth.* Lord *Weymouth*'s *Pine*; vulgo.

The Culture and Management of theſe Trees, being the ſame as for *Firrs*, is fully ſet down adjoining to that Article, for which the Reader is deſired to turn back to *Abies*.

To this *Article* muſt be added;

1. PINUS *ſylveſtris montana tertia. C. B. P.* The third wild mountain Pine, of *Caſpar Bauhin*.
2. PINUS *ſylveſtris montana altera. C. B. P.* Another wild mountain Pine.
3. PINUS *ſylveſtris maritima, conis firmiter ramis adhærentibus. J. B.* Wild maritime Pine, whoſe Cones adhere firmly to the Branches.
4. PINUS *maritima altera Matthioli. C. B. P.* Another maritime Pine of *Matthiolus*.
5. PINUS *maritima minor. C. B. P.* Leſſer maritime Pine.
6. PINUS *humilis, iulis vireſcentibus aut palleſcentibus. Inſt. R. H.* Dwarf Pine, with a green or pale Katkin.
7. PINUS *humilis, iulo purpuraſcente. Inſt. R. H.* Dwarf Pine, with a purpliſh Katkin.
8. PINUS *conis erectis. Inſt. R. H.* Pine whoſe Cones grow erect.
9. PINUS *Orientalis, foliis durioribus amaris, fructu parvo peracuto. Tourn. Cor.* Eaſtern Pine, with harder bitter Leaves, and a ſmall ſharp-pointed Cone.
10. PINUS *Hieroſolymitana, prælongis & tenuiſſimis viridibus ſetis. Pluk. Almag.* Eaſtern Pine, with long narrow green Leaves.
11. PINUS *Virginiana, prælongis foliis tenuioribus, cono echinato. Pluk. Almag.* *Virginian* Pine, with longer narrower Leaves, and a rough Cone.
12. PINUS *Virginiana tripilis ſ. ternis plerumque ex uno folliculo ſetis, ſtrobilis majoribus. Pluk. Almag.* *Virginian* Pine, having for the moſt part three Leaves, coming out of one Sheath, commonly called the Frankincenſe-tree.
13. PINUS *Virginiana, binis brevioribus & craſſioribus ſetis, minori cono, ſingulis ſquammarum capitibus aculeo donatis. Pluk. Alm.* *Virginian* Pine, with ſhorter thicker Leaves, and ſmaller Cones, with a Prickle on the Top of each Scale, commonly called the *Jerſey* Pine.
14. PINUS *Americana paluſtris patula, longiſſimis & viridibus ſetis.* Marſh ſpreading *American* Pine, with the longeſt green Leaves.

The eight firſt-mentioned Sorts grow wild in *Auſtria*, *Spain*, *Portugal*, and ſome other Parts of *Europe*. Theſe are all of them very hardy, and may be propagated by Seeds, in the ſame manner as hath been directed for the Firs, under the Article *Abies*.

The tenth Sort grows upon the Hills in the Neighbourhood of *Aleppo*, and in ſeveral other Places in the *Eaſt*. The Cones of this Kind are ſmall, and the Seeds are deſtitute of Wings. This Sort is very hardy; for I have ſown the Seeds in an open Bed of Earth, where the Plants have come up, and have made great Progreſs, without any farther Care but keeping them clear from Weeds. This Sort is very quick of Growth, and endures the Cold extremely well.

The ninth Sort was diſcovered by Doctor *Tournefort* in the *Levant*, from whence he ſent the Seeds to the Royal

Garden at *Paris*. This bears the Cold extremely well, and may be propagated by Seeds, as the common Sorts.

The eleventh, twelfth, thirteenth and fourteenth Sorts are Natives of *America*, from whence their Cones have been brought into *Europe*, and many of the Plants have been raiſed, which are in the Gardens of ſeveral curious Gentlemen. Theſe Plants are ſomewhat tender, when they firſt ariſe from Seeds; ſo they ſhould be particularly taken Care of, the firſt Summer, otherwiſe they will drop away in a ſhort Time. The Seeds of theſe Kinds ſhould be ſown in Pots or Tubs filled with very light Earth, and they ſhould have ſome light ſhifted Earth ſpread over them, about a quarter of an Inch thick. Theſe Pots or Tubs muſt be ſhaded with Mats or oiled Paper, to ſcreen the Plants from the Sun; and theſe Coverings ſhould be taken off every Night, unleſs the Weather is cold or ſtormy, when they ſhould be continued on. For if the Plants are expoſed to too much Wet, or ſtrong Winds, it will deſtroy them while they are very young; tho', when they have obtained ſtrength, they will reſiſt the ſeverity of Weather extremely well. The Plants ſhould be frequently refreſhed with Water, but it muſt not be given to them in large Quantities, for the Reaſon before aſſigned. Toward the middle of the Summer, the Plants ſhould be expoſed to the Sun by degrees, taking the Covers off in the Afternoon, and letting them remain off longer in the Morning, ſo that by the middle of *July*, they may be quite expoſed in the open Air, obſerving to water them duly in dry Weather. About the latter End of *October*, the Pots or Tubs muſt be placed under a common Frame, where they may be ſheltered from exceſſive Rains or Froſts in the Winter; but they muſt have as much free Air as poſſible in mild Weather. The following Spring theſe Plants ſhould be tranſplanted, when there muſt be a Bed of light freſh Earth prepared, in a well-ſheltered Situation; and in the Beginning of *April*, if the Seaſon proves warm, they may be removed; but if it ſhould prove cold, it is much better to defer it a little later in the Month. In taking of them up, great Care ſhould be had, that the Fibres of their Roots are not broken, as alſo to plant them immediately; for if the Air dries their Roots, they very rarely ſurvive it. The Diſtance theſe Plants ſhould be planted in the Bed, is about ten Inches or a Foot; and as ſoon as they are planted, they ſhould be gently watered three or four times over, ſo as to moiſten the Earth throughly, but not to bear down the Plants. Then the Bed ſhould be arched over with Hoops or Withies, and covered with Mats, or oiled Paper, to ſcreen the Plants from the Sun and drying Winds, until they have taken Root, after which Time they ſhould be inured to bear the open Air by degrees; but then it will be proper to lay ſome Mulch on the Surface of the Ground, to prevent the Sun and Air from penetrating of the Ground, ſo as to dry the Fibres of the Plants; and during this Seaſon, the Plants muſt be watered in dry Weather; for as they have but ſmall rooting in the Ground while they are young, ſo a little Drought will greatly injure, if not abſolutely deſtroy them. The following Winter, if the Froſt ſhould prove extremely hard, it will be of great Service to the Plants, to ſcreen them with oak Branches, which retaining of their Leaves, will greatly protect the Plants from the Severity of the Froſt, and they will not be ſo cloſe as to exclude the Air wholly from them. But when the Froſt is over, the Branches ſhould be taken away by degrees, ſo as not to expoſe the Plants at once to the open Air; for an Indiſcretion of this Kind may deſtroy more Plants than the Froſt would have done, if they had been expoſed thereto.

In this Bed the Plants may remain two Years, when it will be proper to tranſplant them where they are to remain for good; for theſe Plants do not bear tranſplanting when they are large. When this is performed, it ſhould be in *April*, juſt before the Plants begin to ſhoot, and, if poſſible, in a rainy or cloudy Seaſon. The Plants ſhould be taken up with good Balls of Earth to their Roots, and the Holes ſhould be opened, and thoroughly moiſtened before, ſo that the Plants may be immediately planted after they are taken up, that their Roots may not ſuffer from the Air. Then they ſhould be watered to ſettle the Earth to their Roots, and the Surface of the Ground ſhould be covered with Mulch, to prevent the Sun and Air from drying of their Roots; and if the Seaſon ſhould continue dry, it will be proper to water them twice a Week, but they ſhould not have too much Water given them each Time. When the Plants are well fixed in the Ground, they require no farther Care, but to keep them clear from large Weeds, which if permitted to grow, would overbear the Plants while they are young.

All theſe Sorts of *American* Pines ſhould be planted on a Soil rather moiſt than dry, but eſpecially the fourteenth Sort, which grows naturally on low moiſt boggy Places, and will not thrive on a dry Soil. This Tree hath a very remarkable Growth; for the Branches ſpread near the Ground to a great Diſtance from the Stem, and never riſe in Height. The thirteenth Sort is the moſt common in the Northern Parts of *America*, where the Inhabitants call it the *Jerſey-pine*.

As all the *European* Kind of Pines are Inhabitants of Mountains and Hills, ſo they delight in a hard rocky Soil, for which there are no Trees more proper; therefore whenever it happens in a large Plantation, that there is a low moiſt Place intervening between two Hills, that may be planted with theſe *American* Pines; ſo that the whole Plantation will appear, at a Diſtance, of the ſame Trees; and when nearer, the different Shades of their Leaves will diverſify the Proſpect; for which reaſon all theſe Sorts of Trees ſhould be propagated in the Nurſeries.

PISONIA, Fingrigo, *vulgo*.

The *Characters* are;

It is Male and Female in different Plants; the Male Flowers conſiſt of a great Number of Stamina, and have no Petals: the Female Flowers conſiſt of one Leaf, which is bell-ſhaped, and divided at the Top into five Parts: from whoſe Cup ariſes the Pointal, which afterward becomes an oblong angular chanelled Fruit, containing oblong Seeds.

The *Species* are;

1. PISONIA *aculeata mas. Houſt.* The Male Fingrigo.
2. PISONIA *aculeata, fructu glutinoſo & racemoſo. Plum. Nov. Gen.* Prickly Piſonia, with a glutinous and branching Fruit.

Theſe Plants are ſeminal Variations, which ariſe from the Seeds of the ſame Plant; but as they were not diſtinguiſhed by any of the Botaniſts, till the late Dr. *Houſtoun* obſerved their Difference, ſo I thought proper to mention the different Sexes as ſeparate Plants.

The Name of this Plant was given by Father *Plumier* in Honour to Dr. *William Piſo*, who publiſhed a Natural Hiſtory of *Braſil*. The Name of *Fingrigo* is what the Inhabitants of *Jamaica* know it by.

Theſe Plants are very common in the *Savanna*'s and other low Places in the Iſland of *Jamaica*, as alſo in ſeveral other Places in the *Weſt-Indies*; where it is very troubleſome to whoever paſſes thro' the Places of their Growth, by faſtening themſelves, by their ſtrong crooked Thorns, to the Cloaths of the Perſons; and their Seeds being glutinous, alſo faſten themſelves to whatever touches them. So that the Wings of the Ground Doves, and other Birds are often loaden with the Seeds, ſo as to prevent their Flying, by which means they become an eaſy Prey.

It riſes about ten or twelve Feet high, with a pretty ſtrong Trunk; but the Branches are long and ſlender, whereby being unable to ſupport themſelves, they generally twiſt about whatever Plants are near them.

In *Europe* this Plant is preſerved in the Gardens of ſome curious Perſons for Variety: it is propagated by Seeds which ſhould be ſown in Pots filled with light rich Earth and plunged into a Hot-bed of Tanners-bark; and when the Plants come up, they ſhould be tranſplanted into ſeparate Pots, and plunged into the Hot-bed again; where they may remain till *Michaelmas*, when they ſhould be removed into the Stove, and plunged into the Bark-bed, and treated in the ſame manner as hath been directed for ſeveral tender Plants of the ſame Country; obſerving in hot Weather to give them plenty of Water, but in Winter they ſhould have it more ſparingly. They are too tender to thrive in the open Air of this Country at any Seaſon of the Year, ſo ſhould be conſtantly kept in the Stove.

PISTACHIA, *vide* Terebinthus.

PISUM, [Some are of Opinion, that this Plant takes its Name from the City *Piſa*, where it anciently grew in great Plenty; others derive it from πίσειν, he fell, becauſe, if this Plant be not ſupported, it will fall to the Ground] Pea.

The *Characters* are;

It is a Plant with a papilionaceous Flower, out of whoſe Empalement riſes the Pointal, which afterwards becomes a long Pod, full of roundiſh Seeds; to which muſt be added, fiſtulous Stalks, for the moſt part weak, which the Leaves embrace in ſuch a Manner, that they ſeem to be perforated by them; but the other Leaves grow by Pairs along the Mid-rib, ending in a Tendril.

The *Species are*;

1. PISUM *hortenſe majus, flore fructuque albo. C. B. P.* The greater Garden Pea with white Flowers and Fruit.

2. Pisum *præcox Anglicum. Boerh. Ind.* Hot-ſpur Pea, *vulgo*.

3. Pisum *humile caule firmo. Tourn.* The Dwarf Pea.

4. Pisum *humile Gallicum. Boerh. Ind.* French Dwarf Pea.

5. Pisum *cortice eduli. Tourn.* Pea with an eſculent Husk.

6. Pisum *ſiliqua carnoſa incurva, ſeu falcata eduli. Raii Hiſt.* The Sickle Pea, *vulgo*.

7. Pisum *arvenſe, fructu albo. C. B. P.* Common white Pea.

8. Pisum *arvenſe, fructu viridi. C. B. P.* Green Rouncival Pea.

9. Pisum *arvenſe, fructu cinereo. C.B.P.* The Grey Pea.

10. Pisum *arvenſe, flore roſeo, fructu variegato. Raii Hiſt.* Maple Rouncival Pea.

11. Pisum *umbellatum. C. B. P.* The Roſe Pea or Crown Pea.

12. Pisum *maximum, fructu nigra linea maculato. H. R. Par.* The Spaniſh Morotto Pea.

13. Pisum *hortenſe, ſiliqua maxima. H. R. Par.* The Marrow-fat or Dutch Admiral Pea.

14. Pisum *fructu maximo ex viridi obſoleto. Boerh. Ind.* The Union Pea.

15. Pisum *ſpontaneum maritimum Anglicum. Park. Theat.* Engliſh Sea Pea.

16. Pisum *arvenſe, fructu e luteo vireſcente. C. B. P.* Pig Peas.

There are ſeveral other Varieties of the Garden *Peas*, which differ in the Colour of their Flowers and Fruit, and are by ſome Perſons diſtinguiſhed by Names as diſtinct Sorts; but as they are very ſubject to vary when ſown two or three Years in the ſame Place, ſo there can be no doubt of their being ſeminal Variations, which are not worth enumerating in this Place.

The *Engliſh Sea Pea*, is found wild upon the Shoar in *Suſſex*, and ſeveral other Counties in *England*; this was firſt taken notice of in the Year 1555, between *Orford* and *Aldborough*, where it grew upon the Heath, where nothing, no not Graſs, was ever ſeen to grow, and the poor People being in Diſtreſs, by Reaſon of the Dearth of that Year, gathered large Quantities of theſe *Peas*, and ſo preſerved themſelves and Families: This is mentioned by *Stow* in his *Chronicle*, and *Camden* in his *Britannia*. But they were both miſtaken, in imagining that they were *Peas* caſt on Shoar by a Shipwreck, ſeeing they grow in divers other Parts of *England*, and are undoubtedly a different Species from the common *Pea*.

The Sixteenth Sort is greatly cultivated in the Fields in *Dorſetſhire*, where they are known by the Name of *Pig-Peas*, the Inhabitants making great Uſe of them to feed their Hogs. Theſe are alſo often brought up to *London* and ſold for the ſame Purpoſe.

I ſhall now proceed to ſet down the Method of cultivating the ſeveral Sorts of Garden *Peas*, ſo as to continue them throughout the Seaſon.

It is a common Practice with the Gardeners near London, to raiſe *Peas* upon Hot-beds, to have them very early in the *Spring*, in order to which, they ſow their *Peas* upon warm Borders under Walls or Hedges, about the Middle of *October*; and when the Plants come up, they draw the Earth up gently to their Stems with a Hough, the better to protect them from Froſt; in theſe Places they let them remain until the Latter-end of *January*, or the Beginning of *February*, obſerving to earth them up from time to time as the Plants advance in Height (for the Reaſons before laid down) as alſo to cover them in very hard Froſt with Peas-haulm, Straw, or ſome other light Covering, to preſerve them from being deſtroy'd, then at the Time before-mention'd, they make a Hot-bed (in proportion to the Quantity of *Peas* intended) which muſt be well work'd in laying the Dung, that the Heat may not be too great: the Dung ſhould be laid about two Feet thick or ſomewhat more, according as the Beds are made earlier or later in the Seaſon; when the Dung is equally levelled, then the Earth (which ſhould be light and freſh, but not over rich) muſt be laid on about ſix Inches thick, laying it equally all over the Bed: This being done, the Frames (which ſhould be two Feet deep on the Back-ſide, and about fourteen Inches in Front) muſt be put on, and cover'd with Glaſſes, after which it ſhould remain three or four Days, to let the Steam of the Bed paſs off, before you put the Plants therein; obſerving every Day to raiſe the Glaſſes either with Bricks or Stones, to give Vent for the riſing Steam to paſs off; then when you find the Bed of a fine moderate Temperature for Heat, you ſhould with a Trowel, or ſome other Inſtrument, take up the Plants as carefully as poſſible, to preſerve a little Earth to their Roots, and plant them into the Hot-bed in Rows, about a Foot aſunder, and the Plants ſhould be ſet about an Inch and Half, or two Inches diſtance from each other in the Rows; obſerving to water and ſhade them until they have taken Root; after which you muſt be careful to give them Air, at all Times when the Seaſon is favourable, otherwiſe they will draw up very weak, and be ſubject to grow mouldy and decay. You ſhould alſo draw the Earth up to the Shanks of the Plants, as they advance in Height, and keep them always clear from Weeds; the Water they ſhould have, muſt be given them ſparingly, for if they are too much water'd, it will cauſe them to grow too rank, and ſometimes rot off the Plants at their Shanks, juſt above Ground; when the Weather is very hot, you ſhould cover the Glaſſes with Mats in the Heat of the Day, to ſcreen them from the Violence of the Sun, which is then too great for them, cauſing their Leaves to flag, and their Bloſſoms to fall off without producing Pods; as will alſo the keeping of the Glaſſes too cloſe at that Seaſon. But when the Plants begin to fruit, they ſhould be water'd oftener, and in greater Plenty than before; for by that Time the Plants will have nearly done growing, and the often refreſhing them will occaſion their producing a greater Plenty of Fruit.

The Sort of *Pea* which is always uſed for this Purpoſe, is the Dwarf; for all the other Sorts ramble too much to be kept in Frames: the Reaſon for ſowing them in the common Ground, and afterwards tranſplanting them on a Hot-bed, is alſo to check their Growth, and cauſe them to bear in leſs Compaſs; for if the Seeds were ſown upon a Hot-bed, and the Plants continued thereon, they would produce ſuch luxuriant Plants as not to be contained in the Frames, and would bear but little Fruit.

The next Sort of *Pea*, which is ſown to ſucceed thoſe on the Hot-beds, is the *Hot-ſpur*, of which there are reckon'd three or four Sorts, as the *Maſter's Hot-ſpur*, the *Reading Hot-ſpur*, and ſome others; which are very little differing from each other, except in their early Bearing, for which the *Maſter's Hot-ſpur* is chiefly preferr'd; tho' if either of theſe Sorts are cultivated in the ſame Place for three or four Years, they are apt to degenerate and be later in Fruiting, for which Reaſon moſt curious Perſons procure their Seeds annually from ſome diſtant Place, and in the Choice of theſe Seeds, if they could be obtained from a colder Situation, and a poorer Soil, than that in which they are to be ſown, it will be much better than on the contrary, and they will come earlier in the *Spring*.

Theſe muſt alſo be ſown on warm Borders, towards the Latter-end of *October*, and when the Plants are come up, you ſhould draw the Earth up to their Shanks in the Manner before directed, which ſhould be repeated as the Plants advance in Height (always obſerving to do it when the Ground is dry) which will greatly protect the Stems of the Plants againſt Froſt; and if the Winter ſhould prove very ſevere, it will be of great ſervice to the Plants, to cover them with Peas-haulm, or ſome other light Covering, which ſhould be conſtantly taken off in mild Weather, and only ſuffer'd to remain on during the Continuance of the Froſt; for if they are kept too cloſe, they will be drawn very weak and tender, and thereby be liable to be deſtroy'd with the leaſt Inclemency of the Seaſon.

In the *Spring* you muſt carefully clear them from Weeds, and draw ſome freſh Earth up to their Stems; but do not raiſe it too high to the Plants, leſt by burying their Leaves you ſhould rot their Stems, as is ſometimes the Caſe, eſpecially in wet Seaſons. You ſhould alſo obſerve to keep them clear from Vermin, which if permitted to remain amongſt the Plants, will increaſe ſo plentifully, as to devour the greateſt Part of them; the chief of the Vermin which infect *Peas*, are the *Slugs*, which lie all the Day in the ſmall Hollows of the Earth near the Stems of the Plants, and in the Night-time come out and make terrible Deſtruction of the *Peas*; and theſe chiefly abound in wet Soils, or where a Garden is neglected and over-run with Weeds; therefore you ſhould make the Ground clear every Way round the *Peas*, to deſtroy their Harbours, and afterwards in a fine, mild Morning very early, when theſe Vermin are got abroad from their Holes, you ſhould ſlack a Quantity of *Lime*, which ſhould be ſown hot over the Ground, pretty thick, which will deſtroy the Vermin, where-ever it happens to fall upon them; but will do very little Injury to the *Peas*, provided it be not ſcatter'd too thick upon them: This is the beſt Method I could ever find to deſtroy theſe troubleſome Vermin.

If this Crop of *Peas* doth hit, it will immediately ſucceed thoſe on the Hot-bed; but for fear this ſhould miſcarry, it will be proper to ſow two more Crops, at about a Fortnight diſtance from each other; ſo that there may be the more Chances to ſucceed: This will be ſufficient until the *Spring* of the Year, when you muſt ſow three more Crops of theſe *Peas*; one toward the latter End of *January*, and the other a Fortnight after, and the third at the End of *January*: Theſe two later Sowings will be ſufficient to continue the early Sort of *Peas* through the firſt Seaſon, and after this it will be proper to have ſome of the large Sorts of *Peas* to ſucceed them; in order to which, you ſhould ſow ſome of the *Spaniſh Morotto*, which is a great Bearer, and a hardy Sort of *Pea*, about the Middle of *February*, upon a clear open Spot of Ground; theſe muſt be ſown in Rows, about two Feet and a half aſunder, and the *Peas* ſhould be dropped in the Drills about an Inch and a half Diſtance, covering them about two Inches deep with Earth, being very careful that none of them lie uncovered, which will draw the Mice, Pigeons or Rooks to attack the whole Spot; and it often happens by this Neglect, that a whole Plantation is devoured by theſe Creatures; whereas when there are none of the *Peas* left in ſight, they do not ſo eaſily find them out.

About a Fortnight after this you ſhould ſow another Spot, either of this Sort or any other large Sort of *Pea* to ſucceed thoſe, and then continue to repeat ſowing once a Fortnight till the Middle or latter End of *April*, ſome of theſe Kinds, only obſerving to allow the *Marrow-fats*, and other very large Sorts of *Peas*, at leaſt three Feet between Row and Row; and the *Roſe-pea* ſhould be allowed at leaſt eight or ten Inches diſtance Plant from Plant in the Rows; for theſe grow very large, and if they have not Room allowed them, they will ſpoil each other, by drawing up very tall, and will produce no Fruit.

When theſe Plants come up, the Earth ſhould be drawn up to their Shanks (as was before directed) and the Ground kept entirely clear from Weeds; and when the Plants are grown eight or ten Inches high, you ſhould ſtick ſome rough Boughs or Bruſh Wood into the Ground, cloſe to the *Peas*, for them to ramp upon, which will ſupport them from trailing upon the Ground, which is very apt to rot the large growing Sorts of *Peas*, eſpecially in wet Seaſons; beſides, by thus ſupporting them, the Air can freely paſs between them, which will preſerve the Bloſſoms from falling off before their Time, and occaſion them to bear much better, than if permitted to lie upon the Ground; and there will be Room to paſs between the Rows to gather the *Peas* when they are ripe.

The Dwarf Sorts of *Peas* may be ſown much cloſer together than thoſe before-mentioned; for theſe ſeldom riſe above a Foot high, and rarely ſpread above half a Foot in Width; ſo that theſe need not have more Room than two Feet Row from Row, and about an Inch aſunder in the Rows. Theſe will produce a good Quantity of *Peas*, provided the Seaſon be not over dry; but they ſeldom continue long in bearing, ſo that they are not ſo proper to ſow for the main Crop, when a Quantity of *Peas* is expected for the Table; their chief Excellency being for Hot-beds, where they will produce a greater Quantity of *Peas* (provided they are well managed) than if expoſed to the open Air, where the Heat of the Sun ſoon dries them up.

The *Sickle-pea* is much more common in *Holland* than in *England*, it being the Sort moſtly cultivated in that Country; but in *England* they are only propagated by curious Gentlemen for their own Table, and are rarely brought into the Markets; this Sort the Birds are very fond of, and, if they are not prevented, do many times deſtroy the whole Crop. This ſhould be planted in Rows, about two Feet and a half aſunder, and be managed as hath been directed for the other Sorts.

The *Grey*, and other large *Winter-peas*, are ſeldom cultivated in Gardens, becauſe they require a great deal of Room, but are uſually ſown in Fields, in moſt Parts of *England*. The beſt Time for ſowing of theſe is about the Beginning of *March*, when the Weather is pretty dry; for if they are put into the Ground in a very wet Seaſon, they are apt to rot, eſpecially if the Ground be cold; theſe ſhould be allowed at leaſt three Feet Diſtance Row from Row, and muſt be ſown very thin in the Rows; for if they are ſown too thick, the Haulm will ſpread ſo as to fill the Ground, and ramble over each other, which will cauſe the Plants to rot, and prevent their Bearing.

The beſt Method to ſow theſe *Peas*, is, to draw a Drill with a Hough by a Line, about two Inches deep, and then ſcatter the Seeds therein, after which, with a Rake you may draw the Earth over them, whereby they will be equally covered; and this is a very quick Method for Gardens; but where they are ſown in Fields, they commonly make a ſhallow Furrow with the Plough, and ſcatter the Seeds therein, and then with a Harrow they cover them over again. After this, the great Trouble is to keep them clear from Weeds, and draw the Earth up to the Plants; this, in ſuch Countries where Labour is dear, is a great Expence, to do it by Hand with a Hough; but this may be eaſily effected with a Breaſt-houghing Plough, which may be drawn thro' between the Rows, which will entirely eradicate the Weeds, and by ſtirring of the Soil render it mellow, and greatly promote the Growth of the Plants.

When any of theſe Sorts are intended for Seed, there ſhould be as many Rows of them left ungathered, as may be thought neceſſary to furniſh a ſufficient Quantity of Seed; theſe muſt remain until their Pods are changed brown, and begin to ſplit; when you ſhould immediately gather them up together with the Haulm, and if you have not Room to ſtack them up until *Winter*, you may threſh them out ſo ſoon as they are dry, and put them up in Sacks for Uſe: But you muſt be very careful not to let them remain too long abroad after they are ripe, for if Wet ſhould happen, it would rot them, and Heat after a Shower of Rain, would cauſe their Pods to burſt and caſt forth their Seeds, ſo that the greateſt Part of them would be loſt; but, as I ſaid before, it is not adviſable to continue ſowing of the ſame Seed longer than two Years, for the Reaſons there laid down; but rather to exchange your Seeds every Year, or every two Years at leaſt, whereby you may always expect to have them prove well.

PISUM CORDATUM, *vide* Corindum.

PITTONIA.

The *Characters* are:

It hath a globular bell-ſhaped Flower, conſiſting of one Leaf, which is cut into ſeveral Segments at the Brim; from whoſe Cup ariſes the Pointal, which afterward becomes a ſoft ſpherical Berry full of Juice, incloſing two Seeds, which are for the moſt part oblong.

The *Species* are;

1. PITTONIA *arboreſcens chamædrifolia major. Plum. Nov. Gen.* Greater Tree-like *Pittonia*, with a Germander Leaf.

2. PITTONIA *arboreſcens chamædrifolia minor. Plum. Nov. Gen.* Smaller Tree-like *Pittonia*, with a Germander Leaf.

3. PITTONIA *humilis, anchuſæ foliis. Plum. Nov. Gen.* Dwarf *Pittonia*, with alkanet Leaves.

4. PITTONIA *ſcandens, baccis niveis, nigris maculis notatis. Plum. Nov. Gen.* Climbing *Pittonia*, with white Berries ſpotted with black.

5. PITTONIA *fruteſcens folio carnoſo, hirſuto & obtuſo. Plum. Nov. Gen.* Shrubby *Pittonia*, with a hairy fleſhy obtuſe Leaf.

6. PITTONIA *hirſutiſſima & ramoſiſſima, baccis albis. Plum. Nov. Gen.* The moſt hairy and branched *Pittonia*, with white Berries.

7. PITTONIA *racemoſa, nicotianæ foliis fœtidiſſimis. Plum. Nov. Gen.* The moſt ſtinking branchy *Pittonia*, with Tobacco Leaves.

Theſe Plants are all of them Natives of the warmeſt Parts of *America*, where the firſt Sort grows to the Height of twelve or fourteen Feet, and divides into many Branches, ſo as to form a ſmall Tree. The ſecond, fifth and ſeventh Sorts, grow to the Height of eight or nine Feet, and produce many Branches near their Roots, ſo as to form thick Buſhes.

They may be all propagated by Seeds, which ſhould be ſown early in the *Spring* in Pots filled with freſh Earth, and plunged into a Hot-bed of Tanners-bark; and when the Plants are come up, they may be treated after the ſame manner as hath been directed for the *Perſea*; with which Management theſe Plants will thrive very well, and in few Years will produce their Flowers. Theſe are preſerved by thoſe Perſons who are curious in collecting rare Plants, but there is no great Beauty in their Flowers; however, as they are ever-green, ſo they make a Diverſity amongſt other exotic Plants in the Stove in the *Winter* Seaſon.

PLANTA, a *Plant*, is defined by the ingenious Mr. *John Martyn* to be an organical Body, deſtitute of Senſe and ſpontaneous Motion, adhering to another Body in ſuch a manner as to draw from it its Nouriſhment, and having a Power of propagating itſelf by Seed. As to the Parts of which a Plant conſiſts, they are the Root, Stalk, Leaf, Flower, and Fruit.

Plant and Vegetable are pretty near Terms ſynonymous, all Plants being Vegetables. Dr. *Boerhaave* defines a Vegetabl getable to be a Body generated of the Earth, or of ſomething ariſing of the Earth, to which it adheres or is connected by Parts called *Roots*, through which it receives the Matter of its Nouriſhment and Increaſe; and conſiſts of Juices and Veſſels ſenſibly diſtinct from each other: Or a Vegetable is an organical Body, compoſed of Veſſels and Juices, every where diſtinguiſhable from each other; to which Body grow Roots or Parts whereto it adheres, and from which it derives the Matter of its Life and Growth.

This Definition furniſhes a juſt and adequate Idea of a Vegetable; for by *its conſiſting of Veſſels and Juices*, it is diſtinguiſhed from a Foſſil, and by *its adhering to another Body, and deriving its Nouriſhment therefrom*, it is diſtinguiſhed from an Animal.

A Vegetable is defined an *organical Body*, becauſe conſiſting of different Parts, which jointly concur to the Exerciſe of the ſame Function; *adhering by ſome of its Parts to another Body*, for we know of no Plant that is abſolutely vague and fluctuating, but has ſtill a Body it adheres to, tho' that Body may be various, *e.g. Earth*, as in our common Plants; *Stone*, as in Rock-plants; *Water*, as in Sea-plants; and *Air*, as in ſome Mucilages.

As to thoſe few Plants which appear to float in the Water, their manner of Growth is ſomething anomalous. M. *Tournefort* has ſhewn, that all Plants do not ariſe ſtrictly from Seeds, but that ſome, inſtead of Semen, depoſite or let fall a little Drop of Juice, which ſinking in the Water, reaches the Bottom, or ſome Rock, *&c.* in its Way, to which it ſticks, ſtrikes Root, and ſhoots into Branches; ſuch is the Origin of *Coral*. Add, that the Root of a Plant may have any Situation at Pleaſure, with reſpect to the Body thereof; nor needs it either be loweſt or higheſt, *&c.* accordingly in *Aloes*, *Coral*, *Moſſes*, *Fungus's*, &c. the Root is frequently uppermoſt, and its Growth downwards.

The Veſſels, or containing Parts of Plants, conſiſt of mere Earth, bound or connected together by Oil, as a Gluten, which being exhauſted by Fire, Air, Age, or the like, the Plant moulders, or returns again into its Earth or Duſt: Thus in Vegetables burnt by the intenſeſt Fire, the Earth or Matter of the Veſſels is left intire and indiſſoluble by its utmoſt Force; and conſequently the Matter thereof is neither Water, nor Air, nor Salt, nor Sulphur, but Earth alone.

The Root or Part whereby Vegetables are connected to their Matrix, and by which they receive their nutritious Juice, conſiſts of an infinite Number of abſorbent Veſſels, which being diſperſed thro' the Interſtices of the Earth, attract or imbibe the Juices of the ſame, conſequently every Thing in the Earth, that is diſſoluble in Water, is liable to be imbibed; as Air, Salt, Oil, Fumes of Minerals, Metal, *&c.* and of theſe Plants do really conſiſt.

Theſe Juices are drawn from the Earth very crude; but by the Structure and Fabrick of the Plant, and the various Veſſels they are ſtrained through, become changed, farther elaborated, ſecreted, and aſſimilated to the Subſtance of the Plant.

The Motion of the nutritious Juices of Vegetables is produced much like that of Blood in Animals, by the Action of the Air; in effect, there is ſomething equivalent to Reſpiration throughout the whole Plant.

The Diſcovery of this we owe to the admirable *Malpighi*, who firſt obſerved that Vegetables conſiſt of two Series or Orders of Veſſels; firſt, ſuch as receive and convey the alimental Juices, anſwering to the Arteries, Lacteals, Veins, *&c.* of Animals; ſecondly, *Tracheæ*, or *Air Veſſels*, which are long, hollow Pipes, wherein Air is continually received and expelled, *i. e.* inſpired and expired; within which *Tracheæ* he ſhews all the former Series of Veſſels are contained.

Hence it follows, that the Heat of a Year, nay, of a Day, of a ſingle Hour or Minute, muſt have an Effect on the Air included in theſe *Tracheæ*, *i. e.* muſt rarefy it, and conſequently dilate the *Tracheæ*, whence ariſes a perpetual Spring or Source of Action to promote the Circulation in Plants.

PLANTAIN TREE, *vide* Muſa.

PLANTING. Although the Method of *Planting* the various Sorts of Trees, is fully ſet down under the ſeveral Articles where each Kind is mentioned, yet it may not be amiſs to ſay ſomething in general upon that Head in this Place; which ſhall be ſet down as briefly as poſſible. And,

Firſt, The firſt Thing in the *Planting* of Trees, is to prepare the Ground (according to the different Sorts of Trees you intend to plant) before the Trees are taken out of the Earth; for you ſhould ſuffer them to remain as little Time out of the Ground as poſſible.

In taking up the Trees, you ſhould carefully dig away the Earth round their Roots, ſo as to come at their ſeveral Parts to cut them off; for if they are torn out of the Ground without Care, the Roots will be broken and bruiſed very much, to the great Injury of the Trees. When you have taken them up, the next Thing is to prepare them for *Planting*, in doing of which there are two Things to be principally regarded; the one is to prepare the Roots, and the other to prune their Heads, in ſuch a Manner as may be moſt ſerviceable in promoting the future Growth of the Trees.

And firſt, as to the Roots; all the ſmall Fibres are to be cut off, as near to the Place from whence they are produced, as may be, (excepting ſuch Trees as are to be replanted, immediately after they are taken up) otherwiſe the Air will turn all the ſmall Roots and Fibres black; which if permitted to remain on, when the Tree is planted, will grow mouldy and decay, and thereby ſpoil all the new Fibres which are produced; ſo that many times the Trees miſcarry for Want of duly obſerving this: After the Fibres are all cut off, you ſhould prune off all the bruiſed or broken Roots ſmooth, otherwiſe they are apt to rot and diſtemper the Trees; you ſhould alſo cut out all irregular Roots which croſs each other, and all downright Roots (eſpecially in Fruit Trees) muſt be cut off; ſo that when the Roots are regularly pruned, they may in ſome meaſure reſemble the Fingers of a Hand, when ſpread open; then you ſhould ſhorten the larger Roots, in Proportion to the Age and Strength of the Tree; as alſo the particular Sorts of Trees are to be conſidered, for the *Walnut*, *Mulberry*, and ſome other tender-rooted Kinds ſhould not be pruned ſo cloſe, as the more hardy Sorts of Fruit or Foreſt Trees, which in young Fruit Trees, ſuch as *Pears*, *Apples*, *Plums*, *Peaches*, &c. that are one Year old, from budding or grafting, may be left about eight or nine Inches long; but in older Trees they muſt be left of a much greater Length; but this is to be underſtood of the larger Roots only, for the ſmall ones muſt be chiefly cut quite out, or pruned very ſhort, their extream Parts, which are generally very weak, do commonly decay after moving, ſo that it is the better Way intirely to diſplace them.

The next Thing is the pruning of their Heads, which muſt be differently performed in different Trees, and the Deſign of the Trees muſt alſo be conſidered; for if they are intended for Walls or Eſpaliers, it is the better Way to plant them with the greateſt Part of their Heads, which ſhould remain on until the *Spring*, that the Trees begin to ſhoot, when they muſt be cut down to five or ſix Eyes (as is fully ſet down in the ſeveral Articles of the various Kinds of Fruit) being very careful in doing of this, not to diſturb the new Roots.

But if the Trees are deſigned for Standards, you ſhould prune off all the ſmall Branches cloſe to the Places where they are produced, as alſo irregular Branches which croſs each other, and by their Motion when agitated by the Wind, do rub and bruiſe each other, ſo as to occaſion many times great Wounds in thoſe Places; beſides, it makes a diſagreeable Appearance to the Sight, and adds to the cloſeneſs of its Head, which ſhould always be avoided in Fruit Trees; whoſe Branches ſhould be preſerved as far diſtant from each other, as they are uſually produced when in a regular Way of Growth (which is in all Sorts of Trees proportionable to the Size of their Leaves, and Magnitude of their Fruit) for when their Heads are very thick, which is often occaſioned by the unſkilful ſhortening of their Branches, the Sun and Air cannot freely paſs between their Leaves, ſo that the Fruit muſt be ſmall and ill-taſted. But to return: After having diſplaced theſe Branches, you ſhould alſo cut off all ſuch Parts of Branches as have by any Accident been broken or wounded; for theſe will remain a diſagreeable Sight, and often occaſion a Diſeaſe in the Tree. But you ſhould, by no Means, cut off the main, leading Shoots, as is by too many practiſed, for thoſe are neceſſary to attract the Sap from the Root, and thereby promote the Growth of the Tree: For, from ſeveral Experiments which I made the *Winter* 1729, by cutting off the Branches of ſeveral Sorts of Trees, and putting them into Phials filled with Water, whoſe Tops were cloſely covered, to prevent the evaporating of the Water, I found, that thoſe Shoots whoſe leading Buds were preſerved, did attract the Moiſture in much greater Quantity than thoſe Shoots whoſe Tops were cut off: And from ſeveral Experiments made by the Reverend Dr. *Hales*, we find, that great Quantities of Moiſture are imbibed at Wounds, where Branches are cut off; ſo that by thus ſhortening the Branches, the Wet, which generally falls in great Plenty during the *Winter* Seaſon, is plentifully imbibed, and for Want of Leaves to perſpire it off, mixes with the Sap of the Trees, and thereby diſtending the Veſſels, deſtroys their contracting Force, which many times kills the Tree, or at leaſt weakens it ſo much, as not to be recovered again for ſome Years, as I have ſeveral times obſerved.

But being willing to try the Experiment in the Month of *October* 1723, I made choice of two Standard Almond Trees of equal Strength and Age; theſe I took up as carefully as poſſible, and having prepared their Roots, as before directed, I pruned their Heads in the following Manner, *viz.* Of one of them I only cut off the ſmall Branches, and ſuch as were bruiſed or broken, but preſerved all the ſtrong ones intire: Of the other I ſhortened all the ſtrong Branches, and pruned off the weak and broken Shoots, as is the common Practice. Theſe two Trees I planted in the ſame Soil, and to the ſame Situation, gave them both equal Attendance, and managed them both as nearly alike as poſſible; yet, in the *Spring*, when theſe Trees began to ſhoot, that whoſe Branches were intirely preſerved, came out early, continued to ſhoot ſtronger, and is at preſent much larger, and in better Health than the other. And ſince this, I have made ſeveral other Experiments of the like Nature, which have conſtantly ſucceeded in the ſame Manner; from whence it is reaſonable to conclude, that the ſhortening of the Branches is a great Injury to all new-planted Trees.

Having thus prepared the Trees for *Planting*, we muſt next proceed to the placing them into the Ground; but before this, I would adviſe, if the Trees have been long out of the Ground, ſo that their Fibres are dry'd, to place their Roots in Water eight or ten Hours, before they are planted, obſerving to place them in ſuch a manner that their Heads may remain erect, and their Roots only immerſed therein, which will ſwell the dried Veſſels of the Roots, and prepare them to imbibe Nouriſhment from the Earth. In fixing of them, great Regard ſhould be had to the Nature of the Soil, which, if cold and moiſt, the Trees ſhould be planted very ſhallow; as alſo, if it be a hard Rock or Gravel, it will be much the better Way to raiſe a Hill of Earth where each Tree is to be planted, than to dig into the Rock or Gravel, and fill it up with Earth, (as is too often practiſed) whereby the Trees are planted, as it were, in a Tub, there being but little Room for their Roots to extend; ſo that after two or three Years Growth, when their Roots have extended to the Sides of the Hole, they are ſtopped by the Rock or Gravel, can get no farther, and the Trees will decline, and in a few Years die; beſides, theſe Holes do detain the Moiſture ſo that the Fibres of the Plants are often rotted thereby. But when they are raiſed above the Surface of the Ground, their Roots will extend and find Nouriſhment, though the Earth upon the Rock or Gravel be not three Inches thick, as may be frequently obſerved, where Trees are thus placed.

The next Thing to be obſerved is, to place the Tree in the Hole in ſuch manner, that the Roots may be about the ſame Depth in the Ground as they were growing before they were taken up: Then break the Earth fine with a Spade, and ſcatter it into the Hole, ſo that it may fall in between every Root, that there may be no Hollowneſs in the Earth, (but you ſhould by no Means ſift or ſcreen the Mould, for Reaſons given in the Article of *Firrs*) then having filled in the Earth, you ſhould gently tread it cloſe with your Feet; but do not make it too hard; which is a very great Fault, eſpecially if the Ground be ſtrong or wet.

Having thus planted the Trees, you ſhould provide a Parcel of Stakes, which ſhould be drove down by the Sides of the Trees, and faſtened thereto to ſupport them from being blown down, or diſplaced by the Wind; and then lay ſome Mulch upon the Surface of the Ground, about their Roots, to prevent the Earth from drying.

This is to be underſtood of Standard Trees which caſt their Leaves; and as to ſuch as are planted againſt Walls, there is no other Difference in their Management, but only to preſerve their Heads intire, and to place their Roots about five or ſix Inches from the Wall inclining their Heads thereto; which ſhould be faſtened to the Wall, to prevent their being diſplaced by the Wind; and in the *Spring* following, juſt before they ſhoot, their Heads ſhould be cut down to five or ſix Buds, as is fully directed under the ſeveral Articles of the different Kinds of Fruit.

As to the Watering of all new-planted Trees, I ſhould adviſe it to be done with great Moderation; nothing being more injurious to them than over-watering of them; Examples enough of this Kind may have been ſeen in St. *James's* Park a few Years paſt, where there have been many Trees planted to make the Rows complete, where the old Trees were decay'd; and notwithſtanding the great Care in bringing in a large Quantity of freſh Earth, where each Tree was *planted*, yet very few of them have taken, and thoſe few which are yet alive, have made but poor Progreſs, nor will they ever be thriving Trees; which is wholly owing to the Abundance of Water given to them, whereby the Fibres are rotted off as ſoon as they are produced. And how can any Perſon imagine, that a Tree ſhould thrive, when the Ground in which it is *planted*, is continually floated with Water? For, by an Experiment made by the Reverend Dr. *Hales*, in placing the Roots of a *Dwarf Pear-Tree* in Water, the Quantity of Moiſture imbibed decreas'd very much daily, becauſe the Sap-Veſſels of the Roots, like thoſe of the cut-off Boughs in the ſame Experiment, were ſo ſaturated and clogged with Moiſture, by ſtanding in Water, that more of it could not be drawn up. And this Experiment was tried upon a Tree which was full of Leaves, and thereby more capable to diſcharge a large Quantity of Moiſture, than ſuch Trees as are intirely deſtitute of Leaves; ſo that it is impoſſible ſuch Trees can thrive, where the Moiſture is too great about their Roots.

The Seaſons for *Planting* are various, according to the different Sorts of Trees or the Soil in which they are *planted*: For ſuch Trees whoſe Leaves fall off in *Winter*, the beſt time is the Beginning of *October*, provided the Soil be dry; but for a wet Soil, it is better to defer it until the Latter-end of *Februray*, or the Beginning of *March*; and for Ever-greens, the Beginning of *April* is, by far, the beſt Seaſon, though they may be ſafely remov'd at *Midſummer*, provided they are not to be carried very far; but you ſhould always make Choice of a cloudy, moiſt Seaſon, if poſſible, when they will take freſh Root in a few Days. And, on the contrary, when theſe Trees are removed in *Winter*, during which Time they are almoſt in a State of Reſt, they do not take Root until the *Spring* advances, and ſets the Sap in Motion, ſo that many times they die, eſpecially if the *Winter* proves ſevere.

As to the preparing the Soil for *Planting*, that muſt alſo be done to ſuit the different Sorts of Trees, ſome requiring a light Soil, others a ſtrong one, &c. But this is fully ſet down in the ſeveral Articles of Trees, under their proper Heads, to which the Reader is deſired to turn; though for Fruit-Trees in general a freſh Soil from a Paſture-Ground, which is neither too light and dry, nor over ſtrong and moiſt, but rather a gentle, ſoft, loamy Earth, is to be preferr'd. And if it be for Wall Trees, it will be the better if the Borders are fill'd with this Earth ſix Feet wide, but it need not be above eighteen Inches or two Feet deep at moſt; for when the Borders are made too deep, the Roots of theſe Trees are inticed downward, which is of bad Conſequence to Fruit-Trees, as hath been elſewhere obſerved. The ſame alſo muſt be obſerved for Standard Trees, (where freſh Earth is brought to the Places in which they are *planted*) not to make the Holes too deep, but rather let them have the ſame Quantity of Earth in Width, which is much to be preferr'd.

There are ſeveral Perſons who direct the Placing of the ſame Side of the Tree to the South, which, before removing, had that Poſition, as a material Circumſtance to be ſtrictly regarded; but from ſeveral Trials which I have made, I could not obſerve the leaſt Difference in the Growth of thoſe Trees which are ſo placed, and others which were reverſed; ſo that I conclude it is not of any Conſequence to obſerve this Method.

The Diſtance which Trees ſhould be *planted* at, muſt alſo be proportioned to their ſeveral Kinds, and the ſeveral Purpoſes for which they are intended; all which is explain'd under their ſeveral Heads; but Fruit-Trees, *planted* either againſt Walls, or for Eſpalliers, ſhould be allowed the following Diſtances. For moſt Parts of vigorous-ſhooting *Pear-Trees*, twenty four Feet; for *Apricocks*, ſixteen Feet; *Apples*, ſixteen Feet; *Peaches*, *Nectarines*, *Cherries*, and *Plums*, fourteen or ſixteen Feet, according to the Goodneſs of the Soil, or the Height of the Wall. But as theſe Things are mention'd in their ſeveral Articles, it will be needleſs to repeat any more in this Place.

PLANTING REVERSE: Dr. *Agricola* tells us, That he has made ſeveral Experiments on the Branches of Foreig Trees, as well *Orange* as *Laurel*, which he perform'd afte the Manner following: He firſt ſtripp'd the Branches of al the Leaves, then he bent and tyed them, dreſs'd them wit his noble Mummy, and *planted* them the *reverſe* Way; ſ that nothing was to be ſeen of all the Branches, but th great Ends, and kept them, during the *Winter* in hi Stove.

He adds, That thoſe who have a mind to raiſe Trees this Way, which he calls *Monſtrous Fruit-Trees*, may raiſe *Apples*, *Pears*, *Cherries*, *Apricocks*, *Peaches*, *Mulberries*, *Walnut-Trees*, &c. alſo *Roſe-Trees*, *Gooſeberry Buſhes*, &c. which he directs to do ſomething more at large, as follows:

Take thoſe Branches that are furniſhed with long Side Branches, or Twigs, and bend the Side-Twigs in the Joints towards the great Branches and tie them together with Baſs or Packthread; then dreſs them with Mummy, either with a Bruſh only near the Ligature, and here and there on the Joints, or dip them intirely into it: Then having made a deep Hole in the Ground, ſet the Branches the *reverſe* Way, ſo that nothing but the long End of the Branch appears above Ground, the reſt being covered with good, fat, and well-ſifted Earth. This being done, the little Branches will take Root in the Joints every where; then the Buds will begin to ſhoot, ſo that you may ſee fifty or ſixty more Branches ſpring up, making an agreeable as well as monſtrous Figure.

Mr. *Fairchild* of *Hoxton* had begun to put the ſame into Practice, and he himſelf gives Directions for performing it as follows:

Firſt, to make Choice of a young Tree of one Shoot, either of *Alder*, *Elm*, or *Willow*, or any other Tree that will take Root eaſily by Laying, and to bend that Shoot gently down the extreme Part in the Earth, and ſo to let it remain 'till it has taken Root, ſo that the *Plant* then will reſemble an Arch, or bent Bow above the Ground.

When this Top End has well ſtruck new Roots, to dig about the firſt Root, and raiſe it gently out of Ground, 'till the Stem inclines to an Upright, and ſo ſtake it up, otherwiſe it will incline to bend.

Then to prune thoſe Roots that are erected in the Air, from the Bruiſes and Wounds which they receiv'd in being dug up, and do over with a Bruſh the prun'd Parts with the following Compoſition, moderately warm.

Take four Ounces of Tallow, four Ounces of Bees-Wax, two Ounces of Roſin, and two Ounces of Turpentine, melted together in a Pipkin.

After this prune off all the Buds or Shoots that are upon the Stem or *Plant*, and dreſs the Wound with the ſame Compoſition, to prevent any collateral Shootings, that may ſpoil the Beauty of the Stem.

Beſides, Care is to be taken that the new growing Roots of this *revers'd Plant* be well nouriſh'd, and therefore that Part of the Shoot, which was the larger, is to be cut away a little below the Earth, that the Stem may be better nouriſhed, and its Roots tranſlated.

PLATANUS, [πλάτανος of πλάτος, *breadth*] The Plane-Tree.

The *Characters* are;

It hath an amentaceous Flower, conſiſting of ſeveral ſlender Stamina, which are collected into ſpherical little Balls, and are barren; but the Embryo's of the Fruit, which are produced on ſeparate Parts of the ſame Tree, are turgid, and do afterwards become large ſpherical Balls, containing many oblong Seeds, intermix'd with Down.

The *Species* are;

1. PLATANUS *Orientalis verus. Park. Theat.* The true Oriental *Plane-Tree.*
2. PLATANUS *Occidentalis aut Virginienſis. Park. Theat.* The Weſtern or Virginian *Plane-Tree.*
3. PLATANUS *Orientalis aceris folio. T. Cor.* The Maple-leav'd *Plane-Tree.*
4. AN PLATANUS *Americanus, foliis oblongis ex adverſo naſcentibus.* The Button-Tree, *vulgo.*

The firſt of theſe Trees (though the firſt known Sort in *Europe*) is leſs common than the ſecond; which has been introduced ſince the *Engliſh* ſettled in *Virginia*; which may be, in a great meaſure, owing to the latter Sort being much eaſier to propagate than the former; for ever Cutting of this, if planted in a moiſt Soil, juſt before the Tree begins to ſhoot, will take Root, and in a few Years make very large Trees; whereas the firſt is only propagated from Seeds or by Layers.

The third Sort, although by ſome ſuppos'd to be a diſtinct Species from either of the former, yet is no more but a ſeminal Variety of the firſt; for I have had many Plants which came up from the Seeds of the firſt Sort, which ripen'd in the *Phyſick-Garden*, which do moſt of them degenerate to this third Sort, which in the manner of its Leaves, ſeems to be very different from either, and might reaſonably be ſuppos'd a diſtinct Sort, by thoſe who have not traced its Original.

The fourth Sort here mention'd was ſent from *Carolina*, by the Name of *Button-Tree*, and by the Account ſent with it, ſeems to be a Sort of *Plane-Tree*, though the Manner of this Tree's growing is very different from any of the other Sorts; but as it hath not produced either Flowers or Fruit in *England*, ſo I cannot determine whether it be a true *Plane-Tree* or not.

Theſe Trees delight to grow on a moiſt, rich Soil, on which they will arrive to a prodigious Size in a few Years, and during the *Summer* Seaſon do afford a glorious Shade; their Leaves being of a prodigious Size, eſpecially on a good Soil, ſo that there is ſcarcely any Tree at preſent in *England*, which does afford ſo good a Shade. But the Backwardneſs of their coming out in *Spring*, together with their Leaves fading early in *Autumn*, has occaſioned their not being ſo generally eſteem'd, as otherwiſe they would be.

The firſt Sort was brought out of the *Levant* to *Rome*, where it was cultivated with much Coſt and Induſtry: The greateſt Orators and Stateſmen among the *Romans*, took great Pleaſure in their *Villa's* which were ſurrounded with *Platanus*; and their Fondneſs to this Tree became ſo great, that we frequently read of their *irrigating* them with *Wine* inſtead of *Water*. *Pliny* affirms, that there is no Tree whatſoever which ſo well defends us from the Heat of the Sun in *Summer*, nor that admits it more kindly in *Winter*, for the Branches being produced at a proportionable Diſtance, to the Largeneſs of their Leaves, (which is what holds through all the different Sorts of Trees yet known) ſo that when the Leaves are fallen in *Winter*, the Branches growing at a great Diſtance, do eaſily admit the Rays of the Sun.

This Tree was afterwards brought to *France*, where it was cultivated only by Perſons of the firſt Rank; and ſo much was the Shade of it priz'd, as that if any of the Natives did but put his Head under it, they exacted a Tribute from them.

It is generally ſuppos'd, that the Introduction of this Tree into *England*, is owing to the great Lord Chancellor *Bacon*, who planted a noble Parcel of them at *Verulam*, which were there, very flouriſhing, a few Years ſince. But notwithſtanding its having been ſo long in *England*, yet there are but few very large Trees to be ſeen of it at preſent; which may, perhaps, be owing to the great Eſteem the Perſons of the laſt Age had for the *Lime*, which being much eaſier to propagate, and of quicker Growth during the three or four firſt Years, than the *Plane-Tree*, thereby it became the moſt common Tree for Planting of Avenues and ſhady Walks near Habitations in *England*. But ſince the Defects of that Tree have been more generally diſcovered, the *Elm* has had the Preference, and is now the moſt commonly planted for ſuch Purpoſes.

However, notwithſtanding what has been ſaid of the *Plane-Tree*, of its Backwardneſs in coming out in the *Spring*, and the ſudden Decay of its Leaves in *Autumn*, yet, for the goodly Appearance, and great Magnitude to which it will grow, it deſerves a Place in large Plantations, or ſhady Receſſes near Habitations, eſpecially if the Plantation be deſign'd on a moiſt Soil, or near Rivulets of Water; in which Places this Tree will arrive to a prodigious Magnitude.

We read of one of theſe Trees which was growing at a *Villa* of the Emperor *Caligula*, whoſe Trunk was ſo large, as, when hollow'd, to make a Room, therein capacious enough to entertain ten or twelve Perſons at a Repaſt, and for their Servitors to wait upon them. And there is Mention made of one of theſe Trees, which was growing in the *Eaſtern* Country, which was of ſo great a Magnitude, that *Xerxes* made his Army (which conſiſted of ſeventeen hundred thouſand Men) halt, for ſome Days, to admire the Beauty and Procerity of this Tree; and became ſo fond of it, as to take his own, his Concubines, and all the great Perſons Jewels to cover it; and was ſo much enamour'd with it, that for ſome Days, neither the Concern of his Grand Expedition, nor Intereſt, nor Honour, nor the neceſſary Motion of his prodigious Army could diſſuade him from it: He ſtyl'd it, His Miſtreſs, His Minion, His Goddeſs; and when he was obliged to part with it, he cauſed a Figure of it to be ſtamp'd on a Gold Medal, which he continually wore about him.

And ſuch was the Eſteem which the People of *Aſia* had for this Tree, that where-ever they erected any ſumptuous Buildings, the Portico's, which open'd to the Air, terminated in Groves of theſe Trees.

The *Eaſtern Plane-Tree* is propagated either from Seeds or by Layers, the latter of which is generally practis'd in *England*; though the Plants thus rais'd do ſeldom make ſo large, ſtrait Trees, as thoſe which are produc'd from Seeds; but it has been generally thought, that the Seeds of this Tree were not productive, becauſe they have not been ſown at a proper Seaſon, nor managed in a right Manner; for I have had thouſands of the young Plants ſpring up from the Seeds of a large Tree, which ſcatter'd upon the Ground in a moiſt Place: And I ſince find, that if theſe Seeds are ſown ſoon after they are ripe, in a moiſt ſhady Situation, they will riſe extremely well; and the Plants thus obtain'd, will make a conſiderable Progreſs after the ſecond Year, being much hardier, and leſs liable to loſe their Tops in *Winter*, than thoſe which are propagated by Layers. And ſince the Seeds of this Tree ripen well in *England*, they may be propagated in as great Plenty as any other Foreſt Tree.

The *Virginian Plane-Tree* will grow extremely well from Cuttings, if they are planted the Beginning of *March* upon a moiſt Soil; and if they are water'd in dry Weather, will make a prodigious Progreſs. So that in a few Years from the Planting, they will afford noble Trees for planting of Avenues, and other ſhady Walks; and their Trunks are perfectly ſtrait, growing nearly of the ſame Size to a conſiderable Height, there being the leaſt Difference in the Girt of this Tree, for ſeveral Yards upwards, of any other Sort of Tree whatſoever. The Honourable *Paul Dudley*, Eſq; in a Letter to the *Royal Society*, mentions one of theſe Trees, which he obſerved in *New-England*, whoſe Girt was nine Yards, and held its Bigneſs a great Way up; which Tree, when cut down, made twenty-two Cords of Wood. He alſo ſays, in the ſame Letter, That he has propagated many of theſe Trees by cutting off Sticks of five or ſix Feet long, and ſetting them a Foot deep into the Ground in the *Spring* of the Year, when the Seaſon was wet; and that they always thrive beſt in a moiſt Soil.

The Leaves of this Sort are larger, and leſs divided than thoſe of the *Oriental Plane-Tree*; and the Tree grows much faſter, and is hardier, and being thus eaſily propagated, is now the moſt common in *England*.

The *Maple-leav'd Plane-Tree* hath its Leaves leſs divided than the firſt, but more than the ſecond Sort, ſo that it is a middle Kind between both; tho', as I before ſaid, it comes originally from the *Eaſtern* Sort.

This is propagated very eaſily by Layers, every Twig of which will take Root, if they are but cover'd with Earth; and when tranſplanted out in a moiſt Soil, will grow equally faſt with the *Virginian* Kind. But whether this will take from Cuttings or not, I cannot ſay, having never made Trial of it; though from the Readineſs of the Branches taking Root, there is little Reaſon to doubt of it. The beſt time to tranſplant theſe Trees is in *March*; for if they are removed in *Winter*, and the Seaſon ſhould prove very ſevere, the tender Shoots are often kill'd by the Froſt.

PLINIA.

The *Characters* are;

It hath a bell-ſhaped Flower conſiſting of one Leaf, which is divided into five Segments at the Brim; from whoſe Cup riſes the Pointal, which afterward becomes a globular, ſoft, chanelled Fruit, in which is included one Seed of the ſame Form.

We have but one *Species* of this Plant, which is;

PLINIA *fructu croceo odorato. Plum. Nov. Gen.* Plinia with a ſweet-ſcented ſaffron-coloured Fruit.

This Plant was diſcovered by Father *Plumier* in the *Weſt-Indies*, who gave it this Name, in Honour to *Pliny* the famous *Natural Hiſtorian*.

It grows in ſeveral Places in the warmer Parts of *America*, from whence the Seeds have been ſent to *Europe*. Theſe Seeds muſt be ſown in Pots filled with light rich Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to moiſten the Earth with Water whenever it appears dry, as alſo to preſerve a moderate Temperature of Heat in the Bed, ſo that if the Nights ſhould prove cold, the Glaſſes of the Hot-bed ſhould be every Night covered with Mats; and in the middle of the Day the Glaſſes may be raiſed to admit freſh Air, when the Weather is warm. Theſe Seeds will ſometimes remain long in the Ground before the Plants appear; and whenever it ſo happens, the Pots muſt be conſtantly kept clear from Weeds, and duly watered. And when the Plants come up, they ſhould be tranſplanted into Pots, and may be managed as is directed for the *Pittonia*.

PLOUGHING of Land.

There is not a greater Improvement of arable Land, than that of well ploughing it; by which Method the Soil is pulveriſed, and rendered fit to receive the Fibres of Plants. And the oftener this is repeated, the greater Improvement is made. But as this part of Agriculture has been fully treated of by the ſeveral Writers on Husbandry, I ſhall not repeat what they have ſaid, but ſubjoin a few Remarks to thoſe already publiſhed.

In ploughing of Land, great Regard ſhould be had to the Crop which is deſigned to be ſown; for if the Plants have Tap-roots, which run deep into the Ground, then it ſhould be ploughed deep; otherwiſe, when the Roots have reached ſo low as to meet with the unſtirred Earth, they will ſtop, and divide into ſmall forky Roots, and be good for little. It has been often aſſerted, that deep ploughing is very injurious to many Soils; but from repeated Obſervations it appear otherwiſe; for where-ever there is Depth enough of Soil to admit of deep ploughing, when it is practiſed rightly, it is a vaſt Improvement to the Land. Indeed, where the Land is very ſtubborn, and ploughed ſo deep as to turn up the ſtrong part on the Surface, and this is not well wrought to divide the Parts, it often proves a Diſadvantage to the Crop; but when this is practiſed, it ſhould always be done the Beginning of Winter, ſo that it may be expoſed to the Froſt, which will be of great Uſe, by entering of the Clods, and cauſing them to crumble after the Thaw; then in the Spring it ſhould be again ploughed, and this repeated twice more at leaſt the following Summer, which will not only deſtroy the Weeds, but ſo divide the Particles of Earth, as to make it fall eaſily under the Harrow.

The Difference between Land which is dug by hand, and that which is ploughed, conſiſts in having the Parts more divided; ſo that every Perſon who is curious in Working of his Land, will oblige his Labourers to take as thin Spits of Earth as poſſible, that there may remain no large Clods unbroken. And it is the ſame in ploughing; for if the Land is ploughed three or four times carefully, it will divide the Clods equal to the Land which is dug, and will ſufficiently repay the Husbandman. But this is not to be done with the common Plough, for that will not divide the Parts, therefore the Plough with four Coulters; ſhould be uſed for this purpoſe. As this Sort of Plough requires more Strength to draw it, ſo it ſhould not be uſed but in wet Weather; for when the Ground is moiſt, this Plough may be more eaſily drawn, than when it is dry and hard; and there is no Danger of injuring the Land, by ploughing in wet Weather with this Plough, tho' there is much in the common Plough at ſuch times; becauſe, when the Furrow is turned over whole, the Clods will cement with the Wet; and where the Cattle tread on it, the Ground will be rendered as hard as before it was ſtirred.

It hath been a Practice in ſome Countries, where the Land is mellow, to plough the Top of the Furrow, and then with ſix or ſeven Labourers to dig after the Plough, and throw the Earth on the Top, which is almoſt equal to digging of the Land two Spits deep, and is performed at a much eaſier Expence: but this is never practiſed, except for ſome particular Crops, which root very deep in the Ground.

The Models or Draughts of all the Sorts of Ploughs in Uſe being already exhibited in the ſeveral Books of Husbandry extant, I ſhall not give any farther Account of them.

PLUMBAGO; [This Plant is ſo call'd, becauſe its Leaves are of a Leaden Colour, and becauſe it colours the Hands of thoſe that handle it of a leaden Colour: In like manner, it is call'd *Molydana*, of μόλυβδος, *Lead*: It was alſo call'd *Dentillaria* by the Ancients, becauſe its Roots not only reſemble a Tooth, but becauſe it is alſo good for the Tooth-ach] Lead-wort.

The *Characters* are;

The Flower conſiſts of one Leaf, which is ſhap'd like a Funnel, and cut into ſeveral Segments at the Top; out of whoſe fiſtulous Flower-cup riſes the Pointal, which afterwards becomes one oblong Seed, for the moſt part ſharp-pointed, which ripens in the Flower-cup.

The *Species* are;

1. PLUMBAGO *quorundam. Cluſ. Hiſt.* Lead-wort, or Tooth-wort.

2. PLUMBAGO *Americana, betæ folio ampliori. Plum.* American Lead-wort, with a broad Beet-leaf.

3. PLUMBAGO *flore albo. Inſt. R. H.* Leadwort with a white Flower.

4. PLUMBAGO *Orientalis, lapathi folio, flore minori albido. Tourn. Cor.* Eaſtern Leadwort, with a dock Leaf, and a ſmaller whitiſh Flower.

5. Plumbago *Americana ſcandens aculeata, betæ folio minori. Plum. Cat.* Prickly Climbing *American* Leadwort, with a leſſer Beet-leaf.

The firſt of theſe Sorts grows about *Naples*, in *Sicily*, and the Southern Parts of *France*, but is hardy enough to endure the Cold of our Climate in the open Ground, provided it be planted in a warm dry Soil. This is propagated by parting of the Roots in the *Spring* before they ſhoot: In doing of which, you ſhould be very careful to preſerve a Head to each Slip, otherwiſe they will not grow. They ſhould be planted in a warm Situation, and a dry Soil, about two Feet aſunder, and water'd until they take Root; after which they will require no farther Care, but to clear them from Weeds, and ſupport their Branches from being broken by the Wind. They commonly riſe about three Feet high, but, unleſs the *Autumn* be very favourable, they ſeldom flower in this Country. The Root of this Plant is ſometimes us'd in Medicine.

The ſecond is preſerv'd by ſuch as are curious in collecting Exotick Plants. This may be propagated in the ſame manner as the former, as alſo from Seeds, which ſhould be ſown upon a Hot-bed in the *Spring*; and when the Plants come up, they may be treated in the manner directed for *Amaranths*; to which the Reader is deſir'd to turn, to avoid Repetition. Theſe Plants muſt be plac'd in the Stove in *Winter*, where they may have a moderate Degree of Warmth, and ſhould frequently be refreſh'd with Water. The ſecond Year they will produce Flowers in the *Autumn*, and if the Seaſon be warm, the Seeds will ripen. This Plant grows plentifully in *Jamaica*, and the *Caribee* Iſlands; and from the Name given to it by Dr. *Boerhaave*, it doth alſo grow in *Ceylon*.

The third Sort differs in nothing from the common Sort, which is mentioned above except in the Colour of the Flower; that having a purple, and this Sort a white Flower; ſo that they may be indifferently uſed in Medicine.

The fourth Sort was diſcovered by Dr. *Tournefort* in the *Levant*. This is a hardy Plant, which will endure the Cold of our ordinary Winters extremely well in the open Air. Both theſe Sorts may be propagated and managed in the ſame manner as directed above.

The fifth Sort was diſcovered by Father *Plumier*, in ſome of the *French* Settlements in *America*, and ſince was found by the late Dr. *Houſtoun* at *La Vera Cruz*. This Sort may be propagated by Seed, which ſhould be ſown on a Hot-bed early in the Spring, and muſt be afterward treated in the ſame manner as above directed for the ſecond Sort. This Sort will abide ſeveral Years, if it is preſerved in a Stove in the *Winter*, and will ripen Seed every Year.

PLUM TREE, *vide* Prunus.

PLUMERIA, The Jaſmine-tree, *vulgo*.

The *Characters* are;

It hath a funnel-ſhaped Flower, conſiſting of one Leaf, which is cut into ſeveral Segments at the Brim, out of whoſe Cup ariſes the Pointal, which afterward becomes the Fruit or Pod, which for the moſt part grow double, and open lengthwiſe, diſcovering the Seeds, which are oblong, and have a Border round them: theſe are ranged over each other like Slates on a Houſe, and are faſtened to the Placenta.

The *Species* are;

1. Plumeria *flore roſeo odoratiſſimo. Inſt. R. H.* Plumeria with a roſe-coloured ſweet-ſcented Flower, commonly called in the *Weſt-Indies* red Jaſmine.
2. Plumeria *flore majore odorato & incarnato.* Plumeria with a larger ſweet-ſcented and incarnate Flower, called in the *Weſt-Indies*, the Japan-tree.
3. Plumeria *flore niveo, foliis longis anguſtis & acuminatis. Inſt. R. H.* Plumeria with a ſnowy Flower, and long narrow pointed Leaves.
4. Plumeria *flore niveo, foliis brevioribus & obtuſis. Inſt. R. H.* Plumeria with a ſnowy Flower, and ſhorter blunt Leaves.
5. Plumeria *foliis longiſſimis, minus ſucculentibus, flore pallido. Houſt.* Plumeria with very long and leſs ſucculent Leaves, and a pale Flower.
6. Plumeria *folio latiore obtuſo, flore luteo minore.* Plumeria with a broad obtuſe Leaf, and a ſmaller yellow Flower.

This Name was given to this beautiful Genus of Plants, by Dr. *Tournefort*, in Honour to Father *Plumier*, who was Botaniſt to the late King of *France*, and a long Time in *America*, ſearching after new Plants, and who has publiſhed a Catalogue of the Plants he diſcovered, with the new Genus's he conſtituted: and two Volumes in Folio, with Figures and Deſcriptions of many of the Plants.

Theſe Plants grow wild in the *Spaniſh Weſt-Indies*, from whence ſome of the moſt beautiful Kinds were brought into the *Engliſh* Settlements in *America*, and are cultivated in their Gardens for Ornament. The firſt Sort here mentioned, is the moſt common Kind, which is preſerved in the Gardens of the Inhabitants of *Jamaica* and *Barbados*. The Flowers of this Kind nearly reſemble thoſe of the red Oleander, but are larger, and have an agreeable Odour. Theſe are produced in ſmall Bunches, at the Extremity of the Shoots, and generally appear in *July* and *Auguſt*, in this Climate; but in the *Weſt-Indies*, they flower a great Part of the Year.

The ſecond Sort I received from the Iſland of St. *Chriſtophers* by the Name of *Japan-tree*: this Sort is very rare in the *Engliſh* Settlements at preſent, having been but lately introduced from the *Spaniſh Weſt-Indies*: it is in Leaf and Stem very like the firſt, but the Flowers of this are of a paler Colour, and are produced in much larger Bunches. It is very common to have upward of twenty of theſe Flowers open in one Bunch, and a Number to ſucceed theſe as they decay, ſo as that the Bunches have continued in Beauty upward of two Months; during which time they make a moſt beautiful Appearance in the Stove, and have a very agreeable Flavour.

The third Sort grows plentifully at *Campechy*, from whence the late Dr. *Houſtoun* ſent the Seeds. He alſo obſerved ſome Plants of this Kind at *Jamaica*. The ſixth Sort is alſo pretty common in both thoſe Places. Theſe are not near ſo beautiful as the two former Sorts, their Flowers being ſmaller, and produced in leſſer Bunches, and are moreover of ſhorter Duration. But for the Beauty of their Stems and Leaves, and for the Sake of Variety, they deſerve Room in every curious Collection of Plants.

The fourth and fifth Sorts, were diſcovered by Dr. *Houſtoun*, growing in great plenty near *Carthagena* in the *Spaniſh Weſt-Indies*, from whence he ſent their Seeds to *England*. The fourth Sort produces ſmall white Flowers, reſembling thoſe of the third, ſo is leſs valuable than the two firſt. But the fifth Sort produces as large Flowers as the firſt; but they are of a pale red Colour, and ſmell very ſweet. The Leaves of this Sort are ſometimes ten Inches or a Foot in Length, and about three Inches over in their broadeſt Part. Theſe are not near ſo thick, or full of Juice, as are thoſe of the other Sorts, nor are they ſo deeply veined; but being of a bright ſhining green Colour, they make an agreeable Variety amongſt other tender exotick Plants in the Stove.

All theſe Plants may be propagated by Seeds, which ſhould be ſown in Pots filled with light rich Earth, and plunged into a Hot-bed of Tanners-bark; and when the Plants are come up about two Inches high, they ſhould be tranſplanted into ſeparate ſmall Pots, filled with light ſandy Earth, and plunged into the Hot-bed again, obſerving to ſhade them from the Heat of the Sun in the middle of the Day until they have taken Root: but they muſt not have much Water, for as all the Sorts are very ſucculent, being full of a milky Juice, ſomewhat like the Euphorbiums, ſo Moiſture will cauſe them to rot. In hot Weather the Plants ſhould have a pretty large ſhare of freſh Air admitted to them, by raiſing of the Glaſſes of the Hot-bed every Day, in proportion to the Warmth of the Seaſon. Toward *Michaelmas*, when the Nights begin to be cold, the Plants ſhould be removed into the Stove, and plunged into the Bark-bed, where they muſt remain during the *Winter*. As theſe Plants all caſt their Leaves in the Middle of *Winter*, and continue deſtitute of them till about the Beginning of *May*, ſo during that Time they ſhould be watered very ſparingly; becauſe they are in more danger of rotting, while they are in a leſs active State, by too much Moiſture, than when they are furniſhed with Leaves, thro' which the Moiſture is more freely perſpired.

All theſe Sorts are too tender to thrive in the open Air of this Country in the *Summer* Seaſon; ſo they ſhould be conſtantly preſerved in the Stove, where in warm Weather, they muſt have a large Share of free Air; but in cold Weather they muſt be kept very warm. While they are young, it will be proper to continue them in the Bark-bed, but when they have obtained Strength, they may be placed in the dry Stove, where they will thrive very well, provided they are kept in a moderate Temperature of Heat, and have not too much Water.

Theſe Plants may alſo be propagated by Cuttings, which ſhould be taken from the old Plants a Month before they are planted, during which Time they ſhould be laid on the Flues in the Stove, that the Part which joined to the old Plant, may be throughly healed, otherwiſe they will rot. Theſe Cuttings ſhould be planted in ſmall Pots filled with light ſandy Earth, and plunged into a moderate Hot-bed of Tanners-bark, obſerving to ſhade them juſt in the Heat of the Day from the Sun, and refreſh them every third or fourth Day with Water; but it muſt be given to them ſparingly each Time. If the Cuttings ſucceed they will have taken Root in about two Months, when they ſhould have a larger Share of Air, to harden them by Degrees to bear the Sun and Air, and afterward may be treated as the old Plants.

The milky Juice of theſe Plants is very cauſtic, and reckoned very poiſonous: in cutting off any of the Branches of the Plants, if the Knife be not immediately cleaned, the Juice will corrode it, and turn the Blade almoſt black in a very little Time, ſo as not to be cleaned off again; and if dropped on Linen, will cauſe it to waſh in Holes, equal to *Aquafortis*.

POINCIANA; Barbados Flower-Fence, *or* Spaniſh Carnations.

The *Characters* are;

The Flower conſiſts of ſeveral Leaves, which are plac'd in a circular Order; in the Centre of which ariſes a Number of crooked Stamina; the Pointal, which ariſes from a quinquifid Flower-cup, becomes a long, broad, flat Pod, opening into two Parts, and fill'd with broad, flat, roundiſh Seeds, each of which is lodg'd in a ſeparate Cell, which are divided by a thin Partition.

Poinciana *flore pulcherrimo. Tourn.* Barbados Flower-Fence, with a fair Flower.

This Plant is very common in the *Caribbee* Iſlands, where it is planted for a Fence to divide Fields, and is greatly eſteem'd for the Beauty of its Flowers, which are produc'd on long Spikes in vaſt Quantities. The Leaves of this Plant are alſo us'd inſtead of *Sena*, to purge withal.

This was carry'd from *Cape Verd* Iſlands to *Barbados*, as is related by *Ligon*, and hath ſince been diſperſed through the other Iſlands. It grows in thoſe Countries to be ten or twelve Feet high, and the Stem is often as large as the Small of a Man's Leg, and the Wood is very hard; from whence it hath obtain'd the Name of *Ebony* in ſome Places. There are ſome Varieties of this Tree in the *Weſt-Indies*, which differ in the Colour of their Flowers; but whether thoſe Variations do not ariſe from the ſame Seeds, I can't determine, ſince the Plant is ſo tender as to be rarely preſerv'd through the *Winter* in this Climate.

The Seeds of this Plant are annually brought over in Plenty from the *Weſt-Indies*, which, if ſown upon a Hot-bed, will riſe very eaſily: and when the Plants are come up, they ſhould be tranſplanted into ſmall Pots, and plung'd into a Hot-bed of Tanners-Bark, obſerving to ſhade them while they have taken Root; after which you muſt give them Air in Proportion to the Warmth of the Seaſon, and they muſt be frequently refreſh'd with Water. When the Plants have fill'd the Pots with their Roots, they ſhould be taken out, and plac'd into larger ones, that they may have Room to grow: If Care be taken to water and ſhift them as often as is neceſſary, they will grow to be three Feet high the firſt Seaſon. At *Michaelmas* the Pots ſhould be plung'd into a freſh Hot-bed of Tanners-Bark, in the Stove, which ſhould be kept to the *Anana*'s Heat, mark'd on Mr. *Fowler's Thermometers*, and frequently refreſh'd with Water, but you muſt never give them large Quantities, which is very injurious to theſe Plants at that Seaſon. The Earth which theſe Plants ſhould be planted in, muſt be freſh, light, and ſandy (but not over rich); in which they will ſtand the Winter better than if plac'd in a ſtronger Soil.

With this Management I have rais'd ſeveral Plants to be five Feet high; ſome of which I have preſerv'd two or three Years, and have had the Buds of the Flowers appear, but have not as yet been able to bring them to flower; tho' I am in hopes it may be effected, ſince the Improvements which are made every Year in the keeping of tender Plants, are very conſiderable.

To this *Article* muſt be added;

1. **Poinciana** *flore luteo. Houſt. Barbados* Flower-fence, with a yellow Flower.
2. **Poinciana** *flore rubente. Houſt.* Flower-fence with a reddiſh Flower.
3. **Poinciana** *ſpinoſa, vulgo.* TARA. *Feuil.* Prickly Flower-fence, commonly called *Tara*.

The firſt and ſecond Sorts were diſcovered by the late Dr. *Houſtoun* at *Campechy*, where they grew in great Plenty. Theſe do not differ in any thing from the common Sort, before mentioned, except in the Colour of their Flowers; that having a Flower variegated with Red and Yellow, and theſe have Flowers one of them intirely Yellow, and the other of a plain red Colour.

The third Sort was diſcovered by *Pere Feuillée*, growing plentifully in the Vallies of *Lima*. The Flowers of this Kind are ſmaller than thoſe of the other Sorts, and are of a greeniſh yellow Colour, ſo that they are not near ſo beautiful. The Seed-pods of this Sort are uſed by the Dyers in the *Spaniſh Weſt-Indies*, for Dying of Black; and they are alſo uſed for making of Ink: the Infuſion of theſe Pods with Galls, affords the moſt beautiful black Ink in the World.

Theſe three Sorts may be propagated by Seeds, which ſhould be ſown on a Hot-bed early in the Spring; and when the Plants come up, they muſt be treated in the ſame manner as is directed for the common Sort, in the former part of this Article.

POKE VIRGINIAN, *vide* Phytolacca.

POLEMONIUM; [This Plant is ſo call'd of πολὺ *much* and *μόνον alone*, becauſe there are many of its Lobes go to the making of one Leaf. It is alſo call'd *Greek Valerian*, becauſe it was brought from *Greece*.] Greek Valerian, *or* Jacob's Ladder.

The *Characters* are;

The Flower conſiſts of one Leaf, which is divided deeply into five Parts, and is Wheel-ſhap'd; the Pointal which riſes from the Flower-cup, afterwards becomes a roundiſh Fruit, divided into three Cells, which are fill'd with oblong Seeds; to which ſhould be added, The Leaves are pinnated.

The *Species* are;

1. **Polemonium** *vulgare cœruleum. Tourn.* Greek Valerian, with a blue Flower.
2. **Polemonium** *vulgare album. Tourn.* Greek Valerian, with a white Flower.
3. **Polemonium** *vulgare, flore variegato. Tourn.* Gree Valerian, with a ſtrip'd Flower.
4. **Polemonium** *vulgare, foliis eleganter variegati Boerh. Ind.* Greek Valerian, with beautiful ſtrip'd Leave

The two firſt *Species* are very common in many *Engli* Gardens, where they are cultivated for the Beauty of th Flowers: They have alſo been found wild in *Carleton Be* and about *Malham Cove* near *Craven*. The Sort with variegated Flowers, as alſo that with ſtriped Leaves, are Varieti which have been obtained from the former.

Theſe Plants are eaſily propagated, by ſowing their Seed in the *Spring* upon a Bed of light Earth; and when they ar come up pretty ſtrong, they ſhould be pricked out into another Bed of the ſame light Earth, about three Inches aſunder, obſerving to ſhade and water them until they have taken Root, after which they will require no farther Care bu to keep them clear from Weeds, until *Michaelmas*; at whic Time they muſt be tranſplanted into the Borders of th Flower Garden, where, being intermixed with different Sor of Flowers, they will make a beautiful Appearance. The produce their Flowers in *May* and *June*, and their Seeds ripe in *Auguſt*.

The variegated Kinds are preſerved by parting of thei Roots, becauſe the Plants raiſed from Seeds would be ſubject to degenerate, and become plain. The beſt Time t part them is about *Michaelmas*, that they may take goo Root before the cold Weather prevents them. Theſe ſhou have a freſh light Soil, but if it be too rich, their Roots wi rot in *Winter*, and their Stripes will go off.

POLIUM; [This Plant is ſo called of πολιὸς, *hoary*, much as to ſay, the *hoary Herb*, becauſe it was the whi *Poley* of the Ancients] Poley-mountain.

The *Characters* are;

It hath a labiated Flower, conſiſting of one Leaf, whoſe Stmina ſupply the Place of the Creſt; the Beard (or Under-lip) divided into five Segments, as the Germander; out of t Flower-cup riſes the Pointal, attended, as it were, by f Embryo's, which afterwards become ſo many Seeds, ſhut up the Flower-cup: To theſe marks muſt be added, That the Flo ers are collected into a Head upon the Tops of the Stalks a Branches.

The *Species* are;

1. **Polium** *montanum luteum. C. B. P.* Yellow Mou tain-poley.

2. Poli

2. **Polium** *montanum album. C. B. P.* White Poley-mountain.

3. **Polium** *lavendulæ folio. C. B. P.* Poley-mountain, with a Lavender Leaf.

4. **Polium** *lavendulæ folio anguſtiori. C. B. P.* Poley-mountain, with a narrower Lavender Leaf.

5. **Polium** *Pyreniacum ſupinum, hederæ terreſtris folio. Tourn.* Creeping *Pyrenian* Poley-mountain, with a Ground-ivy Leaf.

6. **Polium** *maritimum erectum Monſpeliacum. C. B. P.* Upright Poley-mountain of *Montpelier*.

7. **Polium** *montanum luteum, ſerratis anguſtioribus incanis foliis. Barrel.* Yellow Poley-mountain, with narrow hoary ſerrated Leaves.

There are ſeveral other *Species* of this Plant, which are preſerved in ſome curious Botanick Gardens for Variety; but thoſe here mentioned, are what I have obſerved in the *Engliſh* Gardens.

Theſe Plants are all propagated by planting their Cuttings in a Bed of light freſh Earth, during any of the *Summer* Months, which ſhould be watered and ſhaded until they have taken Root; after which they will require no other Culture than to keep them clear from Weeds until *Michaelmas*; when they ſhould be tranſplanted into a warm Situation, and muſt have a very dry Soil, otherwiſe they are ſubject to decay in *Winter*, for they are Natives of warm Countries; but if they are placed in a dry Rubbiſh, under the Shelter of a Wall or Pale, they will endure the Cold of our ordinary *Winters* very well. Theſe Plants produce their Flowers in *June* and *July*, but do rarely perfect their Seeds in this Country. Their Flowers have very little Beauty in them, but for their hoary Leaves, and odd Appearance, a few Plants of them may be admitted for Variety. The ſecond Sort is uſed in Medicine.

To this *Article* muſt be added;

1. **Polium** *montanum alterum, foliis anguſtioribus, capitulis longioribus. C. B. P.* Another Mountain-poley, with narrower Leaves, and longer Heads.

2. **Polium** *montanum repens. C. B. P.* Creeping Poley-mountain.

3. **Polium** *maritimum ſupinum Venetum. C. B. P.* Creeping maritime *Venetian* Poley-mountain.

4. **Polium** *Hiſpanicum, Chamædryos folio, purpuraſcente flore. Inſt. R. H. Spaniſh* Poley-mountain, with a germander Leaf, and a purpliſh Flower.

5. **Polium** *Luſitanicum ſupinum minus incanum, caulibus purpuraſcentibus, flore albo. Inſt. R. H.* Creeping leſs hoary *Portugal* Poley-mountain, with purpliſh Stalks, and a white Flower.

6. **Polium** *Hiſpanicum latifolium, capitulo breviori, purpuraſcente flore. Inſt. R. H.* Broad-leafed *Spaniſh* Poley-mountain, with a ſhorter Head, and purpliſh Flower.

7. **Polium** *Hiſpanicum maximum album. Inſt. R. H.* The largeſt white *Spaniſh* Poley-mountain.

8. **Polium** *Hiſpanicum maximum luteum. Inſt. R. H.* The greateſt yellow *Spaniſh* Poley-mountain.

9. **Polium** *Hiſpanicum maritimum fruteſcens, roriſmarini folio, flore rubro. Inſt. R. H.* Shrubby maritime *Spaniſh* Poley-mountain, with a Roſemary Leaf, and a red Flower.

10. **Polium** *Hiſpanicum ſupinum, flore flaveſcente. Inſt. R. H.* Creeping *Spaniſh* Poley-mountain, with a yellowiſh Flower.

11. **Polium** *Hiſpanicum, linariæ foliis brevioribus, flore albo. Inſt. R. H. Spaniſh* Poley-mountain, with ſhorter Toadflax Leaves, and a white Flower.

12. **Polium** *montanum gnaphaloides inciſum, flore rubro, & ſupinum. Barr. Icon.* Creeping Poley-mountain, reſembling Cudweed, with a red Flower.

13. **Polium** *Hiſpanicum luteum, majoranæ folio. Inſt. R. H.* Yellow *Spaniſh* Poley-mountain, with a Marjoram Leaf.

14. **Polium** *Hiſpanicum, ſerpylli folio, purpuraſcente flore. Inſt. R. H. Spaniſh* Poley-mountain, with a Mother-of-thyme Leaf, and a purpliſh Flower.

15. **Polium** *Hiſpanicum, thymi folio, purpuraſcente coma. Inſt. R. H. Spaniſh* Poley-mountain, with a Thyme Leaf, and a purpliſh Top.

16. **Polium** *Creticum maritimum humifuſum. Tourn. Cor.* Trailing maritime Poley-mountain of *Crete*.

17. **Polium** *Smyrnæum, ſcordii folio. Tourn. Cor. Smyrna* Poley-mountain, with a Water-germander Leaf.

All theſe Sorts of Poley-mountain are pretty hardy Plants, ſo will endure the Cold of our ordinary *Winters* in the open Air, provided they are planted in a warm Situation, and on a dry ſtony Soil; for if they are planted in a rich moiſt Soil, they will grow very freely in *Summer*; but being replete with Juice are apt to rot in *Winter*; ſo that when they are planted on a lean ſtony Soil, where they will be ſtunted and grow ſhort, and have ſmall Leaves, they will abide ſeveral Years. Theſe Plants ſeldom produce good Seeds in this Country, ſo are propagated by Cuttings, which may be planted any time in the *Summer*, in a Bed of freſh Earth, obſerving to ſhade them until they have taken Root, as alſo to refreſh them with Water in dry Weather. When they are rooted, they will want no farther Care, but to keep them clear from Weeds; and at *Michaelmas* they may be tranſplanted into the Places where they are deſigned to remain, that they may be well rooted before the Froſt comes on.

Theſe Plants are chiefly preſerved in Botanic Gardens for Variety; but they may be rendered ornamental in other Gardens, where they will grow on ſtony gravelly Soils; and their hoary Leaves and Branches, with the different Colour of their Flowers, will make an agreeable Proſpect, if they are properly diſpoſed.

POLYANTHOS, *vide* Primula Veris.

POLYGALA: This Plant is ſo called of πολὺ, *much*, and γαλα, *Milk*, becauſe if Cattle are fed in Marſhes that produce this Plant, they give a great Quantity of Milk: It is alſo called *Ambervalis*, of *Ambiendis Arvis*, from luſtrating the Fields, becauſe the Ancients uſed to crown Virgins with the Flowers of this Plant, when they perambulated the Fields, to implore Fertility thereto: It is alſo called *Amarella*, becauſe it has a bitter Taſte] Milkwort.

The *Characters* are;

It hath a Flower conſiſting of one Leaf, of an anomalous Figure, perforated behind, but divided into two Lips before; the uppermoſt Lip is divided into two Parts, but the under one is curiouſly fringed; out of the lower Part of the Flower riſes the Pointal, which afterwards becomes a broad Fruit, divided into two Cells, which contain oblong Seeds; the Fruit is generally incloſed in the Flower-cup, which is compoſed of five Leaves, viz. three ſmall ones, and two larger, which afterwards embrace the Fruit like Wings,

The *Species* are;

1. **Polygala** *major cærulea. Tabern.* Greater blue Milkwort.

2. **Polygala** *major alba. Tabern.* Greater white Milkwort.

3. **Polygala** *vulgaris. C. B. P.* Common Milkwort, with a blue Flower.

4. **Polygala** *alba. Tabern.* White common Milkwort.

5. **Polygala** *Africana fruteſcens, folio buxi, flore maximo. Oldenl.* Shrubby *African* Milkwort, with a Box Leaf, and a very large Flower.

6. **Polygala** *acutioribus foliis, Monſpeliaca. C. B. P. Montpelier* Milkwort, with ſharp-pointed Leaves.

7. **Polygala** *acutioribus foliis, Monſpeliaca floribus cæruleis. H. R. Monſ. Montpelier* Milkwort, with ſharp-pointed Leaves, and blue Flowers.

8. **Polygala** *foliis lanceolatis brevibus. Bocc. Muſ.* Milkwort, with ſhort ſpear-ſhaped Leaves.

9. **Polygala** *montana minima myrtifolia. Inſt. R. H.* The leaſt Mountain-milkwort, with a Myrtle Leaf.

10. **Polygala** *Cretica vulgari ſimilis, flore albido longiore. Tourn. Cor.* Milkwort of *Crete* like the common Sort, with a longer whitiſh Flower.

11. **Polygala** *Orientalis ſupina myrtifolia, flore cæruleo. Tourn. Cor.* Low *Eaſtern* Milkwort, with a Myrtle Leaf, and a blue Flower.

12. **Polygala** *Orientalis linifolia, flore magno albo. Tourn. Cor. Eaſtern* Milkwort, with a flax Leaf, and a large white Flower.

13. **Polygala** *Orientalis linifolia, flore magno purpureo. Tourn. Cor. Eaſtern* Milkwort, with a flax Leaf, and a large purple Flower.

14. **Polygala** *Luſitanica fruteſcens, magno flore, foliis minimis. Inſt. R. H.* Shrubby *Portugal* Milkwort, with a large Flower, and very ſmall Leaves.

15. **Polygala** *Africana fruteſcens anguſtifolia major. Oldenl.* Greater ſhrubby *African* Milkwort, with a narrow Leaf.

16. **Polygala** *Africana, lini folio, magno flore. Oldenl. African* Milkwort, with a Flax Leaf, and a large Flower.

17. **Polygala** *Virginiana, foliis oblongis, floribus in thyrſo candidis, radice alexipharmica.* Milkwort of *Virginia*, with oblong Leaves, and white Flowers, growing in a looſe Spike,

whoſe Root is alexipharmic, commonly called the *Senegaw Rattle-ſnake-root.*

18. Polygala *cœrulea Americana, anguſtis & denſioribus foliis, vulgo Clin-clin. Feuillée.* Blue *American* Milkwort, with narrow Leaves, commonly called by the *Indians*, *Clin-clin.*

19. Polygala *rubra Virginiana, ſpicâ parvâ compactâ. Baniſt.* Red *Virginian* Milkwort, with a ſmall compact Spike.

20. Polygala *ſpicata rubra major, foliis & caulibus cœruleſcentibus. Baniſt.* Greater red ſpiked Milkwort, with bluiſh Leaves and Stalks.

21. Polygala *ſ. Flos Ambarvalis Virginiana, floribus luteis in caput oblongum congeſtis. Baniſt. Virginian* Milkwort, with yellow Flowers, collected in an oblong Head.

22. Polygala *quadrifolia ſ. cruciata, floribus ex viridi rubentibus, in globam compactis. Baniſt.* Four-leafed Milkwort, with reddiſh green Flowers, growing in a compact Globe.

23. Polygala *quadrifolia minor Virginiana, ſpicâ parvâ rubenti. Baniſt.* Smaller four-leafed *Virginian* Milkwort, with a ſmall reddiſh Spike.

24. Polygala *Mariana, anguſtiore folio, flore purpureo. Pluk. Mantiſ.* Narrow-leafed Milkwort of *Maryland*, with a purple Flower.

25. Polygala *Mariana quadrifolia minor, ſpicâ parvâ albicante. Pluk. Mantiſ.* Smaller four-leafed Milkwort of *Maryland*, with a ſmall whitiſh Spike.

The four firſt *Species* are found wild in moiſt Meadows in divers Parts of *England*, and are never preſerved in Gardens, except for the ſake of Variety: However, I thought proper to inſert them in this Place, to introduce the fifth Sort, which is a beautiful Plant, and is worthy to be preſerved in all curious Collections of rare Plants.

This is propagated by Seeds, which ſhould be ſown upon a moderate Hot-bed in the *Spring*; and when the Plants are come up, they ſhould be pricked into ſmall Pots, filled with light rich Earth, and plunged into another Hot-bed, where they ſhould be ſhaded until they have taken Root, and often refreſhed with Water; after which they muſt have Air given them, in Proportion to the Warmth of the Seaſon, and in *July* they may be removed into the open Air, placing them in a warm Situation, where they may be ſheltered from ſtrong Winds, and in dry Weather they muſt be often refreſhed with Water: In this Place they may remain until *October*, when the Nights begin to be froſty; then you ſhould remove them into the Green-houſe, placing them where they may have the Advantage of the free Air, when the Weather is favourable enough to admit of the Glaſſes being opened, for they only require to be protected from Froſt: During the *Winter* Seaſon they ſhould often be refreſhed with Water, but it ſhould not be given to them in large Quantities, which will injure their Roots: In *Summer* they may be expoſed with *Myrtles*, *Geraniums*, &c. in a Situation where they are defended from ſtrong Winds; and as their Roots increaſe, ſo the Size of their Pots ſhould be enlarged; but you muſt be very cautious not to over-pot them, which is injurious to all Sorts of *Exotick* Plants.

The Earth in which theſe Plants are ſet ſhould be rich, freſh and light, in which they will thrive exceedingly, and continue in Flower moſt part of the Year, which renders it very valuable, and if the Seaſon proves favourable, the Seeds will ripen very well; but you muſt be careful to gather them when ripe, otherwiſe they will drop off and be loſt.

The ſixth, ſeventh, eighth and ninth Sorts are low Plants, which grow in *Spain*, *Italy*, and the South of *France*; as are alſo the tenth, eleventh, twelfth and thirteenth Sorts, which were diſcovered by Dr. *Tournefort* in the *Levant*. Theſe are hardy Plants, which will live in the open Air in this Country, and may be propagated by Seeds, in the ſame manner as the common Sort.

The fourteenth and fifteenth Sorts are ſhrubby Plants, which are preſerved in ſome curious Gardens for Variety. Theſe may be alſo propagated by Seeds, which ſhould be ſown on a moderate Hot-bed in the *Spring*; and when the Plants are come up, they ſhould be tranſplanted into ſeparate Pots, filled with light freſh Earth, and then plunged into the Hot-bed again, obſerving to ſhade them from the Sun until they have taken Root; after which Time they ſhould have a large Share of freſh Air in warm Weather, and muſt be frequently watered. About the Middle of *May* theſe Plants ſhould be inured to bear the open Air by Degrees, and in *June* they may be placed abroad in a ſheltered Situation, where they may remain during the *Summer* Seaſon; and in *Autumn* they muſt be removed into the Green-houſe, and managed as hath been directed for the fifth Sort. Theſe Plants continue a long time in Flower, ſo are worthy of a Place in every curious Garden, for the ſake of Variety.

The ſixteenth Sort is a native of the *Cape of Good Hope*, and the eighteenth grows on the Mountains in the Kingdom of *Chily* in the *Spaniſh Weſt-Indies*, where it is uſed by the *Indians*, to cure Pleuriſies, and all Complaints of the Side. Theſe two Sorts are of low Growth, ſeldom riſing higher than the common Sort; but are too tender to live in the open Air in *England*; ſo they ſhould be planted in Pots, and preſerved in the Green-houſe in *Winter*. Theſe may be propagated by Seeds, as the two former Sorts.

The other Sorts are all of them Natives of *Virginia*, *Maryland*, *New-England*, and ſeveral other Places in the North of *America*, ſo are hardy enough to live in the open Air in *England*, provided they are planted in a warm Situation, and on a light Soil. Theſe are very pretty Plants, and require very little Trouble to cultivate them; for after they are come up from Seeds, the only Care they require is to keep them clear from Weeds, and in very dry Weather to water them while they are young; for when they have obtained Strength, they will not be in much Danger of ſuffering by Drought; for the Roots run pretty deep into the Ground, ſo will find Nouriſhment to ſupport them.

The Root of the ſeventeenth Sort hath been long uſed by the *Senegaw Indians* to cure the Bite of the Rattle-ſnake, which, if taken in Time, is an infallible Remedy. And of late Years it hath been uſed by the Inhabitants of *Virginia* in many Diſorders, which are occaſioned by a thick fizy Blood; ſo that the Root of this Plant, when its Virtues are fully known, may become one of the moſt uſeful Medicines yet diſcovered. The eighteenth Sort, by the Account which *Pere Feuillée* gives of it, partakes of the ſame Qualities with this, though the *Indians* uſe it differently; for he ſays they make a Decoction of the Plant, which they drink to cure the Pain of the Side; whereas the *Senegaw Indians* uſe the Root of the ſeventeenth Sort, which they powder and generally carry about them when they travel in the Woods, leſt they ſhould be bit by the Rattle-ſnake; and whenever this happens, they take a Quantity of the Powder inwardly, and apply ſome of it to the Part bitten, which is a ſure Remedy.

POLYGONATUM; [ſo call'd of πολὺ *many*, and γόνυ a *Knee*, becauſe it has many little Knees, for the Root is very knotty: It is alſo call'd *Solomon's-Seal*, becauſe the Knots of the Root ſomewhat reſemble a Seal] Solomon's-Seal.

The *Characters* are;

The Flower conſiſts of one Leaf, is tuberoſe, and expands at the Top in Shape of a Bell, and is divided into ſeveral Segments; the Ovary, which is ſituated in the Centre of the Flower, becomes a ſoft globular Fruit, containing roundiſh Seeds.

The *Species* are;

1. Polygonatum *latifolium vulgare. C. B. P.* Common Broad-leav'd Solomon's-Seal.

2. Polygonatum *latifolium vulgare, caulibus rubentibus. H. L.* Common broad-leav'd Solomon's Seal, with red Stalks.

3. Polygonatum *latifolium minus, flore majore. C. B. P.* Leſſer broad-leav'd Solomon's-Seal, with a larger Flower.

4. Polygonatum *latifolium, flore duplici odoro. H. R. Par.* Broad-leav'd Solomon's Seal, with a double ſweet-ſmelling Flower.

5. Polygonatum *latifolium maximum. C. B. P.* The greateſt broad-leaved Solomon's-Seal.

6. Polygonatum *latifolium, helleberi albi foliis. C. B. P.* Broad-leaved Solomon's-Seal, with Leaves like the white Hellebore.

7. Polygonatum *latifolium, flore majore odoro. C. B. P.* Broad-leaved Solomon's-Seal, with a large ſwee Flower.

8. Polygonatum *Orientale latifolium, flore parvo. Tourn. Cor.* Eaſtern broad-leav'd Solomon's-Seal, with ſmall Flower.

9. Polygonatum *anguſtifolium non ramoſum. C. B. P.* Narrow-leaved unbranched Solomon's-Seal.

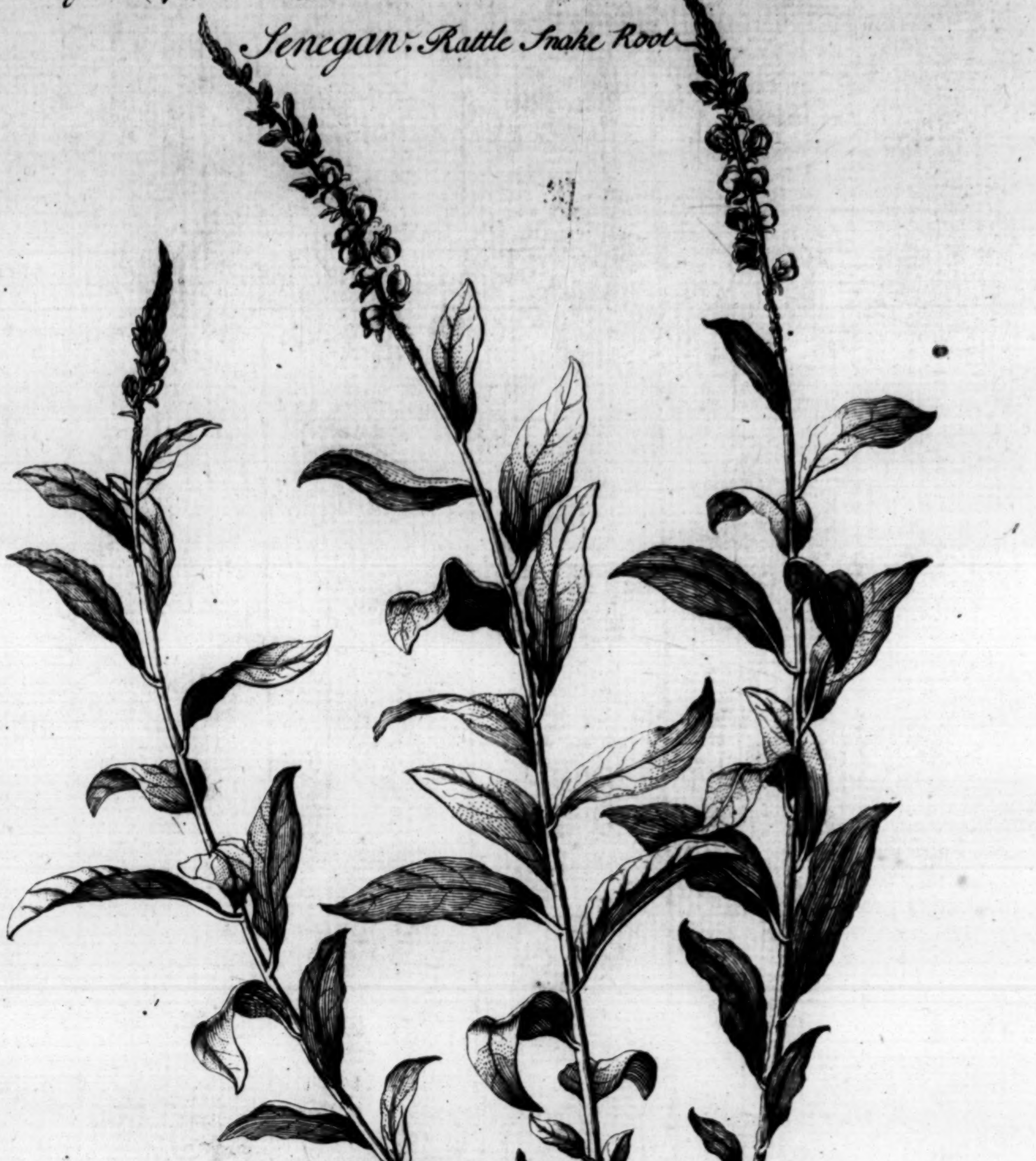
10. Polygonatum *anguſtifolium ramoſum. C. B. P.* Narrow-leaved branching Solomon's-Seal.

11. Polygonatum *Americanum ſcandens altiſſimum, foliis tamni. Plum.* The talleſt climbing *American* Solomon's-Seal.

Th

POLYGALA, *Virginiana foliis oblongis floribus in thyrso candidis radice Alexipharmica*

Senegan: Rattle Snake Root



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The firſt four mention'd are the principal Sorts cultivated in *England*.

Theſe Plants are eaſily propagated by parting of their Roots in the *Spring* before they begin to Shoot, obſerving always to preſerve a Bud to each Off-ſet: They ſhould be planted in a freſh light Earth, where they will thrive exceedingly; but if it be over rich, it will deſtroy their Roots. The firſt Sort is the moſt common in *England*, and is what the College has directed for Medicinal Uſe.

The fifth and ſixth Sorts grow very tall, provided they are planted in a pretty good Soil. In a moiſt Seaſon it is common for theſe to be upward of three Feet high, whereas the ordinary Sort ſeldom riſes above half that Height. The Leaves of theſe Sorts are alſo very large, ſo that they make a handſome Appearance in the Borders of large Gardens.

The ſeventh Sort hath broader Leaves than the common Sort, but doth not grow much higher. The Flowers of this Sort, being larger, and having an agreeable Scent, render it worthy of a Place in large Gardens.

The eighth Sort was diſcovered by Dr. *Tournefort* in the *Levant*, but is not common in *Europe*: this hath a broader Leaf than the common Sort, and the Flower is much ſmaller. It is preſerved in ſome curious Botanic Gardens, for the ſake of Variety.

The ninth and tenth Sorts are very different from either of the former: theſe have four or five Leaves, produced at each Joint, which are much longer and narrower than thoſe of the common Sort, ſo that they make a very different Appearance; therefore ſhould be allowed a Place in large Gardens for the ſake of Variety.

All theſe Sorts are as hardy as the common Solomon's-Seal, and may be propagated by parting of their Roots, in the ſame manner as directed for the common Sort.

The eleventh Sort is a Native of the warmeſt Parts of *America*, where it grows in the Woods, and climbs on whatever Trees grow near it, by the Help of which it riſes to a great Height. This produces its Flowers in long Bunches, ſomewhat like the black Briony. The Seeds of this Plant were ſent from *Campechy*, by Mr. *Robert Millar* Surgeon. This Plant muſt be preſerved in Stoves, otherwiſe it will not live thro' the Winter in this Country; it may be propagated by Seeds, which ſhould be ſown on a Hot-bed early in the Spring; and when the Plants are come up, they ſhould be treated in the ſame manner as hath been directed for *Dioſcorea*: with which Management this Plant will thrive, and produce Flowers in this Country.

POLYPODIUM; of [πολύς *many*, and ποῦς a *Foot*, q. d. *many Feet*. This kind of Plant ſtrikes its Roots into every Part that it can lay hold of, whether it be Stone, Earth, or Tree, it is the ſame thing, eſpecially if it be a Tree of the Oak Kind] Polypody.

The *Characters* are;

It is a Capillary Plant, with oblong jagged Leaves, having a middle Rib, which joins them to the Stalks running through each Diviſion.

The *Species* are;

1. Polypodium *vulgare. C. B. P.* Common *Polypody.*
2. Polypodium *majus, ſerrato folio. Barr. Icon.* Greater *Polypody*, with a ſerrated Leaf.
3. Polypodium *Cambro-Britannicum, pinnulis ad margines laciniatis. Raii Syn.* Welſh *Polypody*, with laciniated Leaves.

There are ſeveral other *Species* of this Plant, which are preſerv'd in ſome curious *Botanick* Gardens for Variety; but as they are rarely cultivated in other Gardens, ſo it is not worth while to enumerate them in this Place.

The firſt Sort is that which is us'd in Medicine, and is found growing upon old Walls and ſhady Banks in divers Parts of *England*. The ſecond ſeems to be only a Variety of the firſt, which differs therefrom in being larger, and having ſerrated Leaves. The third Sort was brought from *Wales*, where it grows in great Plenty, and is the moſt beautiful of all the Sorts. Theſe Plants may be propagated by parting of their Roots in the *Spring* before they ſhoot, and ſhould be planted in a very poor moiſt Soil under the Shade of a Wall, for if they are expos'd to the Sun, they will not thrive: They chiefly delight to grow out of the Joints of Walls, and old Buildings, but are commonly found expos'd to the North.

POMEGRANATE, *vide* Punica.

POMUM ADAMI, *vide* Aurantium.

POPULAGO: [This Plant is ſo call'd, of *Populus* the *Poplar-Tree*, becauſe it grows near Banks and Ditches under the *Poplar-Tree*] Marſh Marygold.

The *Characters* are;

The Flower conſiſts of ſeveral Leaves, which are plac'd circularly, and expand in Form of a Roſe, *in the Middle of which riſes the Pointal, which afterwards becomes a membranaceous Fruit, in which there are ſeveral Cells (which are for the moſt part bent downwards) collected into little Heads, and are full of oblong Seeds.*

The *Species* are;

1. Populago *flore majore. Tourn.* Marſh Marygold, with a larger Flower.
2. Populago *flore minore. Tourn.* Marſh Marygold, with a ſmaller Flower.
3. Populago *flore pleno. Tourn.* Marſh Marygold with a double Flower.

The two firſt Sorts are very common on boggy and watry Places in divers Parts of *England*, and are ſeldom cultivated in Gardens: But the third Sort, which is a Variety from the ſecond, is preſerv'd in Gardens for its fine double Flowers.

This Plant is propagated by parting of the Roots in *Autumn*, and muſt be planted on a moiſt Soil, otherwiſe the Flowers will not be near ſo fair, nor will the Plants thrive. Theſe are very proper to place in very wet Parts of the Garden, where few other Plants will thrive, and will afford an agreeable Variety during their Seaſon of Flowering, which is from the Middle of *April* until the Latter-end of *May*; ſo that they are worthy of a Place in every curious Flower-Garden.

POPULUS; the Poplar-Tree.

The *Characters* are;

The Leaves are broad, and for the moſt part angular; the Male Trees produce amentaceous Flowers, which have many little Leaves and Apices, but are barren: The Female Trees produce membranaceous Pods, which open into two Parts, containing many Seeds, which have a large Quantity of Down adhering to them, and are collected into Spikes.

The *Species* are;

1. Populus *alba, minoribus foliis. C. B. P.* White *Poplar*, with ſmaller Leaves.
2. Populus *alba, majoribus foliis. C. B. P.* White *Poplar*, with large Leaves, *commonly call'd* The Abele Tree.
3. Populus *tremula. C. B. P.* The Trembling *Poplar* or Aſpen-Tree.
4. Populus *nigra. C. B. P.* The Black *Poplar-Tree*, *by ſome falſly call'd* The Cotton-Tree.
5. Populus *alba, folio minore variegato.* The white *Poplar*, with ſtrip'd Leaves.
6. Populus *nigra Caroliniana, folio maximo, gemmis balſamum odoratiſſimum fundentibus. Cateſb.* The *Carolina* black Poplar, with the largeſt Leaf, from whoſe Buds iſſue a very ſweet Balſam.

Theſe Trees may be propagated either from Layers or Cuttings, which will readily take Root, as alſo from Suckers, which the White *Poplars* ſend up from their Roots in great Plenty. The beſt Time for tranſplanting theſe Suckers, is in *October*, when their Leaves begin to decay. Theſe may be plac'd in a Nurſery for two or three Years, to get Strength, before they are planted out where they are deſign'd to remain: But if you intend to propagate them from Cuttings, it is better to defer the doing of that until *February*; at which time you may Plant Truncheons of four or five Feet long, thruſting them about a Foot into the Ground: Theſe will readily take Root, and if the Soil be moiſt in which they are planted, will arrive to a conſiderable Bulk in a few Years.

The black *Poplar* is not ſo apt to take Root from large Truncheons, therefore 'tis the better Method, to plant Cuttings about a Foot and a half in Length, thruſting them a Foot deep into the Ground: Theſe will take Root very freely, and may be afterwards tranſplanted where they are to remain. This Sort will grow upon almoſt any Soil, but will thrive beſt in moiſt Places.

I have planted Cuttings of this Tree, which in four Years, have been bigger in the Trunk than a Man's Thigh, and near twenty Feet in Height, and this upon a very indifferent Soil; but in a moiſt Soil, it is common for theſe Trees to ſhoot twelve or fourteen Feet in a Seaſon: So that where a Perſon hath a mind to make a Shelter in a few Years, there is ſcarce any Tree ſo proper for that Purpoſe as this: But they ſhould not be planted too near the Pleaſure-garden, becauſe the Down which falls from theſe Trees will make a prodigious Litter.

The White Sorts, as alſo the *Aſpen-Tree*, do alſo cauſe a great Litter in the *Spring*, when their Down falls off; and their Roots being very apt to produce a large Quantity of Suckers, renders them unfit to be planted near an Houſe or Garden; but when they are interſpers'd with other Trees in large Plantations, they afford an agreeable Variety; their Leaves being very white on their Underſides, which when blown with the Wind, are turn'd to Sight.

A conſiderable Advantage may be obtain'd by planting theſe Trees upon moiſt boggy Soils, where few other Trees will thrive: Many ſuch Places there are in *England*, which do not, at preſent, bring in much Money to their Owners; whereas if they were planted with theſe Trees, they would, in a very few Years, over-purchaſe the Ground, clear of all Expence: But there are many Perſons in *England*, who think nothing, except Corn, worth cultivating: or, if they plant Timber, it muſt be *Oak*, *Aſh*, or *Elm*; and if their Land be not proper for either of theſe, it is deem'd little worth; whereas if the Nature of the Soils was examin'd, and proper Sorts of Plants adapted to them, there might be very great Advantage made of ſeveral large Parcels of Land, which at this time lie neglected.

The wood of theſe Trees, eſpecially of the *Abele* is very good to lay for Floors, where it will laſt many Years; and for its exceeding Whiteneſs, is, by many Perſons, preferr'd to *Oak*; but being of a ſoft Contexture, is very ſubject to take the Impreſſion of Nails, *&c.* which renders it leſs proper for this Purpoſe: it is alſo very proper for Wainſcoting of Rooms, being leſs ſubject to ſwell or ſhrink than moſt other Sorts of Wood: But for Turnery Ware, there is no Wood equal to this for its exceeding Whiteneſs, ſo that *Trays*, *Bowls*, and many other Utenſils are made of it; and the Bellows-makers prefer it for their Uſe; as do alſo the Shoemakers, not only for Heels, but alſo for the Soles of Shoes: It is alſo very good to make light Carts; and the Poles are very proper to ſupport *Vines*, *Hops*, &c. and the Lopping will afford good Fuel, which in many Countries is much wanted.

The ſixth Sort of Poplar-tree grows by the Sides of Rivers, and in other moiſt Places, in *South Carolina*, where it riſes to be a very large Tree. The young Branches of this Tree are commonly angular, ſometimes having three, and at other times four Angles. The Leaves are much broader, and are not ſo pointed, as thoſe of the common black Poplar. The Buds of the Leaves are very large, and in the Spring, juſt before they puſh, there iſſues out of them a very ſweet Balſam.

Altho' this Tree is a Native of a much warmer Country than *England*, yet it is hardy enough to endure the Cold of our Winters in the open Air; and may be propagated by Cuttings, in the ſame manner as the common black Poplar: the beſt Time to Plant theſe Cuttings, is in the Beginning of *March*. Theſe Cuttings ſhould be about a Foot or fourteen Inches long, and ſhould be planted ſix or eight Inches in the Ground. If the Spring ſhould prove dry, they muſt be frequently watered until they have made Roots; after which Time they will require no farther Care, but to keep them clear from Weeds. Theſe Cuttings will be rooted enough to bear tranſplanting in one Year; ſo the *March* following they ſhould be removed, and planted either in a Nurſery, where they may be trained up to Stems, or in the Places where they are deſigned to remain, which muſt be in a moiſt Soil, where they will grow to be large Trees; and being intermixed with other Trees of the ſame Growth, will make an agreeable Diverſity.

PORRUM [in *Greek* is call'd πράσον of πράω to *enkindle*, as though a Plant that excites a Warmth in the Body] Leek.

The *Characters* are;

The Flower conſiſts of ſix Petals, and is ſhap'd, as it were, like a Bell; in the Centre ariſes the Pointal, which afterwards becomes a roundiſh Fruit, divided into three Cells, which contain roundiſh Seeds: To theſe Notes muſt be added, The Stamina *are generally broad, and flat, ending in three Capillaments; of which the middle one is furniſh'd with a Chive; the Flowers are alſo gather'd into almoſt globular Bunches; the Roots are long, cylindrical, and coated; the Coats ending in plain Leaves.*

The *Species* are;

1. PORRUM *commune capitatum. C. B. P.* The common Leek.

2. PORRUM *ſectivum latifolium. C. B. P.* Broad-leav'd Leek, *commonly call'd* The London Leek.

There are ſome other *Species* of this Plant, which grow wild in the South of *France* and *Spain*, but as they are ſeldom cultivated in Gardens, ſo I ſhall forbear to mention them here. The two Sorts here mention'd, are by many Perſons affirm'd to be ſame, both of them riſing from the ſame Seed; but this is what the Gardeners near *London* will not believe, for they never ſow the Seeds of the latter, if they can procure thoſe of the firſt Sort, there being a great Difference in the Size of the Head, or principal Part of the Leek; but whether by long cultivating they may not alter I cannot poſitively affirm, having never ſown the Seeds of the latter Sort above one Year.

Theſe Plants are cultivated by ſowing their Seeds in the *Spring*, in the ſame manner as was directed for *Onions*, with which theſe are commonly ſown, the two Sorts of Seeds being mix'd according to the Proportion which is deſired of either Sort; tho' the moſt common Method is, to mix an equal Quantity of both, for the *Onions* will greatly out-grow the *Leeks* in the *Spring*; but theſe being drawn off in *July*, the *Leeks* will have time to grow large afterwards, ſo that there may be a moderate Crop of both Sorts. The management of *Leeks* being exactly the ſame with *Onions*, I ſhall not repeat it in this Place, but ſhall only add, that many Perſons do ſow their *Leeks* very thick in Beds in the *Spring*; and in *June*, after ſome of their early Crops are taken off, they dig up the Ground, and plant their *Leeks* out thereon, in Rows a Foot apart, and ſix Inches aſunder in the Rows, obſerving to water them until they have taken Root; after which they will require no farther Culture, but to clear the Ground from Weeds: The *Leeks* thus planted, will grow to a great Size, provided the Ground be good; and this Method is very proper for ſuch Perſons who have little Room.

If you would ſave the Seeds of this Plant, you ſhould make Choice of ſome of the largeſt and beſt you have, which muſt remain in the Place where they grew, until *February*; when they ſhould be tranſplanted in a Row againſt a warm Hedge, Pale or Wall, at about eight Inches aſunder; and when their Stems advance, they ſhould be ſupported by a String to prevent their being broke down, to which they are very liable, eſpecially when in Head, and the cloſer they are drawn to the Fence, in *Autumn*, the better the Seeds will ripen; for it ſometimes happens, in cold *Summers* or *Autumns*, that thoſe which grow in the open Garden, do not perfect their Seeds in this Country, eſpecially if there ſhould be ſharp Froſts early in *Autumn*, which will intirely ſpoil the Seed.

When it is ripe, (which may be known by the Heads changing brown) you ſhould cut off their Heads with about a Foot or more of the Stalk to each, and tie them in Bundles, three or four Heads in each, and hang them up in a dry Place, where they may remain till *Chriſtmas*, or after, when you may threſh out the Seeds for uſe. The Huſk of theſe Seeds is very tough, which renders it very difficult to get out the Seeds, therefore ſome Perſons who have but a ſmall Quantity, do rub it hard againſt a rough Tile, which which will break the Huſks, and get the Seeds out better than moſt other Methods I have known uſed.

PORTULACA: Purſlane.

The *Characters* are;

The Flower conſiſts of many Leaves, which expand in Form of a Roſe; *out of whoſe Flower-cup (which conſiſts of one Leaf) ariſes the Pointal, which, together with the Flower-cup, becomes a Fruit for the moſt part oval, full of ſmall Seeds, and furniſh'd with two Shells or Huſks at top; of which the outer one, which was the part of the Flower-cup that was ſplit in two, opens firſt; and the inner one, which is the Pointal enlarg'd, opens laſt, doubly and tranſverſly, while the lower Part of the Flower-cup adheres to the Footſtalk.*

The *Species* are;

1. PORTULACA *latifolia ſeu ſativa. C. B. P.* Broad leav'd *or* Garden Purſlane.

2. PORTULACA *ſativa latifolia, foliis flavis. Mor. Hiſt.* Broad-leav'd Garden Purſlane, with yellow Leaves.

3. Portulaca *anguſtifolia ſive ſylveſtris. C. B. P.* Narrow-leav'd *or* Wild Purſlane.

4. Portulaca *Curaſſavica, folio capparidis. Par. Bat.* Purſlane from Curaſſo, with a Caper-leaf.

The firſt Sort here mention'd, is what the Gardeners near *London* do chiefly cultivate; though the ſecond Sort does very ofen come up mix'd with the firſt; but whether it is only an accidental Variety ariſing from the ſame Seeds, or that the Seeds are promiſcuouſly ſav'd, I can't determine: Indeed, there is no other Difference between them, but only the Colour of their Leaves, ſo that they are both equally good for Uſe; but the green Sort having a better Appearance, is generally preferr'd in the Markets.

The wild Sort is not a Native of *England*, but grows plentifully in many warm Countries; where when it has once obtain'd ſo as to ſhed its Seeds, 'tis very difficult to extirpate again. This is ſeldom us'd; though 'tis not different from the Garden-kind, except in the Smallneſs of its Leaves.

The fourth Sort is very common in moſt of the warm Parts of *America*, where it grows in great Plenty upon the Shores and Rocks near the Sea. This is preſerved in ſome curious Gardens for Variety, but is a Plant of no great Beauty.

Purſlane is propagated from Seeds, which may be ſown upon Beds of light rich Earth during any of the *Summer* Months; but if you intend to have it early in the Seaſon, it ſhould be ſown upon a Hot-bed, for it is too tender to be ſown in the open Air before *April*, and then it muſt be in a warm Situation. This Seed is very ſmall, ſo that a little of it will be ſufficient to ſupply a Family. There is no other Culture which this Plant requires, but to keep it clear from Weeds, and in dry Weather to water it twice or three times a Week. In warm Weather this Plant will be fit for Uſe in ſix Weeks after ſowing; ſo that, in order to continue a Succeſſion of this Plant, you ſhould ſow it at three or four different Seaſons, allowing a Fortnight between each Sowing, which will be ſufficient to laſt the whole Seaſon, while it is proper to be eaten; for it being of a very cold Nature, it is unſafe to be eaten, except in the Heat of *Summer*, in *England*; for which Reaſon, it is not to any Purpoſe to ſow it upon a Hot-bed, ſince it will come early enough for Uſe in the open Air.

PRIMULA VERIS: [This Plant is ſo call'd, becauſe it is the firſt Plant that appears in the *Spring*] Primroſe.

The *Characters* are;

The Flower conſiſts of one Leaf; the lower Part of which is tubuloſe, but the upper Part expands itſelf flat in Form of a Salver, and is cut into ſeveral Segments; from the Flower-cup (which is fiſtulous) ariſes the Pointal; which, when the Flower is decay'd, becomes an oblong Fruit or Husk, lying almoſt conceal'd in the Flower-cup, and opens at the Top, in which are contain'd many roundiſh Seeds faſten'd to the Placenta.

The *Species* are;

1. Primula Veris *vulgaris. Park.* Common Primroſe.

2. Primula Veris *Conſtantinopolitana, flore albo. Tourn.* Primroſe of Conſtantinople, with a white Flower, *commonly call'd* The Paper White Primroſe.

3. Primula Veris *Conſtantinopolitana, flore dilute carneo. Tourn.* Primroſe of Conſtantinople, with a pale fleſh-colour'd Flower.

4. Primula Veris *Conſtantinopolitana, flore dilute purpureo. Tourn.* Primroſe of Conſtantinople, with a pale-purple Flower.

5. Primula Veris *Conſtantinopolitana, flore albo duplici.* Primroſe of Conſtantinople, with a double white Flower, *commonly call'd* The Double Paper-white Primroſe.

6. Primula Veris *vulgaris, flore dilute purpureo.* Common Primroſe, with a pale-purple Flower.

7. Primula Veris *vulgaris, flore pleno.* Common Primroſe, with a very double Flower.

8. Primula Veris *vulgaris, flore pleno, dilute rubente.* Common Primroſe, with a double pale-red Flower.

9. Primula Veris *pallido flore, elatior. Cluſ.* Common Pagils or Cowſlips.

10. Primula Veris *umbellata odorata pratenſis.* Great Cowſlips *or* Oxſlips.

11. Primula Veris *geminato flore. H. Eyſt.* Double Cowſlip or Hoſe in Hoſe.

12. Primula Veris *caulifera, flore luteo pleno odorato. J. B.* Cowſlip or Pagil, with a very double Flower.

13. Primula Veris *hortenſis umbellata, caule & flore folioſo coccineo majore. H. L.* Garden Primroſe or Polyanthus, with a large red Flower.

14. Primula Veris *umbellatæ odoratæ hortenſis ſimplicis varietas uberrima pro varietate jucundiſſima, coloris multiplicis. Boerh. Ind.*

There are a great Variety of the Garden *Primroſes* or *Polyanthus's*, which are annually produc'd from Seeds; the Flowers of which are ſo beautifully ſtrip'd, and ſome of them have a great Number of Flowers upon a Stalk, ſo that they equal the *Auricula's* in the Beauty of their Flowers and as they require but little Culture, ſo they have, in many Gardens, obtain'd the Preference to moſt other *Spring* Flowers.

The firſt Sort of *Primroſe* grows wild in Woods and other ſhady Places in moſt Parts of *England*, from whence their Roots may be eaſily tranſplanted into the Garden; where, if they are placed under Hedges, and in ſhady Walks, they make a beautiful Appearance early in the *Spring*, when few other Plants are in Flower.

The beſt time to tranſplant them is at *Michaelmas*, that their Roots may have Strength to produce their Flowers early in the *Spring*. Theſe delight in a ſtrong, rich Soil, but will grow in almoſt any Sort of Earth, provided they have a ſhady Situation.

The ſixth, ſeventh, and eighth Sorts are Varieties of the firſt, which have been accidentally produc'd from Seeds: Theſe may be propagated by parting of their Roots at *Michaelmas*, and muſt be treated as the common Sort.

The ninth and tenth Sorts, do alſo grow wild in the Meadows in divers parts of *England*, the Roots of which are often tranſplanted into Gardens; where, if they are intermix'd with other early flowering Plants, they afford an agreeable Variety.

The eleventh and twelfth Sorts are Varieties which were produc'd from Seeds of the former; but the laſt is, at preſent, very rare in *England*. Theſe may be propagated by parting their Roots at *Michaelmas*, and ſhould be planted on a ſtrong Soil, and expos'd to the Morning Sun.

The ſeveral Varieties of *Polyanthus's* are produc'd by ſowing of Seeds, which ſhould be ſav'd from ſuch Flowers as have good Properties, *i. e.* ſuch as have large upright Stems, producing many Flowers upon a Stalk, the Flowers large, beautifully ſtrip'd, and that open flat: From the Seeds of ſuch Flowers, there is room to hope for a great Variety of good Sorts.

Theſe Seeds ſhould be ſown in Boxes fill'd with light rich Earth, in *December*, being very careful not to bury the Seed too deep, for if it be only cover'd with light Earth it will be ſufficient: Theſe Boxes ſhould be plac'd where they may receive the Benefit of the Morning Sun until ten of the Clock, but they muſt by no means be expos'd to the Heat of the Day, eſpecially when the Plants begin to appear, for at that time one whole Day's Sun will intirely deſtroy them: In the *Spring*, if the Seaſon ſhould prove dry, you muſt often refreſh them with Water; and as the Heat increaſes, ſo you ſhould remove the Boxes more in the Shade, for the Heat is very injurious to them.

In *May* theſe Plants will be ſtrong enough to plant out; at which time you ſhould prepare ſome ſhady Borders, which ſhould be made rich; upon which you muſt ſet the Plants about four Inches aſunder, obſerving to water them until they have taken Root; after which they will require no farther Care but to keep them clear from Weeds, until the Latter-end of *Auguſt* following; when you ſhould prepare ſome Borders, which are expos'd to the Eaſt, with good light rich Earth, into which you muſt tranſplant your *Polyanthus's*, placing them ſix Inches aſunder equally in Rows, obſerving, if the Seaſon proves dry, to water them until they have taken Root. In theſe Borders your Plants will flower the ſucceeding *Spring*; at which time you muſt obſerve to mark ſuch of them as are fine, to preſerve, and the reſt may be tranſplanted into Wilderneſſes, and other ſhady Places in the Garden; where, although they are not very valuable Flowers, they will afford an agreeable Variety.

Thoſe which you intend to preſerve, may be removed ſoon after they have done flowering (provided you do not intend to ſave Seeds from them) and may be then parted and tranſplanted into a freſh Border of the like rich Earth, allowing them the ſame Diſtance as before; obſerving alſo to water them until they have taken Root, after which they will require no farther Care, but only to keep them clean from Weeds; and the following *Spring* they will produce ſtrong Flowers; and if the Kinds are good, will be little inferior to a Shew of *Auricula's*.

Theſe Roots ſhould be conſtantly removed and parted every Year, and the Earth of the Border changed, otherwiſe

wiſe they will degenerate and loſe the greateſt Part of their Beauty.

If you intend to ſave Seeds, which is the Method to obtain a great Variety, you muſt mark ſuch of them, which, as I ſaid before, have good Properties: Theſe ſhould be, if poſſible, ſeparated from all ordinary Flowers, for if they ſtand ſurrounded with plain-colour'd Flowers, they will impregnate each other, whereby the Seeds of the valuable Flowers will not be near ſo good, as if the Plants had been in a ſeparate Border where no ordinary Flowers grew; therefore the beſt Way is to take out the Roots of ſuch as you do not eſteem, ſo ſoon as the Flowers open, and plant them in another Place, that there may be none left in the Border, but ſuch as you would chuſe for Seeds.

The Flowers of theſe ſhould not be gathered, except ſuch as are produced ſingly upon Pedicles, leaving all ſuch as grow in large Bunches; and if the Seaſon ſhould prove dry, you muſt now and then refreſh them with Water, which will cauſe their Seeds to be larger and in greater Quantity, than if they were intirely neglected. Towards the Latter-end of *May* the Seed will be ripe, which may be eaſily known by the Pods changing brown and opening; ſo that you ſhould at that Time look over it three times a Week, gathering each time ſuch of it as is ripe, which ſhould be laid upon a Paper to dry, and may then be put up until the Seaſon of Sowing.

PRIMROSE-TREE, *vide* Onagra.

PRIVET, *vide* Liguſtrum.

PRUNING OF TREES: There is not any Part of Gardening, which is of more general Uſe than that of *Pruning*; and yet it is very rare to ſee Fruit-Trees ſkilfully manag'd; almoſt every Gardener will pretend to be a Maſter of this Buſineſs, though there are but few who rightly underſtand it; nor is it to be learn'd by Rote, but requires a ſtrict Obſervation of the different manners of Growth of the ſeveral Sorts of Fruit Trees; ſome requiring to be manag'd one way, and others muſt be treated in a quite different Method, which is only to be known from carefully obſerving how each Kind is naturally diſpos'd to produce its Fruit: For ſome Sorts do produce their Fruit on the ſame Year's Wood, as *Vines*; others produce their Fruit, for the moſt part, upon the former Year's Wood, as *Peaches*, *Nectarines*, &c. and others upon Curſons or Spurs, which are produced upon Wood of three, four, or five Years old, as *Pears*, *Plums*, *Cherries*, &c. therefore in order to the right Management of Fruit-Trees, there ſhould always be Proviſion made to have a ſufficient Quantity of bearing Wood, in every Part of the Trees, and at the ſame time, there ſhould not be a Superfluity of uſeleſs Branches, which would exhauſt the Strength of the Trees, and cauſe them to decay in a few Years.

The Reaſons which have been laid down for *Pruning* of Fruit-Trees, are as follow; Firſt, to preſerve Trees longer in a vigorous bearing State; the ſecond is, to render the Trees more beautiful to the Eye; and thirdly, to cauſe the Fruit to be larger and better taſted.

1. It preſerves a Tree longer in a healthy bearing State, by *Pruning* off all ſuperfluous Branches, whereby there are no more left upon the Tree than is neceſſary, or that the Roots can nouriſh kindly; ſo that the Root is not exhauſted in ſupplying uſeleſs Branches, which muſt afterwards be cut out, and thereby conſequently much of the Sap expended to no Purpoſe.

2. By ſkilful *Pruning* of a Tree, it is rendered much more pleaſing to the Eye; but I would not be underſtood to be an Advocate for a Sort of *Pruning*, which I have ſeen too much practis'd of late, *viz.* the drawing of a regular Line againſt the Wall, according to the Shape or Figure they would reduce the Tree to, and cut all the Branches, whether ſtrong or weak, exactly to the chalk'd Line; the Abſurdity of which Practice, will ſoon appear to every one who will be at the Pains of obſerving the Difference of thoſe Branches ſhooting the ſucceeding *Spring*. All therefore that I mean by rendring a Tree beautiful, is, that the Branches are all *prun'd* according to their ſeveral Strengths, and are nail'd at equal Diſtances, in proportion to the different Sizes of their Leaves and Fruit; and that no Part of the Wall (ſo far as the Trees are advanc'd) be left unfurniſhed with bearing Wood. A Tree well manag'd, though it does not repreſent any regular Figure, yet will appear very beautiful to the Sight, when it is thus dreſs'd and nail'd to the Wall.

3. It is of great Advantage to the Fruit; for the cutting away all uſeleſs Branches, and ſhortening all the bearing Shoots, according to the Strength of the Tree, does render the Tree more capable to nouriſh thoſe which are left remaining, ſo that the Fruit will be much larger, and better taſted. And this is the Advantage which thoſe Trees againſt Walls or Eſpaliers have, to ſuch as are Standards, and are permitted to grow as they are naturally inclined; for it is not their being trained either to a Wall or Eſpalier, which renders their Fruit ſo much better than Standards, but becauſe they have a leſs Quantity of Branches and Fruit for their Roots to nouriſh, and ſo conſequently their Fruit will be larger and better taſted.

The Reaſons for *Pruning* being thus exhibited, the next Thing is the Method of performing it; but this being fully handled under the ſeveral Articles of the different Kinds of Fruit, I ſhall not repeat it again in this Place, and therefore ſhall only add ſome few general Inſtructions, which are neceſſary to be underſtood, in order to the right management of Fruit-Trees.

There are many Perſons who ſuppoſe, that if their Fruit Trees are but kept up to the Wall or eſpalier, during the Summer-ſeaſon, ſo as not to hang in very great Diſorder, and in *Winter* to get a Gardener to *prune* them, it is ſufficient: But this is a very great Miſtake; for the greateſt Care ought to be employed about them in the *Spring*, when the Trees are in vigorous Growth; which is the only proper Seaſon, to procure a Quantity of good Wood in the different Parts of the Tree, and to diſplace all uſeleſs Branches, ſo ſoon as they are produced, whereby the Vigour of the Tree will be intirely diſtributed to ſuch Branches only, as are deſign'd to remain, which will render them ſtrong, and more capable to produce good Fruit: whereas, if all the Branches are permitted to remain, which are produced, ſome of the more vigorous will attract the greateſt Share of the Sap from the Tree, whereby they will be too luxuriant for producing Fruit, and the greateſt Part of the other Shoots will be ſtarved, and rendered ſo weak, as not to be able to produce any thing elſe but Bloſſoms and Leaves (as hath been before-mention'd) ſo that it is impoſſible for a Perſon, let him be ever ſo well ſkill'd in Fruit-Trees, to reduce them into any tolerable Order by *Winter-pruning* only, if they are wholly neglected in the *Spring*.

There are others, who do not intirely neglect their Trees during the *Summer* Seaſon, as thoſe before-mentioned; but yet do little more good to them by what they call *Summer-pruning*; for theſe Perſons neglect their Trees at the proper Seaſon, which is in *May*, when their Shoots are produced, and do only about *Midſummer* go over them, nailing in all their Branches, except ſuch as are produced fore-right from the Wall, which they cut out; and at the ſame time do often ſhorten moſt of the other Branches; all which is intirely wrong Practice; for thoſe Branches which are intended for bearing the ſucceeding Year, ſhould not be ſhortened during the Time of their Growth, which will cauſe them to produce two lateral Shoots from the Eyes below the Place where they were ſtopp'd, which Shoots will draw much of the Strength from the Buds of the firſt Shoot, whereby they are often flat, and do not produce their Bloſſoms, and if thoſe two lateral Shoots are not intirely cut away at the *Winter-pruning*, they will prove injurious to the Tree. And in this Method, ſuffering thoſe luxuriant Shoots to remain upon the Tree until *Midſummer*, before they are diſplaced, they will exhauſt a great Share of the Nouriſhment from the other Branches (as was before obſerved); and by ſhading the Fruit all the *Spring* Seaſon, when they are cut away, and the other Branches faſtened to the Wall, the Fruit, by being ſo ſuddenly expoſed, will receive a very great Check, which will cauſe their Skins to grow tough, and thereby render them leſs delicate. This is to be chiefly underſtood of Stone-Fruit and *Grapes*; but *Pears* and *Apples* being much hardier, do not ſuffer ſo much, though it is a great Diſadvantage to thoſe alſo to be thus managed.

It muſt alſo be remark'd, that *Peaches*, *Nectarines*, *Apricocks*, *Cherries* and *Plums*, are always in the greateſt Vigour, when they are the leaſt maim'd by the Knife; for where theſe Trees have large Amputations, they are very ſubject to gum and decay; ſo that it is certainly the moſt prudent Method, carefully to rub off all uſeleſs Buds when they are firſt produced, and pinch others, where new Shoots are wanted to ſupply the Vacancies of the Wall; by which Management Trees may be ſo ordered, as to want but little of the Knife in *Winter-pruning*, which is the ſureſt Way to preſerve theſe Trees healthful, and is perform'd with leſs Trouble than the common Method.

The Management of *Pears* and *Apples*, is much the ſame with theſe Trees in *Summer*, but in *Winter* they muſt be very differently *pruned*; for as *Peaches* and *Nectarines* do, for the moſt part, produce their Fruit upon the former Year's Wood, and therefore muſt have their Branches ſhortened according to their Strength, in order to produce new Shoots for the ſucceeding Year; ſo *Pears* and *Apples*, on the contrary, producing their Fruit upon *Curſons* or *Spurs*, which come out of the Wood of five, ſix or ſeven Years old; ſhould not be ſhortened, becauſe thereby thoſe Buds which were naturally diſpoſed to form theſe *Curſons* or *Spurs*, would produce Wood-Branches, whereby the Trees would be fill'd with Wood, but never produce much Fruit; and as it often happens that the Bloſſom-buds are firſt produced at the Extremity of the laſt Year's Shoot, ſo by ſhortening the Branches, the Bloſſoms are cut away, which ſhould always be carefully avoided.

There are ſeveral Authors who have written on the ſubject of *Pruning* in ſuch a prolix manner, that it is impoſſible for a Learner to underſtand their Meaning; theſe have deſcribed the ſeveral Sorts of Branches, which are produced on Fruit-trees; as *Wood-Branches*, *Fruit-Branches*, *Irregular-Branches*, *Falſe-Branches*, and *Luxuriant-Branches*, all which they aſſert, every Perſon who pretends to *Pruning* ſhould diſtinguiſh well: Whereas there is nothing more in all this but a Parcel of Words to amuſe the Reader, without any real Meaning; for all theſe are comprehended under the Deſcription already given of luxuriant or uſeleſs Branches, and ſuch as are termed uſeful or Fruit-bearing Branches, and where due Care is taken in the *Spring* of the Year, to diſplace theſe uſeleſs Branches (as was before directed) there will be no ſuch Thing as *irregular*, *falſe*, or *luxuriant Branches*, at the *Winter-pruning*; therefore it is to no purpoſe to amuſe People with a Cant of Words, which, when fully underſtood, ſignify juſt nothing at all.

But ſince I have explained the different Methods of *Pruning* the ſeveral Sorts of Fruits, under their reſpective Articles, I ſhall forbear repeating it again in this Place; but ſhall only give ſome general Hints for the *Pruning* of Standard Fruit-trees, and ſo conclude.

Firſt, you ſhould never ſhorten the Branches of theſe Trees, unleſs it be where they are very luxuriant, and grow irregular on one Side of the Tree, attracting the greateſt Part of the Sap of the Tree, whereby the other Parts are unfurniſhed with Branches, or are rendered very weak; in which Caſe the Branch ſhould be ſhortened down ſo low as is neceſſary, in order to obtain more Branches, to fill up the Hollow of the Tree; but this is only to be underſtood of *Pears* and *Apples*, which will produce Shoots from Wood of three or four Years old; whereas moſt Sorts of Stone-fruit will gum and decay after ſuch Amputation.

But from hence I would not have it underſtood, that I would direct the reducing of theſe Trees into an exact ſpherical Figure, ſince there is nothing more deteſtable, than to ſee a Tree (which if permitted will grow as it is naturally diſpoſed, with its Branches produced at proportionable Diſtances, according to the Size of the Fruit) by endeavouring to make it exactly regular in its Head, ſo crowded with ſmall weak Branches as to prevent the Air from paſſing between them; which will render it incapable to produce Fruit; all that I intend by this ſtopping of luxuriant Branches, is only when one or two ſuch happen on a young Tree, where they intirely draw all the Sap from the weaker Branches and ſtarve them; and then it is proper to uſe this Method, which ſhould be done in time, before they have exhauſted the Roots too much.

Whenever this happens to Stone-fruit, which ſuffer much more by cutting than the former Sorts, it ſhould be remedied by ſtopping or pinching thoſe Shoots in the *Spring*, before they have obtained too much Vigour; which will cauſe them to puſh out Side-branches, whereby the Sap will be diverted from aſcending too faſt to the leading Branch (as hath been directed for Wall-trees); but this muſt be done with Caution, as before.

You muſt alſo cut out all dead or decaying Branches, which cauſe their Heads to look very ragged, eſpecially at the Time when the Leaves are upon the Tree, theſe being deſtitute of them have but a deſpicable Appearance; beſides, theſe do attract noxious Particles from the Air, which are injurious to the Trees; therefore the ſooner they are cut out the better; in doing of this you ſhould obſerve to cut them cloſe down to the Place where they were produced, otherwiſe that Part of the Branch left will decay and prove equally hurtful to the Tree; for it ſeldom happens that when a Branch begins to decay, that it does not die quite down to the Place where it was produced, and if permitted to remain long uncut, does often infect ſome of the other Parts of the Tree. If the Branches are large which you cut off, it will be very proper, after having ſmoothed the cut Part exactly even with a Knife, Chiſſel or Hatchet, to put on a Plaiſter of grafting Clay, which will prevent the Wet from ſoaking into the Tree, at the wounded Part.

All ſuch Branches which run croſs each other, ſhould alſo be cut out; for theſe not only occaſion a Confuſion in the Head of the Tree, but by lying over each other, do rub off their Bark by their Motion, and very often occaſion them to canker, to the great Injury of the Tree; and on old Trees (eſpecially *Apples*) there are often young vigorous Shoots produced from the old Branches near the Trunk, which grow upright into the Head of the Trees; theſe therefore ſhould carefully be cut out every Year, leſt by being permitted to grow they fill the Tree too full of Wood, which ſhould always be guarded againſt, ſince it is impoſſible for ſuch Trees to produce ſo much, or ſo good Fruit, as thoſe Trees whoſe Branches grow at a farther Diſtance, whereby the Sun and Air do freely paſs between them, in every Part of the Tree.

Theſe are all the general Directions which are proper to be given in this Place, ſince not only the particular Methods, but alſo the proper Seaſons for *Pruning* all the different Kinds of Fruit, are fully exhibited under their ſeveral Articles.

PRUNUS. The Plum-Tree.

The *Characters* are;

The Flower conſiſts of five Leaves, which are placed in a circular Order, and expand in Form of a Roſe: *from whoſe Flower-cup riſes the Pointal, which afterwards becomes an oval or globular Fruit, having a ſoft fleſhy Pulp, ſurrounding a hard oblong Stone, for the moſt part pointed; To which ſhould be added, The Foot-ſtalks are long and ſlender, and have but a ſingle Fruit upon each.*

The *Species* are;

1. PRUNUS *fructu parva præcoci. Tourn.* The Jean-hative, or White Primordian. This is a ſmall white *Plum*, of a clear yellow Colour, covered over with a white Flew, which eaſily wipes off; it is a pretty good Bearer, and for its coming very early, deſerves a Place in every good Garden of Fruit. This ripens the Beginning of *July*.

2. PRUNUS *fructu magno craſſo ſubacido. Tourn. Damas noir hative*, i. e. The early black Damaſk, *commonly called* The Morocco Plum. This is a pretty large *Plum* of a round Shape, divided with a Furrow in the Middle (like *Peaches*); the Outſide is of a dark black Colour, covered with a light violet Bloom, the Fleſh is yellow, and parts from the Stone. It ripens in the Middle of *July*.

3. PRUNUS *fructu parvo dulci-atro cæruleo. Tourn.* The little black Damaſk Plum. This is a ſmall black *Plum*, covered over with a violet Bloom; the Juice is richly ſugared, the Fleſh parts from the Stone, and it is a good Bearer. Ripe the Middle of *July*.

4. PRUNUS *fructu magno dulci atro-cœruleo. Tourn. Groſ. Damas Violet de Tours*, i. e. Great Damaſk Violet of Tours. This is a pretty large *Plum*, inclining to an oval Shape, the Outſide is of a dark blue, covered with a violet Bloom; the Juice is richly ſugared, and the Fleſh parts from the Stone. Ripe the Middle of *July*.

5. PRUNUS *fructu rotundo atro-rubente.* The Orleans Plum. The Fruit is ſo well known to almoſt every Perſon, that it is needleſs to deſcribe it; it is a very plentiful Bearer, which has occaſioned its being ſo generally planted by thoſe Perſons who ſupply the Markets with Fruit; but it is an indifferent *Plum*.

6. PRUNUS *fructu oblongo atro-rubente.* The Fotheringham Plum. This Fruit is ſomewhat long, deeply furrow'd in the Middle; the Fleſh is firm, and parts from the Stone; the Juice is very rich. This ripens about the Middle of *July*.

7. PRUNUS *fructu nigro, carne dura. Tourn.* The Perdrigon Plum. This is a middle-ſized *Plum*, of an oval Shape, the Outſide is of a very dark Colour, covered over with a violet Bloom; the Fleſh is firm, and full of an excellent rich Juice; this is greatly eſteemed by the Curious. Ripe the Latter-end of *July*.

8. PRUNUS *fructu magno e violaceo rubente ſuaviſſimo ſaccharato. Tourn.* The Violet Perdrigon Plum. This is a large Fruit rather round than long, of a bluiſh-red Colour on the out-ſide; the Fleſh is of a yellowiſh Colour, pretty firm, and cloſely adheres to the Stone; the Juice is of an exquiſite rich Flavour. This ripens the End of *July*.

9. PRUNUS *fructu ovato ex albo flaveſcente.* The white Perdrigon Plum. This is a middling Plum, of an oblong Figure, the Outſide is yellow, covered with a white Bloom; the Fleſh is firm and well-taſted: it is a very good Fruit to eat raw, or for Sweetmeats, having an agreeable Sweetneſs mixed with an Acidity.

10. PRUNUS *fructu ovato magno rubente. Tourn.* The red Imperial Plum, *ſometimes called* the Red Bonum Mag-

num. This is a large oval-ſhaped Fruit, of a deep red Colour, covered with a fine Bloom; the Fleſh is very dry, and very indifferent to be eaten raw; but is excellent for making Sweetmeats: This is a great Bearer. Ripe the End of *July*.

11. PRUNUS *fructu ovato magno flaveſcente. Tourn.* White Imperial Bonum Magnum; White Holland or Mogul Plum. This is a large oval-ſhaped Fruit, of a yellowiſh Colour, powdered over with a white Bloom; the Fleſh is firm, and adheres cloſely to the Stone; the Juice is of an acid Taſte, which renders it unpleaſant to be eaten raw; but it is very good for Baking or Sweetmeats: It is a good Bearer, and is ripe towards the End of *Auguſt*.

12. PRUNUS *fructu ovato cœruleo.* The Cheſton Plum. This is a middle-ſized Fruit, of an oval Figure, the Outſide is of a dark blue, powdered over with a violet Bloom; the Juice is rich, and it is a great Bearer. Ripe the End of *July*.

13. PRUNUS *fructu maximo rotundo flavo & dulci. Tourn. Prune d'Abricot.* i. e. the Apricock Plum. This is a large round Fruit, of a yellow Colour on the Out-ſide, powder'd over with a white Bloom; the Fleſh is firm and dry, of a ſweet Taſte, and comes clean from the Stone. This ripens the End of *July*.

14. PRUNUS *fructu ſubrotundo, ex rubro & flavo mixto.* The Maitre Claud. This is a middle-ſized Fruit, rather round than long, of a fine mixed Colour, between red and yellow; the Fleſh is firm, and parts from the Stone, and has a delicate Flavour. Ripe the End of *July*.

15. PRUNUS *fructu rubente dulciſſimo. Tourn.* La Roche-Courbon, *or* Diapree-rouge, *i. e.* the Red Diaper Plum. This is a large round Fruit, of a reddiſh Colour, powdered over with a violet Bloom; the Fleſh adheres cloſely to the Stone, and is of a very high Flavour. Ripe in the Beginning of *Auguſt*.

16. PRUNUS *fructu rotundo flaveſcente.* La Reine Claude, *i. e.* Queen Claudia. This is a ſmall round Fruit, of a yellowiſh Colour, powder'd over with a pearl-coloured Bloom; the Fleſh is firm and thick, quits the Stone, and its Juice is richly ſugar'd. Ripe the Middle of *Auguſt*.

17. PRUNUS *fructu rotundo nigro-purpureo majori dulci. Tourn.* Myrabolan Plum. This is a middle-ſized Fruit, of a round Shape, the Outſide is a dark purple, powdered over with a violet Bloom; the Juice is very ſweet. It is ripe the Middle of *Auguſt*.

18. PRUNUS *fructu rotundo e viridi flaveſcente, carne dura, ſuaviſſimo.* The Green Gage Plum. This is one of the beſt *Plums* in *England*: it is of a middle Size, round, and of a yellowiſh-green Colour on the Outſide; the Fleſh is firm, of a deep green Colour, and parts from the Stone; the Juice has an exceeding rich Flavour, and it is a great Bearer. Ripe the End of *July*. This is called *Gros Damas Verd*, i. e. the *Great Green Damaſk*, in *France*.

19. PRUNUS *fructu amygdalino. Tourn.* Rognon de Coq; *i. e.* Cock's Teſticles. This is an oblong Fruit, deeply furrowed in the Middle, ſo as to reſemble the Teſticles; it is of a whitiſh Colour on the Outſide, ſtreaked with red; the Fleſh of it adheres firmly to the Stone, and it is late ripe.

20. PRUNUS *fructu rotundo flavo dulciſſimo.* Drap d' Or, *i. e.* the Cloth of Gold Plum. This is a middle-ſized Fruit, of a bright yellow Colour, ſpotted or ſtreaked with red on the Outſide; the Fleſh is yellow, and full of an excellent Juice; it is a plentiful Bearer, and ripens about the End of *July*.

21. PRUNUS *fructu cerei coloris. Tourn.* Prune de Sainte Catherine, *i. e.* St. Catharine Plum. This is a large oval-ſhaped Fruit, ſomewhat flat; the Outſide is of an Amber Colour, powdered over with a whitiſh Bloom, but the Fleſh is of a bright yellow Colour, is dry and firm, adheres cloſely to the Stone, and has a very agreeable ſweet Taſte. This ripens at the End of *Auguſt*, and is very ſubject to dry upon the Tree, when the *Autumn* proves warm and dry. This makes fine Sweetmeats, and is a plentiful Bearer.

22. PRUNUS *fructu ovato rubente dulci.* The Royal Plum. This is a large fruit, of an oval Shape, drawing to a Point next the Stalk; the Outſide is of a light red Colour, powdered over with a whitiſh Bloom; the Fleſh adheres to the Stone, and has a fine ſugary Juice. This ripens the End of *July*.

23. PRUNUS *fructu parvo ex viridi flaveſcente. Tourn.* La Mirabelle. This is a ſmall, round Fruit, of a greeniſh yellow on the Outſide; the Fleſh parts from the Stone, is of a bright yellow Colour, and has a fine ſugary Juice. This is a great Bearer, and ripens the Beginning of *Auguſt*.

24. PRUNUS *Brignonienſis, fructu ſuaviſſimo. Tourn.* Prune de Brignole, *i. e.* the Brignole Plum. This is a large oval-ſhaped Fruit, of a yellowiſh Colour, mixed with red on the Outſide; the Fleſh is of a bright yellow Colour, is dry, and of an excellent rich Flavour. This ripens the Middle of *Auguſt*, and is eſteemed the beſt *Plum* for Sweetmeats yet known.

25. PRUNUS *fructu magno e violaceo rubente ſerotino. Tourn.* Imperatrice, *i. e.* the Empreſs. This is a large, round Fruit, of a violet-red Colour, very much powdered with a whitiſh Bloom; the Fleſh is yellow, cleaves to the Stone, and is of an agreeable Flavour. This ripens about the Middle of *September*.

26. PRUNUS *fructu ovato maximo flavo. Tourn.* Prune de Monſieur, *i. e.* the Monſieur Plum. This is ſometimes called the *Wentworth* Plum. It is a large, oval-ſhaped Fruit, of a yellow Colour both within and without, very much reſembling the *Bonum Magnum*; but the Fleſh of this parts from the Stone, which the other doth not. This ripens towards the Latter-end of *Auguſt*, and is very good to preſerve, but the Juice is too ſharp to be eaten raw; it is a great Bearer.

27. PRUNUS *fructu majori rotundo rubro. Tourn.* Prune Cerizette, *i. e.* the Cherry Plum. This Fruit is commonly about the Size of the *Ox-heart Cherry*, is round, and of a red Colour; the Stalk is long, like that of a Cherry, which this Fruit ſo much reſembles, as not to be diſtinguiſhed therefrom at ſome Diſtance. The Bloſſoms of this Tree come out very early in the *Spring*, and being tender, are very often deſtroyed by Cold: but it affords a very agreeable Proſpect in the *Spring*; for theſe Trees are generally covered with Flowers, which open about the ſame Time as the Almonds, ſo that when they are intermixed therewith, they make a beautiful Appearance before many other Sorts do put out; but where the Fruit is deſired they ſhould have a South-Eaſt Wall.

28. PRUNUS *fructu albo oblongiuſculo acido. Tourn.* The white Pear Plum. This is a good Fruit for Preſerving, but is very unpleaſant, if eaten raw; it is very late ripe, and ſeldom planted in Gardens, unleſs for Stocks to bud ſome tender Sorts of *Peaches* upon, for which Purpoſe it is eſteemed the beſt amongſt all the Sorts of *Plums*.

29. PRUNUS *Mytellinum. Park.* The Muſcle Plum. This is an oblong flat *Plum*, of a dark red Colour; the Stone is large, and the Fleſh but very thin, and not well-taſted, ſo that its chief Uſe is for Stocks, as the former.

30. PRUNUS *fructu parvo violaceo.* The St. Julian Plum. This is a ſmall Fruit, of a dark violet Colour, powdered over with a mealy Bloom; the Fleſh adheres cloſely to the Stone, and in a fine *Autumn* will dry upon the Tree. The chief Uſe of this *Plum* is for Stocks, to bud the more generous Kinds of *Plums* and *Peaches* upon, as alſo for the *Bruxelles* Apricock, which will not thrive ſo well upon any other Stock.

31. PRUNUS *ſylveſtris major. J. B.* The black Bullace-tree. This grows wild in the Hedges in divers Parts of *England*, and is rarely cultivated in Gardens.

32. PRUNUS *ſylveſtris, fructu majore albo. Raii Syn.* The white Bullace-tree. This grows wild as the former, and is ſeldom cultivated in Gardens.

33. PRUNUS *ſylveſtris. Ger. Emac.* The Black-thorn, *or* Sloe-tree. This is very common in the Hedges almoſt every where; the chief Uſe of this Tree is to plant for Hedges, as *White-thorn*, &c. and being of quick Growth is very proper for that Purpoſe.

All the Sorts of *Plums* are propagated by budding or grafting them upon Stocks of the *Muſcle*, *White Pear*, *St. Julian*, *Bonum Magnum*, or any other Sorts of free-ſhooting *Plums*; the Manner of raiſing theſe Stocks hath been already exhibited under the Article of *Nurſeries*, therefore need not be repeated again in this Place; but I would obſerve, that Budding is much preferable to Grafting, for theſe Sorts of Fruit-trees, which are very apt to gum, where-ever there are large Wounds made on them.

The Trees ſhould not be more than one Year's Growth from the Bud, when they are tranſplanted; for if they are older they ſeldom ſucceed ſo well, being very ſubject to canker; or if they do take well to the Ground, commonly produce only two or three luxuriant Branches; therefore it is much more adviſeable to chuſe young Plants.

The Manner of preparing the Ground (if for Walls) is the ſame as for Peaches, as is alſo the pruning the Roots and planting: and therefore I ſhall forbear repeating it again. The Diſtance which theſe Trees ſhould be planted at, muſt not be leſs than fourteen or ſixteen Feet, and if the Wall is low, they ſhould be placed eighteen Feet aſunder.

Plums ſhould have a middling Soil, neither too wet and heavy, nor over light and dry; in either of which Extremes they ſeldom do well: And thoſe Sorts which are planted againſt Walls, ſhould be placed to an Eaſt or South-Eaſt Aſpect, which is more kindly to theſe Fruits than a full South Aſpect, on which they are ſubject to ſhrivel, and be very dry, and many Sorts will be extreme mealy, if expos'd too much to the Heat of the Sun; but moſt Sorts will ripen extremely well on Eſpaliers, if rightly manag'd.

There are ſome Perſons who plant *Plums* for Standards, in which Method ſome of the ordinary Sorts will bear very well; but then the Fruit will not be near ſo fair as thoſe produced on Eſpaliers, and will be more in danger of being bruis'd or blown down by ſtrong Winds. The Diſtance of placing them for Eſpaliers muſt be the ſame as againſt Walls, as muſt alſo their Pruning and Management, ſo that whatever may be hereafter mention'd for one, ſhould be alſo underſtood for both.

Plums do not only produce their Fruit upon the laſt Year's Wood, but alſo upon Curſons or Spurs, which come out of Wood that is two or three Years old; ſo that there is not a Neceſſity of ſhortening the Branches, in order to obtain new Shoots annually, in every Part of the Tree, (as in *Peaches*, *Nectarines*, *&c.* hath been directed) ſince the more theſe Trees are pruned, the more luxuriant they grow, until the Strength of them is exhauſted, and then they gum and ſpoil: Therefore the ſafeſt method to manage theſe Trees, is, to lay in their Shoots horizontally, as they are produced, at equal Diſtances, in proportion to the Length of their Leaves; and where there is not a ſufficient Quantity of Branches to fill up the Vacancies of the Tree, there the Shoots may be pinch'd the Beginning of *May*, (in the Manner as hath been directed for *Peaches*, *&c.*) which will cauſe them to produce ſome lateral Branches to ſupply thoſe Places; and during the growing Seaſon, all foreright Shoots ſhould be diſplaced, and ſuch as are to remain muſt be regularly train'd in to the Wall or Eſpalier, which will not only render them beautiful, but alſo give to each an equal Advantage of Sun and Air: And hereby the Fruit will be always kept in a ductile, growing State, which they ſeldom are, when over-ſhaded with Shoots ſome Part of the Seaſon, and then ſuddenly expos'd to the Air, by the taking off or training thoſe Branches in their proper Poſition.

With thus carefully going over theſe Trees in the growing Seaſon, there will be but little Occaſion for cutting them in *Winter* Pruning, which (as I before have ſaid) is of ill Conſequence to all Sorts of Stone-Fruit: Beſides, many of theſe Fruits do produce Bloſſom-buds, at the Extremity of their former Year's Shoots; ſo that when thoſe are ſhortened, the Fruit is cut away, and hereby the Number of Shoots is increaſed: For whenever a Branch is ſhortened, there are commonly two or more Shoots produced from the Eyes immediately below the Cut; ſo that by thus unſkilfully Pruning, many Perſons croud their Trees with Branches, and thereby render what little Fruit the Trees do produce, very ſmall and ill-taſted, which is very commonly found in too many Gardens, where the Manager, perhaps, thinks himſelf a compleat Maſter of his Buſineſs. For nothing is more common, than to ſee every Branch of a Fruit-tree paſs the Diſcipline of the Knife, however agreeable it be to the ſeveral Sorts of Fruits.

Thoſe few Rules before laid down, will be ſufficient, if due Obſervation be join'd therewith, to inſtruct any Perſon in the right Management of theſe Sorts of Fruit-trees; therefore I ſhall not ſay any more on that Subject, leſt, by multiplying Inſtructions, it may render it more obſcure to a Learner.

PSEUDOACACIA, [of ψευδὸς *falſe*, and *Acacia*] Virginian Acacia, *vulgo*.

The *Characters* are;

It hath a papilionaceous Flower, from whoſe Flower-cup riſes the Pointal, wrapped up in a fimbriated Membrane, which afterwards becomes a Pod, opening into two Parts, in which are contained ſeveral Kidney-ſhap'd Seeds.

The *Species* are;

1. PSEUDOACACIA *vulgaris. Tourn.* Common Virginian Acacia.

2. PSEUDOACACIA *Americana latifolia, flore roſea. Plum.*

3. PSEUDOACACIA *Americana, flore pyramidato coccineo. Plum. Cat.* Falſe Acacia of *America*, with ſcarlet Flowers, growing in a Pyramid.

4. PSEUDOACACIA *Americana, ſiliquis alatis. Plum. Cat.* Falſe Acacia of *America*, with winged Pods.

5. PSEUDOACACIA *Americana latifolia, floribus purpureis. Plum. Cat.* Falſe Acacia of *America*, with a broad Leaf, and purple Flowers.

6. PSEUDOACACIA *Americana ingens, fructu coccineo, nigrâ maculâ notato. Plum. Cat.* Falſe Acacia of *America*, with a ſcarlet Fruit marked with black Spots.

7. PSEUDOACACIA *Americana, fraxini folio, floribus violaceis. Plum. Cat.* Falſe Acacia of *America*, with an Aſh-leaf, and violet-coloured Flowers.

The firſt of theſe Trees is very common in *England*, eſpecially in the Gardens near *London*, where are ſeveral very large old Trees, which have been ſeveral Years ſtanding: but the ſecond Sort is at preſent very rare in *England*.

Theſe Trees may be propagated by ſowing their Seeds in the Spring upon a Bed of light freſh Earth; and when the Plants are come up, they ſhould be carefully cleared from Weeds; and in very dry Weather, if they be refreſhed with Water, it will greatly promote their Growth: In this Bed the Plants ſhould remain 'till the latter End of *March* following, at which time they ſhould be tranſplanted out into a Nurſery, in Rows, three Feet aſunder, and the Plants eighteen Inches Diſtance in the Rows, obſerving to lay a little Mulch upon the Surface of the Ground about their Roots, to prevent the Earth's drying too faſt. During the Summer-ſeaſon you ſhould carefully clear 'em from Weeds; and if they produce irregular Branches, they ſhould be prun'd off while young. The Spring following the Ground between the Rows ſhould be carefully dug, that the Roots of the Trees may the more eaſily extend themſelves every way; and in Summer the Weeds ſhould be conſtantly hough'd down, to prevent their injuring the Plants.

When the Trees have remain'd in this Nurſery three Years, they ſhould be tranſplanted where they are deſigned to grow; for if they are permitted to remain in the Nurſery too long, they will not bear tranſplanting, their Roots creeping very far juſt under the Surface of the Earth, which when too much cut, do ſeldom abide long in Vigour.

Theſe Trees are very hardy, in reſpect to Cold; but they will not endure to be expoſed too much to ſtrong Winds, which continually break their brittle Branches, and render them unſightly; ſo that many People have neglected to cultivate theſe Trees on that Account: but when they are intermixed with other large-growing Trees, in great Wilderneſſes, they make a beautiful Variety, and in *June* they are covered with large Bunches of white ſweet-ſmelling Flowers.

Indeed, I can't recommend them for planting Avenues, which was the great Uſe they were formerly apply'd to; ſince in ſuch Places they would be greatly expoſed to the Wind, which would cauſe them to have a ragged Appearance, by the continual ſnapping of their Branches: Nor are they very proper to plant in Gardens, becauſe their Roots do extend to a great Diſtance, and emaciate the Soil; and the Numbers of Suckers, which they are apt to produce, render them very troubleſome in open Gardens: but for large Wilderneſſes they are very proper, where, if the Soil be moiſt, they will grow to a conſiderable Magnitude.

I have ſeen ſome theſe Trees upwards of forty Feet high, which have divided at a little Diſtance from the Ground, into three or four Branches, each of which have been equal to a large Tree; ſo that it ſhould not be planted too near other Trees, leſt, by its great Growth, it overſhadows and deſtroys them. In many Gardens near *London* theſe Trees have produced good Seeds, from whence a great Number of Plants have been raiſed.

The third, fifth and ſeventh Sorts, grow plentifully about *Carthagena* in *New Spain*, as alſo at *Campechy*: in both theſe Places they were obſerved by the late Dr. *William Houſtoun*, who ſent Seeds of theſe Kinds to *England*.

The ſecond Sort grows plentifully in all the low Lands of *Jamaica*, and is called by the Inhabitants *Dogwood*. The Bark of this Tree, bruiſed and thrown into ſtanding Waters, where Fiſh are, will intoxicate them for a time, ſo that they turn up their Bellies, and float on the Surface of the Water; by which Method the *Indians* and *Negro*'s take great Quantities of Fiſh, which, when caught by this Method, are eſteemed very wholeſome.

The fourth Sort is alſo pretty common in moſt of the *Engliſh* Settlements in the *Weſt-Indies*, and in the *Spaniſh Weſt-Indies* it is very common. The Seeds of this Tree are of a beautiful ſcarlet Colour, having a large black Spot on the Eye. This was formerly brought into *England* by the Name of *Anacock*.

All theſe Sorts of falſe Acacia are very tender Plants, ſo will not thrive in this Country, unleſs they are preſerved in Stoves. They may be propagated by Seeds, which ſhould be ſown early in the Spring, in Pots filled with rich Earth, and plunged into a Hot-bed of Tanners-bark; and when the Plants are come up, they ſhould be each tranſplanted into a ſeparate Pot, filled with rich Earth, and plunged again into the Hot-bed, being careful to ſhade them until they have taken new Root; after which Time they ſhould have freſh Air admitted to them every Day, in proportion to the Warmth of the Seaſon, and they muſt be frequently watered in warm Weather. With this Management the Plants will make good Progreſs, ſo that towards the End of *July*, they will have filled the Pots with their Roots; when they ſhould be ſhifted into other Pots ſomewhat larger, and may be plunged into the Hot-bed again, where they may remain till towards *Michaelmas*, when they ſhould be removed into the Stove, and plunged into the Bark-bed, where they muſt be kept warm during the winter Seaſon, and ſhould be frequently refreſhed with Water; but it muſt be given to them in ſmall Quantity in cold Weather. The following Spring theſe Plants ſhould be ſhifted into freſh Earth, and if they have made good Progreſs, they will require Pots a little larger than the former: the Hot-bed in the Stove ſhould alſo be refreſhed with ſome new Tan at this Seaſon, to renew its Heat, and the Plants plunged therein; which will cauſe them to puſh early in the Summer, ſo that they will have Time to make good Progreſs before Winter. During the Summer Seaſon, the Plants ſhould have a large Share of free Air in warm Weather, and require Plenty of Water; their Leaves ſhould alſo be frequently waſhed to cleanſe them from Filth, otherwiſe they will not grow very faſt. In two or three Years theſe Plants will produce their Flowers, when they will make an agreeable Variety amongſt other tender exotic Plants in the Stove.

The Seeds of the ſixth Sort are ſo hard as often to remain a whole Year in the Ground, before the Plants appear, eſpecially if the Earth in the Pots be not conſtantly watered; ſo that if the Pots are not preſerved in a proper Temperature of Heat in Winter, the Seeds will rot: therefore the beſt Method to make the Seeds vegetate in a ſhort time, is to lay them under a Pot of Earth in the Tan-bed, as hath been directed for the *Bonduc*, and other hard *Indian* Seeds.

PSEUDO-DICTAMNUS, [of ψευδὸς *falſe*, and *Dictamus*, *Dittany*] Baſtard-Dittany.

The *Characters* are;

It hath a labiated Flower conſiſting of one Leaf, whoſe Upper-lip or Helmet is arched, and generally cut into two Segments: but the Under-lip (or Beard) is divided into three Parts. Out of the Funnel-ſhaped Flower-cup riſes the Pointal, attended by four Embryo's, which afterwards become ſo many oblong Seeds, incloſ'd in the Flower-cup.

The *Species* are;

1. Pseudo-Dictamnus *acetabulis Moluccæ. C. B. P.* Baſtard-Dittany, with the Pan or Hollow of Molucca Balm.
2. Pseudo-Dictamnus *Hiſpanicus, ſcrophulariæ folio. Tourn.* Spaniſh Baſtard-Dittany, with a Figwort Leaf.
3. Pseudo-Dictamnus *Hiſpanicus, ampliſſimo folio, candicante & villoſo. Tourn.* Spaniſh Baſtard-Dittany, with a large, hoary, and hairy Leaf.
4. Pseudo-Dictamnus *verticillatus inodorus. C. B. P.* Whorled Baſtard-Dittany without Smell.
5. Pseudo-Dictamnus *Orientalis, foliis circinatis. T. Cor.* Eaſtern Baſtard-Dittany, with round Leaves.

There are ſeveral other Varieties of this Plant, which are preſerved in Botanick Gardens; but as they have little Beauty or Uſe, ſo it will be needleſs to enumerate them in this Place.

All theſe Plants may be propagated by Seeds, parting of their Roots, or Cuttings: but the two laſt being the moſt expeditious Methods, are generally practiſed. The beſt time to tranſplant and part their Roots, is in the *Spring*, before they begin to grow, that the Off-ſets may take Root before the dry Weather: Theſe ſhould be planted in a poor, dry Soil, where they will endure the Cold much better than if planted in a richer Ground. There is no great Beauty in theſe Plants; but as they are ſometimes preſerved by curious Perſons, I thought it proper to mention them in this Place.

PSYLLIUM, [takes its Name of Ψύλλα *a Flea*, becauſe its Seed reſembles a Flea, in Shape and Colour] Fleawort.

The *Characters* are;

This Plant agrees with Plantain and Buckſhorn Plantain in every reſpect, excepting that this riſes up with leafy Stalks, and divides into many Branches, whereas both the others produce their Flowers upon naked Pedicles.

The *Species* are;

1. Psyllium *majus erectum. C. B. P.* Greater Upright Fleawort.
2. Psyllium *majus ſupinum. C. B. P.* Greater Fleawort, whoſe Branches ſpread to the Ground.
3. Psyllium *Indicum, foliis crenatis. J. B.* Indian Fleawort, with notched Leaves.

There are ſeveral other Varieties of theſe Plants, diſtinguiſhed by Writers in Botany; but ſince they are of little Uſe or Beauty, I ſhall paſs them by without naming.

Theſe Plants may be propagated by ſowing of their Seeds in the Spring, on a Bed of light Earth; and when they are come up, they ſhould be cleared from Weeds; pulling out at the ſame time ſome of the Plants, where they ſtand too cloſe, leaving the remaining ones about eight or nine Inches aſunder: after which they will require no farther Care, but to clear 'em from Weeds; and in *June* they will flower, and their Seeds will ripen in *Autumn*.

The ſecond Sort will abide two or three Years, provided they are on a poor dry Soil; but the other two Sorts periſh every Year.

The firſt Sort, which is the moſt common, is uſed in Medicine; but the other two are never uſed in *England*.

PTARMICA, [takes its Name of Πτάρμος *Sneezing Powder*; becauſe the Head of this Plant, being powdered, is uſed for Snuff: It is alſo called *Dracunculus*, becauſe it has much the ſame Figure as *Dracunculus Hortenſis*] Sneezwort.

The *Characters* are;

It hath radiated Flowers, whoſe Disk conſiſts of many Florets, but the Borders are compos'd of Half-florets: The Embryo's are lodg'd in the Flower-cup, which is ſcaly, each of which becomes one ſlender Seed.

The *Species* are;

1. Ptarmica *vulgaris, folio longo ſerrato, flore albo. J. B.* Common Sneezwort, with a long ſerrated Leaf, and a white Flower.
2. Ptarmica *vulgaris, flore pleno. Cluſ. Hiſt.* Common Sneezwort, with a double Flower, *by ſome call'd* Double Pellitory.
3. Ptarmica *foliis profundè ſerratis, latè viridibus elatior. H. L.* Taller Sneezwort, with broad green Leaves deeply ſerrated.
4. Ptarmica *Alpina, incanis ſerratis foliis. H. L.* Alpine Sneezwort, with hoary ſerrated Leaves.
5. Ptarmica *incana, pinnulis criſtatis. T. Cor.* Hoary Sneezwort, with creſted Leaves.
6. Ptarmica *incana humilis, foliis laciniatis, abſinthii æmulis. H. L.* Dwarf-hoary Sneezwort, with jagged Leaves, reſembling Wormwood.
7. Ptarmica *Alpina, foliis anguſtis, partim ſerratis, partim integris. Bocc. Muſ.* Alpine Sneezwort, with narrow Leaves, Part of which are ſawed on their Edges, and the other Part are whole.
8. Ptarmica *Cretica fruteſcens, ſantolinæ facie. Inſt. R. H.* Shrubby Sneezwort of *Crete*, with the Appearance of Lavender-cotton.
9. Ptarmica *Orientalis, foliis criſtatis Tourn. Cor.* Eaſtern Sneezwort, with creſted Leaves.
10. Ptarmica *Orientalis, foliis criſtatis longioribus, & capitulis majoribus. Tourn. Cor.* Eaſtern Sneezwort, with longer creſted Leaves, and larger Heads.
11. Ptarmica *Orientalis, ſantolinæ folio, flore majore. Tourn. Cor.* Eaſtern Sneezwort, with a lavender-cotton Leaf, and a larger Flower.
12. Ptarmica *Orientalis, ſantolinæ folio, flore minore. Tourn. Cor.* Eaſtern Sneezwort, with a lavender-cotton Leaf, and a ſmaller Flower.
13. Ptarmica *Orientalis, foliis tanaceti incanis, flore aureo. Tourn. Cor.* Eaſtern Sneezwort, with hoary Tanſey-leaves, and a golden Flower.
14. Ptarmica *Orientalis, foliis tanaceti incanis, ſemifloſculis florum pallidè luteis. Tourn. Cor.* Eaſtern Sneezwort, with hoary Tanſey-leaves, whoſe Half-florets are of a pale yellow Colour.
15. Ptarmica *Orientalis, foliis tanaceti incanis, ſemifloſculis florum brevioribus. Tourn. Cor.* Eaſtern Sneezwort, with hoary Tanſey-leaves, whoſe Half-florets are very ſhort.
16. Ptarmica *Orientalis, ſantolinæ folio, radice repente.* Eaſtern Sneezwort, with a lavender-cotton Leaf, and a creeping Root.

17. Ptarmica *Orientalis, tanaceti folio & facie, flore minimo. Tourn. Cor.* Eaſtern Sneezwort, with the Leaf and Face of Tanſey, and the leaſt Flower.

18. Ptarmica *Orientalis incana, foliis pennatis, ſemifloſculis florum vix conſpicuis. Tourn. Cor.* Hoary Eaſtern Sneezwort, with winged Leaves, and the Half-florets ſcarcely diſcernable.

19. Ptarmica *Orientalis, foliis argenteis conjugatis. Tourn. Cor.* Eaſtern Sneezwort, with ſilvery conjugated Leaves.

The firſt of theſe Plants is very common upon Heaths, and in ſhady Places in divers Parts of *England*, and is rarely cultivated in Gardens. This is the Sort directed for Medicinal Uſe in the *College Diſpenſatory*.

The ſecond Sort is a Variety of the firſt, which was accidentally obtain'd: The Flowers of this Kind are very double, and generally produced in large Bunches; which, together with its long Continuance in flower, renders it worthy of a Place in every good Garden. This Sort propagates itſelf very faſt by its Roots, which ſpread very far under Ground; ſo that it ſhould not be planted too near other Plants, leſt it over-run and deſtroy them.

The beſt time to tranſplant theſe Roots is in *Autumn*, that they may take Root before *Winter*; ſo that they will be in no danger of ſuffering from Drought the *Spring* following; and will be capable of producing ſtronger Stalks, and a greater Quantity of Flowers.

This Plant always makes the beſt Appearance when its Roots are confined; becauſe, when they are ſuffered to ſpread, the Stalks come up thin and ſtraggling; and the greateſt Beauty of it is, to ſee it grow cloſe in large Tufts: for which Reaſon many Perſons chuſe to plant it in Pots fill'd with light ſandy Earth; in which, if they are duly watered in dry Weather, they will thrive exceedingly, and make a very handſome Appearance. It is alſo very proper to plant on ſuch Borders as are gravelly and poor, (on which few other things will thrive) where the Roots of this Plant will be confined, more than if planted in a better Soil, and they will flower very well.

The third and fourth Sorts are ſeldom preſerved in Flower-gardens, being Plants of little Beauty: Theſe may be propagated by parting their Roots, either in *Spring* or *Autumn*, and will grow upon almoſt any Soil, or in any Situation.

The fifth Sort was brought from the *Levant* by Monſ. *Tournefort*, but was known long before. Many of the old Botaniſts were of Opinion, that the Seeds of this Plant were the *Semen Santonicum* of the Shops; but it is now generally believed to be the Seeds of ſome other Plant of that Kind: But however, this Plant deſerves a Place in every good Garden, for the Variety of its Silver-colour'd Leaves, together with its long Continuance in flower.

It may be propagated by planting Cuttings during any of the *Summer* Months, upon a Bed of light freſh Earth, obſerving to water and ſhade them until they have taken Root, after which they will require no farther Care, but only to clear them from Weeds, until *September* following, when they ſhould be carefully taken up, preſerving a Ball of Earth to the Roots of each Plant, and planted in a warm dry Situation: and if it be on a poor gravelly or rubbiſhing Soil, they will endure the Cold better, and make much more beautiful Plants: This Sort ſeldom perfects Seeds in *England*.

All the laſt fourteen Sorts of *Ptarmica* are hardy enough to endure the Cold of our ordinary Winters in the open Air, provided they are planted in a dry lean Soil; for when they are in a moiſt rich Soil, they grow very luxuriant in the *Summer*, and are filled with Juice, which renders them leſs capable to reſiſt the Cold, than when they are more ſtunted and woody; and they make a much better Appearance, when they grow ſlowly, than if they were greatly encouraged in their Growth; becauſe they appear more hoary, and produce a greater Number of Flowers.

They may be all (except the ſixteenth Sort) propagated by Cuttings in the *Summer* Months, which ſhould be planted in a ſhady Border of freſh Earth, and muſt be conſtantly watered, until they have taken Root; after which Time they will require no farther Care, but to keep them clear from Weeds, until *Michaelmas*, when they ſhould be carefully taken up, and tranſplanted where they are deſigned to remain; which muſt be done ſo early in the *Autumn*, that they may have Time to get good Roots, before the Froſt comes on, otherwiſe they will be in Danger of ſuffering greatly. The ſixteenth Sort propagates itſelf by its creeping Roots very faſt, ſo requires to be confined; otherwiſe it will ſpread and intermix with whatever Plants grow near it. This is alſo a very hardy Plant, but being of humble Growth, makes no very good Figure in a Garden; ſo is ſeldom preſerved, but by thoſe Perſons who are curious in Botany, for the ſake of Variety.

Altho theſe Plants do not produce very beautiful Flowers, yet they may be diſpoſed in large Gardens, ſo as to make a very agreeable Diverſity; for their hoary Leaves of different Shapes, when intermixed with other hardy Plants of the ſame Growth, on ſmall Hillocks, will have a pretty Effect, and as they retain their Leaves all the Winter, ſo at that Seaſon they add to the Variety: and in *Summer* when their Flowers are produced, they alter the Proſpect ſo as to be very agreeable.

They are all of them low Plants: the talleſt and moſt ſhrubby of them ſeldom riſes above two Feet high, and the others not half ſo high, ſo that they ſhould not be mixed with larger Plants, becauſe thoſe would overbear and deſtroy them. When theſe Plants are well rooted, they require no other Culture, but to keep them clear from Weeds; for their Roots will abide many Years, provided they are not deſtroyed by very ſevere Froſts, which ſeldom happen in *England*.

PULEGIUM: [This Plant takes its Name of *Pulex* a *Flea*; becauſe, being burnt, it is ſaid to drive away Fleas] Penny-royal, *or* Pudding-Graſs.

The *Characters* are;

It hath a labiated Flower, conſiſting of one Leaf, whoſe Upper-lip (or Creſt) is intire; but the Lower-lip (or Beard) is divided into three Parts: Out of the Flower-cup riſes the Pointal, attended by four Embryo's, which afterwards become ſo many Seeds: To which may be added, that the Flowers grow in ſhort thick Whorles.

The *Species* are;

1. Pulegium *latifolium. C. B. P.* Common or Broad-leaf'd Penny-royal.

2. Pulegium *Hiſpanicum erectum, ſtaminibus florum extantibus.* Upright Spaniſh Penny-royal, whoſe Stamina ſtand out from the Flowers.

3. Pulegium *anguſtifolium. C. B. P.* Narrow-leaf'd Penny-royal.

4. Pulegium *anguſtifolium, flore albo. H. R. Par.* Narrow-leaf'd Penny-royal, with a white Flower.

The firſt of theſe Plants is very common on moiſt Heaths in divers Parts of *England*: This is the Sort recommended by the Phyſicians for Medicinal Uſe. But the ſecond Sort, although not a Native of *England*, hath obtain'd in the Gardens where Medicinal Plants are cultivated, ſo much as to have quite ſuperſeded the other in the Markets, for its upright Growth, early Flowering, and more beautiful Appearance: but whether it is equally good for Uſe, I ſhall leave to thoſe to whoſe Province it more immediately belongs to examine.

The third Sort is alſo recommended to be uſed in Medicine: This is not of *Engliſh* Growth, but is very hardy, and will thrive very well if planted on a moiſt Soil; as will alſo the fourth Sort, which is only a Variety of the third, from which it differs in nothing but the Colour of its Flowers.

All theſe Plants propagate themſelves very faſt by their Branches trailing upon the Ground, which emit Roots at every Joint, and faſten themſelves into the Earth, and ſend forth new Branches; ſo that no more is required in their Culture, than to cut off any of theſe rooted Branches, and plant them out in freſh Beds, allowing them at leaſt a Foot from Plant to Plant every way, that they may have Room to grow.

The beſt Time for this Work is in *September*, that the Plants may be rooted before *Winter*; for if the old Roots are permitted to remain ſo cloſe together, as they generally grow in the Compaſs of a Year, they are ſubject to rot in *Winter*: beſides, the young Plants will be much ſtronger, and produce a larger Crop the ſucceeding *Summer*, than if they were remov'd in the *Spring*: Theſe Plants do all love a moiſt ſtrong Soil, in which they will flouriſh exceedingly.

PULMONARIA, [ſo called of *Pulmones*, Lat. *the Lungs*, becauſe it is ſuppoſed to be a very good Medicament for the Lungs] Lung-wort.

The *Characters* are;

The Flower conſiſts of one Leaf, which is ſhaped like a Funnel, whoſe upper Part is cut into ſeveral Segments: From its fiſtulous Flower-cup, which is, for the moſt part, pentagonal, riſes *the Pointal, incompaſſed by four Embryo's, which afterwards become ſo many Seeds incloſed in the Flower-cup.*

The *Species are*;

1. PULMONARIA *vulgaris, maculoſo folio. Cluſ. Hiſt.* Common ſpotted Lungwort, *by ſome call'd* Sage of Jeruſalem, *and* Jeruſalem Cowſlip.

2. PULMONARIA *major, non maculoſa. J. B.* Greater Lungwort, without Spots.

3. PULMONARIA *foliis echii. Lob. Ic.* Lung-wort, with Leaves like Vipers Bugloſs.

4. PULMONARIA *maxima, foliis quaſi ſaccharo incruſtatis. Pluk. Phyt.* Greateſt Lung-wort, with Leaves very much ſpotted.

5. PULMONARIA *vulgaris latifolia, flore albo. Inſt. R. H.* Common broad-leaved Lung-wort, with a white Flower.

6. PULMONARIA *Alpina, foliis mollibus ſubrotundis, flore cœruleo. Inſt. R. H. Alpine* Lung-wort, with ſoft roundiſh Leaves, and a blue Flower.

7. PULMONARIA *anguſtifolia, cœruleo flore. J. B.* Narrow-leaved Lungwort, with a blue Flower.

8. PULMONARIA *Alpina, anguſto folio, Italica. Bocc. Muſ.* Narrow-leaved *Alpine* Lung-wort.

9. PULMONARIA *mitis, fragariæ odore. Bocc. Muſ.* Mild Lungwort ſmelling like Strawberries.

10. PULMONARIA *Cretica annua, calyce veſicario. Inſt. R. H.* Annual Lungwort of *Candy*, with a bladder Flower-cup.

11. PULMONARIA *viridi, ſubrotundo, non maculato folio. Bocc. Muſ.* Green Lungwort, with a roundiſh unſpotted Leaf.

12. PULMONARIA *Chia, echii folio verrucoſo, calyce veſicario, flore albo. Tourn. Cor.* Lungwort of the Iſland *Scio*, with a warted Vipers-bugloſs-leaf, a bladdered Flower-cup, and a white Flower.

13. PULMONARIA *Lesbia, echii folio verrucoſo, calyce veſicario, flore cœruleo. Tourn. Cor.* Lungwort of *Lesbos*, with a warted Vipers-bugloſs-leaf, a bladdered Flower-cup, and a blue Flower.

14. PULMONARIA *Orientalis, calyce veſicario, foliis echii, flore purpureo infundibuliformi. Tourn. Cor.* Eaſtern Lungwort, with a bladdered Flower-cup, a Vipers-bugloſs-leaf, and a purple funnel-ſhaped Flower.

15. PULMONARIA *Orientalis, calycc veſicario, foliis echii, flore albo infundibuliformi. Tourn. Cor.* Eaſtern Lungwort, with a bladdered Flower-cup, a Vipers-bugloſs-leaf, and a white funnel-ſhaped Flower.

The firſt Sort is uſed in Medicine as a vulnerary Herb, but is by many People preſerved in Gardens; as are alſo the three next Sorts for the Variety of their ſpotted Leaves, and pretty Bunches of blue Flowers.

Theſe Plants may be cultivated by parting of their Roots, which may be done either in the *Spring* or *Autumn*; but if the Ground be moiſt into which they are planted, it is better to be done in the *Spring*, otherwiſe the *Autumn* is the moſt preferable Seaſon, that the Plants may be well rooted before the dry Weather comes on in the *Spring*, which will cauſe them to flower much ſtronger.

The Soil in which they are planted ſhould not be rich, but rather a freſh, light, ſandy Ground, in which they will thrive much better than in a richer Soil, in which they are very ſubject to rot in *Winter*. The fourth Sort makes the beſt Appearance of all the Kinds, and is very hardy, will grow either in Sun or Shade, and, taking up little Room, is worthy of a Place in every good Garden for the ſake of Variety.

The fifth, ſixth, ſeventh, eighth, ninth, and eleventh Sorts are abiding Plants, which may be propagated by parting of their Roots: The beſt Time for doing of this is in *Autumn*, that they may be rooted before the Froſt comes on. They ſhould have a ſhady Situation, and a freſh undunged Soil, in which they will thrive better than a rich Soil.

The other Sorts are annual, ſo are propagated only by Seeds. The beſt time to ſow theſe is in *Autumn*, ſoon after they are ripe; for the Plants will reſiſt the Cold of our *Winters* very well, ſo will flower early the following *Summer*, and good Seeds may be obtained; whereas thoſe which are ſown in the *Spring* do ſometimes miſcarry. Theſe Seeds ſhould be ſown where they are deſigned to remain; for the Plants do not ſucceed very well when they are tranſplanted. When the Plants come up, they require no other Culture but to keep them clear from Weeds; and, where they are too cloſe to thin them. If theſe Plants are permitted to ſcatter their Seeds, the Plants will come up, and be better than when they are ſown. Theſe laſt eleven Plants are all preſerved by the Curious in Botany, but they have no greatB eauty, ſo are not often kept in other Gardens.

PULSATILLA; [ſo called of *Pulſando*, Lat. becauſe the Seeds of this Plant are blown, and fly away with the leaſt Wind] Paſque-flower.

The *Characters* are;

The Flower conſiſts of ſeveral Leaves, which are placed in a circular Order, and expand in the Form of a Roſe; *out of the Middle of which riſes a Pointal, beſet, for the moſt part, with Chives; which afterwards becomes a Fruit, in which the Seeds are gathered, as it were, into a little Head, each ending in a ſmall Hair: To which muſt be added, Some little Leaves incompaſſing the Pedicle below the Flower, as in the* Anemone; *from which the* Paſque-flower *differs, in the Seed ending in a Tail.*

The *Species* are;

1. PULSATILLA *folio craſſiore, & majore flore. C. B. P.* Paſque-flower, with thicker Leaves and a larger Flower.

2. PULSATILLA *flore violaceo duplici fimbriato. H. R. Par.* Paſque-flower, with a double-fringed violet-coloured Flower.

3. PULSATILLA *flore minore nigricante. C. B. P.* Paſque-flower, with a ſmaller darker Flower.

4. PULSATILLA *flore rubro obtuſo. C. B. P.* Red Paſque-flower.

5. PULSATILLA *flore albo. C. B. P.* White Paſque-flower.

6. PULSATILLA *lutea, Apii hortenſis folio. C. B. P.* Yellow Paſque-flower, with a Leaf of Garden-parſley.

7. PULSATILLA *lutea Alpina hiſpidior. C. B. P.* Yellow hairy Paſque-flower of the *Alps*.

8. PULSATILLA *folio tenuius inciſo, & flore minore, ſive paluſtris. C. B. P.* Marſh Paſque-flower, with fine cut Leaves, and a ſmaller Flower.

9. PULSATILLA *folio tenuius inciſo ſeu paluſtris, flore dilutiore. H. R. Par.* Marſh Paſque-flower, with a fine cut Leaf, and a paler Flower.

10. PULSATILLA *apii folio, vernalis, flore majore. C.B.P.* Spring Paſque-flower, with a ſmallage Leaf and a larger Flower.

11. PULSATILLA *apii folio, vernalis, flore minore. C.B.P.* Spring Paſque-flower, with a ſmallage Leaf, and a ſmaller Flower.

12. PULSATILLA *apii folio, autumnalis. C. B. P.* Smallage-leafed Paſque-flower, of the *Autumn*.

13. PULSATILLA *folio anemones ſecundæ, ſive ſubrotundo. C. B. P.* Paſque-flower, with a roundiſh Leaf.

14. PULSATILLA *Pyrenaica, flore albo duplici. H. R. Par.* Paſque-flower of the *Pyrenees*, with a double white Flower.

15. PULSATILLA *lutea, paſtinacæ ſylveſtris folio. C. B. P.* Yellow Paſque-flower, with a wild Parſnip Leaf.

16. PULSATILLA *Orientalis, tenuiſſime diviſa & villoſa, flore rubro. Tourn. Cor.* Eaſtern Paſque-flower, with a hairy, finely-divided Leaf, and a red Flower.

17. PULSATILLA *Africana, multifido flore, apii folio rigido. Raii Supp. African* Paſque-flower, with a multifid Flower, and a ſtiff ſmallage Leaf.

The firſt of theſe Plants is common in divers Parts of *England*; it grows in great Plenty on *Gogmagog-hills*, on the Left-hand of the Highway leading from *Cambridge* to *Haveril*, juſt on the Top of the Hill; alſo about *Hilderſham*, ſix Miles from *Cambridge*; and on *Bernack-heath*, not far from *Stamford*; and on *Southrop-common* adjoining thereto; alſo on mountainous and dry Paſtures juſt by *Leadſtone-hall*, near *Pontefract* in *Yorkſhire*. It flowers about the End of *March*, or Beginning of *April*.

The ſecond, third, fourth, fifth, ſixth and ſeventh Sorts are leſs common in *England*, being all of them Natives of other Countries, and are only to be met with in ſome curious Gardens in *England*, where they are cultivated for the Beauty of their Flowers.

Theſe Plants may be propagated by Seeds, which ſhould be ſown in Boxes or Pots filled with very light ſandy Earth; obſerving not to cover the Seeds too deep with Mould, which will prevent their riſing, for they require no more than juſt to be covered. Theſe Boxes ſhould be placed where they may have the Morning Sun until ten of the Clock, but muſt be ſcreen'd from it in the Heat of the Day: And if the Seaſon proves dry, the Earth ſhould be often refreſhed with

Water. The beſt Time for ſowing of theſe Seeds is in *July*, ſoon after they are ripe; for if they are kept till *Spring*, they ſeldom grow.

Theſe Boxes or Pots in which the Seeds are ſown ſhould remain in this ſhady Situation until the Beginning of *October*, when they ſhould be removed where they may enjoy the full Sun during the *Winter* Seaſon: About the Beginning of *March* the Plants will begin to appear, at which Time the Boxes ſhould be again removed where they may have only the Forenoon Sun; for if they are too much expoſed to the Heat, the young Plants will die away: They ſhould alſo be refreſhed with Water in dry Weather, which will greatly promote their Growth; and they muſt be carefully preſerv'd from Weeds, which, if ſuffered to grow amongſt them, will in a ſhort time deſtroy them.

When the Leaves of this Plant are intirely decay'd (which is commonly in *July*) you ſhould then take up all the Roots, which being nearly of the Colour of the Ground, will be difficult to find while ſmall; therefore you ſhould paſs the Earth through a fine Wire Sieve, which is the beſt Method to ſeparate the Roots from the Earth; (but notwithſtanding all poſſible Care taken, yet there will be many ſmall Roots left; ſo that the Earth ſhould either be put into the Boxes again, or ſpread upon a Bed of light Earth, to ſee what Plants will ariſe out of it the ſucceeding Year) The Roots being taken up, ſhould be immediately planted again on Beds of light, freſh, ſandy Earth, about three or four Inches aſunder, covering them about three Inches thick with the ſame light Earth: The *Spring* following moſt of theſe Plants will produce Flowers; but they will not be ſo large and fair as in the ſucceeding Years, when the Roots are larger.

They may alſo be propagated by parting of their Roots; the beſt Time for which is in *July* or *Auguſt*, when the Leaves are entirely decayed; for if they are removed while their Leaves remain freſh, the Roots do commonly rot: Theſe Roots being ſomewhat like thoſe of *Anemonies*, may be divided into ſeveral Tubers or Heads, but ſhould not be parted too ſmall, which will occaſion their Flowers to be very weak, and but few in Number: They muſt always be planted in a freſh undunged Soil, and ſhould have an open Situation; nor ſhould the Roots be tranſplanted oftener than every other Year, if you deſign to have them produce ſtrong Flowers; but the Earth upon the Surface of the Beds ſhould be refreſhed at leaſt once a Year, which will greatly encourage the Roots.

All the remaining Sorts (except the laſt) are very hardy Plants, which may be propagated by Seeds, in the ſame manner as directed before. Theſe ſhould have a pretty ſtrong loamy Soil, and a moiſt Situation, where they will thrive and produce their Flowers.

The laſt Sort is a tender Plant, which muſt be ſheltered in *Winter*, otherwiſe it will not live in this Climate. This is alſo propagated by Seeds, which ſhould be ſown, ſoon after it is ripe, in Boxes or Pots, which ſhould be placed in a ſhady Situation, and frequently refreſhed with Water. In *Autumn* the Plants will come up, when they ſhould be removed into a Situation where they may have more Sun, and in dry Weather they muſt be frequently watered. Towards the Middle or latter End of *October*, when the Nights begin to be cold, the Plants muſt be removed, and placed under a Hot-bed Frame, where they may be ſcreened from hard Froſts; but in mild Weather they ſhould have as much free Air as poſſible. In the following *Spring*, the Plants ſhould be tranſplanted each into a ſeparate Pot filled with freſh undunged Earth, and placed where they may enjoy the Morning Sun, where they ſhould remain all the Seaſon while they are expoſed; and in dry Weather they muſt be frequently watered; and every *Winter* they ſhould be ſheltered under a Frame, as before. With this Management the Plants will thrive and flower every Year, and ſometimes will produce good Seeds.

PUMPION; *vide* Pepo.

PUNICA: [This Plant takes its Name of its Punicean or red Colour, for its Flowers and Fruit are of a red Colour: It is called *Granatum*, of *Granis*, becauſe the Fruit has many Grains; or, as ſome ſuppoſe, of *Granata* or *Granada*, becauſe it grows in great Plenty in that Country.] The Pomegranate Tree.

The *Characters* are;

The Flower conſiſts of many Leaves, placed in a circular Order, which do expand in Form of a Roſe, whoſe Bell-ſhaped, multifid Flower-cup afterwards becomes a globular Fruit, having a thick, ſmooth, brittle Rind, and is divided into ſeveral Cells, which contain oblong, hard Seeds, ſurrounded with a ſoft Pulp.

The *Species* are;

1. PUNICA, *quæ malum Granatum fert. Cæſalp.* The Common Pomegranate.
2. PUNICA *fructu dulci. Tourn.* The Sweet Pomegranate.
3. PUNICA *ſylveſtris. Cord. Hiſt.* The Wild Pomegranate.
4. PUNICA *flore pleno majore. Tourn.* The Double flowered Pomegranate.
5. PUNICA *Americana nana, ſeu humillima. Tourn.* The American Dwarf Pomegranate.

The firſt of theſe Trees is now pretty common in the *Engliſh* Gardens, where formerly it was nurſed up in Caſes, and preſerved in Green-houſes with great Care (as was alſo the Double-flowering Kind); but they are both hardy enough to reſiſt the ſevereſt Cold of our Climate in the open Air; and if planted againſt warm Walls, in a good Situation, the firſt Sort will often produce Fruit, which, in warm Seaſons, will ripen tolerably well; but as theſe Fruits do not ripen till late in the *Autumn*, ſo they are ſeldom well-taſted in *England*; for which Reaſon the Sort with double Flowers is commonly preferred to it. The Sort with ſweet Fruit, as alſo the wild Sort, is leſs common in the *Engliſh* Gardens than the former two.

Theſe Plants may be eaſily propagated by laying down their Branches in the *Spring*, which in one Year's time will take good Root, and may then be tranſplanted where they are deſigned to remain. The beſt Seaſon for tranſplanting of theſe Trees is in *Spring*, juſt before they begin to ſhoot; they ſhould have a ſtrong, rich Soil, in which they flower much better and produce more Fruit, than if planted on a dry, poor Earth. But in order to obtain theſe in Plenty, there ſhould be Care taken in the pruning of the Trees; for want of which we often ſee theſe Trees very full of ſmall Shoots, but do not find many Flowers produced upon them; therefore I ſhall ſet down Directions for pruning of theſe Trees, ſo as to obtain a great Quantity of Flowers and Fruit.

The Flowers of this Tree are always produced at the Extremity of the Branches which were produced the ſame Year: This therefore directs, That all weak Branches of the former Year ſhould be cut out, and that the ſtronger ſhould be ſhorten'd in Proportion to their Strength, in order to obtain new Shoots in every Part of the Tree; Theſe Branches may be laid in againſt the Wall, about four or five Inches aſunder; for as their Leaves are ſmall, ſo there is not a Neceſſity of allowing them a greater Diſtance. The beſt Time for this Work is about *Michaelmas*, or a little later, according to the Mildneſs of the Seaſon; but if they are left until *Spring* before they are pruned, they ſeldom put out their Shoots ſo early; and the earlier they come out, the ſooner the Flowers will appear, which is of great Conſequence where Fruit is deſired. In *Summer* they will require no other Dreſſing but to cut off very vigorous Shoots which grow from the Wall, and do never produce Flowers (for they are the middling Shoots only which are fruitful); and when the Fruit is formed, the Branches on which they are, ſhould be faſtened to the Wall to ſupport them, otherwiſe the Weight of the Fruit, when grown large, will be apt to break them down.

Though, as I ſaid before, the Fruit of this Tree ſeldom arrives to any Perfection in this Country, ſo as to render it valuable; yet, for the Beauty of its ſcarlet Colour, together with the Variety of its Fruit, there ſhould be one Tree planted in every good Garden, ſince the Culture is not great which they require: The chief Care is to plant them upon a rich, ſtrong Soil, and in a warm Situation. Upon ſome Trees which had theſe Advantages, I have obſerved a great Quantity of Fruit which have arrived to their full Magnitude, but I cannot ſay they were well-flavoured; but, however, they made a very handſome Appearance upon the Trees.

The double-flowering Kind is much more eſteemed than the other in this Country, for the ſake of its large, beautiful, double Flowers, which are of a moſt beautiful ſcarlet Colour; and if the Trees are ſupply'd with Nouriſhment, will continue to produce Flowers for near three Months ſucceſſively, which renders it one of the moſt valuable flowering Trees yet known. This muſt be pruned and managed in the ſame Manner as hath been already directed for the Fruit-bearing Kind; but this Sort may be render'd more productive of its beautiful Flowers, by grafting it upon Stocks of the ſingle Kind, which will check the Luxuriancy of the Trees, and cauſe them to produce Flowers upon almoſt every Shoot: by which Method I have had a low Tree, which was planted in the open Air, extremely full of Flowers, which made a very fine Appearance.

The Dwarf Sort was brought into *Europe* from the warmeſt Parts of *America*, where the Inhabitants cultivate it in their Gardens for the Beauty of its Flowers, together with its continuing to produce Flowers and Fruit moſt part of the Year, and do ſeldom grow above three Feet high. The Fruit of this Kind is ſeldom much larger than a *Walnut*, and not very pleaſant to the Taſte; ſo that 'tis rather cultivated for Shew, than for the Sake of its Fruit.

This Plant may be propagated by Layers, in the ſame Manner as the former Sorts, but muſt be planted in Pots filled with rich Earth, and preſerved in a Stove, otherwiſe it is too tender to endure the Cold of our *Winters*; and in the *Summer*, when the Flowers begin to appear, if the Plants are expoſed to the open Air, the Buds will fall off, and never open; ſo that it ſhould ſeldom be removed into the open Air, but be conſtantly preſerved in the Stove with other Plants of the ſame Country; obſerving never to place them too near the Heat, which will cauſe them to produce long Shoots, but no Flowers will appear upon them; but rather let them have a moderate Warmth, in which they will thrive better than in a greater Heat.

I have heard of a Sort of *Pomegranate* with double-ſtriped Flowers, and have ſeen it mentioned in ſome foreign Catalogues, but have not ſeen the Plant growing; tho' I believe it may be eaſily procured from *Italy*.

PURSLAIN; *vide* Portulaca.

PYRACANTHA; *vide* Meſpilus.

PYROLA, Winter-green.

The *Characters* are;

It hath a Roſe-ſhaped Flower, conſiſting of ſeveral Leaves, which are placed circularly; out of whoſe Cup riſes the Pointal ending in a Proboſcis, which afterwards turns to a roundiſh Fruit, which is channelled, generally umbellated, and conſiſting of five Cells, which are commonly full of ſmall Seeds.

The *Species* are;

1. PYROLA *rotundifolia major. C. B. P.* Great round-leafed Winter-green.
2. PYROLA *rotundifolia minor. C. B. P.* Small round-leafed Winter-green.
3. PYROLA *folio mucronato ſerrato. C. B. P.* Winter-green, with a pointed Leaf, ſawed on the Edges.
4. PYROLA *fruteſcens, arbuti folio. C. B. P.* Shrubby Winter-green, with an Arbutus Leaf.

The firſt Sort grows wild in many Places in the North of *England*, on moſſy Moors and Heaths, as alſo in ſhady Woods, ſo that it is very difficult to preſerve in Gardens, in the Southern Parts.

The other three Sorts are Natives of the Hills, in *Germany*, *Italy* and *Hungary*. Theſe are all of them very difficult to cultivate in Gardens; for as they grow on very cold Hills, and in a moſſy mooriſh Soil, ſo when they are removed to a better Soil, and in a warmer Situation, they ſeldom continue long. The beſt time to tranſplant theſe Plants into Gardens, is about *Michaelmas*; when they ſhould be taken up with Balls of Earth to their Roots, and planted in a ſhady Situation, and on a moiſt undunged Soil, where they ſhould be frequently watered in dry Weather, otherwiſe they will not thrive. Some of theſe Plants may be planted in Pots, which ſhould be filled with Earth as nearly reſembling that in which they naturally grow as poſſible; and place them in a ſhady Situation, where, if they are conſtantly watered in dry Weather, they will thrive very well.

The Leaves of the firſt Sort are ſhaped like thoſe of the *Pear-tree*, from whence the Name was given to it; theſe Leaves are of a deep green Colour, and continue moſt part of the Year; but there is no great Beauty in their Flowers, tho' for Variety they are admitted into many curious Gardens.

The firſt Sort is ordered by the College of Phyſicians to be uſed in Medicine, and is generally brought over from *Switzerland*, amongſt other vulnerary Plants; amongſt which Claſs this Plant is ranged, and by ſome hath been greatly commended.

PYRUS; The Pear-tree.

The *Characters* are;

The Flower conſiſts of ſeveral Leaves, which are placed in a circular Order, and do expand in form of a Roſe; whoſe Flower-cup afterwards becomes a fleſhy Fruit, which is more produc'd towards the Footſtalk than the Apple, but is hollow'd like a Navel at the extreme Part: The Cells in which the Seeds are lodg'd, are ſeparated by ſoft Membranes, and the Seeds are oblong.

The *Species* are;

1. PYRUS *ſativa, fructu æſtivo parvo racemoſo odoratiſſimo. Tourn.* Petit Muſcat; *i. e.* Little Muſk Pear, *commonly call'd* The Supreme. This Fruit is commonly produced in large Cluſters: it is rather round than long; the Stalk ſhort; and, when ripe, the Skin is of a yellow Colour: the Juice is ſomewhat muſky, and, if gathered before it is too ripe, is an excellent *Pear:* This ripens at the Beginning of *July*, and will continue good but for a few Days.

2. PYRUS *ſativa, fructu æſtivo minimo odoratiſſimo. Tourn.* Poire de Chio, *i. e.* The Chio Pear, *commonly call'd* The Little Baſtard Muſk Pear. This is ſmaller than the former, but is in Shape pretty much like that: the Skin, when ripe, has a few Streaks of Red on the Side next the Sun, and the Fruit doth ſeldom hang in Cluſters as the former, but in other reſpects is nearly like it.

3. PYRUS *ſativa, fructu æſtivo parvo, è viridi albido. Tourn.* Poire Hativeau, *i. e.* The Haſting Pear, *commonly call'd* The Green Chiſſel. This is a larger *Pear* than either of the former, and is produced more toward the Pedicle: the Skin is thin, and of a whitiſh-green Colour when ripe; the Fleſh is melting, and, if not too ripe, of a ſugary Flavour. This ripens in the Middle of *July*.

4. PYRUS *ſativa, fructu æſtivo partim ſaturatè rubente, partim flaveſcente. Tourn.* Muſcadelles Rouges, *i. e.* The Red Muſcadelle. *It is alſo call'd* La Belliſſime, *i. e.* The Faireſt. This is a large early *Pear*, of great Beauty: the Skin is of a fine yellow Colour, when ripe, beautifully ſtriped with red; the Fleſh is melting, and has a rich Flavour, if gathered before it be too ripe. This generally produces two Crops of Fruit in a Year; the firſt is commonly ripe about the Middle of *July*, and the ſecond ripens in *September*; but this late Crop is ſeldom well-taſted.

5. PYRUS *ſativa, fructu æſtivo parvo flaveſcente moſchato. Tourn.* Petit Muſcat, *i. e.* The Little Muſcat. This is a ſmall *Pear*, rather round than long: the Skin is very thin, and, when ripe, of a yellowiſh Colour; the Fleſh is melting, and of a rich muſky Flavour, but will not keep long when ripe. This comes the Middle of *July*.

6. PYRUS *ſativa, fructu æſtivo oblongo, ferrugineo, carne tenera moſchata. Tourn.* Lady's Thigh, *now commonly call'd* Jargonelle. This is a very long *Pear*, of a pyramidal Shape, having a long Footſtalk: the Skin is pretty thick, of a Ruſſet-green Colour from the Sun, but towards the Sun it is inclined to an Iron Colour; the Fleſh is breaking, and has a rich muſky Flavour. Ripe the Middle of *July*. This is one of the beſt *Summer Pears* yet known, and is certainly what all the *French* Gardeners call the *Cuiſſe Madame*, as may be eaſily obſerved by their Deſcription of this *Pear:* but how that Name came to be applied to another Fruit in this Country, which is vaſtly inferior to it, I can not ſay.

7. PYRUS *ſativa, fructu oblongo, è viridi flaveſcente.* The *Windſor* Pear. This is an oblong Fruit, which is produced toward the Crown; but near the Stalk is drawn toward a Point: the Skin is ſmooth, and, when ripe, of a yellowiſh-green Colour; the Fleſh is very ſoft; and if it be permitted to hang but two or three Days after it is ripe, it grows mealy, and is good for nothing.

8. PYRUS *ſativa, fructu æſtivo oblongo, è viridi Albo.* The Jargonelle, *now commonly call'd* Cuiſſe Madame. This, I am apt to believe, is what the *French* Gardeners call the *Jargonelle*; which, as I before obſerved, is now, in *England*, given to another Fruit, much preferable to this; ſo that the two Names are changed: for the *Jargonelle* is always placed amongſt thoſe which the *French* call bad Fruit; and the *Cuiſſe Madame* is ſet down amongſt their beſt Fruit: which is certainly the Reverſe with us, as they are now nam'd. This *Pear* is ſomewhat like the *Windſor*, but is produced more toward the Crown, and is ſmaller toward the Stalk: the Skin is ſmooth, of a pale-green Colour; the Fleſh is apt to be mealy, if it ſtands to be ripe.

9. PYRUS *ſativa, fructu æſtivo globoſo ſeſſili moſchato, maculis nigris conſperſo. Tourn.* Orange Muſque, *i. e.* The Orange Muſk. This is a middle-ſized *Pear*, of a ſhort, globular form: the Skin is of a yellowiſh Colour, ſpotted with black; the Fleſh is muſky, but is very apt to be a little dry and choaky. It ripens the End of *July*.

10. Pyrus *ſativa, fructu æſtivo albido majori. Tourn.* Gros Blanquet, *i. e.* Great Blanket. This is alſo call'd *La Muſette d' Anjou*, i. e. The Bagpipe of *Anjou*. This is a large *Pear* approaching to a round form: the Skin is ſmooth, and of a pale-green Colour; the Fleſh is ſoft, and full of Juice, which hath a rich Flavour; the Stalk is ſhort, thick, and ſpotted; the Wood is ſlender; and the Leaf is very much like that of the Tree call'd the *Jargonelle*. This ripens the End of *July*.

11. Pyrus *ſativa, fructu æſtivo albido ſaccharato odoratiſſimo. Tourn.* The Blanquette, *or* Muſk Blanquette; The Little Blanket Pear. This *Pear* is much leſs than the former, and more pinch'd in near the Stalk, which is alſo ſhort, but ſlenderer than that of the former; the Skin is ſoft, and of a pale-green Colour: the Fleſh is tender, and full of a rich muſky Juice: The Wood of this Tree is much ſtronger than is that of the former, and the Shoots are commonly ſhorter. This ripens the End of *July*.

12. Pyrus *ſativa, fructu æſtivo albido, pediculo longo donato. Tourn.* Blanquette à longue queue, *i. e.* Long-ſtalk'd Blanket Pear. This *Pear* is in Shape ſomewhat like the former, but the Eye is larger, and more hollow'd at the Crown; towards the Stalk it is ſomewhat plumper, and a little crooked: the Skin is very ſmooth, white, and ſometimes toward the Sun is a little coloured; the Fleſh is between melting and breaking, and is full of a rich ſugary Juice. This ripens the Beginning of *Auguſt*.

13. Pyrus *ſativa, fructu æſtivo oblongo ruſeſcente ſaccharato. Tourn.* Poire ſans Peau, *i. e.* The Skinleſs Pear. It is alſo call'd *Fleur de Guigne*, i. e. Flower of *Guigne*; and *Rouſſellet hâtiff*, i. e. The Early Ruſſelet. This is a middle-ſized Fruit of a long Shape, and a reddiſh Colour, ſomewhat like the *Ruſſellet*: the Skin is extremely thin; the Fleſh is melting, and full of a rich ſugary Juice. This ripens the End of *July*.

14. Pyrus *ſativa, fructu æſtivo turbinato, carne tenera ſaccharata. Tourn.* Muſcat Robine, *i. e.* The Muſk Robin Pear. This is alſo call'd *Poire a la Reine*, i. e. The Queen's Pear; *Poire d' Ambre*, i. e. The Amber Pear; and *Pucelle de Xaintonge*, i. e. The Virgin of *Xaintonge*. This is a ſmall round *Pear*, of a yellowiſh Colour when ripe; the Fleſh is melting, and has a rich muſky Flavour. It is a great Bearer, and ripens the End of *July*.

15. Pyrus *ſativa, fructu æſtivo turbinato moſchato.* Le Bourdon Moſque, *i. e.* The Muſk Drone Pear. This a a middle-ſized round Fruit, whoſe Skin is of a yellowiſh Colour when ripe; the Fleſh is melting, and full of a high, muſky Juice: but it muſt not hang too long on the Tree, for it is ſubject to grow mealy in a ſhort time. This ripens the End of *July*.

16. Pyrus *ſativa, fructu æſtivo globoſo, ſeſſili, è viridi purpuraſcente ſaccharato odorato. Tourn.* Orange Verte, *i. e.* The Green Orange Pear. This *Pear* hath been the moſt common of all the Sorts in *France*, which was occaſion'd by the general Eſteem it was in ſome Years ſince. But this is a middle-ſiz'd round Fruit, of a greeniſh Colour, but the Side next the Sun changes to a purple Colour when ripe; the Fleſh is melting, and the Juice is ſugar'd, with a little Perfume; the Eye is very hollow, and the Stalk is ſhort. This ripens the Beginning of *Auguſt*.

17. Pyrus *ſativa, fructu æſtivo oblongo minori cinereo odorato. Tourn. Caſſolette.* This is ſo call'd from its being ſhaped like a Perfuming-pot. It is a long Fruit, in Shape like the *Jargonelle*, of an Aſh Colour; its Fleſh is melting, and full of a perfumed Juice, but is very apt to rot in the Middle ſo ſoon as ripe, otherwiſe it would be eſteem'd an excellent *Pear*. It is ripe the Beginning of *Auguſt*.

18. Pyrus *ſativa, fructu æſtivo turbinato, è viridi albido*; Poire Magdalené, *i. e.* The Magdalene Pear. This is a large round *Pear*, in Shape like a *Bergamot*: the Skin is green, and the Fleſh is melting; but it is very ſubject to rot upon the Tree, which renders it not near ſo valuable as ſome others. It ripens the End of *July*.

19. Pyrus *ſativa, fructu æſtivo globoſo, è viridi purpuraſcente. Tourn.* Gros Oignonet, *i. e.* The Great Onion Pear. It is alſo call'd *Amiré-roux*, i. e. Brown Admir'd; and *Roy d' Eſté*, i. e. King of Summer. This is a middle-ſiz'd, round *Pear*, of a browniſh Colour next the Sun; the Fleſh is melting, and the Juice is paſſably good. This ripens the End of *July*.

20. Pyrus *ſativa, fructu æſtivo globoſo ſeſſili, ex albido flaveſcente ſaccharato odorato. Tourn. Robine.* It is alſo call'd *Muſcat d' Aouſt*, i. e. The Auguſt Muſcat; *Poire d' Averat*, i. e. The Averat Pear; and *Poire Royale*, i. e. The Royal Pear. This is a roundiſh, flat *Pear*, in Shape very like a *Bergamot*: the Stalk is long, ſtraight, and a little ſpotted, and the Eye is a little hollowed; the Skin is ſmooth, and of a whitiſh yellow Colour; the Fleſh is breaking, but not hard; and its Juice is richly ſugar'd and perfum'd: It is a great Bearer, and is eſteem'd one of the beſt Summer *Pears* yet known. It ripens in *Auguſt*.

21. Pyrus *ſativa, fructu æſtivo globoſo ſeſſili odorato. Tourn.* Poire-roſe, *i. e.* The Roſe-Pear. This is a ſhort round Fruit, of a yellowiſh-green Colour, but a little inclining to red on the Side next the Sun: the Stalk is very long and ſlender; the fleſh is breaking, and the Juice is muſky. This ripens in *Auguſt*.

22. Pyrus *ſativa, fructu æſtivo globoſo albido ſaccharato. Tourn.* Poire du Pouchet. This is a large, round, whitiſh *Pear*, ſhaped ſomewhat like the *Beſideri*; the Fleſh is ſoft and tender, and the Juice is ſugary. This ripens the Middle of *Auguſt*.

23. Pyrus *ſativa, fructu æſtivo turbinato ſeſſili, ſaturatius rubente punctato. Tourn.* Poire de Parfum, *i. e.* The Perfum'd Pear. This is a middle-ſized, round Fruit, whoſe Skin is ſomewhat thick and rough, and of a deep-red Colour, ſpotted with brown; the Fleſh is melting, but dry, and has a perfumed Flavour. This ripens the Beginning of *Auguſt*.

24. Pyrus *ſativa, fructu æſtivo oblongo magno, partim rubro, partim albido, odorato. Tourn.* Bon-Chrêtien d'Eſté, *i. e.* The Summer Bon-Chrêtien, *or* Good Chriſtian. This is a large, oblong Fruit, whoſe Skin is ſmooth and thin: the Side next the Sun is of a beautiful red Colour, but the other Side is of a whitiſh-green: the Fleſh is between breaking and tender, and is very full of Juice, which is of a rich perfum'd Flavour. It ripens the End of *Auguſt*.

25. Pyrus *ſativa, fructu æſtivo globoſo, ex rubro albidoque flaveſcente ſaccharato odorato. Tourn. Salviati.* This *Pear* is pretty large, round, and flat, very much like the *Beſidery* in Shape, but not in Colour: the Stalk is very long and ſlender, and the Fruit is a little hollow'd both at the Eye and Stalk; the Colour is red and yellow next the Sun, but on the other Side is whitiſh: the Skin is rough; the Fleſh is tender, but a little ſoft; the Juice is ſugary, and perfum'd, ſomewhat like the *Robine*, but is not near ſo moiſt. This ripens the End of *Auguſt*.

26. Pyrus *ſativa, fructu æſtivo globoſo ſeſſili ruſeſcente odorato*; Caillot-roſat, *i. e.* Roſe-water Pear. This is a large round *Pear*, ſomewhat like the *Meſſire-Jean*, but rounder: the Stalk is very ſhort, and the Fruit is hollow'd like an *Apple* where the Stalk is produced: the Skin is rough, and of a brown Colour; the Fleſh is breaking, and the Juice is very ſweet. This ripens the End of *Auguſt*.

27. Pyrus *ſativa, fructu æſtivo longo, acerbitate ſtrangulationem minitante. Tourn.* Poire d' Etrangillon, *i. e.* The Choaky Pear. This is ſeldom preſerv'd in Gardens, ſo there needs no Deſcription of it.

28. Pyrus *ſativa, fructu æſtivo oblongo, è ferrugineo rubente, nonnunquam maculato.* Poire de Rouſſelet, *i. e.* The Ruſſelet Pear. This is a large oblong *Pear*: the Skin is brown, and of a dark-red Colour next the Sun; the Fleſh is tender and ſoft, without much Core; the Juice is agreeably perfum'd, if gather'd before it be too ripe: This produces larger Fruit on an Eſpalier than on Standard-trees. It ripens the end of *Auguſt*.

29. Pyrus *ſativa, fructu æſtivo ſubrotundo, partim rubro, partim flaveſcente, odorato.* Poire de Prince, *i. e.* The Prince's Pear. This is a ſmall roundiſh *Pear*, of a bright-red Colour next the Sun, but of a yellowiſh Colour on the oppoſite Side: the Fleſh is between breaking and melting; the Juice is very high-flavour'd; and it is a great Bearer. This ripens the End of *Auguſt*; but will keep a Fortnight good, which is what few Summer Fruits will do.

30. Pyrus *ſativa, fructu æſtivo globoſo viridi, in ore liqueſcente.* Gros Moüille-bouche, *i. e.* The great Mouth-water Pear. This is a large round *Pear*, with a ſmooth green Skin: the Stalk is ſhort and thick; the Fleſh is melting, and full of Juice, if gather'd before it be too ripe, otherwiſe it is apt to grow mealy. This ripens the Middle of *Auguſt*.

31. Pyrus *ſativa, fructu æſtivo rotundo ſeſſili ſaccharato, è viridi flaveſcente*; Bergamotte d' Eſté, *i. e.* Summer Bergamot. This is by ſome call'd the *Hamden's Bergamot*. It is a pretty large, round, flat *Pear*, of a greeniſh-yellow Colour, and hollow'd a little at both Ends like an *Apple*; the Fleſh is melting, and the Juice is highly perfum'd. This ripens the Middle of *Auguſt*.

32. Pyrus *ſativa, fructu autumnali ſeſſili ſaccharato odorato, è viridi flaveſcente, in ore liqueſcente. Tourn.* Bergamotte d'Automne, *i. e.* The Autumn Bergamot. This is a ſmaller *Pear* than the former, but is nearly of the ſame Shape: the Skin is of a yellowiſh Green, but changes to a a faint Red on the Side next the Sun; the Fleſh is melting,

and its Juice is richly perfum'd: It is a great Bearer, and ripens the Middle of *September*.

33. Pyrus *ſativa, fructu autumnali turbinato viridi, ſtriis ſanguineis diſtincta. Tourn.* Bergamot de Suiſſe, *i. e.* the Swiſs Bergamot. This *Pear* is ſomewhat rounder than either of the former: The Skin is tough, of a greeniſh Colour, ſtriped with red; the Fleſh is melting and full of Juice, but it is not ſo richly perfumed as either of the former. This ripens the End of *September*.

34. Pyrus *ſativa, fructu autumnali ſuaviſſimo, in ore liqueſcente. Tourn.* Beurre rouge, *i. e.* The Red Butter-Pear: It is call'd *l' Amboiſe*; and in *Normandy*, *Iſambert*; as alſo *Beurre gris*, i. e. The Grey Butter; and *Beurre vert*, i. e. The Green-Butter-Pear. All theſe different Names of *Beurre's* have been occaſion'd by the Difference of the Colours of the ſame ſort of *Pear*; which is either owing to the different Expoſure where they grew, or from the Stock: thoſe upon Quince Stocks being commonly of a browner Colour than thoſe which are upon free Stocks; whence ſome Perſons have ſuppos'd them to be different Fruits, though in reality they are the ſame. This is a large long Fruit, for the moſt part of a brown Colour; the Fleſh is very melting, and full of a rich ſugary Juice. It ripens the End of *September*; and, when gather'd from the Tree, is one of the very beſt Sort of *Pears* we have.

35. Pyrus *ſativa, fructu autumnali turbinato ſeſſili flaveſcente, & in ore liqueſcente. Tourn.* Le Dyenné, *i. e.* The Dean's Pear. It is alſo call'd by all the following Names; *Saint Michel*, i. e. *Saint Michael*; *Beurre blanc d' Automne*, i. e. The White Autumn Butter Pear; *Poire de Neige*, i. e. The Snow-Pear; *Bonne Ente*, i. e. a Good Graft; The *Carliſle* and *Valencia*. This is a large fair Fruit, in Shape ſomewhat like the *Grey Beurre*, but is ſhorter and rounder: the Skin is ſmooth, and, when ripe, changes to a yellowiſh Colour: the Fleſh is melting, and full of Juice; but it will not keep good a Week after it is gather'd, being very ſubject to grow mealy. This is a great Bearer, and ripens the End of *September*.

36. Pyrus *ſativa, fructu autumnali longo, viridique onorato, in ore liqueſcente. Tourn.* La Verte-longue, *i. e.* The Long Green Pear. It is alſo call'd *Moûille-bouche d' Automne*, i. e. The Autumn Mouth-water Pear. This is a long Fruit, which is very green when ripe: the Fleſh is melting, and very full of Juice; which, if it grows upon a dry warm Soil, and upon a free Stock, is very ſugary, otherwiſe it is but a very indifferent *Pear*. It ripens the Beginning of *October*.

37. Pyrus *ſativa, fructu autumnali tuberoſo ſeſſili, ſaccharato, carne dura. Tourn.* Meſſire Jean blanc et gris, *i. e.* The White and Grey Monſieur John. Theſe, although made two Sorts of Fruit by many Perſons, are indubitably the ſame; the Difference of their Colour proceeding from the different Soils and Situations where they grow, or the Stocks on which they are grafted. This *Pear*, when grafted on a free Stock, and planted on a middling Soil, neither too wet, nor over dry, is one of the beſt *Autumn* Pears yet known; but when it is grafted on a Quince-Stock, it is very apt to be ſtony; or if planted on a very dry Soil, is very apt to be ſmall and good for little, unleſs the Trees are watered in dry Seaſons: which has render'd it leſs eſteem'd by ſome Perſons, who have not conſider'd the Cauſe of their Hardneſs; for when it is rightly manag'd, there is not any Pear in the ſame Seaſon to be compar'd with it. This is a large roundiſh Fruit, the Skin is rough, and commonly of a brown Colour; the Fleſh is breaking, and very full of rich ſugar'd Juice. It ripens the Beginning of *October*, and will continue good moſt part of the Month.

38. Pyrus *ſativa, fructu autumnali, globoſo, ferrugineo, carne tenera, ſapidiſſima. Tourn.* Muſcat fleuri, *i. e.* The flower'd Muſcat. It is alſo call'd *Muſcat à longue queüe d Automne*, *i. e.* The Long-ſtalk'd Muſcat of the *Autumn*. This is an excellent Pear, of a middling Size, and round; the Skin is of a dark-red Colour; the Fleſh is very tender, and of a delicate Flavour. It ripens in the middle of *October*.

39. Pyrus *ſativa, fructu autumnali, globoſo, ferrugineo, carne viſcida. Tourn.* Poire de Vigne, *i. e.* The Vine Pear. This is a round Fruit, of a middling Size; the Skin is of a dark-red Colour; the Fleſh is very melting, and full of a clammy Juice; the Stalk is very long and ſlender. This Fruit ſhould be gather'd before it be full ripe, otherwiſe it grows mealy, and ſoon rots. It ripens in the Middle of *October*.

40. Pyrus *ſativa, fructu autumnali, oblongo, dilute ruffeſcente, ſaccharato, odoratiſſimo. Tourn.* Poire Rouſſeline, *i. e.* The Rouſſeline Pear. It is alſo call'd in *Touraine*, *Le Muſcat à longuequeüe de la fin d' Automne*, *i. e.* The long-ſtalk'd Muſcat of the End of *Autumn*. This is by ſome *Engliſh* Gardeners call'd the *Brute-bonne*; but that is a very different Fruit from this. It is ſhap'd ſomewhat like the *Rouſſelet*; but the Skin of this is ſmooth, and of a greeniſh Yellow from the Sun; but the Side next the Sun is of a deeper red Colour, with ſome Spots of Grey; the Fleſh is very tender and delicate; the Juice is very ſweet, with an agreeable Perfume. It ripens the Beginning of *October*, but muſt not be long kept, leſt it rot in the Middle.

41. Pyrus *ſativa, fructu autumnali, oblongo, majori, cinereo. Tourn.* Poire Pendar, *i. e.* The Knave's Pear. This is very like the *Caſſolette* Pear, but is ſomewhat larger; the Fleſh is fine and tender; the Juice is very much ſugar'd. It ripens in the End of *October*.

42. Pyrus *ſativa, fructu autumnali, turbinato, tuberoſo, viridi, ſaccharato, in ore liqueſcente. Tourn.* Sucré-vert, *i. e.* The Green Sugar-Pear. This Pear is ſhap'd like the *Winter Thorn*, but is ſmaller; the Skin is very ſmooth and green, the Fleſh is very buttery; the Juice is ſugar'd, and of an agreeable Flavour; but it is ſometimes ſubject to be ſtony in the Middle, eſpecially if grafted on a Quince Stock.

43. Pyrus *ſativa, fructu autumnali, tuberoſo, ſeſſili, e viridi flaveſcente, maculis nigris conſperſo, carne tenera ſaccharata. Tourn.* La Marquiſe, *i. e.* The Marquis's Pear. This is often of two different Shapes, according to the Nature of the Soil where they are planted; for when the Soil is dry, the Fruit very much reſembles a fine Blanquet; but when the Soil is very rich and moiſt, it grows much larger: It is a well-ſhap'd Pear, flat at the Top; the Eye is ſmall, and hollow'd; the Skin is of a greeniſh Yellow, a little inclining to Red on the Side next the Sun: If this Pear does not change yellow in ripening, it is ſeldom good; but if it does, the Fleſh will be tender and delicate, very full of Juice, which is ſugar'd. It ripens the End of *October*.

44. Pyrus *ſativa, fructu autumnali, oblongo, partim albido, partem ruffeſcente.* The Chatbrulé, *i. e.* The burnt Cat. It is alſo call'd *Pucelle de Xaintonge*, *i. e.* The Virgin of Xaintonge. This is a ſmall, oblong Pear, ſhap'd much like the *Martin Sec*, but differs from it in Colour; this being of a pale Colour on one ſide, but of a dark-brown on the other; the Skin is ſmooth; the Fleſh is tender, but dry, and, if kept a ſhort Time, is apt to grow mealy. It is in eating the latter End of *October*.

45. Pyrus *ſativa, fructu autumnali, globoſo, ſeſſili e albido flaveſcente.* Le Beſidéry. It is ſo call'd from *Heri*, which is a Foreſt in *Bretagne* between *Rennes* and *Nantes*, where this Pear was found. This is a middle-ſiz'd, round Pear, of a pale Green, inclining to a yellowiſh Colour; the Stalk is very long and ſlender; the Fleſh is dry, and but very indifferent for eating, but it bakes well. It ripens the End of *October*.

46. Pyrus *ſativa, fructu brumali, ſeſſili, e viridi flaveſcente, maculato, utrinque umbilicato, in ore liqueſcente. Tourn.* The Craſane, or Burgamot Craſane. It is alſo call'd *Beurre Plat*, *i. e.* the flat Butter Pear. This is a middle-ſiz'd, round Pear, hollow'd at both Ends like an Apple; the Stalk is very long and crooked; the Skin is rough, of a greeniſh yellow Colour when ripe, covered over with a Ruſſet Coat; the Fleſh is extremely tender, and buttery, and is full of a rich ſugar'd Juice. This is in eating the Beginning of *November*.

47. Pyrus *ſativa, fructu brumali turbinato ſeſſili, flaveſcente, ſaccharato, odorato, in ore liqueſcente. Tourn.* Lanſac ou la Dauphine, *i. e.* the Danſac or Dauphine Pear. This Pear is commonly about the ordinary ſize of a *Burgamot*, of a roundiſh Figure, flat towards the Head, but a little produc'd towards the Stalk; the Skin is ſmooth, and of a yellowiſh green Colour; the Fleſh is yellow, tender, and melting; the Juice is ſugar'd, and a little perfum'd; the Eye is very large, as is alſo the Flower, and the Stalk is long and ſtrait. When this Pear is upon a free Stock, and planted on a good Soil, it is one of the beſt Fruits of the Seaſon; but when it is on a Quince Stock, or upon a very dry Soil, the Fruit will be ſmall, ſtony, and worth little. It ripens in the Beginning of *November*.

48. Pyrus *ſativi, fructu brumali, oblongo, partim intenſe, partim dilute ferrugineo, ſaccharato, odorato. Tourn.* Martin-ſec, *i. e.* The Dry Martin. This is ſometimes call'd the *Dry Martin* of *Champaign*, to diſtinguiſh it from another *Dry Martin* of *Burgundy*. This Pear is almoſt like the *Rouſſelet* in ſhape and colour, which has occaſioned ſome Perſons to give it the Name of *Winter-Rouſſelet*. It is an oblong Pear, whoſe Skin is of a deep Ruſſet Colour on one ſide, but the other Side is inclining to a Red; the Fleſh is breaking and fine; the Juice is ſugared, with a little Perfume, and if grafted on a free Stock, is an excellent Pear; but if it be on a Quince Stock, it is very apt to be ſtony. It is in eating the middle of *November*; but if they were permitted to hang their full Time on the Tree, will keep good two Months.

49. Pyrus *ſativa, fructu brumali, magno ſeſſili, e cinereo flaveſcente. Tourn.* La Villaine d' Anjou, *i. e.* The Villain of Anjou. It is alſo call'd *Poire Tulipée, i. e.* The Tulip Pear; and *Bigarrade, i. e.* The Great Orange. This is a large round Pear, with a very long ſlender Stalk; the Skin is of a pale yellow Colour; the Fleſh is breaking, but not very full of Juice. This is in eating the Middle of *November.*

50. Pyrus *ſativa, fructu brumali, flaveſcente, odoratiſſimo, pediculo craſſiori. Tourn.* Poire de Gros queue, *i. e.* The Large ſtalk'd Pear. This is a large roundiſh Pear, with a yellow Skin; the Stalk is very thick, from whence it had the Name; the Fleſh is breaking, and dry, and has a very musky Flavour, but it is apt to be ſtony, eſpecially if it be planted in a dry Soil, or grafted on a Quince Stock, as are moſt of the perfum'd Pears.

51. Pyrus *ſativa, fructu brumali, turbinato, ruffeſcente, dorato.* L' Amadote, *i. e.* The Amadot Pear. This is a middle-ſiz'd Pear, ſomewhat long, but flat at the Top; the Skin is generally rough, and of a Ruſſet Colour; the Fleſh is dry, and high-flavour'd, if grafted on a free Stock. The Wood of this Tree is generally thorny, and is eſteem'd the beſt Sort of Pears for Stocks to graft the melting Pears upon, becauſe it gives them ſome of its fine musky Flavour. It is in eating the End of *November*, but will keep good ſix Weeks.

52. Pyrus *ſativa, fructu brumali, globoſo, dilute virente tuberoſo, punctato, in ore liqueſcente. Tourn.* Petit Oin, *i. e.* Little Lard Pear. It is alſo call'd *Bouvar* and *Rouſette d' Anjou, i. e.* The Ruſſet of Anjou, and *Amadont*, and *Marveille d' Hyver, i. e.* The Wonder of the Winter. This Pear is of the Size and Shape of the *Ambret* or *Leſchaſſerie*, but the Skin is of a clear green Colour, and a little ſpotted; the Stalk is pretty long, and ſlender; the Eye is large, and deeply hollow'd; the Fleſh is extremely fine, and melting; the Juice is much ſugar'd, and has an agreeable musky Flavour. It is in eating the End of *November* and moſt part of *December*, and is eſteem'd one of the beſt Fruits in that Seaſon.

53. Pyrus *ſativa, fructu brumali, longo e viridi albicante, in ore liqueſcente. Tourn.* Louiſe-bonne, *i. e.* The Good Lewis Pear. This Pear is ſhap'd ſomewhat like the *St. Germain*, or the *Autumn Vert longue*, but is not quite ſo much pointed; the Stalk is very ſhort, fleſhy, and ſomewhat bent, the Eye and the Flower is ſmall; the Skin is very ſmooth; the Colour is green, inclining to a white when ripe; the Fleſh is extremely tender, and full of Juice, which is very ſweet, eſpecially when it grows upon a dry Soil, otherwiſe it is apt to be very large and ill-taſted. It is in eating the latter End of *November* and the Beginning of *December*.

54. Pyrus *ſativa, fructu brumali, tuberoſo, e viridi flaveſcente, punctato, ſaccharato. Tourn.* Poire de Colmar, *i. e.* The Colmar Pear. It is alſo call'd *Poire Manne*, The Manna Pear; and *Bergamotte Tardive*, The late Burgamot. This Pear is ſomewhat like a *Boncretien* in Shape, but the Head is flat; the Eye is large, and deeply hollow'd; the Middle is larger than the Head, and is ſlop'd toward the Stalk, which is ſhort, large, and a little bent; the Skin is green, with a few yellowiſh Spots, but is ſometimes a little coloured on the Side next the Sun; the Fleſh is very tender, and the Juice is greatly ſugar'd. It is in eating the latter End of *November*, but will often keep good till *January*, and is eſteem'd one of the beſt Fruits of that Seaſon.

55. Pyrus *ſativa, fructu brumali, globoſo, Citriformi, flaveſcente, punctato, in ore liqueſcente, ſaccharato, odoratiſſimo. Tourn.* L'Eſchaſſerie. It is alſo call'd *Verte-longue d' Hyver, i. e.* The Winter-long green Pear; and *Beſideri-Landri, i. e.* The Landry Wilding. This Pear is ſhap'd like a Citron; the Skin is ſmooth, and of a green Colour, with ſome Spots while it hangs on the Tree, but as it ripens it becomes of a yellowiſh Colour; the Stalk is ſtrait and long; the Eye is ſmall, and not hollow'd; the Fleſh is melting, and buttery, the Juice is ſugar'd, with a little Perfume. It is in eating the latter End of *November*, and continues good till *Chriſtmas.*

56. Pyrus *ſativa, fructu brumali, longo e viridi flaveſcente, in ore liqueſcente, ſaccharato. Tourn.* La Virgolé, *or* La Virgoleuſe. It is alſo call'd *Bujaleuf, and Chambrette*; and *Poire de Glaſſe, i. e.* The Ice Pear in *Gaſcogny*; but it is call'd *Virgoule*, from a Village of that Name in the Neighbourhood of *St. Leonard* in *Limouſin*, where it was raiſed and ſent to *Paris* by the Marqueſs of *Chambret*. This Pear is large, long, and of a green Colour, inclining to yellow, as it ripens; the Stalk is ſhort, fleſhy, and a little bent; the Eye is of a middling Size, and a little hollow'd; the Skin is very ſmooth, and ſometimes a little colour'd towards the Sun; the Fleſh is melting, and full of a rich Juice. It is in eating the latter End of *November*, and will continue good till *January*, and is eſteem'd one of the beſt Fruits of the Seaſon; but the Tree is very apt to produce vigorous Shoots, and the Bloſſoms being generally produc'd at the extreme Part of the Shoot, where they are ſhorten'd, the Fruit will be intirely cut away, which is the Reaſon it is condemn'd as a bad Bearer; but when it is grafted on a free Stock, it ought to be allow'd at leaſt thirty Feet to ſpread; and if upon a Quince Stock it ſhould be allow'd upwards of twenty Feet, and the Branches train'd in againſt the Eſpalier or Wall, at full Length, in an horizontal Poſition, as they are produc'd. Where this Tree is thus treated, it will bear very plentifully.

57. Pyrus *ſativa, ſpinoſa fructu globoſo, ſeſſili, ferrugineo, in ore liqueſcente, ſaccharato, odoratiſſimo. Tourn.* Poire d' Ambrette. This is ſo call'd from its musky Flavour, which reſembles the Smell of the *Sweet Sultan Flower*, which is call'd *Ambrette* in *France*. This Pear is like the *Leſchaſſerie* in Shape, but is of a Ruſſet Colour; the Eye is larger, and more hollow'd; the Fleſh is melting, and the Juice is richly ſugar'd and perfum'd: the Seeds are large and black, and the Cells in which they are lodg'd are very large; the Wood is very thorny, eſpecially when grafted on free Stocks. The Fruit is in eating the latter End of *November*, and continues good till the latter End of *January*, and is eſteem'd a very good Fruit by moſt People.

58. Pyrus *ſativa, fructu brumali, magno, pyramidato, albido, in ore liqueſcenee, ſaccharato, odorato. Tourn.* Epine d' Hyver, *i. e.* Winter Thorn Pear. This is a large fine Pear, nearly of a pyramidal Figure; the Skin is ſmooth, and of a pale-green Colour, inclining to yellow as it ripens; the Stalk is ſhort and ſlender; the Fleſh is melting and buttery; the Juice is very ſweet, and in a dry Seaſon is highly perfum'd; but when it is planted on a moiſt Soil, or the Seaſon proves wet, it is very inſipid, ſo that it ſhould never be planted on a ſtrong Soil. It ripens the End of *November*, and will continue good two Months.

59. Pyrus *ſativa, fructu brumali, longo, e viridi flaveſcente, in ore liqueſcente. Tourn.* La Saint Germain, *i. e.* The Saint Germain Pear. It is alſo call'd *L' inconnue de la Fare, i. e.* The Unknown of La Fare, it being firſt diſcover'd upon the Banks of a River which is call'd by that Name, in the Pariſh of *St. Germain*. This is a large long Pear, of a yellowiſh green Colour when ripe; the Fleſh is melting, and very full of Juice, which in a dry Seaſon, or if planted on a warm, dry Soil, is very ſweet; but when it is planted on a moiſt Soil, the Juice is very apt to be harſh and auſtere, which renders it leſs eſteem'd by ſome Perſons, tho' in general it is greatly valu'd. This is in eating the End of *November*, but will many times continue good till *Chriſtmas.*

60. Pyrus *ſativa, fructu brumali, tuberoſo, ſubacido, flaveſcente, punctato. Tourn.* Saint Auguſtine. This is about the Size of a middling *Virgoulé* Pear, but is ſomewhat ſhorter, and ſlender near the Stalk, the Skin is of a fine Citron Colour, ſpotted with Red on the ſide next the Sun; the Fleſh is tender, but not buttery, and is pretty full of Juice, which is often a little ſharp, which to ſome Perſons is diſagreeable, but others value it on that Account. This is in eating in *December*, and will continue good two Months.

61. Pyrus *ſativa, fructu brumali, pyramidato, partim purpureo, punctis nigris conſperſo, partim flaveſcente. Tourn.* Bon-Chrêtien d'Eſpagne, *i. e.* The Spaniſh Bonchretien. This is a large Pear of a pyramidal Form, of a fine red or purple Colour on the ſide next the Sun, and full of ſmall black ſpots; the other ſide is of a pale yellow Colour; the Fleſh is breaking, and when it is on a light rich Soil, and grafted on a free Stock, its Juice is very ſweet. It ripens in the Beginning of *December*, and will continue good a Month or ſix Weeks. If this be grafted on a Quince Stock, it is very apt to be dry and Stony.

62. Pyrus *ſativa, fructu brumali, magno, oblongo, turbinato, ferrugineo, utrinque umbilicato. Tourn.* Poire de Livre, *i. e.* The Pound Pear. It is alſo called *Groſs Ratteau Gris*, i. e. the Grey Rak'd Pear; and *Poire d' Amour*, i. e. the Lovely Pear. This is a very large *Pear*, each of which does commonly weigh a Pound, or more; the Skin is rough, and of an obſcure red Colour on the Side next the Sun, but ſomewhat paler on the other Side; the Stalk is very ſhort, and the Eye is greatly hollow'd. This is not fit for eating, but bakes or ſtews exceedingly well, and is in Seaſon from *November* to *Chriſtmas.*

63. Pyrus *ſativa, fructu brumali, parvo, flaveſcente, maculis rubris conſperſo. Tourn.* Beſi de Caſſoy, *i. e.* the Wilding of *Caſſoy*, a Foreſt in *Brittany*, where it was diſcover'd, and paſſes under the Name of *Rouſſet d' Anjou.* It is alſo called *Petit Beurre d' Hyver*, i. e. Small Winter Butter Pear. This is a ſmall roundiſh *Pear*, of a yellowiſh Colour ſpotted with red; the Fleſh is melting, and the Juice is very rich.

It is in eating in *December* and *January*. This is a prodigious Bearer, and commonly produces its Fruit in large Cluſters, provided it be not too much pruned, for it generally produces its Bloſſom-buds at the Extremity of its Shoots, which, if ſhortened, the Fruit would be cut away. There was a Tree of this Kind in the Gardens of *Camden-houſe*, near *Kenſington*, which generally produced a great Quantity of Fruit.

64. Pyrus *ſativa, fructu brumali, turbinato, inequali ventre tumido, partim purpureo, partim flaveſcente. Tourn.* Ronville. It is alſo called *Hocrenaille* and *Martin-ſire*, i. e. the Lord Martin Pear. This *Pear* is about the Size and Shape of a large *Rouſſelet*; the Eye is of a middling Size, and hollowed a little; the Middle of the *Pear* is generally ſwelled more on one Side than of the other, but is equally extended towards the Stalk; the Skin is very ſmooth and ſoft, and is of a lively red Colour next the Sun; but on the other Side it changes yellow as it ripens; the Fleſh is breaking, and full of Juice, which is very ſweet, and a little perfumed; but if grafted on a Quince Stock, is very apt to be ſmall and ſtony.

65. Pyrus *ſativa, fructu brumali, Citriformi, flaveſcente, duro, Moſchato, odoratiſſimo. Tourn.* Citron d' Hyver, *i. e.* the Winter Citron Pear. It is alſo called the *Muſk Orange Pear* in ſome Places. This is a pretty large *Pear*, in Shape and Colour very like a Citron, from whence it had its Name; the Fleſh is hard and dry, and very ſubject to be ſtony, for which Reaſons it is not valuable as an eating *Pear*, but will bake very well. It is in Seaſon from *December* to *March*.

66. Pyrus *ſativa, fructu brumali, oblongo, e viridi flaveſcente, ſaccharato ſaporis auſteri. Tourn.* Roſſelet d' Hyver, *i. e.* the Winter Roſſelet. This is by ſome ſuppoſed to be the ſame *Pear* as is call'd the *Dry Martin*; but it is very different from that in ſeveral Particulars: The Colour of this is a greeniſh yellow; the Stalk is long and ſlender, and the Fleſh is buttery and melting, and generally full of Juice, which is very ſweet, but the Skin is apt to contain an auſtere Juice; ſo that if it be not pared, it is apt to be diſagreeable to many Perſons Palates. It is in eating in *January* and *February*.

67. Pyrus *ſativa, Pictavienſis, fructu brumali, globoſo, ſeſſili, ſaccharato, odorato. Tourn.* Poire Portail, *i. e.* the Gate Pear. This *Pear* was diſcover'd in the Province of *Poitou*, where it was ſo much eſteemed, that they preferred it to moſt other Fruit; though, in the Opinion of the moſt curious Judges, it does not deſerve the great Character which is given to it; for it rarely happens that it proves good for eating, being generally dry, ſtony and hard, unleſs in extraordinary Seaſons, and upon a very good Soil. This muſt always be grafted on a free Stock, and ſhould be planted on a light rich Soil, and in very dry Seaſons the Trees ſhould be water'd, otherwiſe the Fruit will be ſtony. It is in Seaſon from *January* to *March*, and bakes well.

68. Pyrus *ſativa, fructu brumali, magno, globoſo, flaveſcente, punctis rufis conſperſo. Tourn.* Franc-real. It is alſo called *Fin-Or d' Hyver*, i. e. the Golden End of Winter. This is a very large *Pear*, almoſt of a globular Figure; the Skin is yellow, ſpotted with red; the Stalk is ſhort, and the Wood of the Tree mealy: The Fleſh of this *Pear* is dry, and very apt to be ſtony; but it bakes exceeding well, and continues good from *January* till *March*.

69. Pyrus *ſativa, fructu brumali, turbinato, ſeſſili, ſubacido, flaveſcente, punctis aſperioribus conſperſo. Tourn.* Bergamote Bugi. It is alſo call'd *Bergamote de Paſque*, i. e. the Eaſter Bergamot. It is a large *Pear*, almoſt round, but is a little produced in Length towards the Stalk; the Eye is flat, and the Skin is green, having many rough Protuberances, like Spots, diſperſed all over, but as it ripens it becomes yellowiſh; the Fleſh is breaking, and in a good Seaſon the Juice is ſweet, but it muſt have a free Stock, a South-Eaſt Wall, and a good Soil, otherwiſe it is apt to be ſtony and auſtere. It is in eating from *February* till *April*.

70. Pyrus *ſativa, fructu brumali, magno, pyramidato, e flavo non nihil rubente. Tourn.* Bon-Chrêtien d' Hyver, *i. e.* the Winter Bon-chretien Pear. This *Pear* is very large and long, of a pyramidal Figure; the Skin is of a yellowiſh Colour, but the Side next the Sun inclines to a ſoft red; the Fleſh is tender and breaking, and is very full of rich ſugar'd Juice. This is eſteem'd in *France* one of the beſt *Winter Pears*, but in *England* it is ſeldom ſo good, tho' I am fully ſatisfied, if it were grafted on a free Stock, and planted in a good Soil, againſt a Wall expoſed to the South-Eaſt, and the Branches train'd at full Length, it might be rendered more acceptable than it is at preſent in *England*.

71. Pyrus *ſativa, fructu brumali, magno, cydoniæ facie, partim flavo, partim purpureo. Tourn.* Catillac, *or* Cadillac. This is a large Pear, ſhaped ſomewhat like a Quince; the Skin is for the moſt part of a yellow Colour, but changes to a deep red on the Side next the Sun, the Fleſh is hard, and the Juice auſtere, but it is one of the beſt Fruits for baking yet known, and being a plentiful Bearer deſerves a Place in every good Collection of Fruit. It will be good from *Chriſtmas* to *April*, or longer.

72. Pyrus *ſativa, fructu brumali, oblongo, flaveſcente, punctis rubris conſperſo.* La Paſtourelle. This *Pear* is of the Size and Shape of a fine *Rouſſelet*; the Stalk is ſhort and crooked; the Skin is ſomewhat rough, of a yellowiſh Colour, ſpotted with red: the Fleſh is tender and buttery; and when it grows on a dry Soil, the Juice is very ſweet; but on a wet Soil, or in moiſt Years, it is ſubject to have an auſtere Taſte. This *Pear* is in eating in *February* and *March*.

73. Pyrus *ſativa, fructu brumali, ſeſſili, partim flaveſcente, partim purpuraſcente. Tourn.* La Double Fleur, *i. e.* the Double-flowering Pear. This is ſo call'd, becauſe the Flowers have a double Range of Petals or Leaves. It is a large ſhort *Pear*; the Stalk is long and ſtrait; the Skin is very ſmooth, and of a yellowiſh Colour, but the Side next the Sun is commonly of a fine red or purple Colour. This is by ſome eſteem'd for eating, but it is generally too auſtere in this Country for that Purpoſe. It is the beſt *Pear* in the World for baking or Compoſts. It is good from *February* to *May*.

74. Pyrus *ſativa, fructu brumali, oblongo, partim flaveſcente, partim purpuraſcente.* Saint Martial. It is alſo call'd in ſome Places *Poire Angelique*, i. e. the Angelick Pear. This *Pear* is oblong, and has a very long Stalk; the Skin is ſmooth and yellowiſh, but on the Side next the Sun it turns to a purpliſh Colour; the Fleſh is tender and buttery, and the Juice is very ſweet. This is in eating in *February* and *March*.

75. Pyrus *ſativa, fructu brumali, oblongo, partim albido, partim purpureo, odorato, ſaccharato.* La Poire de Chaumontelle, *or* Beſi de Chaumontelle, *i. e.* the Wilding of Chaumontelle. This *Pear* is in Shape ſomewhat like the *Autumn Beurrè*, but is flatter at the Crown; the Skin is a little rough, of a pale green Colour, but turns to a purpliſh Colour next the Sun; the Fleſh is melting; the Juice is very rich, and a little perfum'd. It is in eating from *March* to *June*, and is eſteem'd the beſt late *Pear* yet known.

76. Pyrus *ſativa, fructu brumali, globoſo, ſeſſili, cinereo, maculis amplis obſcurioribus conſperſo. Tourn.* Carmelite. This is a middle-ſiz'd *Pear*, of a roundiſh Form; the Skin is of a grey Colour on one Side, but is inclining to a red on the other, having ſome broad Spots of a dark Colour all over; the Fleſh is commonly hard and dry, ſo that it is not very much eſteem'd. It is in Seaſon in *March*.

77. Pyrus *ſativa, fructu brumali maximo pyramidato, dilute virente.* The Union Pear; otherwiſe call'd Dr. *Uvdale's St. Germain.* This is a very large long *Pear*, of a deep green Colour, but the Side next the Sun doth ſometimes change to a red as it ripens. This is not fit for eating, but bakes very well; and being a great Bearer, and a very large Fruit, deſerves a Place in every good Collection. It is in Seaſon from *Chriſtmas* to *April*.

78. L'Aurate, *i. e.* the Aurate, is an excellent *Pear*: It ripens the Middle of *July*. It is a large *Pear*, ſhaped like the Muſcat, but is red on the Side next the Sun; this is at preſent very rare in *England*.

79. L'Eparque, ou Beau-Present, *i. e.* The fine Preſent; it is alſo called *Saint Samſon*. This is a large, long, green *Pear*, with a Bluſh of red next the Sun. The Fleſh is breaking; it hath a very long Stalk, and ripens the Beginning of *Auguſt*.

81. Le Rousselet de Reims. It is an excellent *Pear*. about the Size of the *Katharine*, or a little larger: It is ruſſet on the Side next the Sun, and of a browniſh yellow Colour on the other Side. It ripens the End of *Auguſt*.

81. L'Epine d'Ete, *i. e.* the Summer Thorn. This is a large long *Pear*, with a ſmooth green Skin: the Fleſh is melting, and ſomewhat perfumed. This is placed amongſt the good *Pears*. It ripens the Beginning of *September*.

82. La Poire d'oeuf, *i. e.* the Egg-Pear, ſo named from the Figure of its Fruit, which is ſhaped like an Egg. This is a large good *Pear* of a greeniſh Colour, ſtriped with Red on the Side next the Sun; the Fleſh is tender and half-buttery, and hath a high Flavour. This comes from *Germany*, where it is greatly eſteemed. It ripens in the Beginning of *September*.

83. L'ORANGE TULIPPE. The Orange Tulip, is a large round *Pear*, which is very red on the Side next the Sun, but greeniſh on the other Side; the Fleſh is half-breaking, and a little ſtony, but hath an agreeable Flavour: It ripens the Beginning of *September*.

84. LA MANSUETTE. This *Pear* greatly reſembles the *Winter Boncretien* in its Fruit, Wood and Leaves, but is ſmaller at the Eye. It is half-breaking, and hath an agreeable Flavour. It ripens the End of *September*. This *Pear* is greatly eſteemed in *Flanders*.

85. LE MUSCAT D'ALLEMAN, *i. e.* the German Muſcat. This is an excellent *Pear*, more long than round, of the Shape of the Winter-royal, but is leſs towards the Eye, and is more ruſſet, and of a red Colour next the Sun: It is buttery, melting, and a little musky. This is in eating in *March*, *April*, and ſometimes in *May*, if it keeps ſo long.

86. LA BERGAMOTTE DE HOLLANDE, *i. e.* the Hollands Bergamot. It is large and round, of the Shape of the ordinary Bergamot. The Colour is greeniſh, the Fleſh is half-buttery and tender; the Juice is highly flavour'd. This is a very good *Pear*, and will keep till *May*.

87. LA POIRE DE NAPLES, *i. e.* the Pear of Naples. This is a pretty large, long, greeniſh *Pear*; the Fleſh is half-breaking, the Juice is ſweet, and a little vinous. It is in eating in *March*. I am in Doubt whether this *Pear* is not in ſome Places taken for a *Saint Germain*; for there is a *Pear* in ſome Gardens very like the *St. Germain*, which will keep till *April*, and this *Pear* agrees with the Characters of that.

There are many other ſorts of *Pears* which are ſtill continu'd in ſome old Gardens; but as thoſe here mentioned are the beſt ſorts known at preſent, ſo it would be needleſs to enumerate a great Quantity of ordinary Fruit; ſince every one who intends to plant Fruits, will rather chuſe thoſe which are the moſt valu'd, the Expence and Trouble being the ſame for a bad ſort of Fruit as a good one. Indeed I have inſerted many more than are really worth planting, in order to pleaſe ſuch who are fond of a great Variety: but whoever hath a mind to make choice of ſuch only as are good, may eaſily diſtinguiſh them, by attending to the Account given of each ſort, and hereby every Perſon is at liberty to pleaſe himſelf; for it is not every one who prefers a *Beurre Pear*, tho' that is generally eſteem'd the very beſt in its proper Seaſon: There are ſome who admire the *Meſſire Jean*, for the Firmneſs of its Fleſh, which to others is a great Objection againſt it; ſo that as ſome eſteem the Breaking, and others, the melting *Pears*, I have diſtinguiſh'd them by their Deſcriptions in ſuch a Manner, that every one may make choice of the Kinds of Fruits which are agreeable to their Palates; and the different Seaſons in which each Kind is in eating, being exhibited, (allowing a little for the Difference of Seaſons, which are earlier ſome Years than others) it is not very difficult for a Perſon to make a Collection of good *Pears* to ſucceed each other throughout the Seaſon of theſe Fruits, both for Eating and Baking.

Pears are propagated by budding or grafting them upon Stocks of their own Kind, which are commonly call'd Free-Stocks, or upon Quince-Stocks, or White-Thorn, upon all which theſe Fruits will take; but the latter ſort of Stock is now ſeldom uſed, becauſe they rarely keep Pace in their Growth with the Fruit budded or grafted upon them; as alſo becauſe the Fruit upon ſuch Stocks are commonly drier, and more apt to be mealy, than when they are upon Pear-Stocks. Quince-Stocks are greatly uſed in the Nurſeries for all Sorts of *Pears* which are deſigned for Dwarfs or Walls, in order to check the Luxuriancy of their Growth, ſo that they may be kept within Compaſs better than upon Free-ſtocks. But againſt the general Uſe of theſe Stocks, for all ſorts of *Pears* indifferently, there are very great Objections: 1ſt, Becauſe ſome Sorts of *Pears* will not thrive upon theſe Stocks, but in two or three Years will decay, or at moſt will but juſt keep alive. 2dly, Moſt of the Sorts of hard breaking *Pears* are render'd ſtony, and good for little; ſo that whenever any of theſe Sorts are thus injudiciouſly rais'd, the Fruit, altho' the Kind be ever ſo good, is condemn'd as good for nothing, by ſuch as are not well acquainted with it, when the Fault is entirely owing to the Stock on which it was grafted. On the contrary, moſt melting buttery *Pears* are greatly improv'd by being upon Quince-Stocks, provided they are planted on a ſtrong Soil: but if the Ground be very dry and gravelly, no ſort of *Pear* will do well upon Quince-Stocks in ſuch Places.

Theſe general Directions being given, there is no Occaſion to repeat any Part of the Method in which theſe Stocks are rais'd, and the Fruits budded or grafted thereon; which has been already mentioned under the Article of Nurſeries.

The Diſtance which theſe Trees ſhould be planted either againſt Walls or Eſpaliers, muſt not be leſs than twenty-Feet: but if they are planted twenty-five Feet, it will be better; for if they have not Room to ſpread on each Side, it will be impoſſible to preſerve them in good Order, eſpecially thoſe on Free-Stocks; for the more theſe Trees are pruned, the more they will ſhoot; and, as I before ſaid, many ſorts of *Pears* do produce their Bloſſom-buds firſt at the Extremity of the former Year's Shoots, ſo that when they are ſhorten'd, the Fruit will be cut away; and this cannot be avoided, where the Trees have not Room allow'd in their firſt planting.

The Manner of preparing theſe Trees for Planting, is the ſame as hath been directed for other Fruit-trees, *viz.* To cut off all the ſmall Fibres from the Roots, and to ſhorten ſome of the longeſt Roots, and cut off all the bruiſed ones, or ſuch as ſhoot downright: This being done, you ſhould plant 'em in the Places intended at the before-mentioned Diſtance. The beſt Time to plant theſe Trees, (if upon a middling or dry Soil) is in *October*, leaving their Heads on 'till *Spring*, which ſhould be faſten'd to the Walls or Stakes, to prevent the Wind from diſturbing their Roots: and in the Beginning of *March* their Heads ſhould be cut off, in the Manner already directed for *Peaches* and other Fruit-trees; obſerving alſo to lay ſome Mulch upon the Surface of the Ground about their Roots when they are planted; as hath been ſeveral times already directed for other Trees.

The firſt *Summer* after planting, the Branches ſhould be trained to the Wall or Eſpalier (againſt which they are planted) in a horizontal Poſition, as they are produc'd without ſhortening of them; and the *Michaelmas* following theſe Shoots ſhould be ſhorten'd down to five or ſix Eyes, in order to obtain a ſufficient Quantity of Branches to furniſh the lower Part of the Wall or Eſpalier: But when this is done, the Shoots ought not to be ſhorten'd, unleſs where there is want of Branches to fill a Vacancy; for whenever the Shoots are ſtopp'd, it occaſions the Buds immediately below the Cut to ſend forth two or more Shoots, whereby there will be a Confuſion of Branches, and rarely any Fruit is produced with this Management.

The Diſtance which the Branches of *Pears* ſhould be train'd, muſt be proportion'd to the Size of their Fruit. Such Sorts whoſe Fruit are ſmall, may be allowed five or ſix Inches; but the larger Sorts muſt not be leſs than ſeven or eight Inches aſunder. If this be duly obſerv'd and the Branches carefully train'd horizontally as they are produced, there will be no occaſion for ſo much cutting as is commonly practis'd on theſe Trees, which, inſtead of checking their Growth, does, on the contraay, cauſe them to ſhoot the ſtronger.

It is very ſurprizing to read the tedious Methods which moſt of the Writers on Fruit-trees have directed for pruning of theſe Trees; for by their prolix and perplexed Methods, one would imagine they had endeavoured to render themſelves as unintelligible as poſſible: And this, I am ſure, may be affirmed, That it is next to impoſſible for a Learner ever to arrive at any tolerable Skill in Pruning, by the tedious and perplex'd Directions which are publiſh'd by Monſ. *Quintiney*, and thoſe who have copied from him; for theſe have all ſet out wrong in the Beginning, by allowing their Trees leſs than half the Diſtance at which they ſhould be planted; and then have preſcribed Rules to keep them within that Compaſs: which is what cannot be effected, where Perſons are deſirous of having Plenty of Fruit.

I ſhall therefore only lay down a few neceſſary Directions for the Pruning and Managing of theſe Trees; which ſhall be done in as few Words as poſſible, that a Learner may the more eaſily underſtand it; and which (together with proper Obſervations) will be ſufficient to inſtruct any Perſon in the right Management of them.

Pear-trees do generally produce their Bloſſom-buds firſt at the Extremity of the laſt Year's Shoots; ſo that if theſe are ſhorten'd, the Bloſſoms are cut off. But this is not all the Damage; for (as I before ſaid) this occaſions the Buds immediately below the Cut to put forth two or more Shoots, whereby the number of Branches will be increaſed, and the Tree crouded too much with Wood: Beſides, thoſe Buds which, by this Management, do produce Shoots, would have only produced *Curſons* and *Spurs*, upon which the Bloſſom-buds are produced, if the leading Branch had not been ſhorten'd; therefore theſe ſhould never be ſtopped, unleſs to furniſh Wood to fill a Vacancy.

It is not neceſſary to provide a new Supply of Wood in *Pear-trees*, as muſt be done for *Peaches*, *Nectarines*, &c. which only produce their Fruit upon young Wood; for *Pears* do produce their Fruit upon *Curſons* or *Spurs*, which are produced upon Branches which are three or four Years old, which *Curſons* do continue fruitful many Years; ſo that where theſe Trees have been ſkilfully managed, I have ſeen Branches which have been train'd horizontally, upwards of twenty Feet from the Trunk of the Tree, and have been fruitful their whole Length. And if we do but carefully obſerve the Branches of an healthful Standard Tree, which has been permitted to grow without pruning, we ſhall find many that are ten or twelve Years old, or more, which are very full of theſe *Curſons*, upon which is annually a good number of Fruit produced.

During the *Summer* Seaſon theſe Trees ſhould be often look'd over, to train in the Shoots, as they are produced, regularly, to the Wall or Eſpalier, and to diſplace fore-right and luxuriant Branches as they ſhoot out, whereby the Fruit will be equally expoſed to the Air and Sun, which will render them more beautiful, and better-taſted, than when they are ſhaded by the Branches; and by thus managing the Trees in *Summer*, they will always appear beautiful, and in *Winter* they will want but little pruning.

Where *Pear-trees* are thus regularly trained, without ſtopping of their Shoots, and have full Room for their Branches to extend on each Side, there will never be any occaſion for disbarking of the Branches, or cutting off the Roots, (as hath been directed by ſeveral Writers on Gardening); which Methods, however they may anſwer the Intention for the preſent, yet will certainly greatly injure the Trees; as muſt all violent Amputations, which ſhould ever be avoided, as much as poſſible, on Fruit-trees; and this, I am ſure, can never be wanted, where Trees have been rightly planted, and regularly trained, while young.

The Seaſon for pruning of theſe Trees, is any time after the Fruits are gathered, until the Beginning of *March*, but the ſooner it is done, after the Fruit is gathered, the better, for Reaſons already given for pruning of *Peach-trees*; though indeed, the deferring of theſe until *Spring*, where there are large Quantities of Trees to prune, is not ſo injurious to them, as to ſome more tender Fruits.

All the Sorts of *Summer Pears* will ripen very well, either on Standards, Dwarfs, or Eſpaliers; as will all the *Autumn Pears*, upon Dwarfs, or Eſpaliers: But where a Perſon is very curious in his Fruit, I would always adviſe the planting them againſt Eſpaliers, in which Method they take up but little Room in a Garden, and, if they are well managed, do appear very beautiful, and the Fruit is larger and better-taſted than thoſe produced on Dwarfs, as hath been already obſerved: But all the Sorts of *Winter Pears* muſt be planted againſt the Eaſt, South-Eaſt, or South-Weſt Walls, otherwiſe they ſeldom ripen well in *England*.

In the Gathering of *Pears*, great Regard ſhould be had to the Bud which is formed at the Bottom of the Footſtalk, for the next Year's Bloſſoms; which, by forcing off the *Pear* before it be mature, is, many times, ſpoiled; for during the Time the Fruit is growing, there is always a Bud formed by the Side of the Footſtalk upon the ſame Spur, for the next Year's Fruit; ſo that when the *Pears* are ripe, if they are gently turn'd upwards, the Footſtalk will readily part from the Spur, without injuring of the Bud.

The Seaſon for gathering all *Summer Pears* is juſt as they ripen; for none of theſe will remain good above a Day or two after they are taken from the Tree: nor will many of the *Autumn Pears* keep good above ten Days, or a Fortnight after they are gathered. But the *Winter* Fruits ſhould hang as long upon the Trees as the Seaſon will permit; for they muſt not receive the Froſt, which will cauſe them to rot, and render their Juices flat and ill-taſted; but if the Weather continues mild until the Middle of *October*, it will then be a good Seaſon for gathering them in, which muſt always be done in dry Weather, and when the Trees are perfectly dry.

In the doing of this, you ought carefully to avoid bruiſing them; therefore you ſhould have a broad flat Baſket to lay them in as they are gather'd; and when they are carry'd into the Store-room they ſhould be taken out ſingly, and each Sort laid up in a cloſe Heap, on a dry Place, in order to ſweat, where they may remain for eight or ten Days; during which time the Windows ſhould be open, to admit the Air, in order to carry off all the Moiſture which is perſpired from the Fruit: After this, the *Pears* ſhould be taken ſingly, and wiped dry with a Woollen Cloth, and then packed up in cloſe Baſkets, obſerving to put ſome ſweet Wheat-ſtraw in the Bottoms, and round the Sides of the Baſkets, to prevent their bruiſing againſt the Baſkets: You ſhould alſo obſerve to put but one Sort of Fruit into a Baſket, leſt, by their different Fermentations, they ſhould rot each other: But if you have enough of one Sort to fill a Baſket which holds two or three Buſhels, it will be ſtill better. After you have filled the Baſkets, you muſt cover them over with Wheat-ſtraw very cloſe, and faſten them down; then place theſe Baſkets in a cloſe Room, where they may be kept dry, and from Froſt; but the leſs Air is let into the Room, the better the Fruit will keep. It will be very neceſſary to fix a Label to each Baſket, denoting the Sort of Fruit therein contained; which will ſave the Trouble of opening them, whenever you want to know the Sorts of Fruit: Beſides, they ought not to be opened before their Seaſon to be eaten; for the oftner they are opened and expoſed to the Air, the worſe they will keep. I don't doubt but this will be objected to by many, who imagine Fruit cannot be laid too thin; for which Reaſon they make Shelves to diſpoſe them ſingly upon, and are very fond of admitting freſh Air whenever the Weather is mild, ſuppoſing it very neceſſary to preſerve the Fruit; but the contrary of this is found true, by thoſe Perſons who have large Stocks of Fruit laid up in their Store-houſes in *London*, which remain cloſely ſhut up for ſeveral Months, in the Manner before related; and when theſe are opened, the Fruit is always found plumper and ſounder than any of thoſe Fruits which were preſerved ſingly upon Shelves. For (as Mr. *Boyle* obſerves) the Air is the Cauſe of Putrefaction; and in order to prove this, that honourable Perſon put Fruits of ſeveral Kinds into Glaſſes where the Air was exhauſted, in which Places they remained ſound for ſeveral Months; but, upon being expoſed to the Air, did rot in a very ſhort time: Which plainly ſhews the Abſurdity of the common Method now uſed to preſerve Fruit.

QU

QUAMOCLIT, [it is an *Indian* Name] Bindweed.

The *Characters* are;

The Flower conſiſts of one Leaf, ſhaped like a Funnel, and divided at the Top into ſeveral Segments: From the Flower-cup riſes the Pointal, which afterwards becomes a roundiſh Fruit, incloſing ſeveral oblong Seeds.

We have but one *Species* of this Plant in *England*, which is,

QUAMOCLIT, *foliis tenuiter inciſis, & pennatis. Tourn.* Quamoclit, with very fine-cut winged Leaves, *commonly called*, in *Barbados*, Sweet William.

This Plant is very common in *Jamaica*, *Barbados*, and the *Caribbee* Iſlands, where it climbs upon Buſhes, Hedges, or whatever grows near it, and produces great Quantities of beautiful ſcarlet Flowers, almoſt of the Figure of a ſmall Convolvulus Flower: but the Tube being much larger, and the Seeds being of a different Figure from thoſe of the Convolvulus, Monſ. *Tournefort* hath ſeparated it from that Genus. The Seeds of this Plant are generally brought into *England* every *Spring* from the *Weſt-Indies*: They ſhould be ſown on a Hot-bed in *March*, and when the Plants are come up, they muſt be planted each into a ſmall Pot filled with light ſandy Earth, and plunged into a freſh Hot-bed, to bring the Plants forward. As the Plants advance in Height, ſo they ſhould be removed into larger Pots, and Sticks placed down by them, for 'em to climb upon: They muſt alſo be removed to a freſh Hot-bed, when the old one has loſt its Heat; and when the Plants are too high to be contain'd under Frames, they ſhould be remov'd into the Stove, where, if they are plung'd into a moderate Hot-bed of Tanners-bark, and not too much drawn, they will produce a great Quantity of beautiful ſcarlet Flowers, and ripen their Seeds very well: but if they are expoſed to the open Air, they ſeldom flower in this Country. This Plant continues but one Year, the Root periſhing ſoon after the Seeds are ripe.

QUERCUS, [ſo call'd of κέρχω, Gr. *to make rough*; becauſe of the Roughneſs of its Bark] The Oak-tree.

The *Characters* are;

It hath Male Flowers (or Katkins) which conſiſt of a great Number of ſmall ſlender Threads: The Embryo's, which are produced at remote Diſtances from theſe, on the ſame Tree, do afterwards become Acorns, which are produced in hard ſcaly Cups: To which may be added, the Leaves are ſinuated.

The *Species* are;

1. Quercus *latifolia. Park. Theat.* The Common Oak.

2. Quercus *latifolia mas, quæ brevi pediculo eſt. C. B. P.* Oak, with the Acorns on ſhort Footſtalks.

3. Quercus *latifolia, foliis ex albo eleganter variegatis.* The ſtriped Oak.

4. Quercus *latifolia perpetuo-virens. C. B. P.* The Broad-leaf'd Ever-green Oak.

5. Quercus *calyce echinato, glande majore. C. B. P.* Oak with large Acorns having prickly Cups.

6. Quercus *humilis, gallis binis, ternis aut pluribus ſimul junctis. C. B. P.* Dwarf-Oak, *vulgo.*

7. Quercus *Virginiana, rubris venis muricata. Pluk. Phyt.* The Virginian Scarlet Oak.

8. Quercus *caſtaneæ foliis, procera arbor Virginiana. Pluk. Phyt.* Virginian Oak, with Cheſnut Leaves.

9. Quercus *alba Virginiana. Park. Theat.* The White or Iron Oak of *Virginia.*

10. Quercus *Virginiana, ſalicis longiore folio, fructu minimo. Pluk. Amalth.* Virginian Willow-leaf'd Oak.

11. Quercus *pumilis, caſtaneæ folio, Virginienſis. Pluk. Almag.* The Chinquapin Oak.

12. Quercus *parva, ſive Phagus Græcorum, & Eſculus Plinii. C. B. P.* The ſweet Oak.

13. Quercus *calyce hiſpido, glande minore. C. B. P.* Oak with ſmall Acorns, having a prickly Cup.

14. Quercus *Burgundiaca, calyce hiſpido. C. B. P.* The *Burgundy* Oak, whoſe Acorns have prickly Cups.

15. Quercus *pedem vix ſuperans. C. B. P.* Dwarf Oak.

16. Quercus *foliis molli lanugine pubeſcentibus. C. B. P.* Oak with ſoft woolly Leaves.

17. Quercus *gallam exiguæ nucis magnitudine ferens. C. B. P.* Oak which bears ſmall Galls not larger than Nuts.

18. Quercus *foliis muricatis, non lanuginoſis, gallâ ſuperiori ſimili. C. B. P.* Oak with prickly Leaves, which are not woolly, bearing Galls like the former.

19. Quercus *foliis muricatis, minor. C. B. P.* Smaller Oak, with prickly Leaves.

20. Quercus *latifolia, magno fructu, calyce tuberculis obſito. Tourn. Cor.* Broad-leafed Oak, with large Acorns, whoſe Cups are beſet with Tubercles.

21. Quercus *Orientalis, glande cylindriformi, longo pediculo inſidente. Tourn Cor.* Eaſtern Oak, with cylindrical Acorns growing on long Footſtalks.

22. Quercus *Orientalis, caſtaneæ folio, glande recondita in cupula craſſa & ſquamoſa. Tourn. Cor.* Eaſtern Oak, with a cheſnut Leaf, whoſe Acorns are cloſely ſhut up in a thick ſcaly Cup.

23. Quercus *Orientalis anguſtifolia, glande minori, cupula crinita. Tourn. Cor.* Eaſtern Oak, with a narrow Leaf, and a ſmaller Acorn, whoſe Cup is hairy.

24. Quercus *Orientalis latifolia, glande maxima, cupula crinita. Tourn. Cor.* Eaſtern Oak, with a broad Leaf, and the largeſt Acorn, whoſe Cup is hairy.

25. Quercus *Orientalis latifolia, foliis ad coſtam pulchrè inciſis, glande maxima, cupula crinita. Tourn. Cor.* Eaſtern broad-leaved Oak, whoſe Leaves are finely cut to the Stalks, and a very large Acorn, whoſe Cup is hairy.

26. Quercus *Orientalis, folio ſubrotundo minori, glande magna ſtriata. Tourn. Cor.* Eaſtern Oak with a ſmaller roundiſh Leaf, and a large ſtriated Acorn.

27. Quercus *Orientalis, folio ſubrotundo, leviter inciſo, fructu minori cylindriformi. Tourn. Cor.* Eaſtern Oak, with a roundiſh Leaf, lightly cut in, and a ſmaller cylindrical Fruit.

28. Quercus, *an potius, Ilex Marilandica, folio longo anguſto ſalicis. Raii Hiſt.* The ſwamp willow Oak of *Maryland.*

29. Quercus *ſempervirens, foliis oblongis non ſinuatis. Baniſt.* Live Oak.

30. Quercus *(forte) Marilandica, folio trifido, ad ſaſſafras accedente. Raii Hiſt.* The black Oak of *Maryland.*

31. Quercus *folio non ſerrato, in ſummitate triangulo. Catesby Hiſt. Nat. Carolin.* The Water Oak.

32. Quercus *Carolinienſis, virentibus venis, muricata. Catesb. Hiſt. Nat. Carolin.* The White Oak of *Carolina.*

33. Quercus *humilior, ſalicis folio breviore. Catesb. Hiſt. Nat. Carolin.* Dwarf *Highland* willow Oak.

34. Quercus *eſculi diviſura, foliis amplioribus aculeatis. Pluk. Phyt.* Red Oak of *Maryland.*

35. Quercus *Mariana, oleæ folio, glande parvâ compreſſo, ad apiculam eleganter radiato. Pluk. Mantiſ.* Swamp *Spaniſh* Oak.

36. Quercus *Mariana, muricatis caſtaneæ foliis ſubtus villoſis. Pluk. Mant.* Champion cheſnut Oak of *Maryland.*

The two firſt Sorts are common in *England*; but the Sort whoſe Acorns grow on ſhort Footſtalks, is leſs frequent than the other. I have ſeen ſeveral Trees of that kind near *Dulwich* in *Surry*; but whether the Acorns of this Sort will produce Trees of the ſame Kind, I cannot determine. The Sort with ſtriped Leaves was obtain'd by Accident, but may be propagated by budding or grafting it upon the Common Oak: The Leaves of this are generally variegated with White in a moſt beautiful manner, and the Tree is eſteem'd a great Curioſity by ſuch as delight in variegated Plants.

The fourth Kind deſerves a Place in Wilderneſſes, amongſt other Sorts of Ever-green Trees, where it will make a beautiful Appearance; but the Timber is not near ſo good as that of the Common Sort.

The fifth Kind was originally brought into *England* from *Spain*, but is hardy enough to endure the Cold of our Winters very well: This is preſerved by ſuch as are curious in collecting the ſeveral Kinds of Trees.

The ſixth, ſeventh, eighth, ninth, tenth, and eleventh, have been brought from *America* (where there are a Variety of different *Oaks*) and are very hardy: Many of them are of quicker Growth than the Common Sort; and although their Timber is not ſo good, yet they deſerve a Place in large Wilderneſſes, where they will afford an agreeable Variety. As theſe Trees are propagated from Acorns; ſo thoſe Perſons who are deſirous to cultivate 'em, ſhould endeavour to obtain the Acorns freſh from *America*; which muſt be put up in Sand, to preſerve them during their Paſſage; and when they arrive in *England*, they ſhould be put into the Ground immediately, otherwiſe they will ſeldom grow.

Beſides the Sorts of *Oaks* here mentioned, there are divers others which are produced in ſeveral Parts of *Europe*, and differ in the Shape and Size of their Leaves and Fruit; but theſe are not to be found in any of our *Engliſh* Plantations at preſent: though, when I was at *Leyden* in *Holland*, in the Year 1727, I ſaw above forty Sorts of *Oaks*, in the curious Garden of the learned Dr. *Boerhaave*, near *Leyden*, moſt of which were in a very proſperous Condition, and had endured the Cold of that Climate two or three Years in the open Air; ſo that if theſe were procured in *England*, they would be equally as hardy as the Common Sort, and add to the Variety of our Plantations.

All the Sorts of *Oaks* are propagated from Acorns, which ſhould be ſown as ſoon as poſſible, when they are ripe; for if they are kept long out of the Ground, they ſeldom grow.

The Manner of ſowing theſe Acorns, (if deſigned for a ſmall Plantation, to be removed) is, to prepare a Bed or two of freſh Earth, neither too ſtrong and heavy, nor too light and dry; in theſe Beds you ſhould place the Acorns about two Inches aſunder, covering them about two Inches thick with the ſame freſh Earth; obſerving to leave none of them uncovered, to intice the Vermin, which may, in a ſhort time, deſtroy all the Seeds.

In the *Spring*, when the Plants begin to appear, you muſt carefully clear them from Weeds; and if the Seaſon proves dry, you ſhould refreſh them now and then with a little Water, which will greatly promote their Growth. In theſe Beds the Plants ſhould remain until the following *Spring*, (obſerving conſtantly to keep them clear from Weeds;) at which time you ſhould prepare a Spot of good freſh Earth, (in Size proportionable to the Quantity of Plants) which ſhould be well trenched and levell'd: Then, toward the Middle or Latter-end of *March*, you ſhould carefully take up the Plants, ſo as not to injure their Roots, and plant them out in Rows three Feet aſunder, and eighteen Inches diſtance Plant from Plant; obſerving never to ſuffer the Plants to abide long out of the Ground, becauſe their Roots would dry, and endanger the Growth of the Plants.

When they are planted, you ſhould lay a little Mulch upon the Surface of the Ground, near their Roots, to prevent the Earth from drying too faſt; and if the Seaſon be very dry, you ſhould give them a little Water, to ſettle the Earth to their Roots.

If theſe Things are carefully obſerved, there will not ſo many of the Plants miſcarry, as do generally in the common Method: For few Perſons conſider either the proper Method or Seaſon for removing theſe Trees; moſt People imagining it may be performed with equal Succeſs, any time after the Leaves begin to decay. But this is a very wrong Opinion; for, from ſeveral Experiments which I have made, in tranſplanting of theſe Trees in various Seaſons, I find they always ſucceed beſt, when they are tranſplanted juſt before they begin to ſhoot; at which Seaſon there will very few fail, provided they are removed with Care.

When the Plants have taken Root in this Nurſery, they will require little more Care than to keep 'em clear from Weeds, and dig the Ground between the Rows every *Spring*; in doing of which, you ſhould cut off ſuch Roots as extend very far from the Trunk of the Trees, which will render them better for tranſplanting again: You ſhould alſo prune off ſuch Side-branches as do extend themſelves very far, and would retard the upright Shoot: but you ſhould by no means cut off all the ſmall lateral Branches, ſome of which are abſolutely neceſſary to be left on, to detain the Sap for the Augmentation of the Trunk; for I have often obſerved, where Trees have been thus cloſely pruned, that their Heads have over-grown their Bodies, ſo that they have bent downward, and become crooked.

When theſe Trees have remained in the Nurſery three or four Years, they will then be large enough to tranſplant to the Places where they are to remain; for it is not proper to let them grow very large before they are planted out; becauſe theſe are very hazardous Trees to remove when old, or after they have taken deep Root.

The Seaſon for this Work is (as I ſaid) juſt before they begin to ſhoot, in the *Spring*; at which time, if they are carefully taken up, there will be little danger of their ſucceeding. When they are planted, the Surface of the Ground ſhould be mulched about their Roots, to prevent its drying too faſt: And if the Seaſon is very dry, they ſhould be watered, to ſettle the Earth to their Roots, which may be repeated two or three times in very dry Weather: but you muſt carefully avoid giving them too much Water, which is very injurious to theſe Trees, when newly removed.

You ſhould alſo ſtake them, to prevent their being ſhaken and diſturbed by the Winds, which would retard their rooting. In tranſplanting of theſe Trees, you ſhould by no means cut their Heads, which is too much practiſed: All that ſhould be done, muſt be only to cut off any bruiſed or ill-placed Branches, which ſhould be taken off cloſe to the Place where they are produced: But there can be no greater Injury done to theſe Trees, than to ſhorten their Shoots; for when the leading Bud (which is abſolutely neceſſary to draw and attract the Nouriſhment) is taken off, the Branch often decays entirely, or at leaſt down to the next vigorous Bud.

The Trees thus raiſed and managed, will (if planted in a proper Soil) grow to a conſiderable Magnitude, and are very proper for a Wilderneſs in large Gardens, or to plant in Clumps in Parks, *&c.* but if they are deſign'd for Timber, it is by much the better Method to ſow the Acorns in the Places where they are to remain; in order to which, you ſhould provide yourſelf in *Autumn* with a ſufficient Quantity of Acorns, which ſhould be always taken from ſtrait, upright, vigorous-growing Trees; theſe ſhould be gathered from under the Trees as ſoon as may be, after they are fallen, and, if poſſible, in a dry Time, laying them thin in ſome open Room to dry; after which, they may be put up in dry Sand, and preſerved in a dry Place until the End of *January*, when you ſhould prepare the Ground for planting them.

The Manner of doing this, when the Plantation is very large, ſhould be, to dig ſquare Spots about two Feet over, at every ten Feet Diſtance, into each of which you ſhould put four or five ſound Acorns, about two Inches deep, being careful to cover them all over, leſt, by leaving any of them above Ground, the Vermin ſhould be inticed, and thereby the greateſt Part of the Plantation ſhould be deſtroy'd. When the whole Plantation is finiſhed, it will be of great Service to ſtick into each Plot a few ſmall Buſhes, which will protect the Plants when they appear above Ground, from Cattle, and alſo from the Injury of Weather: And when the Plants are come up, the Weeds ſhould be carefully clean'd away from them during the growing Seaſon, which will greatly promote their Growth; and the following *Spring*, juſt before the Plants begin to ſhoot, you ſhould take them all up, except two of the moſt thriving out of each Plot, (which may be tranſplanted into another Place, if you have occaſion for them:) but in doing of this, you ſhould be very careful not to diſturb the Roots of the remaining Plants: And it will be very neceſſary to renew the Buſhes about them where they are left, to protect them from Cattle, and the following *Summer* they ſhould be kept clear from Weeds.

In this manner they may remain three or four Years, (obſerving every *Spring* to dig and looſen the Earth about their Roots, which will be of great Service to them;) by which time you will eaſily judge which of the two Plants left in each Plot, is likely to make the beſt Tree, ſo that the other ſhould now be taken away, being very careful how you dig near the remaining Plants, leſt you ſhould injure their Roots: And if at this time you find any of them with very crooked, unſightly Stems, you may cut them down near the Surface of the Ground; and if their Roots are ſtrong, they will ſend forth ſtrait vigorous Shoots the following *Summer*, and make kindly handſome Plants.

When theſe Plants are advanced out of the Reach of Cattle, they will require but little more Care, except to prune off any ſtrong lateral Branches, where they are produced, in order to ſtrengthen the leading Shoot: but you ſhould by no means be too buſy in pruning theſe Trees, which will greatly retard their Growth. The Expence of ſuch Plantations is but ſmall, eſpecially where Labour is cheap; and the Profits which muſt ariſe from them, to the Succeſſors of thoſe who are ſo beneficent to their Poſterity, as to lay out a ſmall Share of their Fortune this way, will be very great: but as this has been fully treated of by the eminent Mr. *Evelyn*, ſo I ſhall not repeat it in this Place, but refer the Curious to his valuable Treatiſe of *Foreſt Trees*, where they will find enough ſaid, to encourage all Gentlemen of Eſtates, to lay out ſome of their preſent Fortune, to inrich their Families.

The twelfth, thirteenth, fourteenth, fifteenth, ſixteenth, ſeventeenth, eighteenth and nineteenth Sorts grow on the Hills in *Spain*, *Portugal*, *Germany*, and *Hungary*, from whence their Acorns may be obtained; which ſhould be ſown after the manner above directed; for altho' ſome of theſe Sorts naturally grow in Countries which are warmer than *England*, yet they will thrive as well as the common Sort in the open Air.

The next eight Sorts were diſcovered by Dr. *Tournefort* in the *Levant*, and ſome of theſe Sorts have been introduced into the *Engliſh* Gardens, where they thrive, and are as hardy as the common Sort.

The other nine Sorts are Natives of the cold Parts of *America*: moſt of them grow in *New England*, *Virginia* and *Maryland*, and other Places on the Continent, where the Woods have not been cleared. Theſe moſt of them delight in a Soil which is moiſt: for in dry Land they do not thrive well. They may be propagated by ſowing of their Acorns, after the ſame manner as the common Sort; but as theſe muſt be procured from *America*, (there being none of theſe Trees in *England* which produce Fruit at preſent) ſo they ſhould be put up in Sand, ſoon after they are ripe, and forwarded to *England*: for all Sorts of Acorns are ſubject to periſh, if they are not planted, or put up in Sand, in a very little Time after they fall from the Trees: ſo that it is more difficult to tranſport theſe Seeds, than thoſe of moſt other Plants.

When the Acorns arrive, they ſhould be planted as ſoon as poſſible; for if they are good, it will be near two Months from the Time of ſowing to the appearing of the Plants; and the earlier theſe come up in the Spring, the more Time they will have to get Strength before Winter, ſo will be in leſs Danger of ſuffering from the Cold. For while theſe Plants are very young and tender, they are often injured by ſevere Froſt; tho', when they have obtained Strength, they will endure the greateſt Cold of our Winters extremely well. Therefore, if the firſt Winter after the Plants come up from Acorns, ſhould prove very ſevere, it will be proper to ſcreen them from the Froſt; which may be done by laying ſome Branches of Oak, with the decayed Leaves on them, or ſome dry Fern or Furze over them, which will prevent the Froſt from penetrating very deep in the Ground; and theſe lying hollow, will admit a ſufficient Quantity of Air to the Plants, to prevent their taking the Mould, which is very injurious to them. After the firſt Year, theſe Sorts may be treated in the ſame manner as the common Oak, by tranſplanting them into Nurſeries, or the Places where they are to remain.

The twenty-five laſt mention'd Sorts of Oak are all o them inferior to the common Sort of our own Growth, in regard to their Timber, ſo ſhould not be cultivated for tha Purpoſe: but as ſome of them have large beautiful Leaves, ſo they make an agreeable Variety, when mixed with othe Trees in Gardens, and other ſmall Plantations. And a ſome of theſe Sorts are of very humble Growth, ſo the may be planted for Underwood, in ſuch Plantations wher they will have a good Effect; and many of the Sorts conti nue green throughout the Year, which renders them mor valuable; and thoſe Sorts whoſe Leaves are downy under neath, make a moſt agreeable Proſpect, when viewed at Diſtance; for as the Wind turns up the Leaves, ſo they ap pear to be covered over with Silver; and theſe Trees riſe t a great Height. There is one of the ſixteenth Sort growing a *Ragnal* near *Tucksford* in *Nottinghamſhire*, which is upwar

o

of forty Feet high, and produces a great Number of Acorns almoſt every Year, from whence ſeveral Plants have been raiſed. But theſe Acorns being ſo cloſely ſhut up in their Cups, do not ripen well in a cold wet Seaſon.

QUICK, delights in a Ground that is more dry than wet, (for watery Places it abhors.) Plant *Quick* in the following Manner:

Let the firſt Rows of Sets be placed in a Trench of about half a Foot deep, even with the Top of the Ditch, in ſomewhat a ſloping or inclining Poſture; then having rais'd the Bank near a Foot upon them, plant another Row, ſo as their Tops may juſt peep out over the Middle of the Spaces of the firſt Row: Theſe cover again to the Height and Thickneſs of the other, and place a third Rank oppoſite to the firſt, and then finiſh the Bank to its intended Height.

The Diſtances of the Plants ſhould not be above one Foot; and the Seaſon to do the Work in, may be from the Beginning of *February* 'till the End of *March*; or elſe from *September* to the Beginning of *December*.

When this is finiſh'd, you muſt guard both the Top of the Bank, and the outmoſt Verge of the Ditch with a ſufficient dry Hedge interwoven from Stake to Stake into the Earth, (which commonly they do on the Bank) to ſecure the *Quick* from the Spoil of Cattle.

You muſt alſo be careful to repair ſuch as decay, the following *Spring*, by ſupplying the dead, and trimming the reſt; and after three Years Growth, intermix ſome Timber-trees amongſt them, ſuch as *Oak*, *Aſh*, *Beech*, *Maple*, *Fruit*, or the like; which being drawn young out of the Nurſeries, may be very eaſily inſerted.

Some indeed object againſt ſcattering theſe Maſts and Keys amongſt Fences; which being grown, over-top the Hedge that grows under it, and may prejudice it with their Shade and Drip: But this may be prevented by planting *Hollies* (which are Proof againſt theſe Impediments) in the Line or Trench where you would raiſe Standards, as far as they uſually ſpread in many Years, and which, if placed at good Diſtances, how cloſe ſoever to the Stem, would (beſide their ſtout Defence) prove a great Decoration to large and ample Incloſures.

In *February* or *October*, with a ſharp Hand-bill, cut away all ſuperfluous Sprays and Straglers; then ſearch out the principal Stems, and with a keen and light Hatchet cut them ſlantwiſe cloſe to the Ground hardly three-quarters through, or rather ſo far only as 'till you can make them comply handſomely, leſt you rift the Stem, and ſo lay it from you ſloping as you go, folding in the leſſer Branches which ſpring from them; and ever within five or ſix Feet Diſtance, where you find an upright Set, (cutting off only the Top to the Height of your intended Hedge) let it ſtand as a Stake, to fortify your Work, and to receive the twining of thoſe Branches about it.

Laſtly: At the Top, (which ſhould be about five Feet above Ground) take the longeſt, moſt ſlender, and flexible Twigs which you reſerv'd, and (being cut as the former, where Need requires) bind in the Extremities of all the reſt; and thus your Work is finiſhed.

This being done very cloſe and thick, makes an impregnable Hedge in few Years; for it may be repeated as you ſee occaſion; and what you ſo cut away, will help to make your dry Hedges for your young Plantations, or will be uſeful for the Oven, and make good Bavin, eſpecially the extravagant Side-branches, which will ſpring upright, 'till the newly-wounded are healed.

There are ſome who would have no Stakes cut from the Trees, ſave here and there one, ſo as to leave half the Head naked, and the other ſtanding: but the over-hanging Boughs will kill what is under them, and ruin the Tree, ſo pernicious is this Half-topping.

There is nothing more prejudicial to under-growing young Trees, than, when newly trimmed and pruned, to have their (as yet raw) Wounds poiſon'd with continual Dripping.

For Stakes in this Work, *Oak* is to be prefer'd, though ſome will uſe *Alder*, but it is not good, or the *Bl[illegible]k-thorn*, *Crab-tree*: In Mooriſh Ground, *Withy*, *Aſh*, *Maple*, *Hazle*, (which ſome make Hedges of; but being ſubject to the browſing of Cattle, when the young Shoots appear, it does better in Copſes) theſe not laſting, ſhould be yet drove well in at every Yard of Interval, both before and after they are bound, 'till they have taken the hard Earth, and are very faſt; and even your plaſhed Hedges need ſome ſmall Thorns to be laid over, to protect the Shoots from Cattle and Sheep 'till they are ſomewhat fortify'd: and the doubler the Winding is lodg'd the better, which ſhould be beaten and forced down together with the Stakes, as equally as may be.

Note, That in ſloping your Windings, if it be too low done (as very uſually) it frequently mortifies the Tops; therefore it ought to be ſo bent, as it may not impede the mounting of the Sap.

If the *Plaſh* be of an extraordinary Age, wind it at the nether Boughs all together; and cutting the Sets, as directed, permit it rather to hang downwards a little, than to riſe too forward; and then twiſt the Branches into the Work, leaving a Set free and unconſtrain'd at every Yard-ſpace, beſides ſuch as will ſerve for Stakes, abated to about five Feet Length, (which is a competent Stature for a Hedge) and ſo let it ſtand.

One ſhall often find in this Work, eſpecially in old neglected Hedges, ſome great Trees or Stubs, that commonly make Gaps for Cattle; ſuch ſhould be cut ſo near the Earth, as, 'till you can lay them athwart, that the top of one may reſt on the Root or Stub of the other as far as they extend, ſtopping the Cavities with its Boughs and Branches: And thus a Hedge, which ſeems to conſiſt of nothing but ſcrubby Trees and Stumps, may be reduced to a tolerable Fence: but in caſe it be ſuperanuated, it is adviſeable to ſtub all up, and quite to renew it.

Thomas Franklin, Eſq; has given the following Account of his Method of planting *Quick*.

He firſt ſet out the Ground for Ditches and *Quick* ten Feet in Breadth; he ſubdivided that, by marking out two Feet and a half on each Side (more or leſs at Pleaſure) for the Ditches, leaving five in the Middle between them; then digging up two Feet in the midſt of that five Feet, he planted the Sets in; which, although it required more Labour and Charge, he ſays, he ſoon found it repaid the Coſt: This done, he began to dig the Foſſes, and to ſet up one Row of Turfs on the Outſide of the ſaid five Feet: namely, one Row on each Side thereof, the green Side outmoſt, a little reclining, ſo as the Graſs might grow.

After this, returning to the Place he began at, he order'd one of the Men to dig a Spit of the under Turf-mould, and lay it between the Turfs placed edgewiſe, as before deſcribed, upon the two Feet which was purpoſely dug in the Middle, and prepared for the Sets, which the Planter ſets with two *Quicks* upon the Surface of the Earth almoſt upright, whilſt another Workman laid the Mould forwards about twelve Inches, and then ſet two more, and ſo continued.

This being finiſhed, he order'd another Row of Turfs to be placed on each Side upon the Top of the former, and fill'd the Vacancy between the Sets and Turfs as high as their Tops, always leaving the Middle, where the Sets were planted, hollow, and ſomewhat lower than the Sides of the Banks by eight or ten Inches, that the Rain may deſcend to their Roots, which is of great Advantage to their Growth, and by far better than by the old Ways, where the Banks are too much ſloping, and the Roots of the Set are ſeldom wetted, even in a moiſt Seaſon, the *Summer* following: but if it prove dry, many of the Sets, eſpecially the late planted, will periſh; and even few of thoſe that had been planted in the latter End of *April* (the *Summer* happening to be ſomewhat dry) eſcaped.

The Planting being thus advanced, the next Care is *Fencing*; by ſetting a Hedge of about twenty Inches high upon the Top of the Bank on each Side thereof, leaning a little outwards from the Sets, which will protect them as well (if not better) than a Hedge of three Feet, or four Inches more, ſtanding on the Surface of the Ground, which being raiſed with the Turfs and Sods about twenty Inches, and the Hedge about twenty Inches more, will make three Feet four Inches; ſo as no Cattle can approach the dead Hedge to prejudice it, unleſs they ſet their Feet in the Ditch itſelf, which will be at leaſt a Foot deep; and from the Bottom of the Foſſe to the Top of the Hedge about four Feet and a half, which they can hardly reach over to crop the *Quick*, as they might in the old Way; and beſides, ſuch an Hedge will endure a Year longer.

He ſays, he had an Hedge which had ſtood five Years; and tho' nine or ten Feet were ſufficient for both Ditches and Banks, yet where the Ground is but indifferent, it is better Huſbandry to take twelve Feet, which will allow of a Bank at leaſt ſix Feet broad, and gives more Scope to place the dead Hedges farther from the Sets; and the Ditches being ſhallow, will in two Years time graze.

As to the Objection, That taking twelve Feet waſtes too much Ground, he affirms, That if twelve Feet in Breadth be taken for a Ditch and Bank, there will no more Ground be waſted than by the common Way; for in that a *Quick* is rarely ſet but there are nine Feet between the dead Hedges, which is intirely loſt all the time of fencing; whereas with double Ditches there remain at leaſt eighteen Inches on each

Side where the Turfs were ſet on Edge, that bear more Graſs than when it lay on the flat.

But admitting it did totally lay waſte three Feet of Ground, the Damage were very inconſiderable, ſince forty Perch in Length, two hundred and twenty Yards, which make Perches 7, 25″, 9′, or 7 Pole ½, which at 13*s.* and 4*d.* the Acre, amounts not to 7*d.* ½ *per Annum.*

Now that this is not only the beſt but cheapeſt Way of *Quick-ſetting*, will appear by comparing the Charge of both.

In the uſual Way, the Charge of a three Foot Ditch is four Pence *per* Pole, the Owner providing Sets: If the Workman finds them, he will have for making the ſaid Ditch, and ſetting them, eight Pence *per* Pole, and for hedging, two Pence; that is, for both Sides, four Pence the Pole: Which renders the Charge of Hedging, Ditching, and Sets, twelve Pence the Pole; that is, for forty Rods in Length, forty Shillings.

Then one Load of Wood out of the Copſe coſts (with the Carriage, tho' but two or three Miles Diſtance) ten Shillings, which will ſeldom hedge above eight Poles (ſingle Hedge); but allowing to do ten, to fence forty Poles, there muſt be at leaſt eight Loads of Wood, which coſts four Pounds; making the whole Expence for Ditching, Fencing and Setting forty Poles, to be ſix Pounds, reckoning with the leaſt; for ſcarce any will undertake to do it for leſs than three Shillings and ſix Pence *per* Pole, and then the forty Poles coſt ſeven Pounds.

Whereas with double Ditches, both of them *Settings* and *Sets*, will be done for eight Pence the Pole, and the Huſbandman get as good Wages as with the ſingle Ditch; (for tho' the Labour about them is more, yet the making the Table is ſav'd) which coſts one Pound ſix Shillings and eight Pence; and the Hedges being low, they will make better Wages at Hedging for a Penny a Pole, than at two Pence for common Hedges, which comes to ſix Shillings and eight Pence, for hedging forty Poles on both Sides: Thus, one Load of Wood will fence thirty Poles at leaſt, and forty hedged with two-thirds of Wood leſs than in the other Way, and coſt but one Pound ſix Shillings and eight Pence; which makes the other whole Charge of Sets, Ditching, Fencing, and Wood, but three Pounds.

QUICK BEAM; *vide* Sorbus Sylveſtris.

QUINCE TREE; *vide* Cydonia.

QUINCUNX ORDER, is a Plantation of Trees, diſpoſed originally in a Square conſiſting of five Trees, one at each Corner, and a fifth in the Middle; which Diſpoſition, repeated again and again, forms a regular Grove, Wood, or Wilderneſs; and when view'd by an Angle of the Square or Parallelogram, preſents equal or parallel Alleys.

Or, the *Quincunx* is the Figure of a Plantation of Trees, diſpoſed in ſeveral Rows, both length and breadthwiſe, in ſuch manner, that the firſt Tree of the ſecond Row commences in the Centre of the Square form'd by the two firſt Trees of the firſt Row, and the two firſt of the third, reſembling the Figure of the *Five at Cards*; the fineſt manner of planting Trees to form a Grove.

Trees planted in *Quincunx*, are ſuch as are planted in the following Form.

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QUINQUEFOLIUM, [is ſo called of *quinque*, *five*, and *folium*, Lat. *a Leaf*, becauſe this Plant bears five Leaves upon one Stalk: It is call'd *Pentaphyllum*, of πέντε, *five*, and φύλλον, *a Leaf*, i. e. a Plant having *five Leaves*] Cinquefoil.

There are many *Species* of this Plant, which are preſerved in Botanick Gardens for Variety (ſome of which grow wild in divers Parts of *England)*; but as they are never propagated either for Uſe or Beauty, ſo I ſhall not trouble the Reader with an Enumeration of their ſeveral Names.

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RACEMIFEROUS, ſignifies *bearing in Cluſters.*

RACEMUS, *a Cluſter*, is a Stalk divided or branched into ſeveral Footſtalks, ſuſtaining the Flowers or Fruits thick ſet together; as are the Bunches of *Grapes*, *Currants*, &c. The firſt of theſe Conditions diſtinguiſhes it from a Spike, the laſt from a Panicle.

RADIATED FLOWERS, are ſuch as have ſeveral Semi-florets ſet round a Diſk, in form of a radiant Star; as are the Flowers of *Daizy*, *Camomil*, &c. Theſe are called *Radiated diſcous Flowers.* Thoſe which have no ſuch Ray, are called *Naked diſcous Flowers*, as the *Wormwood*, *Mugwort*, *Tanſey*, &c.

RADICLE, denotes that Part of the Seed of a Plant, which, upon its Vegetation, becomes a little Root, by which the tender Plant at firſt receives its Nouriſhment before the After-root is formed. This is that Part of the Seed which, in making *Malt*, ſhoots forth, and is called the *Come* or *Comb.*

RADISH; *vide* Raphanus.

RADISH (HORSE); *vide* Cochlearia.

RAIN, is generally accounted to be a crude Vapour of the Earth, but more eſpecially of the Sea, drawn up from thence by the attractive Power of the Sun, or carry'd thitherward by Pulſion, and wafted by the Winds into the Aerial Region; by which Sublimation and Rarefaction, and the virtual Qualities of the Sun and Air, it is formed into Clouds.

The Crudities are diſpelled, and theſe Clouds ſuſpend and hang in the Air: And tho' it may be thought impoſſible that they ſhould be ſo ſuſpended in the Air, by reaſon of their great Weight and Preſſure, yet it will not appear ſo on Conſideration.

When theſe Vapours are thus drawn up to any conſiderable Height, by the Strength of the Air which is underneath them, and which ſtill grows greater and greater, and, by its Motion, undulating this Way and that Way, they riſe gradually through the Air.

This is demonſtrable by Paper Kites, which, after they are raiſed to about ſixty Feet high, do riſe eaſier, and with greater Swiftneſs; and the higher, ſtill the better and ſtronger they fly.

Theſe Clouds being thus arrived into the upper Region of the Air, they are ſoon aggregated and condenſed into Bodies and Clouds.

And tho' they are blown here and there, they are ſtill ſuſpended, 'till they are releaſed from their Impriſonment by the genial Diſpoſition of the Sun, or by the natural Warmth, Humidity, and Rarefaction of the Air.

It is not to be doubted, but that *Rain* drops out of the Clouds, becauſe we don't find it rain but where Clouds are to be ſeen; and by how much the fairer the Weather is, the ſeldomer it rains.

Rain is a very frequent and uſeful Meteor, deſcending from above in form of Drops of Water.

Rain ſeems to differ from Dew, only in this, that Dew falls at ſome particular Times, and in very ſmall Drops, ſo as to be ſeen when it is down, but is ſcarce perceivable while it is falling; whereas *Rain* is groſſer, and falls at any Time.

Rain is apparently a precipitated *Cloud*, as *Clouds* are nothing but Vapours raiſed from Moiſture, Waters, *&c.* and Vapours are demonſtratively nothing elſe but little Bubbles, or *Veſiculæ*, detached from the Waters by the Power of the ſolar or ſubterraneous Heat, or both.

Theſe *Veſiculæ* being ſpecifically lighter than the Atmoſphere, are buoy'd up thereby till they arrive at a Region where the Air is a juſt Balance with them; and here they float, 'till by ſome new Agent they are converted into Clouds, and thence into either *Rain*, *Snow*, *Hail*, *Miſt*, or the like.

But the Agent in this Formation of *Clouds*, *&c.* is a little controverted: The Generality will have it the *Cold*, which conſtantly occupying the ſuperior Regions of the Air, chills and condenſes the *Veſiculæ*, at their Arrival from a warmer Quarter, congregates them together, and occaſions ſeveral of them to coaleſce into little Maſſes; by this Means their Quantity of Matter increaſing in a greater Proportion than their Surface, they become an Over-load to the lighter Air, and deſcend in *Rain.*

The Coldneſs of the *Air* may cauſe the Particles of the Clouds to loſe their Motion, and become leſs able to reſiſt the Gravity of the incumbent Air, and conſequently to yield to its Preſſure, and fall to the Ground.

Dr. *Derham* accounts for the Precipitation hence, That the *Veſiculæ* being full of Air, when they meet with a colder Air than that they contain, their Air is contracted into a leſs Space, and conſequently their watery Shell or Caſe rendered thicker, ſo as to become heavier than the Air, *&c.*

Others only allow the Cold a Part in the Action, and bring in the Winds as Sharers with it: Indeed it is clear, that a Wind blowing againſt a Cloud will drive its *Veſiculæ* upon one another; by which Means ſeveral of them coaleſcing, as before, will be enabled to deſcend; and the Effect will ſtill be more conſiderable, if two oppoſite Winds blow towards the ſame Place. Add to this, that Clouds already formed, happening to be aggregated by freſh Acceſſions of Vapour continually aſcending, may thence be enabled to deſcend.

The Wind may collect the Vapours in ſuch Abundance, as firſt to form very thick Clouds, and then to ſqueeze thoſe Clouds together, till the watery Particles make Drops too big to hang in the Air.

But the grand Cauſe, according to Monſ. *Rohault*, is ſtill behind; he conceives it to be the Heat of the Air, which, after continuing for ſome Time near the Earth, is at length carried up on high by a Wind, and there thawing the frozen *Villi*, or Flocks of the half-frozen *Veſiculæ*, reduces them into Drops, which coaleſcing, deſcend, and have their Diſſolution perfected in their Progreſs thro' the lower and warmer Stages of the Atmoſphere.

M. *Le Clerc*, and others, aſcribe this Deſcent of the Clouds rather to an Alteration of the Atmoſphere, than of the *Veſiculæ*, and ſuppoſe it to proceed from a Diminution of the Spring or elaſtick Force of the Air.

This Elaſticity, which depends chiefly, or wholly, upon the dry terrene Exhalations being weaken'd, the Atmoſphere ſinks under its Burthen, and the Clouds fall upon the common Principle of Precipitation.

Now the little *Veſiculæ*, by any or all of theſe Means, being once upon the Deſcent, will perſiſt therein, notwithſtanding the Increaſe of Reſiſtance they every Moment meet withal, in their Progreſs thro' ſtill denſer and denſer Parts of the Atmoſphere.

For as they all tend towards the ſame Point, *viz.* the Centre of the Earth, the farther they fall the more Coalitions will they make; and the more Coalitions, the more Matter there will be under the ſame Surface: the Surface only increaſing as the Squares, but the Solidity as the Cubes; and the more Matter under the ſame Surface, the leſs Friction or Reſiſtance there will be to the ſame Matter.

Thus, if the Cold, the Wind, *&c.* happen to act early enough to precipitate the *Veſiculæ*, ere they are arrived at any conſiderable Height, the Coalitions being few in ſo ſhort a Deſcent, the Drops will be proportionably ſmall; and thus is form'd what we call *Dew*.

If the Vapours prove more copious, and riſe a little higher, we have a *Miſt* or *Fog*.

A little higher ſtill, and they produce a ſmall *Rain*.

If they neither meet with Cold or Wind enough to condenſe or diſſipate them, they form a heavy, thick, *dark Sky*, which laſts ſometimes ſeveral Weeks.

Hence we may account for many of the Phænomena of the Weather; e. g. Why a cold, is always a wet *Summer*, and a warm, a dry one; becauſe the Principle of Precipitation is had in the one Caſe, and wanting in the other.

Why we have ordinarily moſt *Rain* about the Equinoxes; becauſe the Vapours ariſe more plentifully than ordinary in the *Spring*, as the Earth becomes looſened from the brumal Conſtipations; and becauſe as the Sun recedes from us in *Autumn* the Cold increaſing, the Vapours that had lingred above, during the *Summer* Heats, are now diſpatched down.

Why a ſettled, thick, cloſe Sky ſeldom ever *rains*, 'till it has been firſt clear'd; becauſe the equally confuſed Vapours muſt firſt be condenſed and congregated into ſeparate Clouds, to lay the Foundation of *Rain*: by which Means the reſt of the Face of the Heaven is left open, and pervious to the Rays of the Sun, *&c.*

Monſ. *Le Clerc* obſerves, That all Winds do not produce *Rains*; but only ſuch as collect a great Quantity of Vapours. Thus in *Holland*, *Weſt* Winds are *rainy*, becauſe they come from the Ocean, and blow up the Vapours; *Eaſt* Winds blow clear, becauſe they come over vaſt Tracts of Land; *North* Winds are *rainy*, becauſe they come from the *North* Sea; but not ſo *rainy* as the *Weſt*, becauſe the cold *North* does not yield ſuch a Quantity of Vapours, as the kinder Climate of the *Brittanick* Ocean: *South* Winds bring *Rain* too; for that they conſiſting of Vapours raiſed by the Heat of the Sun, in a hot Quarter, and ſo being elevated above others in the Air, ſeem to lie upon our Clouds, and preſs them down towards the Earth.

But, notwithſtanding, there are many Exceptions in thoſe Caſes, according to the Variety of Cauſes conſpiring to the ſame Effect, many of which we know nothing of.

Again: *Rain* may be produced after this Manner; If the Vapours riſe in ſo great Abundance, as to reach and mingle with the Clouds above them, then they cauſe *Rain* in very large Drops: And this may happen in ſtill, ſultry Weather; for then the Clouds which are over our Heads have no ſenſible Motion, and in the mean time the Heat fills the Air with Vapours; which joining with the Clouds, and ſo being ſtopp'd in their Progreſs, open a Paſſage for the Stores in the Clouds to deſcend upon the Earth.

Sometimes alſo, the warm Wind thaws the Clouds into Drops, as we ſee Snow diſſolved by Heat: Now by how much the thicker and ſooner any ſuch Cloud was gathered, the larger are the Drops that come from it, becauſe a greater Store of Vapours was condenſed there. From thence it is, that in *Summer* time we have ſudden Showers of *Rain* in very large Drops.

It ought alſo to be remember'd, that in thoſe Countries which lie between the Tropicks, where they have the Sun vertical, the *Rain* pours down, for ſeveral Weeks together, more like Pails-full than Drops. And it is very probable that this is the Cauſe; *viz.* Becauſe at that time the Sun draws up abundance of Vapours, and rarefies them extremely, ſo that they are elevated as high as poſſible, and then are precipitated at once, being too copious and heavy to hang any longer in the Air: And beſides, there may ſometimes be a Concurrence of neighbouring Vapours, which will be ready to croud into that Part in the Air, which is moſt rarefied by the Heat of the Sun meeting with the Vapours, which are raiſed in that Place, and produce very great Clouds and *Rain*.

If any aſk how the Drops of falling Water come to be round, as in *Rain*? It is anſwered, That this does not happen by any Diſpoſition peculiar to the Water; but becauſe the Drops are equally preſſed by the Air on every Side, and thereby forced into a round Figure: the Reſiſtance of the Particles, as well as the Preſſure of the Air, being equal every way. But others give other Reaſons for it.

In *Rain* there are two diſtinct *Properties* or *Species*; the one which ſerves for the Diſſolution of the Salts of the Earth, and the other is a *Terreſtrial Matter*, which it meets with in its *Sublimation*, which may, with ſome Propriety, be call'd either *Salt* or *Nitre*: and both theſe are uſeful in the Buſineſs of *Vegetation*.

Rain is operative in diſſolving the *Salts* that are in the Earth, and alſo cools and bathes the Cortex or Skin of all Vegetables, and, by a ſort of Relaxation, cauſes the Sap to paſs up more freely, and by that Means the Tree to grow and ſhoot the better.

Theſe foggy, humid Vapours ariſing out of the Ground, *&c.* of which *Rain* is formed, would inevitably ſtagnate and poiſon the whole Face of the Earth, were they not ſublimated by the Air, and drawn up by the Aſſiſtance of the Sun into the upper Regions; but being there rarefied, they are made of ſecond Uſe in Vegetation.

As to the Quantity of *Rain* that falls, its Proportion in ſeveral Places at the ſame Time, and in the ſame Place at ſeveral Times, we have Store of Obſervations, Journals, *&c.* in the Memoirs of the *French* Academy, the *Philoſophical Tranſactions*, &c. an Idea of which take as follows.

Upon meaſuring, then, the *Rain* falling yearly, its Depth, at a Medium, is found as in the following Table:

Depth of RAIN *falling Yearly, and its Proportion in ſeveral Places.*

At *Townley* in *Lancaſhire*, obſerved by Mr. *Townley* - - - - -	42 ½ Inches
Upminſter in *Eſſex*, by Dr. *Derham* - - - - - - - - - - -	19 ¼
Zurich in *Switzerland*, by Dr. *Sceutcher* - - - - - - - - - -	32 ¼
Piſa in *Italy*, by Dr. *Mich. Ang. Tilli* - - - - - - - - - -	43 ¼
Paris in *France*, by M. *de la Hire* - - - - - - - - - -	19
Liſle in *Flanders*, by M. *de Vauban* - - - - - - - - - -	24

Proportions of the RAIN *of ſeveral Years to one another.*

At UPMINSTER.

1700	19 Inches	03 Cent.
1701	18	69
1702	20	38
1703	23	99
1704	15	81
1705	16	93

At PARIS.

21 Inches	38 Cent.
27	78
17	42
18	51
21	20
14	82

Proportion of the RAIN *of the ſeveral Seaſons to one another.*

1708	Depth at *Piſa*	Depth at *Upminſter*	Depth at *Zurich.*
	Inch.	Inch.	Inch.
January	6 41	2 88	1 64
February	3 28	0 46	1 65
March	2 65	2 03	1 51
April	1 25	0 96	4 69
May	3 33	2 02	1 91
June	4 90	2 32	5 91
Half Year.	28 82	16 67	17 31

1708	Depth at *Piſa*	Depth at *Upminſter*	Depth at *Zurich*
	Inch.	Inch.	Inch.
July	0 00	1 11	3 50
Auguſt	2 27	2 94	3 15
September	7 21	1 46	3 02
October	5 33	0 23	2 24
November	0 13	0 86	0 62
December	0 00	11 97	2 62
Half Year	14 94	18 57	15 35

The Reverend Dr. *Hales*, in his excellent Treatiſe of *Vegetable Staticks*, tells us, That the Quantity of *Rain* and *Dew* that falls in a Year, is, at a Medium, 22 Inches; and that the Quantity of the Earth's Evaporation in a Year, is at leaſt $9+\frac{1}{2}$ Inches, ſince that is the Rate at which it evaporates in a *Summer*'s Day; from which $9+\frac{1}{2}$ Inches is to be deducted 3. 39 Inches, for circulating daily Dew, there remains 6. 2 Inches; which 6. 2 Inches deducted from the Quantity of *Rain* which falls in a Year, there remains at leaſt 16 Inches Depth to repleniſh the Earth with Moiſture for Vegetation, and to ſupply Springs and Rivers.

Hence we find, that 22 Inches Depth of *Rain* in a Year, is ſufficient for all the Purpoſes of Nature, in ſuch flat Countries as is that about *Teddington* near *Hampton-Court*: But in the Hill Countries, as in *Lancaſhire*, there falls 42 Inches Depth of *Rain-water*; from which deducting 7 Inches for Evaporation, there remains 35 Inches Depth of Water, beſides great Supplies from much more plentiful Dews than fall in plain Countries.

Which vaſt Stores ſeem ſo abundantly ſufficient to anſwer the great Quantity of Water, which is convey'd away by Springs and Rivers from thoſe Hills, that we need not have recourſe for Supplies to the great Abyſs, whoſe Surface at High-Water, is ſurmounted ſome hundreds of Feet by ordinary Hills, and ſome thouſands of Feet by thoſe vaſt Hills, from whence the longeſt and greateſt Rivers take their Riſe.

RAINBOW, a Meteor in Form of a Party-colour'd Arch or Semi-circle, exhibited in a rainy Sky oppoſite to the Sun, by the Refraction of his Rays in the Drops of falling *Rain*.

The *Rainbow*, Sir *Iſaac Newton* obſerves, never appears but where it rains in the Sun-ſhine, and may be repreſented artificially, by contriving Water to fall in little Drops like *Rain*, through which the Sun ſhining, exhibits a Bow to the Spectator's Eye, placed between the Sun and the Drops; eſpecially if a dark Body, *e. g.* a Black Cloth to be diſpoſed beyond the Drops.

Auton de Denicinis firſt accounted for the *Rainbow* in 1611: He explain'd at large how it was form'd by Refraction and Reflexion of the Sun-beams in ſpherical Drops of Water, and confirm'd his Explication by Experiments made with Glaſs Globes, *&c.* full of Water; wherein he was follow'd by *Des Cartes*, who mended and improv'd upon his Account.

But as they were both in the Dark, as to the true Origin of Colours, their Explications are defective, and in ſome Things erroneous; which it is one of the Glories of the *Newtonian* Doctrine of Colours, to ſupply and correct.

The following Properties are aſcribed to the *Rainbow*:

1. That it never appears but in a Place oppoſite to the Sun, ſo that when we look directly at it, the Sun is always behind us.

2. That when the *Rainbow* appears, it always rains ſomewhere.

3. That the conſtant Order of the Colours is, that the outmoſt is *Red* or Saffron-colour, the next is *Yellow*, the third is *Green*, the fourth and inmoſt is *Violet* or *Blue*; but theſe Colours are not always equally bright.

4. Two *Rainbows* appear together, one of which is higher and larger than the other, and ſhews the aforeſaid Colours, but in an inverted Order.

5. The *Rainbow* is always exactly round, but does not always appear equally intire, the upper or lower Parts being very often wanting.

6. Its apparent Breadth is always the ſame.

7. That thoſe who ſtand upon plain low Ground, never ſee above half its Circle, and often times not ſo much.

8. The higher the Sun is above the Horizon, the leſs of the Circle is ſeen; and, if there be no Cloud to hinder, the lower, the more of it.

9. That never any *Rainbow* appears, when the Sun is above 41 Degrees 46 Minutes high.

Lunar (Rainbow): The Moon alſo ſometimes exhibits the Phænomena of an *Iris* or *Bow*, by the Refraction of her Rays in the Drops of *Ruin* in the Night-time.

Ariſtotle ſays, he was the firſt that ever obſerv'd it; and adds, that it never happens, *i. e.* is viſible, but at the time of the Full Moon, her Light at other times being too faint to affect the Sight. After two Refractions and one Reflection, the *Lunar Iris* has all the Colours of the *Solar* very diſtinct and pleaſant, only faint, in Compariſon of the other, both from the different Intenſity of the Rays, and the different Diſpoſition of the Medium.

Marine (Rainbow) is a Phænomenon ſometimes obſerved in a much agitated Sea, when the Wind ſweeping Part of the

Tops of the Waves, carries them aloft ; ſo that the Sun's Rays falling upon them, are refracted, &c. as in a common Shower, and paint the Colours of the Bow.

F. *Bourzes*, in the *Philoſophical Tranſactions*, obſerves, that the Colours of the *Marine Rainbow* are leſs lively, diſtinct, and of leſs Duration, than thoſe of the common *Bow*; that there are ſcarce above two Colours diſtinguiſhable, a dark Yellow on the Side next the Sun, and a pale Green on the oppoſite Side.

But theſe Bows exceed as to Number, there being ſometimes twenty or thirty ſeen together ; they appear at Noonday, and in a Poſition oppoſite to that of the common *Bow*, *i. e.* the Concave Side is turned upwards ; as indeed it is neceſſary it ſhould be, from what may be ſaid in accounting for the Appearance of the *Solar Bow*.

RAMPIONS ; *vide* Campanula raide eſculenta.

RAMUS, *a Branch*, is the Diviſion of a Stalk : In Trees, it is often call'd *a Bough*.

RANDIA.

The *Characters* are ;

It hath a Flower conſiſting of one Leaf, whoſe lower Part is tubulous, but the upper Part is expanded, and for the moſt part divided into five Segments ; the Flower is ſucceeded by an oval Fruit, having but one Cell, which is filled with flat cartilaginous Seeds ſurrounded by a Pulp.

There is but one *Species* of this Plant at preſent known ; *viz.*

RANDIA *fruteſcens, ſpinis bijugis, foliis ſubrotundis, floribus albis. Houſt.* Shrubby Randia, with Spines growing two at a Joint, roundiſh Leaves, and white Flowers. This Plant is figured and deſcribed by Sir *Hans Sloane* in his Hiſtory of *Jamaica*, under the Title of *Lycium forte, foliis ſubrotundis integris, ſpinis & foliis ex adverſo ſitis.* Vol. 1. p. 40.

This Shrub grows plentifully about *La Vera Cruz*, from whence the Seeds were ſent by the late Dr. *William Houſtoun*, who gave this Name to it, in Honour to Mr. *Iſaac Rand*, a curious Botaniſt.

This Shrub riſes to the Height of ten or twelve Feet in the Country of its Growth, and divides into a great Number of Branches, which are always produced by Pairs oppoſite, as are alſo the Leaves and Spines. The Flowers are ſmall, and of a white Colour, which are ſucceeded by hard oval-ſhaped Fruit, about the Size of a large *Spaniſh* Nut, which is full of flat Seeds incloſed in a ſoft blackiſh Pulp.

It is propagated by Seeds, which ſhould be ſown early in the *Spring*, in Pots filled with light freſh Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to water the Earth frequently to promote the Vegetation of the Seeds. When the Plants come up, they muſt have freſh Air admitted to them every Day, when the Weather is warm, and they muſt be often refreſhed with Water. In about a Month's time after the Plants come up, they will be fit to tranſplant ; when they ſhould be carefully taken out of the Pots, and each planted into a ſeparate ſmall Pot filled with light freſh Earth, and then plunged into the Hot-bed again ; where they muſt be ſcreened from the Sun until they have taken new Root, after which Time they muſt have Air and Moiſture in proportion to the Warmth of the Seaſon. The Plants may remain in the Hot-bed till toward *Michaelmas*, when the Nights begin to be cold ; at which time they ſhould be removed into the Stove ; and if they are plunged in the Bark-bed, it will greatly forward their Growth, tho' they will live in the dry Stove, if they are kept in a moderate Temperature of Heat, and are frequently watered. During the two firſt Seaſons, while the Plants are young, it will be proper to keep them conſtantly in the Stove (but then their Leaves muſt be waſhed, whenever they contract Filth) ; which will bring them forward : but after the Plants have obtained Strength, they may be expoſed every *Summer* to the open Air, provided they are placed in a warm Situation : but in *Winter* they muſt be conſtantly placed in a Stove, and kept in a moderate Warmth ; otherwiſe they will not live in this Country.

The Leaves of this Plant continue green throughout the Year, which renders the Plant valuable, becauſe it makes an agreeable Variety in the *Winter* Seaſon, when mixed with other tender Plants. Sir *Hans Sloane* found this Plant in the Iſland of *Barbadoes*.

RANUNCULUS, [ſo call'd, as ſome ſay, from *Rana*, Lat. *a Frog*, on account of its delighting to grow in moiſt Places, which Frogs frequent] Crowfoot.

The *Characters* are ;

The Flower conſiſts of ſeveral Leaves, which are placed in a circular Order, and expand in form of a Roſe ; having, for the moſt part, a many-leafed Empalement or Flower-cup ; out of the Middle of the Flower riſes the Pointal, which afterwards becomes a Fruit, either round, cylindrical, or ſpiked ; to the Axis of which, as a Placenta, adhere many Seeds, for the moſt part naked.

The *Species* are ;

1. RANUNCULUS *hortenſis erectus, flore pleno. C. B. P.* Common Yellow Crowfoot, with a double Flower.
2. RANUNCULUS *repens, flore pleno. J. B.* Common Creeping Crowfoot, with a double Flower.
3. RANUNCULUS *montanus, aconiti folio, albus, flore minore. C. B. P.* Mountain Crowfoot, with a white Flower.
4. RANUNCULUS *folio aconiti, flore albo multiplici. C. B. P.* Crowfoot, with a Monk's-hood Leaf, and a double white Flower, *commonly call'd* The Fair Maid of *France*.
5. RANUNCULUS *bulboſus, flore pleno. C. B. P.* Common Bulbous-rooted Crowfoot, with a double Flower.
6. RANUNCULUS *Conſtantinopolitanus, flore ſanguineo pleno. J. B.* Common *Ranunculus*, with a double bloody Flower.
7. RANUNCULUS *aſphodeli radice, prolifer miniatus. C. B. P. Ranunculus* with an Aſphodel Root, and Childing Carmine Flowers, *commonly call'd* Turks Turban.
8. RANUNCULUS *aſiaticus polyclonos, ſive grumoſa radice, ſecundus. J. B.* Aſiatick *Ranunculus* with many Heads, and a grumoſe Root, *commonly call'd* Sphericus.
9. RANUNCULUS *aſphodeli radice, flore ſanguineo maximo. H. R. Par.* Aſphodel-rooted *Ranunculus*, with a very large Flower, *commonly call'd* The Monſter.
10. RANUNCULUS *aſphodeli radice, flore ſubphœnicio rubente. C. B. P.* Aſphodel-rooted *Ranunculus*, with purpliſh-red Flowers, *commonly call'd* Marvelia.
11. RANUNCULUS *aſphodeli radice, flore luteo variegato. H. R. Par.* Aſphodel-rooted *Ranunculus*, with a yellow variegated Flower.
12. RANUNCULUS *Alepus, grumoſa radice, flore lineis rubris & luteis ſtriato. H. R. Par.* Grumoſe-rooted Crowfoot with a Flower-ſtrip'd with red and yellow Lines, *commonly call'd* Ranunculus of *Aleppo*.
13. RANUNCULUS *aſphodeli radice, flore flavo, venis rubris diſtincto ; Boſvel dictus. H. R. Par.* Crowfoot with an Aſphodel Root and yellow Flower with red Veins, *commonly call'd* Boſvel.
14. RANUNCULUS *Alepus, grumoſa radice, flore miniato, per oras luteo. H. R. Par.* Aleppo Crowfoot with a grumoſe Root, and a carmine Flower, bordered with yellow.
15. RANUNCULUS *flore pleno flaveſcente, & rubris lineis elegantiſſime variegato. H. R. Par.* Crowfoot with a double yellow Flower curiouſly ſtrip'd with red Lines, *commonly called* Aurora.
16. RANUNCULUS *aſphodeli radice, flore pleno albo parvo, rubris ſtriis diſtincto. H. R. Monſp.* Crowfoot with an Aſphodel Root, and a ſmall double white Flower ſtrip'd with red.
17. RANUNCULUS *aſphodeli radice, flore pleno magno lacteo, ſuperius lituris rubris eleganter picto. Boerh. Ind.* Crowfoot with an Aſphodel Root, and a large double white Flower, mark'd above with red Spots, *commonly called* the Seraphick.

Theſe are moſt of them old Flowers, which have been long cultivated in the *Engliſh* Gardens: The five firſt-mentioned Sorts are very hardy Plants, and will thrive extremely well in ſhady Borders ; theſe require no other Culture, but to take up their Roots every other Year, when their Leaves decay, and part them, planting out the Off-ſets in other Borders, leſt by permitting them to grow too large, they rot each other. The creeping Sort will require to be oftner tranſplanted, otherwiſe it will ſpread over every thing that grows near it. Theſe do all produce handſome double Flowers, which continue long in Beauty, and afford an agreeable Variety, and being hardy, are worthy of a Place in every good Garden.

The other Sorts were originally brought from *Turkey*, and were formerly in great Eſteem in *England*, but of late Years there have been introduced many other Sorts of a differing Kind, from *Perſia*, amongſt which are many with ſemi-double Flowers, which produce Seeds, from which there are ſuch prodigious Varieties of new Flowers annually obtained, which are ſo large, and of ſuch Variety of beautiful Colours, as to exceed all other Flowers of that Seaſon, and even vie with the moſt beautiful Carnations: Theſe are, many of them, finely ſcented, and the Roots, when ſtrong, do generally produce eight, ten, or twelve Flowers upon each, which ſucceeding each other, do continue in Beauty a full Month or longer, according to the Heat of the Seaſon, or the Care taken to defend them from the Injuries of the Weather; all which excellent Qualities have rendered them ſo valuable, that the old Sorts here-named are almoſt diſregarded, except in ſome old Gardens; but however, as they are ſtill preſerved by ſome Perſons, ſo I ſhall briefly ſet down their Management, before I proceed to that of the new Kinds, which muſt be treated in a different manner from theſe.

All theſe very double Flowers do never produce Seeds, ſo that they are only multiplied by Off-ſets from their Roots, which they generally produce in good Plenty, if planted in a good Soil, and duly attended in *Winter*. The Seaſon for planting their Roots is any Time in *October*; for if they are planted ſooner, they are apt to come up in a ſhort Time, and grow pretty rank before Winter, whereby they will be in greater Danger of ſuffering by Froſt; and if they are planted much later, they will be in Danger of periſhing underground; ſo that if you keep them out of the Ground any longer than the Beginning of November, it will be the better way to defer the planting of them till the latter End of *January*, or the Beginning of *February*, after the great Froſts are paſt.

The Beds in which theſe Roots are planted, ſhould be made with freſh, light, ſandy Earth, at leaſt a Foot deep: The beſt Soil for theſe Roots may be compoſed in the following Manner, *viz.* Take a Quantity of freſh Earth from a rich up-land Paſture, about ſix Inches deep, together with the Green-ſward; this ſhould be laid in a Heap to rot for twelve Months before it is uſed, obſerving to turn it over very often, to ſweeten it, and break the Clods; to this you ſhould add a proportionable Quantity of Sea or Drift Sand, according as the Earth is lighter or ſtiffer; if it be light and inclining to a Sand, there ſhould be no Sand added; but if it be a hazel Loam, one Load of Sand will be ſufficient for four Loads of Earth: but if the Earth is ſtrong and heavy, the Sand ſhould be added in a greater Proportion; but you ſhould often turn it over, in order to unite their Parts well together, before it is put into the Beds.

The Depth which this ſhould be laid in the Beds, muſt be about a Foot; this ſhould be below the Surface, in Proportion to the Drineſs or Moiſture of the Place where they are ſituated; which in dry Ground ſhould be eight Inches below the Surface, and the Beds rais'd four Inches above; but in a moiſt Place they ſhould be ſix Inches below, and ſix above the Ground; and in this Caſe it will be very proper to lay ſome Rubbiſh and Stones in the Bottom of each Bed, to drain off the Moiſture. This Earth I would by no means have ſcreen'd very fine, but only in turning it over each Time, you ſhould be careful to break the Clods, and throw out all large Stones, which will be ſufficient; for if it is made very fine, when the great Rains in *Winter* come on, it will cauſe the Earth to bind into one ſolid Lump, whereby the Moiſture will be detained, and the Roots not being able to extend their tender Fibres, will rot: Of this I have ſeen many Examples, but one particularly to my Coſt; when I had procured a fine Parcel of theſe Roots from abroad, and being deſirous of having them thrive very well, I took great Pains to ſcreen the Earth of my Beds very fine, which I laid near two Feet deep, and planted a good Part of my Roots therein; but the Seaſon advancing, and having a great deal of other Buſineſs upon my Hands, I did not ſcreen the Earth of all my Beds, but planted ſome of them without doing any thing more than raking them; and the Succeſs was, that the Roots in thoſe Beds which were ſcreened, did, great Part of them, intirely rot, and the remaining Part were ſo weak, as not to produce any good Flowers; whereas thoſe which were planted in the Beds which were not ſcreened, did thrive and flower very well, and ſcarce any of the Roots failed, tho' the Earth of all the Beds was the ſame, and were in the ſame Situation, both with regard to Wind and Sun, ſo that the Damage which thoſe Roots ſuſtained, was owing intirely to the Fineneſs of the Earth; and this I have ſeveral Times ſince obſerved in other Gardens.

The beds being thus prepared, ſhould lie a Fortnight to ſettle, before the Roots are planted, that there may be no Danger of the Earth ſettling unequally after they are planted, which would prejudice the Roots, by having hollow Places in ſome Parts of the Bed, to which the Water would run and lodge, and ſo rot the Roots in ſuch Places. Then having levelled the Earth, laying the Surface a little rounding, you ſhould mark out the Rows by a Line, at about four Inches Diſtance each way, ſo that the Roots may be planted every way in ſtrait Lines; then you ſhould open the Earth with your Fingers, at each Croſs where the Roots are to be planted, about two Inches deep, placing the Roots exactly in the Middle, with their Crowns upright, then with the Head of a Rake you ſhould draw the Earth upon the Surface of the Bed level, whereby the Top of the Roots will be about an Inch covered with Earth, which will be ſufficient at firſt: This Work ſhould be done in dry Weather, becauſe the Earth will then work better than if it were wet; but the ſooner after Planting there happens to be Rain, the better it will be for the Roots; for if it ſhould prove dry Weather long after, and the Earth of the Beds be very dry, the Roots will be ſubject to mould and decay; therefore in ſuch a Caſe it will be proper to give a little Water to the Beds, if there ſhould no Rain happen in a Fortnight's Time, which is very rare at that Seaſon of the Year, ſo that they will ſeldom be in Danger of ſuffering that way.

When the Roots are thus planted, there will no more be required until toward the Middle of *November*, by which Time they will begin to heave the Ground, and their Buds appear, when you ſhould lay a little of the ſame freſh Earth of which the Beds were compoſed, about an Inch thick all over the Beds, which will greatly defend the Crown of the Root from Froſt: And when you perceive the Buds to break through this ſecond Covering, if it ſhould prove a very hard Froſt, it will be very proper to arch the Beds over with Hoops, and cover them with Mats, eſpecially in the *Spring*, when the Flower-buds will begin to appear; for if they are expoſed to too much Froſt or blighting Winds at that Seaſon, their Flowers do ſeldom open fairly, and many times the Roots are deſtroyed: But this happens more frequently to the *Perſian* Kinds, which are tenderer, than to theſe Sorts, which are pretty hardy; for which Reaſon theſe are often planted in open Borders, intermix'd with other Flowers, though in very hard *Winters* theſe are apt to ſuffer, where there is not Care taken to guard off the Froſt.

In the Beginning of *March* the Flower ſtems will begin to riſe, at which Time you ſhould carefully clear the Beds from Weeds, and ſtir the Earth with your Fingers between the Roots, being very careful not to injure them; this will not only make the Beds appear handſome, but alſo greatly ſtrengthen their Flowers. When the Flowers are paſt, and the Leaves are withered, you ſhould take up the Roots, and carefully clear them from the Earth, then ſpread them upon a Mat to dry, in a ſhady Place, after which they may be put up in Bags or Boxes in a dry Room, until the *October* following, which is the Seaſon for planting them again.

Thus having directed how theſe Sorts are to be cultivated, I ſhall proceed to treat of the *Perſian* Kinds, where I ſhall only mention in what Particulars theſe are to be treated different from thoſe already mentioned.

* Theſe Flowers are not only propagated by Off-ſets from the old Roots, as the former, but are alſo multiplied by Seeds, which the ſemi-double Kinds do produce in Plenty. Therefore whoever is deſirous to have theſe in Perfection, ſhould annually ſow their Seeds, from which new Varieties will be every Year produced; but in order hereto, you ſhould be careful in ſaving the Seed, or in procuring it from ſuch Perſons as underſtand how to ſave it; that is, who will be careful not to leave any Flowers for Seeds, but ſuch as have three or four Rows of Petals at leaſt, and are well coloured; for ſince theſe Flowers do increaſe ſo plentifully, it is not worth the Trouble to ſow any indifferent Seeds, becauſe there can be but little Hopes of obtaining any good Flowers from ſuch Seeds.

Being prepared with Seeds, about the Middle of *Auguſt*, which is the proper Seaſon for ſowing of them, you ſhould get ſome large Pots, flat Seed-pans or Boxes, (of either as many as you have Seeds to ſow) theſe ſhould be filled with light, ſandy, rich Earth, levelling the Surface very even, then ſow the Seeds thereon pretty thick, and cover it about a Quarter of an Inch thick with the ſame light Earth; after which you ſhould remove theſe Pots into a ſhady Situation, where they may have the Morning Sun until ten of the Clock, and if the Seaſon ſhould prove dry, you muſt often refreſh them with Water, being very careful in doing of this, ſo as not to waſh the Seeds out of the Ground. In this Situation the Pots ſhould remain until the Beginning of *October*, by which Time the Plants will begin to come up, (though ſometimes the Seeds will remain in the Earth until *November*, before the Plants appear) when you ſhould remove the Pots into a more open Expoſure, where they may have full Sun, which at that Time is neceſſary to exhale the Moiſture of the Earth; but toward the Middle of *November*, when you are apprehenſive of Froſt, the Pots ſhould be removed under a common Hot-bed Frame, where they may be covered with the Glaſſes in the Night-time, and in bad Weather; but in the Day, when the Weather is mild, they ſhould be entirely opened, otherwiſe the Plants will draw up too weak: The only Danger they are in, is from violent Rains and Froſts, the firſt often rooting the tender Plants, and the Froſt will often turn them out of the Ground, therefore they ſhould be carefully guarded againſt both of theſe.

In the *Spring*, as the Seaſon grows warm, ſo theſe Pots ſhould be expoſed to the open Air, placing them at firſt near the Shelter of a Hedge, to protect them from the cold Winds; but towards the latter End of *March*, or the Beginning of *April*, they ſhould be removed again into a more ſhady Situation, according to the Warmth of the Seaſon; and if it ſhould prove dry, they muſt ſometimes be refreſhed with Water; but you ſhould be careful not to give it to them in great Quantities, which is very apt to rot theſe tender Roots; and in the Middle or latter End of *April*, they ſhould be placed where they may have only the Morning Sun: In which Place they may remain till their Leaves decay, when they may be taken out of the Earth, and the Roots dry'd in a ſhady Place; after which they may be put in Bags, and preſerved in a dry Place until the *October* following, when they muſt be planted in the Manner before directed for the old Roots.

The *Spring* following theſe Roots will flower, at which Time you ſhould carefully mark ſuch of them as are worthy to be preſerved; and the ſingle or bad-coloured Flowers may be pulled up and thrown away, which is the ſureſt Method of removing them from the good Sorts; for if they are permitted to remain together until their Leaves decay, there may be ſome Off-ſets of the bad Sorts mixed with the good Flowers. You ſhould not ſuffer thoſe Flowers, which you intend to blow fine the ſucceeding Year, to bear Seeds, but cut off the Flowers when they begin to decay; for thoſe Roots which have produced Seeds, do ſeldom flower well afterwards, nor will the principal old Root, which has flower'd ſtrong, ever blow ſo fair as will the Off-ſets, which is what ſhould be principally obſerv'd, when a Perſon purchaſes any of theſe Roots; and a great Part of the Complaints made by thoſe who have bought theſe Roots at a dear Rate, is principally owing to this; for the Perſons who ſold them being appriſed of this Matter, have parted with their old Roots to their Purchaſers, and reſerved the Off-ſets for their own Uſe; which old Roots have often ſo much degenerated from what they were the preceding Year, as to cauſe a Suſpicion, whether the Perſons they were purchaſed from had not changed the Roots; and this Degeneracy always attends theſe Flowers, after having flower'd extremely large and fair, or that they have been permitted to ſeed: So that it is abſolutely neceſſary to ſow Seeds every Year, in order to preſerve a Succeſſion of good Flowers.

The Soil which theſe delight moſt in, is a rich, light, ſandy Earth; but whatever Dung is added to the Earth, ſhould be very rotten, and ought to be mixed with the Earth at leaſt ſix Months before it be uſed: During which Time it ſhould be often turned over to mix the Parts well together; and the lighter this Earth is, the better will the Flowers thrive: But, as I before ſaid, it is by no means adviſeable to ſift or ſcreen it too fine, for the Reaſons already given. Some there are who mix rotten Tan, or Saw-duſt, with their Earth, to render it light; but this is alſo bad for theſe Flowers, as I have ſeveral times experienced, eſpecially if either of theſe be not ſo rotten as to have quite loſt its Appearance, and reduced to Earth; for tho' the Roots will often come up very ſtrong, and flouriſh very vigorouſly till the Beginning of *February*, yet at that Seaſon it is very common to have them die off in large Patches: Which when I have obſerv'd, I have ſearch'd to the Bottom of the Roots, and found ſome Part of the Tan or Saw-duſt lying near them, which has detain'd the Moiſture, and thereby rotted the Roots.

The Manner of preparing the Beds, and the Diſtance and Method of planting the Roots, being exactly the ſame as hath been already directed for the old Sorts, I ſhall not repeat it here, but will only obſerve, that theſe Flowers being more tender than the others, muſt be protected from hard Froſts, and cutting ſharp Winds, eſpecially after *Chriſtmas*, when their Flower-buds are forming; for if they are neglected at that Seaſon, their Flowers will rarely prove fair; nor ſhould you ſuffer them to receive too much Wet in *Winter* or *Spring*, which is equally as injurious to them as Froſt. In planting of theſe Roots you ſhould obſerve to place the ſemi-double Kinds, from which you intend to ſave Seeds, in ſeparate Beds by themſelves, and not intermix them with the double Flowers, becauſe they will require to be treated in a different Manner; for when the Flowers of the ſemi-double Kinds begin to fade, you ſhould carefully guard them from Wet; for if they are permitted to receive hard Rains, or are water'd at that Seaſon, the Seeds do rarely come to Maturity, or are ſo weak, that ſcarce one in fifty of them will grow.

When the Seed begins to ripen (which may be eaſily known by ſeparating from the Axis, and falling) you ſhould look it over every Day, gathering it as it ripens; for there will be a conſiderable Diſtance in the Seeds of the ſame Bed coming to Maturity, at leaſt a Fortnight, and ſometimes three Weeks or a Month. When you gather the Seed, it ſhould not be expoſed to the Sun, but ſpread to dry in a ſhady Place; after which, you muſt put it up where the Vermin cannot come to it, until the Time of ſowing it.

By this Method of ſowing Seeds every Year, you will not only increaſe your Stock of Roots, but alſo raiſe new Varieties, which may be greatly mended by changing the Seeds into freſh Ground; for if a Perſon continually ſows his Seed in the ſame Garden many Years, they will not produce near ſo fine Flowers, as if he procured his Seeds at ſome Diſtance; which is alſo the Caſe with moſt other Plants.

It will alſo be neceſſary to take away all the Earth out of the Beds in which the Roots were blown the precedent Year, and put in new, if you intend to plant *Ranunculus*'s there again; otherwiſe they will not thrive near ſo well, notwithſtanding you may add ſome new Compoſt to the Beds: And this is what all the curious Floriſts do continually obſerve.

RAPA; Turnip.

The *Characters* are;

The Flower conſiſts of four Leaves, which are placed in form of a Croſs; out of the Flower-cup riſes the Pointal, which afterwards turns to a Pod, divided into two Cells by an intermediate Partition, into which the Valves adhere on both Sides, and are full of roundiſh Seeds: To theſe Marks muſt be added, a carneous and tuberoſe Root.

The *Species* are;

1. RAPA *ſativa rotunda, radice candida. C. B. P.* Round Garden Turnip, with a white Root.
2. RAPA *ſativa rotunda, radice ſupra terram viridi. Boerh. Ind.* Round Garden Turnip, whoſe Root is green above Ground.
3. RAPA *ſativa rotunda, radice punicea. C. B. P.* Round Garden Turnip, with a purple Root.
4. RAPA *ſativa rotunda, radice obſoleta nigricante. C. B. P.* Round Garden Turnip, with a ruſty black Root.
5. RAPA *ſativa rotunda, radice foris & intus flaveſcente. C. B. P.* Round Garden Turnip, with a yellow Root both within and without.
6. RAPA *radice oblonga, ſeu fœmina. C. B. P.* Oblong or Female Turnip.

There are ſome other Varieties of this Plant, which differ in the Shape or Colour of their Roots; but as they are only ſeminal Variations, ſo it would be needleſs to enumerate them in this Place, ſince it is the firſt and third Sort here mentioned, which are chiefly cultivated for the Table in *England*. The yellow Sort, and that with long Roots, were formerly more cultivated than at preſent; for it is now very rare to ſee either of theſe brought to the Markets, though ſome Years ſince they were ſold in as great Plenty as the common round Sort.

Turnips delight in a light, ſandy Soil, which muſt not be rich, for in a rich Soil they grow rank, and are ſticky; but if it be moiſt, they will thrive the better, eſpecially in a freſh Land, where they are always ſweeter than upon an old worn out Soil.

The common Seaſon for ſowing of *Turnips* is any time from the Beginning of *July* to the Middle of *Auguſt*, or a little later; tho' it is not adviſeable to ſow them much after, becauſe, if the *Autumn* ſhould not prove very mild, they will not have time to apple before *Winter*. But notwithſtanding this is the general Seaſon in which the greateſt Part of *Turnips* are ſown in the Country, yet about *London* they are ſown ſucceſſively from *March* to *Auguſt*, by thoſe who propagate them to ſupply the Markets with their Roots; but there is a great Hazard of loſing thoſe which are ſown early in the Year, if the Seaſon ſhould prove dry, by the Fly, which will devour whole Fields of this Plant while young; ſo that where a ſmall Quantity for the Supply of a Family is wanted, it will be abſolutely neceſſary to water them in very dry Weather: And where a Perſon ſows of thoſe Seeds in *April*, *May* and *June*, it ſhould always be upon a moiſt Soil, otherwiſe they ſeldom come to good, the Heat of the Weather

ther at that Seaſon being too great for them upon a dry Soil: But thoſe which are ſown towards the Middle or latter End of *July*, do commonly receive ſome refreſhing Showers to bring them forward: without which, it is very common to have them all deſtroy'd.

Their Seeds ſhould always be ſown upon an open Spot of Ground; for if they are near Hedges, Walls, Buildings, or Trees, they will draw up, and be very long topp'd, but their Roots will not grow to any Size.

They are ſown in great Plenty in the Fields near *London*, not only for the Uſe of the Kitchen, but for Food for Cattle in *Winter*, when other Food fails; and this Way is become a great Improvement to barren, ſandy Lands, particularly in *Norfolk*, where, by the Culture of *Turnips*, many Perſons have doubled the yearly Value of their Ground.

The Land upon which this Seed is ſown, ſhould be plough'd in *May*, and twy-fallow'd in *June*, and made very fine; then the Seed ſhould be ſown pretty thin, (for it being ſmall, a little will ſow a large Piece of Ground, two Pounds of this Seed is ſufficient for an Acre of Land): The Seed muſt be harrowed in, and the Ground rolled with a Wooden Roll, to break the Clods, and make the Surface even: In ten Days or a Fortnight after ſowing, the Plants will come up; at which Time, if the Seaſon ſhould prove dry, they will be in great Danger of being deſtroyed by the Fly: But if it ſo happen, the Ground muſt be ſow'd again, for the Seed being cheap, the chief Expence is the Labour.

When the Plants have got four or five Leaves, they ſhould be houghed to deſtroy the Weeds, and to cut up the Plants where they are too thick, leaving the remaining ones about ſix or eight Inches aſunder each Way, which will be Room enough for the Plants to ſtand for the firſt Houghing: But in the ſecond Houghing, which muſt be performed about three Weeks or a Month after the firſt, they ſhould be cut up, ſo as that the remaining Plants may ſtand fourteen or ſixteen Inches Diſtance, or more, eſpecially if they are deſign'd for feeding of Cattle; for where the Plants are allowed a good Diſtance, the Roots will be proportionably large, ſo that what is loſt in the Number will be over-gained by their Bulk: which is what I have often obſerv'd: But in ſuch Places where they are ſown for the Uſe of the Kitchen, they need not be left at a greater Diſtance than ten Inches or a Foot, becauſe large Roots are not ſo generally eſteem'd for the Table.

In order to ſave good *Turnip* Seeds, you ſhould tranſplant ſome of the faireſt Roots in *February*, placing them at leaſt two Feet aſunder each Way, obſerving to keep the Ground clear from Weeds, until the *Turnips* have ſpread ſo as to cover the Ground, when they will prevent the Weeds from growing; and when the Pods are formed, you ſhould carefully guard them againſt the Birds, otherwiſe they will devour it, eſpecially when it is near ripe; at which Time you ſhould either ſhoot the Birds as they alight upon the Seed, or lay ſome birdlim'd Twigs upon it, whereby ſome of them will be caught; and if they are permitted to remain ſome Time, and afterwards turn'd looſe, they will prevent the Birds from coming there again for ſome Time, as I have experimented. When the Seed is ripe, it ſhould be cut up, and ſpread to dry in the Sun; after which it may be threſh'd out, and preſerv'd for Uſe.

RAPHANISTRUM; Charlock.

This differs from the *Radiſh*, in having a jointed Pod, containing one roundiſh Seed in each Joint.

There are ſeveral Varieties of this Plant, two of which grow wild in *England*; the others are Natives of *France*, *Spain* and *Italy*; but as they are Weeds which grow frequently on arable Land, ſo they are not cultivated in Gardens.

RAPHANUS; [of ῥᾴδιος, *eaſy*; and φαίνω, to *appear*; *q. d.* a *Plant eaſily appearing*; for this Plant being ſown, quickly puts forth out of the Ground] Radiſh.

The *Characters* are;

The Flower conſiſts of four Leaves, which are placed in form of a Croſs; out of the Flower-cup riſes the Pointal, which afterward turns to a Pod in form of a Horn, that is thick, ſpungy, and furniſhed with a double Row of roundiſh Seeds, which are ſeparated by a thin Membrane.

The *Species* are;

1. RAPHANUS *minor oblougus. C. B. P.* Small oblong *or* common Radiſh.

2. RAPHANUS *niger major rotundus. Mor. Hiſt.* Great, round, black Radiſh, *commonly called* The Spaniſh Radiſh.

3. RAPHANUS *major orbicularis, floribus candidis. C. B. P.* Great round-rooted Radiſh, with white Flowers.

4. RAPHANUS *minor oblongus pyriformis, vulgo Ramurazza. Hort. Cath.* The leſſer Radiſh, with an oblong Pear-ſhap'd Root.

5. RAPHANUS *major orbicularis, vel rotundus. C. B. P.* Greater Radiſh, with a round Root.

The firſt Sort here mentioned, is that which is commonly cultivated in Kitchen Gardens for its Root; of which there are ſeveral Varieties, as the Small-topp'd, the Deep-red, and the Long-topp'd ſtrip'd *Radiſh*; all which are Varieties ariſing from Culture: The Small-topp'd Sort is moſt commonly preferr'd by the Gardeners near *London*, becauſe they require much leſs Room than thoſe with large Tops, and may be left much cloſer together: And as the forward *Radiſhes* are what produce the greateſt Profit to the Gardener, ſo theſe being commonly ſown upon Borders near Hedges, Walls, or Pales, if they are of the Large-topp'd Sort, they will be apt to grow moſtly at Top, and not ſwell ſo much in the Root as the other, eſpecially if they are left pretty cloſe.

The Seaſons for ſowing this Seed are various, according to the Time when they are deſired for Uſe: But the earlieſt Seaſon is commonly toward the latter End of *October*, that the Gardeners near *London* ſow them to ſupply the Market; and theſe, if they do not miſcarry, will be fit for Uſe in *March* following, which is full as ſoon as moſt People care to eat them. Theſe (as I ſaid before) are commonly ſown on warm Borders, near Walls, Pales, or Hedges, where they may be defended from the cold Winds.

The ſecond Sowing is commonly about *Chriſtmas*, provided the Seaſon be mild, and the Ground in a fit Condition to work: Theſe are alſo ſow'd near Shelter, but not ſo near Pales or Hedges as the firſt Sowing: Theſe, if they are not deſtroy'd by Froſt, will be fit for Uſe the Beginning of *April*: But in order to have a Succeſſion of theſe Roots for the Table through the Seaſon, you ſhould repeat ſowing of their Seeds once a Fortnight, from the Middle of *January* till the Beginning of *April*, always obſerving to ſow the latter Crops upon a moiſt Soil, and an open Situation, otherwiſe they will run up, and grow ſticky, before they are fit for Uſe.

Many of the Gardeners near *London* ſow *Carrot* Seed with their early *Radiſhes*; ſo that many times when their *Radiſhes* are kill'd, the *Carrots* will remain; for the Seeds of *Carrots* commonly lie in the Ground five or ſix Weeks before they come up: and the *Radiſhes* ſeldom lie above a Fortnight under Ground; ſo that theſe are often up, and kill'd, when the *Carrot* Seed remains ſafe in the Ground: But when both Crops ſucceed, the *Radiſhes* muſt be drawn off very young, otherwiſe the *Carrots* will be drawn up ſo weak, as not to be able to ſupport themſelves when the *Radiſhes* are gone.

It is alſo a conſtant Practice with theſe Gardeners, to mix *Spinach* Seed with their latter Crop of *Radiſhes*; ſo that when the *Radiſhes* are drawn off, and the Ground clean'd between the *Spinach*, it will grow prodigiouſly, and in a Fortnight's Time will as completely cover the Ground, as tho' there had been no other Crop: And this *Spinach*, if it be of the broad-leav'd Kind, will be larger and fairer than it commonly is when ſown by itſelf; becauſe where People have no other Crop mix'd with it, they commonly ſow it too thick, whereby it is drawn up weak: But here the Roots ſtand pretty far apart, ſo that after the *Radiſhes* are gone, they have full Room to ſpread; and if the Soil be good, it is a prodigious Size this Spinach will grow to, before it runs up for Seed: But this Huſbandry is chiefly practis'd by the Gardeners, who pay very dear for their Land, and are oblig'd to have as many Crops in a Year as poſſible, otherwiſe they could not afford to pay ſuch large Rents.

When the *Radiſhes* are come up, and have got five or ſix Leaves, they muſt be pull'd up where they are too cloſe, otherwiſe they will draw up to Top, but the Roots will not increaſe their Bulk: In doing of this, ſome only draw them out by Hand: but the beſt Method is to hough them with a ſmall Hough, which will ſtir the Ground, and deſtroy the young Weeds, and alſo promote the Growth of the Plants. The Diſtance which theſe ſhould be left, if for drawing up ſmall, may be three Inches; but if they are to ſtand until they are pretty large, ſix Inches are full near enough; and a ſmall Spot of Ground will afford as many *Radiſhes* at each Sowing, as can be ſpent in a Family while they are good.

If you intend to ſave Seeds of your *Radiſhes*, you ſhould, about the Beginning of *May*, prepare a Spot of Ground in Proportion to the Quantity of Seeds intended (but you ſhould always make Allowance for bad Seaſons, becauſe it often happens, in a very dry Seaſon, that there will not be a fourth Part of the Quantity of Seeds upon the ſame Proportion of Ground as there will be in a moiſt Seaſon:) This Ground ſhould be well dug and levell'd; then you ſhould draw up ſome of the ſtraiteſt and beſt coloured *Radiſhes* (throwing away all ſuch as are ſhort, and that branch out in their Roots:) Theſe ſhould be planted in Rows three Feet Diſtance, and two Feet aſunder in the Rows, obſerving, if the Seaſon be dry, to water them until they have taken Root; after which they will require no farther Care, but only to hough down the Weeds between them, until they are advanced ſo high, as to ſpread over the Ground, when they will prevent the Growth of Weeds.

When the Seed begins to ripen, you ſhould carefully guard it againſt the Birds, who will otherwiſe deſtroy it: When it is ripe, (which you may know by the Pods changing brown) you ſhould cut it, and ſpread it in the Sun to dry; after which you ſhould threſh it out, and lay it up for Uſe, where the Mice cannot come to it, otherwiſe they will eat it up.

The ſmall round-rooted *Radiſh* is not very common in *England*; but in many Parts of *Italy* it is the only Sort cultivated. The Roots of this Kind are many times as large as a ſmall Turnip, and are very ſweet. This may be propagated in the ſame manner as the common Sort, but only with this Difference, *viz.* That this muſt not be ſown till the Beginning of *March*, and the Plants allow'd a greater Diſtance. The Seeds of this Kind are very ſubject to degenerate when ſav'd in *England*, ſo that it is proper to have them from abroad every Year.

The other round-rooted *Radiſhes* are rarely cultivated in *England*; but thoſe who have a mind to have them, may ſow them in the ſame manner as the laſt.

The *Black Spaniſh Radiſh* is only cultivated for Medicinal Uſe in *England*: The Seeds of this may be ſown in *May*; and when the Plants come up, they ſhould be houghed out, ſo as to leave the remaining ones ten Inches or a Foot aſunder; after which they muſt be conſtantly clear'd from Weeds in Summer, and in Autumn they will be fit for Uſe.

RAPISTRUM; Charlock, *or* Wild Muſtard.

There are two or three Species of this Plant, one of which grows wild in *England*, the other two are Weeds in the South of *France*, *Italy* and *Spain*. Theſe are never preſerv'd, except by Botaniſts for Variety.

RAPUNCULUS, Rampions.

The *Characters* are;

The Flower conſiſts of one Leaf, in its Form approaching to a Bell-ſhape; but is ſo expanded and cut, that it almoſt repreſents the Figure of a Star. The Pointal is commonly ſplit into two horned Diviſions, and the Flower-cup becomes a Fruit, which is divided into three Cells, incloſing many ſmall Seeds.

The *Species* are;

1. Rapunculus *ſpicatus. C. B. P.* Spiked Rampion.
2. Rapunculus *ſpicatus albus. C. B. P.* Spiked Rampion, with a white Flower.
3. Rapunculus *Alpinus corniculatus. C. B. P.* Horned Rampion of the *Alps*.
4. Rapunculus *ſcabioſæ capitulo cœruleo. C.B.P.* Rampions with blue ſcabious-like Heads.
5. Rapunculus *ſcabioſæ capitulo albo. C. B. P.* Rampion with white ſcabious-like Heads.
6. Rapunculus *ſpicatus, flore flaveſcente. Inſt. R. H.* Spiked Rampion, with a yellowiſh Flower.
7. Rapunculus *Creticus, ſeu pyramidalis altera. C. B. P.* Pyramidal Rampion of *Crete*.
8. Rapunculus *folio gramineo. Inſt. R. H.* Graſs-leaved Rampion.
9. Rapunculus *Creticus petromarula, flore albo. Tourn. Cor.* Rampion of *Crete*, with a white Flower.
10. Rapunculus *Orientalis, foliis anguſtis dentatis. Tourn. Cor.* Eaſtern Rampion, with narrow indented Leaves.
11. Rapunculus *Orientalis anguſtifolius multicaulis totus floridus. Tourn. Cor.* Eaſtern narrow leaved Rampion, with many Stalks, filled with Flowers.
12. Rapunculus *Orientalis, campanulæ pratenſis folio. Tourn. Cor.* Eaſtern Rampion, with a meadow Belflower-leaf.
13. Rapunculus *Orientalis, foliis longioribus, aſperis & rigidis. Tourn. Cor.* Eaſtern Rampion, with longer rough ſtiff Leaves.
14. Rapunculus *Orientalis altiſſimus, foliis glabris & rigidis. Tourn. Cor.* The talleſt Eaſtern Rampion, with ſmooth ſtiff Leaves.
15. Rapunculus *Orientalis, heſperidis folio. Tourn. Cor.* Eaſtern Rampion, with a Dames-violet-leaf.

Theſe are all of them hardy Plants, which will thrive in the open Air: they are propagated by Seed, which ſhould be ſown in Autumn; for if they are kept out of the Ground till the Spring, they frequently fail. Theſe Seeds ſhould be ſown on a Bed of freſh undunged Earth, where they are deſigned to remain; for they do not thrive ſo well when they are tranſplanted. Therefore the beſt Method is, to make ſmall Drills croſs the Bed, about eighteen Inches aſunder, and ſow the Seeds therein: then cover them lightly over with Earth; for if they are buried too deep, they will rot in the Ground. In about a Month after the Seeds are ſown, the Plants will come up; when they ſhould be diligently weeded, which is all the Care they will require till Spring; at which Time the Plants ſhould be thinned where they are too cloſe; ſo as to leave them ſix or ſeven Inches apart in the Rows; and afterwards they require no farther attention but to keep them clear from Weeds. In *June* the Plants will flower, and if the Summer prove favourable, they will produce ripe Seeds.

As theſe Plants do not continue above two or three Years, ſo there ſhould be Seeds ſown every other Year, to continue the Sorts; for they are Plants which require little Trouble to cultivate them, and their Flowers make a pretty Variety in large Gardens; therefore they ſhould be allowed a Place amongſt other hardy Flowers.

RAPUNTIUM; Rampions, *or* Cardinal's Flower.

The *Characters* are;

The Flower conſiſts of one Leaf, which is of an anomalous Figure, hollowed like a Pipe, and furrow'd or channell'd, divided, as it were, into many Parts, in the Shape of a Tongue, defended by a Vagina or Covering, which enfolds the Pointal: When the Flowers decay, the Flower-cup turns to a Fruit, divided into three Cells, full of ſmall Seeds, which adhere to a Placenta, which is divided into three Parts.

The *Species* are;

1. Rapuntium *maximum, coccineo ſpicato flore. Col. in Reçh.* Greater Rampions, with a Crimſon-ſpiked Flower, *commonly call'd* The Scarlet Cardinal's Flower.

3. Rapuntium *Americanum, flore dilute cœruleo H. R. Par.* The Blue Cardinal's Flower.

3. Rapuntium *Americanum, virgæ aureæ foliis, parvo flore cœruleo. Tourn.* Cardinal's Flower, with Golden Rod Leaves, and a ſmall Blue Flower.

There are ſeveral other Varieties of this Plant growing in divers Parts of *America*; but thoſe here mentioned are all which I have obſerv'd cultivated in *England*. The firſt Sort is greatly prized by the Curious for the Beauty of its rich Crimſon Flowers, which exceed all the Flowers I have yet ſeen, in the Deepneſs of its Colour: And theſe commonly, when their Roots are ſtrong, produce large Spikes of theſe Flowers, which continue a long Time in Beauty, and make a moſt magnificent Shew amongſt other Flowers. The Time of their Flowering is commonly in *July* and *Auguſt*; and if the *Autumn* proves very favourable, they will ſometimes produce good Seeds in *England*. Theſe Plants are Natives of *Virginia* and *Carolina*, where they grow by the Sides of Rivulets, and make a moſt beautiful Appearance; from whence the Seeds are often ſent into *England*. Theſe Seeds do commonly arrive here in the Spring; at which Time they ſhould be ſown in Pots fill'd with light Earth, and but juſt cover'd over; for if the Seeds are buried deep, they will not grow: Theſe Pots ſhould be placed under a Frame, to defend them from Cold, until the Seaſon is a little advanc'd; but they ſhould not be plac'd on a Hot-bed, which will alſo deſtroy the Seeds.

When the Weather is warm, towards the Middle of *April*, theſe Pots ſhould be placed in the open Air, in a Situation where they may have the Morning Sun till twelve of the Clock, obſerving to water them conſtantly in dry Weather; and when the Plants come up, they ſhould be tranſplanted each into a ſmall Pot fill'd with freſh light Earth, and plac'd in the ſame Situation, obſerving to water them in dry Weather; and in Winter they ſhould be plac'd under a Hot-bed Frame, where they may be ſhelter'd from ſevere Froſts;

but in mild Weather they ſhould be as much expos'd to the open Air as poſſible.

The *March* following theſe Plants ſhould be put into larger Pots fill'd with the ſame freſh Earth, and plac'd, as before, to the Morning Sun, obſerving to water them in dry Weather, which will cauſe them to flower ſtrong the *Autumn* following.

Theſe Plants are alſo propagated by parting of their Roots: The beſt Seaſon for which is, either ſoon after they are paſt Flower, or in *March*, obſerving to water and manage them, as hath been directed for the Seedling Plants, both in *Winter* and *Summer*.

The Blue Sort does conſtantly produce ripe Seeds in *England*, which ſhould be ſown ſoon after they are ripe; in the *Spring* following the Plants will come, when they ſhould be tranſplanted and managed as the other Sort, with which Culture this will alſo agree. This is preſerv'd for Variety; but the Flowers are not near ſo beautiful as thoſe of the former Sorts.

The other Sort, with ſmall Blue Flowers, is a biennial Plant, periſhing as ſoon as the Seeds are ripe. This may be raiſed in the ſame Manner as the former, but is ſcarcely worthy of a Place in the Flower Garden.

To this *Article* muſt be added;

1. Rapuntium *Americanum, floribus albis. Inſt. R. H. American* Cardinal Flower, with white Flowers.

2. Rapuntium *Americanum, coccineo flore, lineis albis eleganter picto. Inſt. R. H. American* Cardinal Flower, with a ſcarlet Flower, elegantly ſtriped with White.

3. Rapuntium *Americanum altiſſimum, foliis cirſii, flore vireſcente. Plum. Cat.* The talleſt *American* Cardinal Flower, with Leaves like the Melancholy-thiſtle, and greeniſh Flowers.

4. Rapuntium *Americanum, foliis cirſii lucidis, flore multiplici coccineo conglobato. Plum. Cat. American* Cardinal Flower, with ſhining melancholy-thiſtle Leaves, and many ſcarlet Flowers growing in Cluſters.

5. Rapuntium *Americanum, trachelii folio, flore purpuraſcente. Plum. Cat. American* Cardinal Flower, with a throatwort Leaf, and a purpliſh Flower.

6. Rapuntium *Americanum, foliis oblongis, floribus parvis cæruleis, ſpicâ longiſſimâ. American* Cardinal Flower, with oblong Leaves, and ſmall blue Flowers, growing in a long Spike.

7. Rapuntium *urens Solonienſe. Mor. H. R. Blæſ.* Burning Cardinal Flower of *Blois*.

8. Rapuntium *urens, flore purpureo-cæruleo. Inſt. R. H.* Burning Cardinal Flower, with a blueiſh purple Flower.

9. Rapuntium *Africanum minus anguſtifolium, flore violaceo. Inſt. R. H.* Leſſer narrow-leaved *African* Cardinal Flower, with a violet-coloured Flower.

10. Rapuntium *Æthiopicum, violaceo galeato flore, foliis pinaſtri. Breyn. Cent. Ethiopian* Cardinal Flower, with a violet galeated Flower, and leaves like the Pinaſter.

11. Rapuntium *Æthiopicum, cæruleo galeato flore, foliis coronopi. Breyn. Cent. Ethiopian* Cardinal Flower, with a blue galeated Flower, and Leaves like Buckshorn Plantain.

12. Rapuntium *Æthiopicum, cæruleo galeato flore, foliis dentatis. Breyn. Cent. Ethiopian* Cardinal Flower, with a blue galeated Flower, and indented Leaves.

13. Rapuntium *Canadenſe pumilum, linariæ folio. Sarrac.* Low *Canady* Cardinal Flower, with a toad-flax Leaf.

14. Rapuntium *Creticum minimum, bellidis folio, flore maculato. Tourn. Cor.* The leaſt Cardinal Flower of *Crete*, with a daizy Leaf, and a ſpotted Flower.

Moſt of theſe Sorts are biennial Plants, which commonly periſh when they have produced Seed; ſo ſhould be ſown every Year, in order to continue a Succeſſion of them to flower annually. The fifth Sort is an annual Plant, which flowers and ſeeds the ſame *Summer* it is ſown, and ſoon after periſhes. If the Seeds of this Kind are permitted to ſcatter in the Pots, and the Pots kept in the Stove, the Plants will come up in *Autumn*, and flower early the following *Spring*.

The Seeds of the other Sorts ſhould be ſown in Pots filled with light rich Earth, and plunged into a moderate Hot-bed of Tanners-bark, and ſhould be frequently watered; otherwiſe the Seeds will remain in the Earth ſeveral Months, before the Plants will appear; and ſometimes I have known the Seeds remain in the Earth a whole Year, and the Plants have come up the following *Spring*. When the Plants come up, they ſhould be tranſplanted each into a ſeparate ſmall Pot, and plunged into the Hot-bed again to bring them forward; but in *June* they ſhould be inured to bear the open Air by degrees, and toward the End of that Month, they may be removed out of the Hot-bed, and placed in a warm Situation, where they may have the Morning Sun, and muſt be conſtantly watered in dry Weather. In this Place they may remain till *October*, when they ſhould be placed under a common Hot-bed Frame, where they ſhould have as much free Air as poſſible in mild Weather; but muſt be covered in froſty Weather, otherwiſe they will not live in this Country. The *Spring* following the Plants muſt be ſhifted into larger Pots, and placed abroad again in a ſheltered Situation, and duly watered, otherwiſe they will not flower very ſtrong. In *July* the Plants will produce their Flowers, and if the *Autumn* proves favourable, they will perfect their Seeds.

RAUVOLFIA.

The *Characters* are;

It hath a tubulous Flower conſiſting of one Leaf, whoſe upper Part ſpreads open into a plain Surface, and is cut into ſeveral Parts; from whoſe Cup ariſes the Pointal, fixed like a Nail, which afterward becomes an almoſt globular ſoft Fruit, full of Milk, in which are contained one or two hard Seeds.

The *Species* are;

1. Rauvolfia *tetraphylla anguſtifolia. Plum. Nov. Gen.* Four-leaved *Rauvolfia*, with narrow Leaves.

2. Rauvolfia *tetraphylla latifolia. Plum. Nov. Gen.* Four leaved *Rauvolfia*, with broad Leaves.

This Name was given to this Genus of Plants by Father *Plumier*, who was the Perſon that diſcovered them in *America*, in Honour to *Leonard Ravwolf*, who was a curious Botaniſt, and flouriſhed about the Year 1583. He travelled into the *Holy-land*, and ſeveral other Places in the Eaſt, and publiſhed his Travels in *High-Dutch*, which were tranſlated into *Engliſh* under the Inſpection of the great Mr. *Ray*.

Theſe Plants grow plentifully at *Campechy*, from whence I received their Seeds, which were collected by Mr. *Robert Millar*, Surgeon.

The Seeds of theſe Plants ſhould be ſown in Pots filled with freſh Earth, and plunged into a Hot-bed of Tanners-bark; for as they are very hard, ſo they frequently remain a long time in the Ground: therefore when they are in Pots, they may be ſhifted from one Bed to another, as their Heat decays. When the Plants come up, they muſt be frequently refreſhed with Water, but it muſt not be given them in large Quantities; for the Plants are ſucculent, and full of a milky Juice, ſo are in Danger of rotting with too much Moiſture. They ſhould alſo have a large Share of freſh Air admitted to them in warm Weather; and when they are about two Inches high, they ſhould be tranſplanted each into a ſeparate ſmall Pot, filled with freſh light Earth, and then plunged into the Hot-bed again; obſerving to ſhade them from the Sun, until they have taken new Root; after which Time they ſhould have free Air admitted to them every Day, in proportion to the Warmth of the Seaſon, and they muſt be often refreſhed with Water. In this Hot-bed the Plants may remain till toward *Michaelmas*, when they ſhould be removed into the Stove, and plunged into the Tanners-bark, where they muſt be kept warm, and not have too much Moiſture in cold Weather, leſt it rot them.

As theſe Plants are Natives of very hot Countries, ſo they will not live in the open Air in *England*; therefore they ſhould conſtantly remain in the Stove; and if they remain in the Bark-bed, they will thrive much faſter, than when they are placed on Stands in a dry Stove. But in the *Summer* Seaſon, they ſhould have a large Share of freſh Air admitted to them, and the Leaves of the Plants muſt be now and then waſhed with a Sponge, to clear them from the Filth they are apt to contract, which, if ſuffered to remain, will retard the Growth of the Plants. Where this Care is taken of them, they will thrive very faſt, and the ſecond Year will produce Flowers, and continue ſo to do for many Years; but as yet they have not perfected their Seeds in *England*. They may alſo be propagated by Cuttings, which ſhould be laid to dry for two or three Days before they are planted; and then ſhould be plunged into a moderate Hot-bed of Tanners-bark, obſerving to ſhade them until they have taken Root; after which Time they may be treated as the ſeedling Plants.

RESEDA, Baſtard-rocket.

The *Characters* are;

It hath a polypetalous anomalous Flower, compoſed of ſeveral diſſimilar Petals, out of whoſe Cup ariſes the Pointal, which afterward becomes a membranaceous Fruit, for the moſt part three

three or four-cornered, oblong, and, as it were cylindraceous, pregnant with roundiſh Seeds.

The *Species* are;

1. RESEDA *vulgaris. C. B. P.* Common Baſtard-rocket.
2. RESEDA *criſpa Gallica. Bocc. Rar. Pl.* Curled *French* Baſtard-rocket.
3. RESEDA *latifolia, flore flavo. Mor. Hiſt.* Broad-leaved Baſtard-rocket, with a yellow Flower.
4. RESEDA *foliis calcitrapæ, flore albo. Mor. H. R. Blæſ.* Baſtard-rocket, with Star-thiſtle-leaves, and a white Flower.
5. RESEDA *minor vulgaris. Inſt. R. H.* Smaller common Baſtard-rocket.
6. RESEDA *minor vulgaris, folio minus inciſo. Inſt. R. H.* Smaller common Baſtard-rocket, with a Leaf leſs cut.
7. RESEDA *minor vulgaris, foliis integris. Inſt. R. H.* Small common Baſtard-rocket, with whole Leaves.
8. RESEDA *Pyrenaica, linariæ folio glauco. Schol. Bot. Pyrenean* Baſtard-rocket, with a glaucous toad-flax Leaf.

Theſe Plants are preſerved in the Gardens of ſome Perſons, who are curious in Botany; but at preſent they are not uſed in Medicine. They are all of them very hardy Plants, which are propagated by Seeds, which ſhould be ſown in the Spring, on an open Bed of freſh undunged Earth, in the Place where they are deſigned to remain; and when the Plants come up, they ſhould be houghed to ſeparate them, where they are too cloſe, as alſo to deſtroy the Weeds. The four firſt Sorts ſhould be allowed eighteen Inches or two Feet; but the other Sorts, being of leſs Growth, do not require above half that Room. The Weeds ſhould be conſtantly houghed down between the Plants when they ariſe, which is all the Culture the Plants require. Some of theſe Plants will flower the ſame Year they are ſown, when they come up early in the Spring; but in general they do not flower till the ſecond Year, when they produce their Seeds, and the Plants commonly periſh ſoon after. If the Seeds of theſe Plants are permitted to ſcatter, the Plants will come up, and ſtock the Ground, ſo as to become Weeds.

RHABARBARUM MONACHORUM; *vide* Lapathum.

RHAMNOIDES; The Sea Buckthorn.

The *Characters* are;

It hath the whole Appearance of the Buck-thorn, *but is Male and Female in different Trees: The Flowers of the Male have no Petals; the Flower-cup conſiſts of two Leaves, in the Centre of which are ſeveral ſmall Stamina: The Female Trees produce roundiſh Berries, each of which contains a ſingle Seed.*

The *Species* are;

1. RHAMNOIDES *florifera, ſalicis foliis. T. Cor.* Male Willow-leav'd Sea Buckthorn.
2. RHAMNOIDES *fructifera, foliis ſalicis, baccis leviter flaveſcentibus. T. Cor.* Female Willow-leav'd Sea Buckthorn, with yellow Berries.

Theſe Plants do grow in great Plenty upon the Sea-coaſts of *Lincolnſhire*, and at *Sandwich*, *Deal* and *Folkſton* in *Kent*, as alſo in divers Parts of *Scotland*.

They are preſerv'd in ſeveral Gardens near *London* for Variety; where, being intermixed with other Shrubs of the ſame Growth, they afford an agreeable Proſpect.

Theſe Shrubs are eaſily propagated from Suckers, which they ſend forth in great Plenty from the old Plants. Theſe Suckers may be taken off any time in *February* or *March*, and planted in a Nurſery, where they may be train'd up for two or three Years; after which they may be remov'd to the Places where they are to remain. There is no very great Beauty in theſe Plants; but as their Leaves and Flowers are very different from moſt other Trees, ſo they make a pretty Variety in ſmall Wilderneſs Quarters; or when planted in Clumps with various Trees, they will grow to be ten or twelve Feet high, but it is very rare to ſee them larger.

RHAMNUS; The Buckthorn.

The *Characters* are;

It hath a Funnel-ſhap'd Flower, conſiſting of one Leaf, which is divided towards the Top into four or five Segments; out of the Flower-cup riſes the Pointal, which afterward becomes a ſoft roundiſh Berry, very full of Juice, incloſing four hard Seeds, which are round and ſmooth on the Outſide, but flatted on the other.

The *Species* are;

1. RHAMNUS *catharticus. C. B. P.* Common purging Buckthorn.
2. RHAMNUS *catharticus minor. C. B. P.* Leſſer purging Buckthorn.
3. RHAMNUS *Afer, folio pruni longiori ſubrotundo, flore candicante, ſpinis longiſſimis. Boerh. Ind. alt.* African Buckthorn, with a longer roundiſh Plum Leaf, white Flowers, and very long Spines.
4. RHAMNUS *Hiſpanicus, folio buxi, minor. Tourn.* Leſſer Spaniſh Buckthorn, with a Box Leaf.
5. RHAMNUS *catharticus minor, folio longiori. Inſt. R. H.* Leſſer purging Buckthorn, with a longer Leaf.
6. RHAMNUS *tertius, flore herbaceo, baccis nigris. C.B.P. Cluſius*'s third Buckthorn, with an herbaceous Flower, and black Berries.
7. RHAMNUS *Hiſpanicus, buxi folio ampliore. Inſt. R. H. Spaniſh* Buckthorn, with a larger Box-leaf.
8. RHAMNUS *Hiſpanicus, oleæ folio. Inſt. R. H. Spaniſh* Buckthorn, with an Olive-leaf.
9. RHAMNUS *Hiſpanicus, hyperici folio. Inſt. R. H. Spaniſh* Buckthorn, with a St. Johns-wort Leaf.
10. RHAMNUS *Creticus, amygdali folio minori. Tourn. Cor. Candy* Buckthorn, with a ſmaller almond Leaf.
11. RHAMNUS *Orientalis, alaterni folio. Tourn. Cor.* Eaſt-Buckthorn, with an alaternus Leaf.
12. RHAMNUS *Creticus, buxi folio minori. Tourn. Cor. Candy* Buckthorn, with a ſmaller box-tree Leaf.
13. RHAMNUS *Orientalis, amygdali folio ampliore. Tourn. Cor.* Eaſtern Buckthorn, with a larger almond Leaf.

The firſt of theſe Trees is very common in the Hedges in divers Parts of *England*; the Berries of which are order'd by the *College of Phyſicians* for Medicinal Uſe; but particularly for making a Syrup, which was formerly in great Uſe, but of late the Perſons who ſupply the Markets with theſe Berries, have gathered ſeveral other Sorts of Berries, which they have either mixed with thoſe of the *Buckthorn*, or have wholly ſubſtituted them in their Place; theſe are the Berries of the *Frangula*, *Cornus Fœmina*, *&c.* which Mixture hath ſpoiled the Syrup, and render'd it leſs eſteem'd. But whoever purchaſes the *Buckthorn* Berries, may diſtinguiſh whether they are right or not, by opening them, and obſerving the Number of Seeds in each; for theſe have commonly four, whereas the *Frangula* has but two, and the *Cornus Fœmina* but one; as alſo by bruiſing of the Berries on white Paper, the Juice giving a green Tincture.

The ſecond Sort is leſs common in *England*, and only to be found in Gardens, where it is cultivated for Variety. Both theſe Sorts may be propagated by laying down their tender Branches in *Autumn*, which, if duly water'd in dry Weather the ſucceeding *Summer*, will take Root in the Compaſs of one Year, and may then be tranſplanted either where they are to remain, or in ſome Nurſery, to be train'd up for a few Years, and then remov'd to their Places of Growth.

The firſt Sort will grow to the Height of eighteen or twenty Feet; but being a ſtraggling Grower, is ſeldom much cultivated in Gardens.

The ſecond Sort ſeldom riſes above five Feet high, and ſo ſhould be planted amongſt Shrubs of the ſame Growth, where it will add to the Variety, tho' it has little more Beauty than the former.

They may alſo be propagated by Seeds, which muſt be ſown on a Bed of freſh Earth, ſoon after they are ripe; the Spring following the Plants will appear, when they muſt be carefully clean'd from Weeds; the *Autumn* following they may be tranſplanted out, and managed as the Layers.

The fourth Sort is alſo preſerv'd in ſeveral curious Gardens for Variety: this produces vaſt Quantities of purple Flowers, moſt part of *Summer*, and many times ripens its Seeds in *England*: This may be propagated by laying down the tender Branches in the *Spring*, which will take Root by the *Spring* following, when they ſhould be planted into Pots; and require to be houſed in *Winter*, tho' they need only be ſhelter'd from the extreme Froſt; but ſhould have as much free Air as poſſible in mild Weather, and in *Summer* muſt be often water'd. It delights in a freſh light Soil, and requires to be often remov'd, becauſe the Roots do greatly increaſe, ſo as to fill the Pots in a ſhort Time.

The nine laſt Plants are Natives of warmer Countries than *England*; but yet they are hardy enough to thrive in the open Air very well, if they are planted in ſheltered Situations: and as they are Shrubs of moderate Growth, ſo they may be admitted to have a Place in Wilderneſs Quarters, where they will live under taller Trees, and add to the Variety.

They may be propagated either by Seeds, which ſhould be ſown ſoon after they are ripe; or by laying down of the tender Branches, in the ſame manner as above directed for the common Sort.

But if theſe Plants are raiſed from Seeds, they will require a little Care the firſt *Winter*, if the Froſt ſhould prove ſevere; in which Caſe there ſhould be ſome dry Fern or Oak Branches with their Leaves on, laid over them; which will protect them from the Froſt, and at the ſame Time admit Air to the Plants; to prevent their growing mouldy; which oftentimes deſtroys the tender Parts of Plants, when the Air is too much excluded from them.

The fifth Sort here enumerated ſeldom riſes above four or five Feet high; but moſt of the other Sorts will grow to the Height of ten or twelve Feet, and divide into many Branches, ſo as to form large Shrubs; and being different in their Leaves from each other, they make an agreeable Variety; for which reaſon they are preſerved by ſuch Perſons as delight in hardy Trees and Shrubs.

RHUS; [ῥοῦς takes it Name of ῥέω to *flow*, becauſe it ſtops dyſenterial Fluxes of the Belly, and Womens Courſes] The Sumach Tree.

The *Characters* are;

The Flower conſiſts of five Leaves, which are placed in a circular Order, and expand in form of a Roſe; from whoſe Flower-cup riſes the Pointal, which afterwards becomes a roundiſh or almoſt Kidney-ſhaped Veſſel, containing one Seed of the ſame Shape: To which marks may be added, the Flowers growing in Bunches, and the Leaves are either winged, or have three Lobes.

The *Species are*;

1. RHUS *Virginianum. C. B. P.* Virginian Sumach, *by ſome falſely call'd* The Stag's horn Tree.
2. RHUS *tenuifolia Virginiana humilis: Rhus anguſtifolium. C. B. P. Pluk. Alm.* Dwarf Virginian Sumach with narrow Leaves.
3. RHUS *Africanum trifoliatum majus, foliis ſubtus argenteis acutis, & margine inciſis. Pluk. Phyt.* Great African three-leav'd Sumach, with narrow Leaves cut on their Edges, and white underneath.
4. RHUS *Africanum trifoliatum minus glabrum, ſplendente folio ſubrotundo integro, forte Lentiſcus Africanus triphyllos quorundam. Pluk. Phyt.* Leſſer three-leav'd African Sumach, with a whole, roundiſh, ſhining, ſmooth Leaf.
5. RHUS *Africanum trifoliatum majus, folio ſubrotundo integro, molli & incano. Pluk. Phyt.* Greater three-leav'd African Sumach, with a whole, roundiſh, woolly Leaf.
6. RHUS *Americanum, paniculâ ſparſâ herbaceâ, ramis patulis glabris. Horth. Elth. American* Sumach, with a looſe herbaceous Panicle, and low ſmooth Branches.
7. RHUS *folio ulmi. C. B. P.* Elm-leaved Sumach.

The firſt of theſe Plants is pretty common in many Gardens near *London*, where it endures the ſevereſt Cold of the *Winters* in the open Air, and is uſually intermixed in ſmall Wilderneſs Quarters, amongſt other Trees of the like Growth, where it affords an agreeable Variety: This produces Bunches of ſmall Flowers in *June*, at the Extremities of the Branches, which are ſucceeded by Seeds which are incloſed in red Covers, ſo that the whole Spikes appear of a fine red Colour. Theſe Bunches are ſometimes uſed in Dying, and the Branches of the Tree are uſed for Tanning of Leather in *America*, where theſe Trees grow in Plenty.

This Tree will grow to be eight or ten Feet high, but is very ſubject to produce crooked, unſightly Branches, ſo that it can't be reduc'd to a regular Stem, which renders it unfit to plant ſingly in an open Situation: but amongſt other Trees, where the Deformity of the Stem is hid, it looks very well.

The ſecond Sort is leſs common than the firſt, and only to be found in ſome very curious Gardens. This is like the firſt, in moſt reſpects, but is of much ſmaller Growth, and the Leaves are very narrow. Both theſe may be propagated in Plenty, from the great Quantity of Suckers which they produce from their Roots, which being taken off in *March*, and planted on a light ſandy Soil, will, in a few Years, produce Flowers. They may alſo be propagated by laying down of the Branches, in the *Spring* of the Year, which will take Root in the Compaſs of one Seaſon, and may then be taken off and tranſplanted where they are to remain.

The *African* Sorts are all preſerv'd in Pots or Tubs, and houſed in *Winter*, being too tender to endure the Cold of this Climate in the open Air. Theſe may be propagated by laying down their young Branches into freſh Earth, obſerving to water them duly in dry Weather, which will greatly forward their Rooting: In one Year they will be fit to tranſplant, when they may be taken from the old Plants, and each placed in a ſeparate Pot, fill'd with freſh light Earth. The beſt Time for tranſplanting of theſe Plants, is in *April*, obſerving to water and ſhade them until they have taken Root; after which they may be expos'd with Myrtles, Oleanders, and other hardy Exoticks, during the *Summer* Seaſon, and in *Winter* muſt be houſed with them, being equally as hardy, and only require to be ſcreened from ſevere Froſt.

Theſe Plants do rarely produce Flowers in *England*; but as they retain their Leaves all the *Winter*, and may eaſily be reduced to a regular Head, ſo they are preſerved for the Diverſity of their Leaves, which adds to the Variety of a Green Houſe.

The ſixth Plant was brought from *North Carolina*, and I have ſince received the Seeds of this Kind from *Penſilvania*, where it grows in great Plenty. This Sort doth not grow very large, being ſeldom above ſix or eight Feet high; but divides into ſeveral Branches, which grow more regular than moſt of the other Sorts; and the Flowers are produced on the Tops of the Branches, which are in very large looſe Panicles, and of a yellowiſh green Colour. The tender Shoots of this Plant are of a purpliſh Colour, and ſmooth; and the Leaves are ſmooth, having a great Number of *Pinnæ* on each.

The ſeventh Sort grows plentifully in the South of *France*, and in *Spain*; but is at preſent pretty rare in *England*. This Sort is directed by the College of Phyſicians to be uſed in Medicine; and in the South of *France*, it is uſed inſtead of Oak-bark for tanning of Leather.

Theſe two laſt Sorts are very hardy Plants, which will live in the open Air in *England*, and are very proper to plant with other hardy Shrubs in Quarters of Wilderneſs-work, where they will make an agreeable Variety. Theſe may be propagated by Seeds, or from Suckers or Layers, after the ſame manner as hath been directed for the common *Virginian Sumach.*

RIBES; The Currant-Tree.

The *Characters* are;

It hath no Prickles; the Leaves are large; the Flower conſiſts only of five Leaves, which are placed in a circular Order, and do expand in form of a Roſe; the Ovary, which ariſes from the Center of the Flower-cup, becomes a globular Fruit, which are produced in Bunches.

The *Species* are;

1. RIBES *vulgaris acidus ruber. J. B.* Common red Currant.
2. RIBES *major, fructu rubro. H. Eyſt.* The large Dutch red Currant.
3. RIBES *vulgaris acidus albas baccas ferens. J. B.* Common white Currant.
4. RIBES *quæ groſſularia hortenſis, majore fructu albo. H. R. Par.* Large Dutch white Currant.
5. RIBES *major, fructu carneo.* The Champaign Currant, *vulgo.*
6. RIBES *Alpinus dulcis. J. B.* The Gooſeberry-leav'd Currant.
7. RIBES *fructu parvo. Merr. Pin.* The ſmall wild Currant.
8. RIBES *nigrum vulgo dictum, folio olente. J. B.* The black Currant.
9. RIBES *vulgaris, foliis ex luteo variegatis.* The yellow ſtrip'd-leav'd Currant.
10. RIBES *vulgaris, foliis ex albo eleganter variegatis.* The common Currant, with Leaves beautifully variegated with Green and White.
11. RIBES *fructu albo, foliis ex albo variegatis.* The white Currant, with ſtrip'd Leaves.
12. RIBES *Alpinus dulcis, foliis variegatis.* The ſtrip'd Gooſeberry-leav'd Currant.
13. RIBES *fructu nigro, foliis variegatis.* The black Currant, with ſtrip'd Leaves.
14. RIBES *Americanus, fructu nigro.* The American black Currant.

The five firſt mentioned Sorts are preſerv'd in all curiou Gardens for the ſake of their Fruits: Indeed, of late Years the common red and white Currants have been neglected, ſince the *Dutch* red and white have become plenty in *England*

land; theſe producing much larger and fairer Fruit to the Sight than the common Sorts, tho' I think the common Sorts are much better flavour'd, ſo that they ſhould not be intirely neglected by ſuch as are curious in Fruits.

The ſixth Sort is preſerv'd as a Curioſity, by ſuch who delight in Variety; but the Fruit is not valuable.

The ſeventh Sort is found wild in *England*. The Fruit of this Kind is ſmall, and very tart, which renders it unworthy of being cultivated in Gardens.

The eighth Sort is preſerved in ſome old Gardens; but the Fruit having a diſagreeable ſtrong Taſte, has occaſioned its being but little cultivated of late Years.

Thoſe Sorts with variegated Leaves, are preſerved by ſuch as are fond of ſtrip'd Plants; but as their greateſt Beauty is only in the *Spring*, before their Leaves grow large, after which they become more green; ſo they are ſcarcely worth preſerving in a Garden.

The fourteenth Sort was obtain'd by Mr. *Peter Colliſon* from *America*, in whoſe fine Garden it has produced Fruit, and from thence hath been communicated to ſeveral other curious Gardens. The Manner of this Plant's Flowering is very different from the other Sorts of Currants, for which Variety it may have a Place amongſt other Shrubs; but the Fruit being ſomewhat like our black Currant, is not much eſteem'd.

All theſe Sorts may be eaſily propagated by planting their Cuttings any time from *September* to *March*, upon a Spot of freſh Earth, which in the *Spring* muſt be kept very clear from Weeds, and in very dry Weather if they are water'd, it will greatly promote their Growth: Theſe may remain two Years in this Nurſery, during which Time they muſt be pruned up for the purpoſes deſigned, *i. e.* either to clear Stems, if for Standards, or if for Walls, Pales, or Eſpaliers, they may be trained up flat.

Then they ſhould be planted out where they are to remain; the beſt Seaſon for which is ſoon after the Leaves begin to decay, that they may take Root before *Winter*, ſo that they may be in no Danger of ſuffering from Drought in the *Spring*.

Theſe Plants are generally planted in Rows at about ten Feet aſunder, and four Diſtance in the Rows; but the beſt Method is to train them againſt low Eſpaliers, in which manner they will take up much leſs Room in a Garden, and their Fruit will be much fairer.

The Diſtance they ſhould be placed for an Eſpalier, ought not to be leſs than eight Feet, that their Branches may be trained horizontally, which is of great Importance to their Bearing.

Thoſe that are planted againſt Pales or Walls, ſhould alſo be allowed the ſame Diſtance; if they are planted againſt a South-Eaſt Wall or Pale, it will cauſe their Fruit to ripen at leaſt a Fortnight or three Weeks ſooner than thoſe in the open Air, and thoſe which are planted againſt a North Wall or Pale, will be proportionably later; ſo that by this Method the Fruit may be continued a long Time in Perfection, eſpecially if thoſe againſt the North Pales are matted in the Heat of the Day.

Theſe Plants produce their Fruit upon the former Year's Wood, and alſo upon ſmall Snags which come out of the old Wood, ſo that in pruning them, theſe Snags ſhould be preſerved, and the young Shoots ſhortened in Proportion to their Strength. The only Method, very neceſſary to be obſerved in pruning of them, is not to lay the Shoots too cloſe, and never to prune their Snags to make them ſmooth: this, with a ſmall Care in obſerving the Manner of their Growth, will be ſufficient to inſtruct any Perſon how to manage this Plant, ſo as to produce great Quantities of Fruit.

Theſe Plants will thrive and produce Fruit in almoſt any Soil or Situation, and are often planted under the Shade of Trees; but the Fruit is always beſt when they are planted in the open Air, and upon a dry Soil.

RICINOIDES; Phyſick-nut, *vulgo*.

The *Characters* are;

The Male Flowers conſiſt of ſeveral Leaves, which are placed in a circular Order, and do expand in form of a Roſe; theſe are barren: At remote Diſtances from theſe Flowers, upon the ſame Plant, are produced the Embryo's, which are wrapt up in the Flower cup, and afterwards do become tricapſular Fruits, containing one oblong Seed in each Cell.

The *Species* are;

1. RICINOIDES *Americana, goſſypii folio. Tourn.* American Phyſick-nut, with a Cotton Leaf.

2. RICINOIDES *arbor Americana, folio multifido. Tourn.* Tree American Phyſick-nut, with a multifid Leaf, *commonly called in the* Weſt-Indies, French Phyſick-nut.

3. RICINOIDES *Americana, ſtaphyſagriæ folio. Tourn.* American Phyſick-nut, with a Staves-acre Leaf, *called in the* Weſt-Indies, Bellyach-weed and Wild Caſada.

4. RICINOIDES *Americana, oleaſti folio. Plum.* American Phyſick nut, with a wild Olive Leaf.

5. RICINOIDES *fruteſcens, althϾ folio. Plum. Cat.* Shrubby Phyſick-nut, with a Marſhmallow Leaf.

6. RICINOIDES *foliis populi hirſutis. Plum. Cat.* Phyſick-nut, with hairy Poplar Leaves.

7. RICINOIDES *fruteſcens, linariæ foliis obtuſis. Plum. Cat.* Shrubby Phyſick-nut, with blunt Toad-flax Leaves.

8. RICINOIDES *folio citrii, argenteo polline conſperſo. Plum. Cat.* Phyſick-nut, with a Citron Leaf, powder'd over with Silver.

9. RICINOIDES *elæagni folio. Plum. Cat.* Phyſick-nut, with a Wild-olive Leaf.

10. RICINOIDES *verbaſci folio. Plum. Cat.* Phyſick-nut, with a Mullein Leaf.

11. RICINOIDES *caſtaneæ folio. Plum. Cat.* Phyſick-nut, with a Cheſnut Leaf.

12. RICINOIDES *herbaceum, foliis trifidis vel quinquefidis & ſerratis. Houſt.* Herbaceous Phyſick-nut, with three or five-ſawed Leaves.

13. RICINOIDES *folio ſubrotundo ſerrato, fructu parvo conglomerato. Houſt.* Phyſick-nut, with a roundiſh-ſawed Leaf, and ſmall Fruit, growing in Cluſters.

14. RICINOIDES *paluſtre, fructu hiſpido, foliis ſubrotundis, nervoſis & aſperis. Houſt.* Marſh Phyſick-nut, with a prickly Fruit, and roundiſh ribbed Leaves, which are rough.

15. RICINOIDES *fruteſcens, lauri folio, calice ampliſſimo viridi. Houſt.* Shrubby Phyſick-nut, with a Bay Leaf, and a large green Flower-cup.

16. RICINOIDES, *ex qua paratur* TOURNESOL *Gallorum. Inſt. R. H. App.* Phyſick-nut, from which the *Tourneſol* of the *French* is made.

Theſe Plants are very common in the warm Parts of *America*. The firſt Sort is planted in Hedges, in moſt Parts of *Jamaica* and *Barbados*, and is propagated by Slips or Cuttings, which will take Root very freely, and do make a good Fence in a ſhort Time, being very quick of Growth. This riſes to be twenty Feet high, and produces a great Quantity of Nuts, which are given from three to ſeven for a Vomit; but if the thin Film be taken off, they may be eaten in Quantities without any ill Effect. There is an Oil drawn from theſe Seeds, which is uſed for burning in Lamps.

The ſecond Sort is cultivated in Gardens in *Jamaica* and *Barbados*, for the Beauty of its Flowers, which are of a fine ſcarlet Colour, and produced in large Bunches on divers Parts of the Plant. The Nuts of this Kind are larger than the other, but have much the ſame Quality. This is not a Native in any of the *Engliſh* Settlements in the *Weſt-Indies*, but was brought thither either from the *Spaniſh* or *French* Settlements, from whence it had the Names of *French* and *Spaniſh Phyſick-nut*.

The third Sort is very common in the *Savannas* in *Jamaica* and *Barbados*; the Seed of this Kind is the common Phyſick among the poorer Sort, for the dry Belly-ach.

The fourth Sort grows plentifully upon the Sea Coaſt in divers Parts of the *Weſt-Indies*, and is ſometimes brought into *England* as a Curioſity, where, in ſome very good Gardens it is preſerved with the former Sorts.

Theſe may be all propagated by ſowing their Seeds upon a Hot-bed in the *Spring*, and when the Plants are come up, they ſhould be each tranſplanted into a ſeparate Pot, filled with light, freſh Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to ſhade them until they have taken Root, after which they ſhould have Air and Water in Proportion to the Warmth of the Seaſon, and the Hot-bed in which they are placed.

When their Roots have filled theſe Pots they ſhould be ſhaken out, and put into larger Pots, filled with the ſame freſh Earth, and plunged again into the Hot-bed; and ſo, from Time to Time, as the Plants advance, they ſhould be ſhifted into larger Pots; and when they are too high to be contained under a Frame, they ſhould be removed into the Bark-ſtove, where they may have Room to advance in Height, obſerving to water them duly, as they may require it; which, if conſtantly performed, and the Plants kept in a warm Bed, they will grow three or four Feet high the firſt *Summer*, and divide into ſeveral Branches in *Winter*.

Theſe Plants muſt be placed in a Bark-ſtove, (with other Plants which are the Produce of the ſame Countries) during which Seaſon they ſhould be often refreſh'd with Water, and the Stove ſhould be kept up to *Anana*'s Heat (as marked on Mr. *Fowler's* Thermometers); in this they will continue flouriſhing all the *Winter*, and early the next *Spring* will produce Flowers, which will be ſucceeded by Fruit.

Theſe Plants, if thus managed, will continue ſeveral Years, and annually produce a great Number of Flowers and Fruit, ſo that they are worthy of a Place in every curious collection of exotick Plants.

The fifth, ſixth, ſeventh, eighth, ninth, tenth and eleventh Sorts were diſcovered by Father *Plumier* in *America*: The fifth and ſixth Sorts have been found growing plentifully in the Iſland of *Jamaica*: The ninth, tenth, eleventh, twelfth, thirteenth and fourteenth Sorts were found in Plenty about *La Vera Cruz*, by the late Dr. *William Houſtoun*, from whence he ſent their Seeds to *England*: The fifteenth Sort was alſo diſcovered by the ſame Gentleman at *Jamaica*. All theſe Sorts are very tender Plants, being Natives of very warm Countries, and require to be tenderly treated, otherwiſe they will not grow in this Country. The ſixth, eleventh, twelfth, thirteenth and fourteenth Sorts are annual, ſo their Seeds muſt be ſown on a Hot-bed early in the *Spring*; and when the Plants are come up, they ſhould be tranſplanted each into a ſeparate ſmall Pot, filled with light rich Earth, and then plunged into a moderate Hot-bed of Tanners-bark, obſerving to ſhade them until they have taken Root; and then they ſhould have freſh Air admitted to them by raiſing of the Glaſſes every Day in warm Weather, and they muſt be frequently watered. In about a Month's Time, the Plants will have filled theſe Pots with their Roots, when they ſhould be ſhaken out, and put into larger Pots filled with rich Earth, and plunged again into the Hot-bed, provided there is Room for the Plants to grow in Height, without being preſſed by the Glaſſes; in which Caſe it will be proper to put them into the Bark-bed in the Stove; for they are too tender to thrive in the open Air in this Country, in the warmeſt Seaſon of the Year. In *July* theſe Plants will flower, and their Seeds will ripen in *Auguſt* and *September*, ſoon after which Time the Plants will decay.

The other Sorts which live over the Year, muſt be raiſed in the ſame Manner as the annual Kinds; but in *Winter* they muſt be plunged into the Bark-bed, in the warmeſt Stove, and treated after the ſame Manner as directed above.

The ſixteenth Sort is an annual Plant, and is found wild in the *South* of *France*, *Spain* and *Italy*, from which the *Tourneſol* is made, that is uſed for colouring of Wine and Jellies. This is made of the Juice which is lodged between the outer Cover and the Seeds; and if rubbed on Cloth, at firſt appeareth of a lively green Colour, but ſoon changeth to a bluiſh purple Colour: If theſe Cloths are put into Water, and afterward wrung, they will colour the Water of a Claret Colour. The Rags, thus dry'd, are brought to *England*, and ſold in the Druggiſts Shops, by the Name of *Turnſole*.

This Sort may be propagated by Seeds, which ſhould be ſown in the *Autumn*, ſoon after they are ripe, on a warm Border of freſh, light Earth; and if any of the Plants come up before *Winter* (which ſometimes happens) they ſhould be ſheltered in hard Froſt, otherwiſe they will not live through the *Winter*. But the Seeds generally remain in the Ground until the *Spring*, when the Plants will appear; at which Time they ſhould be cleaned from Weeds, and where the Plants are too cloſe, they ſhould be thinned, ſo as to leave them about ſix Inches aſunder; and in very dry Weather, if they are now and then refreſhed with Water, it will promote their Growth. This is all the Culture they require, except the keeping them conſtantly clear from Weeds; for the Plants do not thrive well, if they are tranſplanted, ſo they ſhould be ſown where they are deſigned to remain. In *July* the Plants will flower, and their Seeds will ripen in *Auguſt*, when the Plants will ſoon after decay.

RICINUS, [ſo called becauſe the Seed reſembles (*Ricinus*) the Animal called by that Name, *i. e.* a *Tick*, which infeſts Dogs and Oxen. It is alſo called *Palma Chriſti*, becauſe its Leaves are ſaid to reſemble the Palm of the Hand] Palma Chriſti, *vulgo*.

The *Characters* are;

The Flowers are apetalous, (i. e. *have no Leaves*) *conſiſting of many Stamina, which ariſe in the Center of the Flower-cup; theſe are barren; for the Embryo's are produced at remote Diſtances, upon the ſame Plant, which afterwards become triangular Fruits, having three Cells, in each of which is contained one oblong Seed, which has a hard Shell.*

The *Species* are;

1. RICINUS *vulgaris. C. B. P.* The common Palma Chriſti, commonly known in the *Weſt-Indies* by the Name of Oil-nut, *or* Agnus Caſtus.

2. RICINUS *vulgaris minor. C. B. P. caule rutilante.* The leſſer Palma Chriſti, with reddiſh Stalks, commonly called in *Barbados*, Red Oil-ſeed.

3. RICINUS *vulgaris minor. C. B. P. caule vireſcente.* Leſſer Palma Chriſti, with green Stalks, *commonly called* White Oil Seeds in *Barbados*.

4. RICINUS *Americanus major, caule vireſcente. H. R. P.* The greater Palma Chriſti, with green Stalks.

5. RICINUS *Africanus maximus, caule geniculato rutilante. H. R. Par.* The greateſt African Palma Chriſti, with reddiſh jointed Stalks.

6. RICINUS *Indicus, fructu rugoſo non echinato. Indian* Oil-ſeed, with a rough Fruit not echinated.

7. RICINUS *Americanus, fructu racemoſo hiſpido. John. Dend. American* Oil-ſeed, with prickly Fruit, growing in a Cluſter.

8. RICINUS *Americanus, fructu racemoſo glabro majore. Millar. American* Oil-ſeed, with larger ſmooth Fruit growing in a Cluſter.

9. RICINUS *Americanus minor, fructu racemoſo glabro. Millar.* Smaller *American* Oil-ſeed, with ſmooth Fruit, growing in Cluſters.

10. RICINUS Z*eylanicus, foliis profundius laciniatis. Inſt. R. H.* Oil-ſeed of *Ceylon*, with Leaves deeply cut in.

11. RICINUS *humilis, foliis ſubrotundis ſerratis, & ſubtus argenteis, flore fructuque conglomeratis. Houſt.* Dwarf Oil-ſeed, with roundiſh ſawed Leaves, which are ſilvery underneath, and the Flowers and Fruit growing in Bunches.

The firſt five of theſe Plants are very common in divers Parts of *Africa* and *America*, and ſome of them are alſo found in the warm Parts of *Europe*; but in *England* they are preſerved with great Care in ſeveral curious Gardens.

The firſt Sort has been a long Time in this Country, but was formerly treated as an annual Plant; whereas, if it be preſerved in a good Green-houſe, it will abide two or three Years, and become a large Plant.

The ſecond and third Sorts do grow promiſcuouſly all over *America*, where their Seeds are gathered to draw an Oil from them, for the Uſe of Lamps; theſe Seeds are frequently ſent into *England*, intermixed with each other.

The fourth Sort is alſo very common in *America*, growing promiſcuouſly with the common Sort; the Seeds of both being gathered indifferently to draw an Oil from them.

The fifth Sort, though mentioned to be a Native of *Africa*, yet is alſo very common in divers Parts of *America*, from whence I have ſeveral times received the Seeds. This produces very large Leaves and Seeds, and will grow to a large Size, if planted in a rich Soil. I have meaſured one of the Leaves of this Plant, (which was growing near *Chelſea*) which was upward of two Feet Diameter, and the Stem was as large as a middle-ſiz'd Broom-ſtaff, tho' but of one *Summer*'s Growth.

Theſe Plants may be propagated by ſowing their Seeds upon a Hot-bed; and when they are come up, they ſhould be each planted into a ſeparate Pot filled with light, freſh Earth, and plunged into a freſh Hot-bed, obſerving to water and ſhade them until they have taken Root; after which they muſt have a great Share of free Air, when the Seaſon is mild, otherwiſe they will draw up tall, and be very weak: And as theſe Plants grow very faſt, ſo their Roots will in a ſhort Time fill the Pots, therefore they ſhould be ſhifted into larger Pots filled with the like freſh Earth; and toward the latter End of *May*, when the Seaſon is warm, they may be hardened to endure the open Air by Degrees; and then, if they are planted out into a very rich Border, and in dry Weather duly watered, they will grow to a very large Size, particularly the firſt Sort, which I have ſeen upwards of ten Feet high in one Seaſon; and theſe Plants have produced a great Quantity of Flowers and Seeds: But if you intend to preſerve them through the *Winter*, they muſt never be placed in the full Ground, becauſe after their Roots have been widely extended, there will be no tranſplanting them with Safety; therefore the beſt Way is to ſhift them into larger Pots, from Time to Time, as their Roots ſhall require, placing them in the open Air during the *Summer* Seaſon, in ſome warm Situation, where they may remain until *October*, when they muſt be removed into the Houſe with other exotick Plants, obſerving duly to water them in *Winter*, and let them have free Air in mild Weather, for they only require to be protected from Froſt and cold Winds, ſo that they will endure the *Winter* in a common Green-houſe, without any Addition of artificial Warmth.

The firſt four Sorts will perfect their Seeds the firſt Seaſon in this Climate, provided they are ſown early in the *Spring*, but the fifth Sort will rarely produce any till the ſecond Year; ſo that there is a Neceſſity of preſerving this through the *Winter*, otherwiſe it cannot be maintained in *England*.

Theſe Plants do deſerve a Place in every curious Garden for the ſingular Beauty of their Leaves (notwithſtanding their Flowers are not very valuable) eſpecially thoſe Sorts which may be propagated every Year from Seeds, becauſe thoſe Perſons who have no Green-houſe to place them into in *Winter*, may cultivate them as other annual Plants; amongſt which theſe, being placed either in Pots or Borders, do afford an agreeable Variety; But it muſt be obſerved, as theſe are large growing Plants, never to place them too near other Plants of leſs Growth, becauſe theſe will overbear and deſtroy them; and thoſe which are planted in Pots ſhould be allowed Room for their Roots to expand, and muſt be frequently watered(otherwiſe they will not grow very large.

The Seeds of the ſixth Sort were brought from the *Eaſt-Indies*, which came up and flouriſhed in the Phyſick-garden at *Chelſea*. This Sort grows about the ſame Height as the common Kind, but the Leaves are not ſo deeply divided. The Coverings of the Seeds are not prickly, as in moſt of the other Sorts (ſomewhat reſembling the outer Cover of the Cheſnut); but are rough, and full of Protuberances.

The Seeds of the ſeventh and eighth Sorts were ſent from *Jamaica* by Mr. *Robert Millar*, who gathered them on the North Side of that Iſland. Theſe Plants grow in their native Country, to be eighteen or twenty Feet high, and continue two or three Years. They are nearly alike in their outward Appearance, but differ in the Covering of their Seeds, the ſeventh having prickly Covers, and the eighth being ſmooth.

The ninth Sort is a low Plant, ſeldom riſing above three Feet high, and differs from the common ſmall Sort, in having ſmooth Covers to the Seeds: This is leſs common, and hath not been remarked by any Botanical Writer.

The tenth Sort is a Native of *Ceylon*, from whence the Seeds were brought to *Holland*, and hath been cultivated in many curious Gardens. The Leaves of this Kind are very deeply jagged, in which it chiefly differs from the common Sort.

The eleventh Sort was diſcovered by the late Dr. *William Houſtoun* at *Campechy*, from whence he ſent the Seeds to *England*. This is a very low Plant, ſeldom riſing above eight or nine Inches high, and periſhes ſoon after the Seeds are perfected.

Theſe Sorts are propagated by Seeds, which muſt be ſown on a Hot-bed early in the *Spring*; and when the Plants are come up, they ſhould be treated in the ſame manner as above directed; with which Management theſe will thrive very well, except the laſt Sort, which is a tender Plant, ſo will not perfect Seeds in the open Air in this Country: Therefore this Sort ſhould remain in the Hot-bed, and in warm Weather the Glaſſes ſhould be raiſed to admit freſh Air to the Plants; and they muſt be frequently watered, otherwiſe their Seeds will not be well nouriſhed.

The ſeventh and eighth Sorts will not perfect their Seeds in this Climate the firſt Year, unleſs they are placed in the Stove, and forwarded early in the *Spring*; ſo that it will be proper to preſerve a Plant or two of each Kind through the *Winter*, in order to obtain good Seeds. But as they are tender Plants, ſo they muſt be kept in a moderate Temperature of Warmth, otherwiſe they will not live; therefore the beſt Way is to plunge the Pots into the Bark-bed in the Stove, which will keep them growing all the *Winter*, and cauſe them to make large handſome Plants by the following *Summer*.

RIPENING of FRUIT.

The Method of producing Early Fruits.

A Wall ſhould be erected ten Feet high, and in Length according to the Number of Trees intended for three Years Forcing.

This being done, a Border may be marked out about four Feet wide on the South Side of it, and ſome Scantlings of Wood, about four Inches thick, muſt be faſtened to the Ground in a ſtrait Line on the Outſide of the Border, to reſt the Glaſs Lights upon; which Lights are to ſlope backwards to the Wall, to ſhelter the Fruit as there ſhall be Occaſion.

Bars about four Inches wide, cut out of whole Deal, muſt be placed between theſe Glaſſes, ſo that the Lights may reſt on them.

If you would not have the Glaſs-lights ſlope ſo much as they will from this Fall from the Upright, then you may have a Line of Whole Deals fixed on the Top of the Wall to project their whole Breadth over the Trees, and made ſo, that the Top of the Glaſs-ſights may fall in an Inch or two under them: There muſt alſo be a Door ſhaped to the Profile of the Frame at each End, that it may be open'd at either of the Ends, according as the Wind blows.

The Frame before-mentioned ſhould be made ſo, that when the firſt Part has been forced, the Frame may be moved the next Year forward, and the ſucceeding Year forward again; ſo that the Trees will be forced but every third Year; and having two Years to recover themſelves, will continue ſtrong for many Years.

Theſe Trees ſhould be well grown before they are forced, otherwiſe they will ſoon be deſtroyed; and the Fruit produced on grown Trees, will be much fairer and better taſted, than on freſh-planted Trees.

The Fruit that may be planted in theſe Frames are,

The *Avant*, the *Albemarle*, the *Anne*, the *Early Newington* and *Brown Nutmeg Peaches*.

Mr. *Fairchild*'s *Early*, the *Elruge* and *Newington Nectarines*; the *Maſculine Apricock*; the *May Duke* and *May Cherry*.

As for *Grapes*, the *White* and *Black Sweet-water*.

Gooſeberries; the *Dutch White*, the *Dutch Early Green*, and the *Walnut Gooſeberries*.

Currants; the *Large Dutch White*, *the Large Dutch Red Currants*.

It has been found by Experience, that the Trees will be injured, if the Heat be apply'd before *November*: And that the Time for applying the Heat for bringing either *Duke* or *May Cherries*, is about the Middle or latter End of that Month, and applying Heat at the ſame Time would do for *Apricocks*; ſo that the *Maſculine Apricock* will in *February* be as large as *Duke Cherries*, and will be ripe by the Beginning of *April*.

Cherries thus forced will not hold ſo well as *Apricocks*, though the former will laſt, perhaps, for ſeven Years in good Plight; but *Apricocks* will thrive and proſper thus many Years.

It is very likely that Mr. *Fairchild*'s *Early Nectarines* would ripen much about the ſame Time as the *Maſculine Apricok*, if they were both forced at the ſame Time; and the *Brugnon Nectarine* would follow that. As to the forward Sorts of *Plums*, they have been try'd, and do ripen about the latter End of *April*.

Gooſeberries would produce green Fruit fit for Tarts in *January* and *February*, and probably would ripen about the End of *March*, or the Beginning of *April* at the fartheſt.

Currants, which tend to ſhoot forward, might, by the ſame Heat that brings *Cherries* in *February*, be forced to produce ripe Fruit in *April*, if not ſooner.

As for the Diſtance of theſe Trees one from another, it need not be ſo great as is directed for thoſe planted in the open Air, becauſe they will never ſhoot ſo vigorouſly, therefore eight or nine Feet will be ſufficient.

The higher Parts of the Wall being furniſhed with *Apricocks*, *Cherries*, *Nectarines*, *Peaches* and *Plums*, the lower ſmall Space between them may be filled up with *Currants*, *Gooſeberries* and *Roſes*.

As to the Pruning of theſe Trees:

The Time of doing it in theſe Frames muſt not be the ſame as in other Trees; becauſe in the common Caſe of *Stone-fruit* againſt Walls, the *Spring* does not begin till the End of *January*; but in the forcing Frames the *Spring* begins in *November*: Therefore they ſhould be pruned three Weeks before the Heat is apply'd; for then the Air will be ſo artificially tempered, as to ſet the Trees a growing, and the Froſts cannot come at them, if the Glaſſes be ſet up as ſoon as they are pruned.

As to the Nailing of theſe Trees:

Every Branch that ſhoots muſt be laid as cloſe to the Wall as can be; for the Fruit which touches the Wall will be ripe a Month ſooner than thoſe that lie but two Inches from it.

Sometimes it happens that the Tops of ſuch Trees have Bloſſoms a Month or ſix Weeks before the Bottom; and ſometimes one Branch has been full of Bloſſoms, when there have been half a Score or more Branches of the ſame Tree, which have not ſtirr'd till the Fruit of the firſt Bloſſoms has been almoſt ripe, notwithſtanding which the Tree has done very well: And it is no uncommon Thing for ſuch Trees to have Fruit ripening upon them for near three Months continually.

As for *Gooſeberries*; ſuch Plants as are planted in theſe Frames, ſhould be ſuch as have ſpread; and when as many Shoots have been nail'd to the Wall as may conveniently be done, others may be left at a Diſtance from it, to ſucceed them in ripening.

If they are taken up in the Summer, and properly manag'd, they will bear Fruit the firſt Year, as well as if they had not been tranſplanted.

The *Currants* may be order'd after the ſame Manner, and alſo the *Roſes:* And the beſt kind of *Roſe* for this Purpoſe, is the *Monthly Roſe*, which ought always to be topp'd about the End of *July*, or the Beginning of *Auguſt*, to make them put out a good Number of Flower-buds.

As to the laying the Dung to the Wall;

The Dung, before it be laid to the Back of the Wall, ſhould be thrown up in an Heap, and lie for ſome Days, that it may yield an equal Heat every where, and be conſtant.

When it has been thus prepar'd, it ſhould be laid about four Feet thick at the Baſe, and ſo ſloping, till it has but two Feet wide at the Top.

It ſhould be laid at firſt within four Inches of the Top of the Wall, for it will ſink to about three Feet in ſix Weeks time; and then ſome freſh Dung muſt be laid, becauſe the firſt Heat will not do much more than ſwell the Buds of the Trees, or begin to bring them to a green Colour, or at the moſt will but barely ſhew the Colour of the Bloſſom Buds.

But, according as the Froſts ſhall have happen'd to have had more or leſs Influence over the Buds, this will happen ſooner or later.

If theſe Trees be covered with the Glaſſes, it will contribute very much to forward their Bloſſoming; for tho' their Bloſſoms will not be deſtroy'd by the Froſts, yet the more the Froſts come at them, they will both be the drier and more hard to open.

If the Weather be tolerably mild, the Trees ought not to be hinder'd from the Benefit of the Showers till the Buds begin to ſtir; but afterwards the Glaſſes ſhould be kept conſtantly over them till the Influence of the Sun is ſomething conſiderable.

But the Doors which are at each End of the Frame, ſhould in the mean time be ſet open, when the Wind does not blow too ſharp, and the Sun ſhines any thing warm: And if this does not happen in the Space of a Fortnight, then the Doors at both Ends may be open'd, and Mats of Baſe or Canvaſs ſhould be hung up over the Door-ways to correct the Winds, and give the Air Leave to circulate in the Frames.

As for *Cherries*; about three Changes of Dung will be ſufficient to bring them to a due Ripeneſs in *February*, ſuppoſing each Parcel remains a Month at the Back of the Wall.

But as for *Apricocks*, *Grapes*, *Nectarines*, *Peaches* and *Plums*, if *April* proves cold, the forcing Heat muſt be continu'd till *May* is ſettled; but ſome of the Glaſſes ſhould be open'd in the Morning in *March* and *April*, when the Wind is ſtill, and the Sun warm; and they ſhould be permitted to receive the Showers that fall, while the Fruit is growing; but while they are in Bloſſom no Rain ſhould come near them, becauſe if there ſhould be any Moiſture lodg'd in the Boſom of the Flowers, and the Sun ſhould ſhine hot thro' the Glaſſes, it would be apt to deſtroy them.

The Dung that comes from theſe Frames having loſt its Heat, may be laid in Heaps to rot for the meliorating of ſtubborn Grounds.

Another Thing which ought to obſerv'd in planting Fruit in theſe Frames, is to plant thoſe Fruits which come forward together, and thoſe which come late by themſelves, becauſe it will be prejudicial to the forward Fruit, to give them any more Heat when they have done bearing, when at the ſame time the later Fruits ſet amongſt them may require more Heat, and to be continu'd longer, ſome of them, perhaps, requiring an artificial Heat till *May*.

There may alſo a Row or two of *Scarlet Strawberries* be planted near to the Back of this Frame; and theſe you may expect will be ripe by the End of *February*, or Beginning of *March*.

As for the *Vines*, they may probably be brought to bloſſom in *April*, and have ripe *Grapes* in *June*.

There may alſo be here and there planted a *Monthly Roſe-tree* and *Hyacinths*, *Jonquils*, *Narciſſus's*, *Polyanthus's*; and alſo early *Tulips* might be planted in the Borders.

A ROOT is that Part of a Plant by which it naturally draws in its Nouriſhment. The *Roots* of Plants being of various Forms, and each diſtinguiſh'd by a different Name, it will not be improper, in this Place, to inſert the Principal of thoſe which are diſtinguiſh'd. And firſt,

A fibroſe *Root* is that which conſiſts wholly of ſmall Fibres; as moſt Sorts of *Graſs*, *Pinks*, &c.

A tuberoſe *Root* is that which conſiſts of an uniform fleſhly Subſtance, and is of a roundiſh Figure; as *Turnips*, *Potatoes*, &c.

A bulbous *Root* is that which conſiſts either of ſeveral Coats involving one another; as *Onions*, *Tulips*, &c. or of ſeveral Scales lying over one another; as *Lillies Crown Imperials*, &c. The firſt of theſe is called a *tunicated Root*; the laſt a *ſquamoſe Root*.

A teſticulated *Root* is a double tuberoſe *Root*, for it conſiſts of two Knobs, reſembling a Pair of Teſticles; as in the *Orchis*.

A handed *Root* is a tuberoſe *Root*, divided, as it were, into ſeveral Fingers; as in the *handed Satyrions*.

A grumous *Root* is that which is compos'd of ſeveral Knobs, as the *Anemone*, &c.

A granulous *Root* is a kind of grumous *Root* with ſmall Knobs, reſembling ſo many Grains of Corn; as in the *White Saxifrage*.

A tap *Root* is a tuberoſe *Root* extended in Length; as in *Parſnips*, *Carrots*, &c.

RONDELETIA.

The *Characters* are;

It hath a ſalver-ſhaped Flower, conſiſting of one Leaf, which is tubulous, and reſts on the Empalement; which Empalement afterwards becomes roundiſh coronated Fruit, divided into two Cells, containing many ſmall Seeds.

We know but one *Species* of this Plant; which is,

RONDELETIA *arboreſcens, tini facie. Plum. Nov. Gen.* Tree-like Rondeletia, with the Face of *Laurus Tinus*.

This Plant was diſcovered by Father *Plumier*, in *America*, who gave it this Name in Honour to *Gulielmus Rondeletius*, a famous Phyſician of *Montpelier*.

The Seeds of this Plant were ſent to *England* by Mr *Robert Millar*, Surgeon, who collected them on the North-ſide of the Iſland of *Jamaica*, where the Trees grow plentifully, as alſo in ſeveral Parts of the *Spaniſh Weſt-Indies*.

This Plant is very tender, ſo cannot be preſerved in *England*, unleſs it is kept in a warm Stove. It is propagated by Seeds, which ſhould be ſown on a Hot-bed early in the *Spring*; and when the Plants are come up, they muſt be tranſplanted into ſeparate ſmall Pots, and plunged into a moderate Hot-bed of Tanners-bark, where they muſt be treated in the ſame manner as hath been directed for the *Pereskia*; and in Winter muſt be placed in the Tan-bed in the Stove, where theſe Plants will thrive, and in two or three Years will flower; when they will make an agreeable Variety amongſt other tender exotick Plants.

ROSA; The Roſe-tree.

The *Characters* are;

The Flower is compoſed of ſeveral Leaves, which are placed circularly, and do expand in a beautiful Order; whoſe leafy Flower-cup afterwards becomes a roundiſh or oblong fleſhy Fruit, incloſing ſeveral angular hairy Seeds: To which may be added, It is a weak, pithy Shrub, for the moſt part beſet with Prickles, and hath pinnated Leaves.

The *Species* are;

1. ROSA *ſylveſtris inodora, ſeu canina. Park. Theat.* The Wild Briar, Dog Roſe, *or* Hep-Tree.

2. ROSA *ſylveſtris, fructu majore hiſpido. Raii. Syn.* Wild Briar *or* Dog Roſe, with large prickly Heps.

3. ROSA *ſylveſtris pomifera major noſtras. Raii Syn.* The greater *Engliſh* Apple-bearing Roſe.

4. ROSA *pumilla ſpinoſiſſima, foliis pimpinellæ glabris, flore albo. J. B.* The Dwarf Wild Burnet-leav'd Roſe.

5. ROSA *pumilla ſpinoſiſſima, foliis pimpinellæ glabris, ex luteo & viridi eleganter variegatis.* The Dwarf Wild Burnet-leav'd Roſe, with variegated Leaves.

6. ROSA *pimpinella minor Scotica, floribus ex albo & carneo eleganter variegatis. Pluk. Alm.* The ſtrip'd Scotch Roſe.

7. ROSA *ſylveſtris, foliis odoratis. C. B. P.* The ſweet Briar *or* Eglantine.

8. ROSA *ſylveſtris odora ſive Eglanteria, flore duplici. Park. Parad.* Sweet Briar, with a double Flower.

9. ROSA *rubra multiplex. C. B. P.* The double Red Roſe.

10. ROSA *Damaſcena. Park. Parad.* The Damaſk Roſe.

11. ROSA *Provincialis, ſive Hollandica, Damaſcena. Park. Parad.* The Damaſk Provence Roſe.

12. ROSA *Provincialis major, flore pleno ruberrimo. Boerh. Ind. Alt.* The Red Provence Roſe.

13. ROSA *centifolia Batavica. Cluſ. H.* The Dutch-hundred-leav'd Roſe.

14. ROSA *Provincialis ſpinoſiſſima, pedunculo muſcoſo.* The Moſs Provence Roſe.

15. ROSA *Provincialis rubra. Park. Parad.* The Common Provence Roſe.

16. ROSA *holoſericea ſimplex. Park. Parad.* The ſingle Velvet Roſe.

17. ROSA *holoſericea multiplex. Park. Parad.* The double Velvet Roſe.

18. ROSA *odore Cinamomi, flore pleno. C. B. P.* The double Cinnamon Roſe.

19. ROSA *odore Cinamomi, ſimplex. C. B. P.* The ſingle Cinnamon Roſe.

20. ROSA *lutea ſimplex. C. B. P.* The ſingle yellow Roſe.

21. ROSA *lutea multiplex. C. B. P.* The double yellow Roſe.

22. ROSA *ſylveſtris Auſtriaca, flore Phœnicio. Park. Theat.* The Auſtrian Roſe.

23. ROSA *ſylveſtris Auſtriaca, flore totum luteum.* The yellow Auſtrian Roſe.

24. ROSA *uno ramo luteos, cæteris puniceos flores gerens ſimplices. Boerh. Ind. Alt.* The Auſtrian Roſe, with yellow Flowers upon one Branch, and purple Flowers on the other.

25. ROSA *alba vulgaris major. C. B. P.* The Common white Roſe.

26. ROSA *alba minor. C. B. P.* The leſſer white Roſe.

27. ROSA *candida ſemiplena. J. B.* The ſemi-double white Roſe.

28. ROSA *incarnata. Park. Parad.* The Bluſh Roſe.

29. ROSA *Præneſtina variegata plena. Hort. Eyſt.* The York and Lancaſter Roſe.

30. ROSA *rubro & albo variegata, Roſa mundi, vulgo dicta. Raii Hiſt.* The Roſe of the World, or *Roſa mundi*.

31. ROSA *Francofurtenſis. Park. Parad.* The Frankfort Roſe.

32. ROSA *ſemper-virens. Park. Parad.* The Ever-green Roſe.

33. ROSA *omnium calendarum. H. R. Par.* The Monthly Roſe.

34. ROSA *omnium calendarum, flore variegato.* The ſtrip'd Monthly Roſe.

35. ROSA *ſine ſpinis, flore minore. C. B. P.* The Roſe without Thorns.

36. ROSA *ſine ſpinis, flore majore ruberrimo.* The Royal Virgin Roſe.

37. ROSA *ſylveſtris Virginienſis. Raii Hiſt.* The Wild Virginian Roſe.

38. ROSA *moſchata, ſimplici flore. C. B. P.* The ſingle Muſk Roſe.

39. ROSA *moſchata, flore pleno. C. B. P.* The double Muſk Roſe.

40. ROSA *moſchata ſemper-virens. C. B. P.* The Ever-green Muſk Roſe.

41. ROSA *Belgica, ſive vitrea, flore rubro. Rea. Flor.* The red Belgick Roſe.

42. ROSA *Belgica, ſive vitrea, flore rubicante. Rea. Flor.* The bluſh Belgick Roſe.

43. ROSA *marmorea. Rea. Flor.* The marbled Roſe.

44. ROSA *Provincialis, flore ſimplici.* The ſingle Provence Roſe.

45. ROSA *Damaſcena, flore ſimplici.* The ſingle Damaſk Roſe.

46. ROSA *pimpinella minor Scotica, flore livide rubente.* The Dwarf Scotch Roſe, with a bluiſh Red Flower.

47. ROSA *ſylveſtris Virginiana, flore majore pallido.* The wild *Virginian* Roſe, with a larger pale Flower.

48. ROSA *Americana moſchata, flore minore.* The *American* Muſk-roſe, with a ſmaller Flower.

49. ROSA *Americana odoratiſſima ſerotina, flore pallido pleno.* The moſt ſweet-ſcented *American* late-flowering Roſe, with a double Flower.

The firſt Sort of *Roſe* grows wild in the Hedges in moſt Parts of *England:* The Fruit of this Tree is made into a Conſerve for Medicinal Uſe; but this is ſeldom cultivated in Gardens.

The ſecond, third, and fourth Sorts do alſo grow wild in divers Parts of *England*, and are rarely preſerved in Gardens, unleſs for Variety ſake.

The fifth Sort is a Variety of the fourth, and is preſerved by ſome for the Beauty of its ſtrip'd Leaves.

The ſixth Sort is found wild in *Scotland*, and has been by many ſuppos'd to be the ſame as the fourth Sort, but only differing therefrom in having variegated Flowers; which is a great Miſtake, for I have obſerv'd, where the two Sorts were cultivated on the ſame Soil for many Years, and yet retain'd a conſiderable Difference in the Size of the Plants, the *Scotch* Sort being not half ſo large as the other, yet the Flowers were much larger, the Leaves were leſs, and the Branches much weaker than thoſe of the fourth Sort.

The laſt Sort here mention'd, was raiſed from the Seeds of the *Scotch Roſe*; and altho' the Flowers were plain-coloured, yet the whole Appearance of the Plant continues the ſame as the original Kind, which is a plain Proof of its being different from the fourth Sort.

The *Sweet-Briar*, altho' wild in ſome Parts of *England*, yet is preſerv'd in moſt curious Gardens, for the extreme Sweetneſs of its Leaves, which perfumes the circumambiant Air in the Spring of the Year, eſpecially after a Shower of Rain. The Flowers of this Sort being ſingle, are not valued, but the Branches of the Shrubs are cut to intermix with Flowers to place in Baſons to adorn Halls, Parlours, &c. in the Spring of the Year, the Scent of this Plant being agreeable to moſt Perſons.

The Double-flower'd *Sweet-Briar* is preſerved on the Account of its Beautiful Flowers, as well as for the Sweetneſs of its green Leaves.

All the other Sorts of *Roſes* are originally of foreign Growth, but are hardy enough to endure the Cold of our Climate in the open Air, and produce the moſt beautiful and fragrant Flowers of any kind of Shrubs yet known: This, together with their long Continuance in Flower, has juſtly render'd them the moſt valuable of all the Sorts of flowering Shrubs, beſides the great Variety of different Sorts of *Roſes*, do make a Collection of Flowers, either for Baſons or in the Garden, without any other additional Mixture; and their Scent being the moſt inoffenſive Sweet, is generally eſteem'd by moſt Perſons.

But in order to continue theſe Beauties longer than they are naturally diſpoſed to laſt, it is proper to plant ſome of the monthly *Roſes* near a warm Wall, which will occaſion their Budding at leaſt three Weeks or a Month before thoſe in the open Air; and if you give them the Help of a Glaſs before them, it will bring their Flowers much forwarder, eſpecially where Dung is placed to the Backſide of the Wall (as is practiſed in raiſing early Fruits:) By this Method I have ſeen fair *Roſes* of this Kind blown in *February*, and they may be brought much ſooner, where People are curious this way.

You ſhould alſo cut off the Tops of ſuch Shoots which have been produc'd the ſame Spring, early in *May*, from ſome of theſe Sorts of *Roſes* which are planted in the open Air, and upon a ſtrong Soil: This will cauſe them to make new Shoots, which will flower late in *Autumn*; as will alſo the late removing the Plants in *Spring*, provided they do not ſuffer by Drought, as I have ſeveral times experienced; but particularly in the Year 1718, when I had occaſion to remove a large Parcel of theſe Plants in *May*, juſt as they were beginning to flower: In doing of which I cut off all the Flower-buds, and, after having opened a Trench in the Place where they were to be planted, I poured a large Quantity of Water, ſo as to render the Ground like a Pap; then I took up the Plants, and placed them therein as ſoon as poſſible, that their Roots might not dry; and after planting them, I water'd the Ground well again, and cover'd the Surface over with Mulſh, to prevent its drying; after this I repeated watering the Plants all over two or three times a Week in the Evening, until they had taken Root; In about three Weeks time the Plants ſhot out again, and produc'd a great Quantity of Flowers in *Auguſt* and *September*, which were as fair as thoſe produc'd in *June*. This is the only Sort of *Roſe* for this Purpoſe, there being no other Sort which will flower both early and late, except this.

The next Sort of *Roſe* which flowers in the open Air, is the *Cinnamon*, which is immediately follow'd by the *Damask Roſe*; then the *Bluſh*, and *York*, and *Lancaſter* come; after which the *Provence*, *Dutch*, *Hundred leav'd White*, and moſt other Sorts of *Roſes* do follow; and the lateſt Sorts are the two *Muſk Roſes*, which, if planted in a ſhady Situation, do ſeldom flower until *September*; and if the *Autumn* proves mild, will continue often till the middle of *October*.

The Plants of theſe two Sorts ſhould be placed againſt a Wall, Pale, or other Building, that their Branches may be ſupported otherwiſe they are ſo ſlender and weak, as to trail upon the Ground; theſe Plants ſhould not be pruned until *Spring*, becauſe their Branches are ſomewhat tender, ſo that when they are cut in *Winter*, they often die after the Knife. Theſe produce their Flowers at the Extremity of the ſame Year's Shoots, in large Bunches, ſo that their Branches muſt not be ſhorten'd in the *Summer*, leſt hereby the Flowers ſhould be cut off. Theſe Shrubs will grow to be eight or nine Feet high, and muſt not be check'd in their Growth, if you intend they ſhould flower well, ſo that they ſhould be placed where they may be allowed Room.

The loweſt Shrub of all the Sorts here mentioned, is the *Scotch Roſe*, which rarely grows above two Feet high, ſo that this muſt be placed among other Shrubs of the ſame Growth. The *Red Roſe* and the *Roſa mundi* do commonly grow from three to four Feet high, but ſeldom exceed that; but the *Damask*, *Provence*, and *Frankfort Roſes* grow to the Height of ſeven or eight Feet; ſo that in planting of them great Care ſhould be taken to place their ſeveral Kinds, according to their various Growths, amongſt other Shrubs, that they may appear beautiful to the Eye.

The *Frankfort Roſe* is of little Value, except for a Stock to bud the more tender Sorts of *Roſes* upon, for the Flowers do ſeldom open fair, and have no Scent; but it being a vigorous Shooter, renders it proper for Stocks to bud the *Yellow* and *Auſtrian Roſes*, which will render them ſtronger than upon their own Stocks; but the *Yellow Roſes* do ſeldom blow fair within eight or ten Miles of *London*, tho' in the Northern Parts of *Great Britain* they do flower extremely well. This Sort muſt have a Northern Expoſure; for if it is planted too warm, it will not flower.

All the Sorts of *Roſes* may be propagated either from Suckers, Layers, or by budding them upon Stocks of other Sorts of *Roſes*; which latter Method is only practiſed for ſome peculiar Sorts, which do not grow very vigorous upon their own Stocks, and ſend forth Suckers very ſparingly; or where a Perſon is willing to have more Sorts than one upon the ſame Plant; but then it muſt be obſerv'd to bud ſuch Sorts upon the ſame Stock as are nearly equal in their manner of Growth; for if there be a Bud of a vigorous growing Sort, and ſome others of weak Growth, the ſtrong one will draw all the Nouriſhment from the weaker, and entirely ſtarve them.

The beſt Sort for Stocks is the *Frankfort Roſe*, which is a vigorous Grower, and produces ſtrong clean Shoots, which will take the Buds much better than any other Sort of *Roſe*; but you muſt be very careful to keep the Stock after Budding intirely clear from Suckers or Shoots at the Bottom; for if they are permitted to remain on, they will, in a ſhort time, ſtarve the Buds. The beſt Seaſon for budding of *Roſes* is in *June*; the Manner of doing it, being the ſame as for Fruit-trees, need not be repeated here.

If you would propagate them from Suckers, they ſhould be taken off annually in *October*, and tranſplanted out either into a Nurſery in Rows, (as hath been directed for ſeveral other Sorts of flowering Shrubs) or into the Places where they are to remain; for if they are permitted to ſtand upon the Roots of the old Plants more than one Year, they grow woody, and do not form ſo good Roots as if planted out the firſt Year, and ſo there is more Danger of their not ſucceeding.

But the beſt Method to obtain good rooted Plants, is to lay down the young Branches in *Autumn*, which will take good Root by the *Autumn* following, (eſpecially if they are watered in very dry Weather) when they may be taken from the old Plants, and tranſplanted where they are to remain. Theſe Plants may be tranſplanted any Time from *October* to *April*; but when they are deſign'd to flower ſtrong the firſt Year after planting, they ſhould be planted early; tho', as I ſaid before, if they are planted late in the *Spring*, it will cauſe them to flower in *Autumn*, provided they do not ſuffer by Drought.

Moſt of theſe Sorts do delight in a rich, moiſt Soil, and an open Situation, in which they will produce a greater Quantity of Flowers, and thoſe much fairer, than when they are upon a dry Soil, or in a ſhady Situation. The Pruning which they require, is only to have their dead Wood cut out, and the Suckers cleared off, which ſhould be done every *Autumn*; and if there are any very luxuriant Branches, which draw the Nouriſhment from the other Parts of the Plant, they ſhould be taken out, or ſhorten'd, to cauſe it to produce more Branches, if there be Occaſion for them to ſupply a Vacancy; but you muſt avoid crouding them with Branches, which is as injurious to theſe Plants as to Fruit-trees; for if the Branches have not an equal Benefit of the Sun and Air, they will not produce their Flowers ſo ſtrong, nor in ſo great Plenty, as when they are more open and better expos'd to the Sun, ſo that the Air may circulate the more freely between them.

The laſt three Sorts of *Roſes* grow wild in the Woods of *North America*, from whence their Seeds have been ſent to *England*, and great Numbers of the Plants have been raiſed. They are extremely hardy, ſo may be planted in any Situation, but they love a moiſt light Soil. They may be propagated by Layers or Suckers, in the ſame manner as the common Sorts of *Roſes*; and being intermixed with them, they will add to the Variety. There is ſome Variation in the Colour of the Flowers of theſe Sorts, which hath ariſen from the Seeds which were brought over, as there frequently happens with all the other Sorts of *Roſes*; for of late Years, ſince ſome curious Perſons have ſowed the Seeds of *Roſes*, there have been many new Varieties obtained, ſome of which are very double, and of beautiful Colours; which Succeſs ſhould encourage others to practiſe this Method, ſince there is not a more beautiful *Genus* of Plants in Nature, than that of the *Roſe*; and the greater Variety there can be obtained, the more will they be valued, on account of their ſeveral Succeſſions, whereby they are, one or other of the *Species*, in Flower above five Months.

ROSA SINENSIS; *vide* Ketmia Sinenſis.

ROSE THE GUILDER; *vide* Opulus.

ROSE-TREE; *vide* Roſa.

ROSEMARY; *vide* Roſmarinus.

ROSMARINUS: [ſo call'd of *Ros*, *Dew*, and *Marinus*, *Lat.* belonging to the *Sea*, q. d. *Sea-Dew*, as ſome ſay, becauſe formerly growing in great Plenty near the Shore of the *Mediterranean* Sea, the Vapours thence ariſing, us'd to fall on it in the Manner of Dew] Roſemary.

The *Characters* are;

It is a verticillate Plant, with a labiated Flower, conſiſting of one Leaf, whoſe Upper-lip or Creſt is cut into two Parts, and turns up backwards, with crooked Stamina (or Chives); but the Under-lip (or Beard) is divided into three Parts, the middle Segment being hollow like a Spoon; out of the two or three-teethed Flower-cup riſes the Pointal, attended, as it were, by four Embryo's, which afterwards turn to ſo many Seeds, that are roundiſh, and are incloſed in the Flower-cup.

The *Species* are;

1. Rosmarinus *hortenſis, latiore folio. Mor. Hiſt.* Broad-leav'd Garden Roſemary.
2. Rosmarinus *hortenſis, anguſtiore folio. C. B. P.* Narrow-leav'd Garden Roſemary.
3. Rosmarinus *ſtriatus, ſive aureus. Park. Theat.* The Gold-ſtrip'd Roſemary.
4. Rosmarinus *hortenſis, anguſtiore folio, argenteus. H. R. Par.* The Narrow-leav'd Silver-ſtrip'd Roſemary.
5. Rosmarinus *Almerienſis, flore majore ſpicato purpuraſcente. Tourn.* Roſemary of Almeria, with a large ſpiked purpliſh Flower.
6. Rosmarinus *ſpontaneus, folio eleganter variegato. Boerh. Ind.* Broad-leav'd Roſemary, with an elegant ſtrip'd Leaf.

Theſe Plants grow plentifully in the Southern Parts of *France*, in *Spain* and *Italy*, where, upon dry rocky Soils near the Sea, they thrive prodigiouſly; but notwithſtanding they are produc'd in warm Countries, yet they are hardy enough to bear the Cold of our ordinary *Winters* very well in the open Air, provided they are planted upon a poor, dry, gravelly Soil, on which they will endure the Cold much better than upon a richer Soil, where the Plants will grow more vigorouſly in *Summer*, and ſo be more ſubject to Injury from Froſt, and they will not have ſo ſtrong an Aromatick Scent as thoſe upon a dry barren Soil.

Theſe ſorts with ſtrip'd Leaves are ſomewhat tender, and ſhould either be planted near a warm Wall, or in Pots fill'd with light freſh Earth, and ſhelter'd in *Winter* under a Frame, otherwiſe they will be ſubject to die in froſty Weather.

All theſe ſorts may be propagated by planting Slips or Cuttings of them in the *Spring* of the Year, upon a Bed of a light freſh Earth; and when they are rooted, they may be tranſplanted into the Places where they are deſign'd to grow, but it will be proper to do this about the Beginning of *Auguſt*, that they may take new Root before the froſty Weather comes on; for if they are planted too late in *Autumn*, they ſeldom live through the *Winter*, eſpecially if the Weather proves very cold; ſo that if you do not tranſplant them early, it will be the better Method to let them remain unremoved until *March* following, when the Froſt is over, obſerving never to tranſplant them at a Seaſon when the dry Eaſt Winds blow, but rather defer the doing of it until the Seaſon is more favourable; for if they are planted when there are cold drying Winds, they are apt to dry up their Leaves, and kill them: But if there happens to be ſome warm Showers ſoon after they are removed, it will cauſe them to take Root immediately; ſo that they will require no farther Care, but to keep them clear from Weeds.

Altho' theſe Plants are tender when planted in a Garden, yet when they are by Accident rooted in a Wall, (as I have ſeveral times ſeen them) they will endure the greateſt Cold of our Winters, though expos'd much to the cold Winds, which is occaſion'd by the Plants being more ſtunted and ſtrong, and their Roots being drier.

The Flowers of the Narrow-leav'd Garden ſort are uſed in Medicine, as are alſo the Leaves and Seeds.

RUBEOLA, Petty-madder.

The *Characters* are;

It hath a funnel-ſhaped Flower, conſiſting of one Leaf, which is ſlightly cut into four Parts at the Brim; reſting on the Empalement, which is ſometimes double, and ſometimes ſingle. This Empalement afterward becomes a Fruit, compoſed of two naked Seeds.

The *Species* are;

1. Rubeola *latiori folio. Inſt. R. H.* Broad-leaved Petty-madder.
2. Rubeola *anguſtiore folio. Inſt. R. H.* Narrow-leaved Petty-madder.
3. Rubeola *vulgaris quadrifolia lævis, floribus purpuraſcentibus. Inſt. R. H.* Common ſmooth four-leaved Petty-madder, with purpliſh Flowers, commonly called Squinency-wort.
4. Rubeola *Luſitanica aſpera, floribus purpuraſcentibus. Inſt. R. H.* Rough Petty-madder of *Portugal*, with purpliſh Flowers.
5. Rubeola *Cretica ſaxatilis fruticoſa, gallii folio, flore purpureo violaceo. Tourn. Cor.* Shrubby rocky Petty-madder of *Candy*, with a ladies-bedſtraw Leaf, and a violet purple Flower.
6. Rubeola *Cretica ſexatilis fruteſcens, flore flaveſcente. Tourn. Cor.* Shrubby rock Petty-madder of *Candy*, with a yellowiſh Flower.
7. Rubeola *Cretica fœtidiſſima fruteſcens myrtifolia, flore magno ſuave-rubente. Tourn. Cor.* The moſt ſtinking ſhrubby Petty-madder of *Candy*, with a myrtle Leaf, and a large pale red Flower.
8. Rubeola *Orientalis fœtida fruticoſa ſerpyllifolia, flore parvo ſuave-rubente. Tourn. Cor.* Shrubby ſtinking Eaſtern Petty-madder, with a mother-of-thyme Leaf, and a ſmall pale red Flower.
9. Rubeola *Orientalis, foliis gallii, flore multiplici ex viridi flaveſcente. Tourn. Cor.* Eaſtern Petty-madder, with many greeniſh yellow Flowers.

The firſt, ſecond, fourth and ninth Sorts, are annual Plants, which decay ſoon after they have perfected their Seeds. Theſe are preſerved in the Gardens of thoſe Perſons who are curious in Botany, for the ſake of Variety. They are very hardy Plants, which require no other Care than to clear them from Weeds: for if they are permitted to ſcatter their Seeds, the Plants will come up and maintain their Place, if they are not overborne with larger Plants. The Seeds of theſe Plants may be ſown either in *Spring* or *Autumn*, in the Places where they are to remain, which may be in almoſt any Soil, but they love an open Situation.

The third Sort grows wild on chalky Hills in divers Parts of *England*, where the Branches trail on the Ground, and produce Tufts of purpliſh Flowers from the Joints where the Leaves are ſet on, which open in *June*, and the Seeds are ripe in *Auguſt*; but the Roots abide many Years. This Plant is eſteemed efficacious in the Cure of Quinſeys, either taken inwardly, or outwardly applied.

The fifth, ſixth, ſeventh and eighth Sorts, were diſcovered by Dr. *Tournefort* in the *Levant*. Theſe are abiding Plants, which become ſhrubby, and by their different Appearances, make an agreeable Variety in a Garden. They may be propagated by ſowing of their Seeds on a Bed of freſh undunged Soil, in the *Spring*; and when the Plants come up, they muſt be kept clear from Weeds, and in very dry Weather they ſhould be refreſhed with Water; and when the Plants are about three or four Inches high, they ſhould be tranſplanted, ſome of each Sort, into Pots, that they may be ſheltered under a Hot-bed Frame in Winter; and the others into dry warm Borders of poor Earth: for in ſuch Places where the Plants grow ſlowly, they will live thro' the *Winter*, better than when they are planted in a rich Soil.

RUBIA; [takes its Name from its red Colour, becauſe the Root of this Plant is uſed in dying a red Colour] Madder.

The *Characters* are;

The Flower conſiſts of one ſingle Leaf, which is cut into four or five Segments, and expanded at the Top; the Flower-cup afterwards becomes a Fruit compoſed of two juicy Berries, cloſely joined together, containing Seed, for the moſt part hollowed like a Navel; to which may be added, the Leaves being rough, and ſurrounding the Stalks in Whorles.

The *Species* are;

1. Rubia *tinctorum ſativa. C. B. P.* Cultivated Dyers Madder.
2. Rubia *ſylveſtris aſpera, quæ ſylveſtris Dioſcoridis. C. B. P.* Wild Madder.
3. Rubia *ſylveſtris Monſpeſulana major. J. B.* Great Wild Madder of *Montpelier*.

The firſt of theſe Sorts was formerly cultivated in divers Parts of *England*, for the Dyers Uſe; but of late Years it has been wholly neglected, ſo that at preſent I believe there is ſcarce any of it cultivated, except in ſmall Quantities for Medicinal Uſe: How this Plant came to be ſo much neglected in *England* I cannot imagine, ſince it will thrive as well here as in any Country in *Europe*; and the Conſumption of it in *England* is pretty large; for I have been inform'd, that we pay upwards of thirty thouſand Pounds annually for this Commodity, which might be eaſily ſav'd to the Nation, were it cultivated here. At preſent the greateſt Quantity of it is cultivated in *Flanders* and *Holland*, from whence we are annually furniſh'd with it, in three different Manners, and diſtinguiſhed by the Names of *Madder in the Branch*, *Madder in the Bundle*, and *Madder unbundled*: The firſt ſort is brought to us in the Root, as it comes out of the Ground, without any other Preparation than that of being dried. The ſecond Sort is that of *Bunch Madder*, or ſuch as is made into Bundles, which is *Madder in Branch*, firſt freed from the Bark and the Pith, then ground by a Mill into groſs Powder, as we buy it. The third Sort is the *Madder unbundled*, that is the *Branched Madder* ground into Powder; but the *Bunched Madder*, or that in Bundles, is the beſt, which, for its Excellency, when it is freſh, is made into Bales, or put up into Casks; 'tis of a pale Red, but as it grows older, increaſes its Colour to a fine Red; that of *Zealand* is eſteem'd the beſt for the Dyers Uſe.

In the Year 1727. I obſerv'd a great Quantity of this Plant cultivated in *Holland*, between *Helvoetſluice* and the *Brill*; and it being the firſt Time I had ever ſeen any conſiderable Parcel of it, I was tempted to make ſome Enquiries about its Culture, and take ſome Minutes of it down upon the Spot, which I ſhall here inſert, for the Uſe of ſuch as may have Curioſity to attempt the Culture of it.

In *Autumn* they plough the Land, where they intend to plant *Madder* in the *Spring*, and lay it in high Ridges, that the Froſt may mellow it; in *March* they plough it again, and at this Seaſon they work it very deep, laying it up in Ridges eighteen Inches aſunder, and about a Foot deep; then about the Beginning of *April*, when the *Madder* will begin to ſhoot out of the Ground, they open the Earth about their old Roots, and take of all the Side-ſhoots which extend themſelves horizontally, juſt under the Surface of the Ground, preſerving as much Root to them as poſſible: theſe they tranſplant immediately upon the Tops of the new Ridges, at about a Foot apart, obſerving always to do this when there are ſome Showers, becauſe then the Plants will take Root in a few Days, and will require no Water.

When the Plants are growing, they carefully keep the Ground houghed, to prevent the Weeds from coming up between them, for if they are ſmothered by Weeds, eſpecially when young, it will either deſtroy or weaken them ſo much, that they ſeldom do well after. In theſe Ridges they let the Plants remain two Seaſons, during which Time they keep the Ground very clean, and at *Michaelmas*, when the Tops of the Plants are decayed, they take up the Roots and dry them for Sale. This is what I could learn of their Method of cultivating this Plant; to which I will ſubjoin a few Obſervations of my own, which I have ſince made upon the Culture of *Madder* in *England*. And, firſt, I find there is no Neceſſity for laying the Ground up in Ridges in *England*, as is practiſed by the *Dutch*, (eſpecially in dry Land) becauſe the Places where I ſaw it were very wet Land, which is often floated in *Winter*: ſo that if the Plants were not elevated upon Ridges, their Roots would rot in *Winter*. Secondly, They ſhould be planted at a greater Diſtance in *England*, the Rows ſhould be at leaſt three Feet Diſtance, and the Plants eighteen Inches aſunder in the Rows; for as they extend themſelves pretty far under Ground, ſo where they are planted too near, their Roots will not have Room to grow. And, thirdly, I find, that if all the horizontal Roots are deſtroyed from time to time, as they are produced, it will cauſe the large downright Roots to be much bigger, in which the Goodneſs of this Commodity chiefly conſiſts: For if the upper Roots are ſuffered to remain, they will draw off the principal Nouriſhment from the downright Roots, as I have experienced; for I planted a few Roots upon the ſame Soil and Situation, which were of equal Strength, and rooted equally well; half of theſe I houghed round, and cut off the horizontal Roots, and the other half I permitted the horizontal Roots to remain on, and when I took them all up, thoſe which I had houghed about and kept clear from horizontal Roots, were almoſt as large again as the other, and the Roots were double the Weight, which plainly proves it neceſſary to cut off thoſe ſuperficial Roots.

The Manner of drying and preparing theſe Roots for Uſe, I am not acquainted with, having never had an Opportunity of ſeeing that Part, ſo can give no Inſtructions concerning it; but whoever ſhall have Curioſity enough to cultivate this uſeful Plant, might eaſily inform themſelves, by going over to *Holland* at the Seaſon of taking up the Roots.

The two Sorts of *Wild Madder* are of no Uſe; though their Roots ſeem to be of the ſame Quality with the manured Sort; and as they are never cultivated in Gardens, it is needleſs to ſay any Thing more of them in this Place.

Theſe Plants love a looſe Soil, neither too dry nor over wet, but will do better in a dry than on a wet Soil, becauſe in ſuch Places the Roots are apt to rot in *Winter*.

RUBUS; [This Plant is ſo called of the red Colour of the Fruit before it comes to Maturity] The Bramble *or* Raſpberry-buſh.

The *Characters* are;

It hath a Flower conſiſting of five Leaves, which are placed circularly, and do expand in form of a Roſe; *the Flower-cup is divided into five Parts, containing many Stamina, or Chives, in the Boſom of the Flower, in the Centre of which riſes the Pointal, which afterwards becomes the Fruit, conſiſting of many Protuberances, and full of Juice.*

The *Species* are;

1. Rubus *major, fructu nigro. J. B.* The common Bramble *or* Blackberry-buſh.
2. Rubus *minor, fructu cæruleo. J. B.* The Dewberry-buſh, *or* Leſſer Bramble.
3. Rubus *vulgaris major, fructu albo. Raii Syn.* The common Greater Bramble-buſh, with white Fruit.
4. Rubus *vulgaris major, folio eleganter variegato.* The Greater Bramble-buſh, with a beautiful ſtrip'd Leaf.
5. Rubus *Idæus, ſpinoſus, fructu rubro. J. B.* The Raſpberry-buſh, Framboiſe, *or* Hind-berry.
6. Rubus *Idæus, ſpinoſus, fructu albo. J. B.* The Raſpberry-buſh, with white Fruit.
7. Rubus *Idæus, ſpinoſus, fructu rubro ſerotino.* The Raſpberry-buſh, with late red Fruit.
8. Rubus *Idæus, non ſpinoſus. J. B.* The Raſpberry-buſh, without Thorns.
9. Rubus *Idæus, fructu nigro, Virginianus. Baniſter.* The Virginian Raſpberry-buſh, with black Fruit.
10. Rubus *odoratus. Cornut.* Virginian flowering Raſpberry, *vulgo*.
11. Rubus *Americanus, magis erectus, ſpinis rarioribus, ſtipite cæruleo. Pluk. Alm.* The Upright Penſylvania Bramble, *or* Raſpberry-buſh.
12. Rubus *Alpinus humilis. J. B.* Dwarf Bramble of the Alps.
13. Rubus *vulgaris, ſpinis carens. H. R. Par.* Common Bramble, without Spines.
14. Rubus *ſpinoſus, foliis & flore eleganter laciniatis. Inſt. R. H.* Prickly Bramble, with Leaves and Flowers elegantly jagged.
15. Rubus *flore albo pleno. H. R. Par.* The Bramble with double white Flowers.
16. Rubus *non ſpinoſus, fructu nigro majore, Polonicus. Barr. Icon.* Poland Bramble without Thorns, and a larger black Fruit.

The firſt and ſecond Sorts are very common in Hedges, and upon dry Banks in moſt Parts of *England*, and are rarely cultivated in Gardens. The third Sort was found by Mr. *Jacob Bobart*, in a Hedge not far from *Oxford*, and hath ſince been cultivated in ſeveral Gardens as a Curioſity. This does not only differ from the common *Bramble* in the Colour of the Fruit, but alſo in the Colour of the Bark and the Leaves, which, in this Sort, are of a lively green; whereas thoſe of the common Sort are of a dark brown Colour. The fourth Sort is a Variety of the common *Bramble*, differing therefrom only in having ſtriped Leaves, for which it is preſerved by ſome Perſons, who are curious in collecting variegated Plants.

The *Raſpberry-buſh* is alſo very common in divers Woods in the Northern Counties of *England*, but is cultivated in all curious Gardens for the ſake of its Fruit. Of this there are three Kinds, which are cultivated commonly in Gardens near *London*; which are the common red, late red, and the white Sorts; but the Sort without Thorns is leſs common at preſent than the other.

The ninth, tenth, eleventh and twelfth Sorts are preſerved as Curioſities in ſeveral Gardens near *London*; but as their Fruits are of no Value, ſo they are ſcarcely worth cultivating, except in Botanick Gardens for Variety.

All theſe Plants are eaſily propagated by Suckers, which they ſend from the Roots in great Plenty. The beſt Time to take them off and tranſplant them, is in *October*, that they may take good Root before *Winter*; which will cauſe them to be ſtrong, and produce Fruit the ſucceeding *Summer*.

In preparing theſe Plants, their Fibres ſhould be ſhortened; but the Buds which are placed at a ſmall Diſtance from the Stem of the Plant, muſt not be cut off, becauſe thoſe produce the new Shoots the following *Summer*. Theſe Plants ſhould be planted about two Feet aſunder in the Rows, and four or five Feet Diſtance Row from Row; for if they are planted too cloſe, their Fruit is never ſo fair, nor will ripen ſo kindly as when they have Room for the Air to paſs between the Rows. The Soil in which they thrive beſt, is a freſh, ſandy Loam, neither too moiſt nor over dry, the Extreme of either being injurious to theſe Plants.

The Time for dreſſing of them is in *October*, when all the old Wood, which produced Fruit the preceding *Summer*, ſhould be cut out down to the Surface of the Ground, and the young Shoots muſt be ſhortened to about two Feet in Length; then the Spaces between the Rows ſhould be well dug, to encourage their Roots; and if you bury a very little rotten Dung therein, it will make them ſhoot vigorouſly the *Summer* following, and their Fruit will be much fairer. During the *Summer* Seaſon they ſhould be kept clear from Weeds, which, with the before-mentioned Culture, is all the Management they will require: But it is proper to make new Plantations once in three or four Years, becauſe thoſe are better than ſuch Plants as are ſuffered to remain longer.

All the other Sorts are propagated from Suckers in the ſame Manner as the Garden *Raſpberries*, and are equally hardy, ſo that they may be placed in the open Air in any Part of the Garden, provided it be not over moiſt, which is apt to rot the Roots of ſome Sorts in *Winter*, but eſpecially of the *Canada* Sort, which is apt to periſh, if planted in a very wet Soil.

The thirteenth Sort is in all Reſpects like the common Bramble, excepting in this Particular, that there are no Thorns on the Branches or Leaves of this Sort.

The fourteenth Sort differs from the common Bramble, in having the Leaves and Flowers curiouſly jagged.

The fifteenth Sort produces large Spikes of Flowers, which are very large and double, ſo that they make a fine Appearance, being almoſt as large and double as Roſes. This merits a Place in every good Garden, becauſe it may be planted in any abject Part of the Garden, under Trees in Wilderneſs Quarters, where it will thrive and flower as well as when planted in a more open Situation.

The ſixteenth Sort is not very common in *England*, but is a Native of *Poland*. This produces much larger Fruit than the common Bramble; ſo is preſerved in the Gardens of ſome curious Perſons for the ſake of Variety.

All the Sorts of Bramble are eaſily propagated by laying down of their Shoots, which in one Year will be ſufficiently rooted to tranſplant; ſo may then be cut off from the old Plants, and planted where they are deſign'd to remain; which ſhould be in Wilderneſs Quarters, or other abject Parts of the Garden, where they may have Room to ſpread, without incommoding other Plants.

RUELLIA.

The *Characters* are ;

It hath a Funnel-ſhaped Flower, conſiſting of one Leaf, which is cut into ſeveral Parts at the Brim, from whoſe Empalement ariſes the Pointal, which is fixed like a Nail in the Bottom of the Flower, and afterward becomes a membranaceous Pod, which opens into ſeveral Parts, and is filled with ſmall Seeds.

The *Species* are ;

1. RUELLIA *Americana humilis, aſphodeli radice. Plum. Nov. Gen.* Dwarf American Ruellia, with an aſphodel Root.
2. RUELLIA *Carolinana, foliis oblongis anguſtis, flore purpureo. Houſt.* Carolina Ruellia, with narrow oblong Leaves, and a purple Flower.
3. RUELLIA *Americana humilis, parvo flore cœruleo, capſulis teretibus. Houſt.* Dwarf American Ruellia, with a ſmall blue Flower, and a taper Pod.

The firſt Sort was diſcovered by Father *Plumier* in *America*, who gave this Name to the *Genus*, in Honour of Dr. *Ruellius*, who was a very learned Perſon in Natural Hiſtory, and lived about two hundred Years paſt.

The ſecond Sort grows plentifully in *South Carolina*, from whence it was brought into the *Engliſh* Gardens. This Sort grows much taller than the other two.

The third Sort was diſcover'd by the late Dr. *William Houſtoun* in *Jamaica*, who ſent the Seeds into *England*. The Flowers of this Kind are much ſmaller than thoſe of the other Sorts, and are of ſhort Duration, ſeldom continuing above one Day.

Theſe Plants are propagated by Seeds, which muſt be ſown early in the *Spring* in Pots filled with light, rich Earth, and plunged into a moderate Hot-bed ; and when the Plants come up, they muſt be tranſplanted each into a ſeparate ſmall Pot, filled with rich Earth, and plunged into a Hot-bed of Tanners-bark, where they muſt be ſhaded from the Sun, until they have taken new Root ; after which Time they muſt have freſh Air admitted to them every Day in warm Weather, and be conſtantly watered three or four times a Week during the *Summer* Seaſon. If the Plants thrive well, thoſe of the firſt and third Sort will produce Flowers the *July* following, and will perfect their Seeds in *Auguſt* ; but the Roots will continue, provided they are plunged into the Bark-bed in the Stove, and kept in a moderate Temperature of Heat.

The ſecond Sort, which riſes much higher than either of the other, will require to be ſhifted into larger Pots, by the Beginning of *June* ; and then they ſhould be removed into the Stove, or a Glaſs-caſe, where they may have a larger Share of Air ; otherwiſe they will draw up very weak, which will prevent their flowering. This Sort dies to the Root every *Winter* ; but if the Pots are placed in a warm Stove, their Roots will live and put out again the following *Spring*, ſo may be continued ſeveral Years. This Sort will ripen Seeds very well, provided the Plants are ſhelter'd when they are in flower.

The firſt Sort is by much the moſt beautiful Plant, the Flowers being four times as large as thoſe of either of the other Sorts, and are of a fine blue Colour ; ſo that it makes a fine Appearance when it flowers ; and as the Plants are ſmall, ſo they may be kept in a little Compaſs, and are as well worth preſerving, as moſt tender exotick Plants. When this Plant is ſhifted, (which ſhould be the Beginning of *April*, before the new Leaves are put out) great Care ſhould be taken, that the Roots are not broken or bruiſed ; for as they conſiſt of many thick Tubers, ſo if theſe are injured the Plant is frequently deſtroy'd.

RUSCUS : [ſo called of *Ruſticus*, *q. d.* a *ruſtick Plant*, becauſe the Countrymen in old Time uſed to lay it upon their Fleſh to defend it from Mice. It is alſo called *Laurus*, becauſe it is fit for making Laurel Garlands. It is alſo call'd *Alexandrina*, from its growing in *Alexandria*] Knee-holly, Butchers-broom.

The *Characters* are ;

The Flower-cup conſiſts of one Leaf, which is cut into ſeveral Diviſions, out of which is produced a globular Bell-ſhap'd Flower, conſiſting alſo of one Leaf, in the Centre of which riſes the Pointal, which afterwards becomes a ſoft, roundiſh Fruit, in which is incloſed one or two hard Seeds.

The *Species* are ;

1. RUSCUS *myrtifolius aculeatus. Tourn.* The common Knee-holly, *or* Butchers-broom.
2. RUSCUS *anguſtifolius, fructu folio innaſcente. Tourn.* Narrow-leafed Butchers-broom, *or* Alexandrian Laurel, with the Fruit growing on the Leaves.
3. RUSCUS *latifolius, fructu folio innaſcente. Tourn.* Broad-leafed Butchers-broom, *or* Alexandrian Laurel, with the Fruit growing on the Leaves.
4. RUSCUS *anguſtifolius, fructu ſummis ramulis innaſcente. Tourn.* Narrow-leafed Butchers-broom, *or* Alexandrian Laurel, with the Fruit growing upon the Tops of the Branches.
5. RUSCUS *latifolius crenatus, fructu è crenis foliorum prodeuntibus.* Broad-leafed Alexandrian Laurel, with the Fruit growing upon the Edges of the Leaves.

The firſt Sort is very common in the Woods in divers Parts of *England*, and is rarely cultivated in Gardens. The Roots of this Kind are ſometimes uſed in Medicine, and the green Shoots are cut and bound into Bundles, and ſold to the Butchers, who uſe it as Beſoms to ſweep their Blocks ; from whence it had the Name of *Butchers-broom*.

The ſecond, third and fourth Sorts are hardy Plants, and though not Natives of *England*, yet may be preſerved in Gardens, if planted in a ſhady Situation, as in Wilderneſs-Quarters, *&c.* where they ſerve to intermix with other Wood-plants, to make Variety ; and the third Sort is ſometimes uſed in Medicine. Theſe Plants may be propagated by parting their Roots in the *Spring* of the Year, before they begin to make new Shoots, obſerving, if the Seaſon be dry, to water them until they have taken Root ; after which they will require no farther Care but to keep them clear from Weeds, obſerving not to tranſplant or diſturb their Roots oftener than once in three or four Years, for when they are often removed, they ſeldom thrive well, and do rarely produce Fruit.

The fifth Sort is tender, and muſt therefore be placed in Pots filled with freſh Earth, and in *Winter* put into the Green-houſe ; but it ſhould be placed where it may have free Air in mild Weather, and be conſtantly watered : In which Management this Plant will ſend forth Stems ſix or eight Feet high, furniſh'd with Leaves from Bottom to Top, which in *June* will be cloſely ſet with Flowers upon their Edges, which do make a very beautiful and odd Appearance, and renders it worthy of a Place in every good Collection of Plants. This is alſo propagated by parting the Roots, as the former, which ſhould not be done very often, becauſe if the Roots are not permitted to remain ſome Time to get Strength, they will produce but weak Shoots, and very few Flowers ; and in the Strength of their Shoots, and Number of Flowers, the greateſt Beauty of theſe Plants conſiſts.

It is generally ſuppoſed, that it was one of theſe Plants which the ancient Victors were crowned with ; and ſince from the pliableneſs of their Branches, whereby they are very proper to wreathe into any Figure, as alſo from the Reſemblance thoſe Coronets, which we ſee ſurrounding the Heads of ſome ancient Buſts, have to the Leaves of theſe Plants ; ſo that it is a probable Conjecture at leaſt.

RUTA ; [This Plant is called *Ruta*, of ῥύω, to *preſerve*, becauſe it is a Plant very good to preſerve Health] Rue.

The *Characters* are ;

The Flower for the moſt part conſiſts of four hollow Leaves, which are placed orbicularly, and do expand in form of a Roſe ; out of whoſe Flower-cup riſes the Pointal, which afterwards becomes a roundiſh Fruit, which is generally four-corner'd, and compoſed of four Cells fixed to an Axis, and full of ſmall angular Seeds.

The *Species* are ;

1. RUTA *major hortenſis latifolia. Mor. Hiſt.* The common broad-leafed Garden Rue.
2. RUTA *hortenſis minor tenuifolia. Mor. Hiſt.* The leſſer Garden Rue, with narrow Leaves.
3. RUTA *hortenſis minor tenuifolia, foliis variegatis argenteis. Boerh. Ind.* The leſſer Garden Rue, with narrow Leaves, variegated with White.
4. RUTA *Chalepenſis latifolia, florum petalis villis ſcatentibus. H. L.* The broad-leafed Aleppo Rue, whoſe Flower-leaves are beſet with Down.
5. RUTA *Chalepenſis tenuifolia, florum petalis villis ſcatentibus. Mor. Hiſt.* Narrow-leafed Aleppo Rue, whoſe Flower-leaves are beſet with Down.
6. RUTA *ſylveſtris major. C. B. P.* Greater Wild Rue.

There are ſome other Varieties of theſe Plants, which are preſerved in curious Botanick Gardens; but thoſe here mentioned are all the Sorts which I have ſeen cultivated in the *Engliſh* Gardens.

The firſt Sort here mentioned is that which the College of Phyſicians have directed to be uſed in Medicine, and is the moſt commonly cultivated in *England*.

The ſecond Sort is propagated but in few Gardens in *England*; though the third, which is a Variety of the ſecond, and only differing from it in having its Leaves variegated with White, is very common in *England*, being greatly cultivated by thoſe Gardeners who ſupply the *London* Markets with Plants in the *Spring* Seaſon, at which Time this Plant makes a beautiful Appearance; but as the Seaſon advances, and the Plants increaſe in Vigour, ſo the Variegation of the Leaves goes off, and they appear almoſt green; but their Colour returns again in *Winter*.

The two Sorts of *Aleppo Rue* are only preſerved in ſome curious Gardens, being rarely uſed in Medicine; though of late Years the broad-leafed Sort was become ſo plenty, as to be brought to the Markets inſtead of the firſt Sort: But it being much ranker, and of a more offenſive Smell, it was neglected.

The greater *Wild Rue* is leſs common in *England* than either of the former. This I raiſed from Seeds, which were ſent me by my honoured Friend Mr. *Henry Hopkey*, from *Gibraltar*, where this Plant grows upon the Hills in great Plenty.

All theſe Plants may be propagated either by ſowing of their Seeds, or by planting Slips or Cuttings, both of which muſt be done in the *Spring*. The Manner of propagating them from Cuttings being the ſame with *Roſemary*, &c. I ſhall not repeat it here, but refer the Reader to that Article; and if they are propagated by Seeds, there needs no farther Care but to dig a Bed of freſh Earth in the *Spring*, making it level; then to ſow the Seeds thereon, treading them in, and raking the Ground ſmooth: After which you muſt obſerve to keep the Bed clear from Weeds, until the Plants are come up about two Inches high; when they ſhould be tranſplanted out into freſh Beds, where they may remain for Uſe. All theſe Plants muſt have a dry Soil, otherwiſe they are very ſubject to be deſtroyed in *Winter*. The two *Aleppo Rues* and the *Wild Rue* are ſomewhat tenderer than the common Sort; but theſe will endure our ordinary *Winters* very well in the open Air, eſpecially if they are planted on a dry Soil.

Theſe Plants were formerly uſed to plant for Edgings on the Sides of Borders; but they are by no Means proper for this Uſe, for they ſhoot ſo vigorouſly that there is no keeping them within the Bounds of an Edging; beſides, when they are kept cloſely ſheered, they appear very ragged and ſtumpy, and their Roots do ſpread ſo far as to exhauſt the Goodneſs of the Soil, ſo that the other Plants would be deprived of their Nouriſhment; which Reaſons have cauſed them to be wholly neglected for this Purpoſe; ſo that at preſent they are chiefly cultivated for medicinal Uſe, or to furniſh the Balconies for the Citizens in the *Spring*.

RUTA CANINA; *vide* Scrophularia.

RUTA MURARIA; Wall Rue, *or* White Maidenhair.

This Plant is found growing out of the Joints of old Walls in divers Parts of *England*, where it is gathered for medicinal Uſe; but as it cannot be cultivated in Gardens, ſo as to grow to Advantage, I ſhall not ſay any Thing more of it in this Place.

RUYSCHIANA.

The *Characters* are;

It hath a labiated Flower, conſiſting of one Leaf, whoſe Upper-lip (or Creſt) is divided into two Parts; but the Beard is cut into three Segments, the middle Segment being divided into two Parts, and is twiſted like a Screw: Out of the Empalement ariſes the Pointal, fixed like a Nail in the hinder Part of the Flower, attended by four Embryo's, which afterwards become ſo many Seeds incloſed in the Empalement.

We have but one *Species* of this Plant, which is,

RUYSCHIANA *flore cœruleo magno. Boerh. Ind. alt.* Ruyſchiana, with a large blue Flower.

This Name was given to this Plant by the learned Dr. *Boerhaave*, Profeſſor of Botany at *Leyden*, in Honour of Dr. *Ruyſch*, who was Profeſſor of Anatomy and Botany at *Amſterdam*. It was by ſome Writers in Botany ranged amongſt the Hyſſops; by others it was made a Ground-pine, and by ſome a Self-heal, to neither of which it exactly agreed: Which occaſioned Dr. *Boerhaave* to conſtitute a new *Genus* of it by this Name.

This is a perennial Plant, which dies to the Root in *Autumn*, and riſes again the following *Spring*: It commonly grows about two Feet high, and has long narrow Leaves, ſomewhat reſembling thoſe of Roſemary; on the Tops of the Stalk the Flowers are produced in a cloſe thick Spike, growing in Whorles round the Stalks, which are of a fine blue Colour, and make a very pretty Appearance during their Continuance in Beauty; which in a cool Seaſon is ſometimes ſix Weeks, beginning in *May*, and laſting till *July*.

It is propagated by Seed, which ſhould be ſown in the Middle of *March*, in a Bed of freſh, light Earth, in an open Expoſure; and in about five Weeks after, the Plants will appear; when they ſhould be carefully cleared from Weeds; and if the Seaſon ſhould prove dry, they muſt be refreſhed now and then with Water, which will greatly promote their Growth. When the Plants are about two Inches high, they ſhould be carefully tranſplanted into a Bed or Border of freſh, light, undunged Earth, obſerving to ſhade them from the Sun until they have taken Root, as alſo to refreſh them frequently with Water, until they are well eſtabliſhed in this Bed; after which Time they will require no farther Care, but to keep them conſtantly clear from Weeds till *Michaelmas*, when they are to be removed into the Places where they are deſigned to remain for good.

When the Plants are firſt tranſplanted from the Seed-bed into the Nurſery-bed, they ſhould be planted about ſix Inches aſunder every Way, which will be ſufficient Room for them the firſt Seaſon: And this will admit of the Hough to come between the Plants to deſtroy the Weeds, which is by much a better Method than the pulling out of the Weeds by hand, and is much ſooner performed. For as the Hough ſtirs the Ground between the Plants, it not only cuts down the Weeds, which were up and viſible, but alſo deſtroys all thoſe whoſe Seeds were ſprouted, and would have ſoon after appeared; ſo that one houghing, if well performed, and in dry Weather, will more effectually deſtroy the Weeds than two hand Weedings would do, were it performed ever ſo carefully. Beſides, the ſtirring of the Ground is of great Service to the Plants.

At *Michaelmas*, when the Plants are tranſplanted for good, they ſhould be carefully taken up with Balls of Earth to their Roots, and they muſt be planted in the Middle of the Borders, in freſh light Earth, intermixing them with other hardy Plants of the ſame Growth, where they will make a pretty Appearance when they are in flower, and will continue three or four Years; and in ſome poor ſtony Soils I have known the Roots live ſix or ſeven Years; but theſe did not produce ſo large Spikes of Flowers as thoſe which were younger and more vigorous Plants.

It will be proper to have ſome of theſe Plants in Pots, which, in caſe of a ſevere *Winter*, may be ſheltered under a Frame, for fear thoſe Plants which are expoſed ſhould be deſtroyed; and theſe Plants in Pots, if they are duly ſupply'd with Water in dry Weather, will flower very ſtrong; ſo may be placed amongſt other Plants to decorate Courts, &c. where they will have a good Effect.

But as theſe Plants do not continue many Years, ſo it will be proper to raiſe a Supply of young Plants to ſucceed them; for the old Plants will produce Seeds plentifully, which are ripe in *Auguſt*, when they ſhould be gathered in dry Weather, and kept in a warm dry Room, till the Time for ſowing of them.

S A

SABINA; The Savine-Tree.

The *Characters* are:

It hath compact, rigid, and prickly Ever-green Leaves; the Fruit is ſmall, ſpherical, and warted, and the whole Plant has a very rank, ſtrong Smell.

The *Species* are;

1. SABINA *folio tamariſci Dioſcoridis. C. B. P.* The Male *or* common Savin.
2. SABINA *folio cupreſſi. C. B. P.* The Berry-bearing *or* Upright Savin.
3. SABINA *folio variegato.* The ſtrip'd Savin.

Theſe Plants are commonly cultivated for Medicinal Uſe, and are rarely planted in Gardens for Pleaſure, becauſe their ill Scent renders them diſagreeable in frequented Places; but yet they may be admitted for planting in Clumps, or to form Amphitheatres of Ever-green Trees; where, if theſe are intermix'd amongſt other low-growing Plants, they will add to the Variety.

Theſe Plants may be propagated by laying down their young Branches in the *Spring*; which, if duly watered in dry Weather, will take Root in a Year's Time, and may then be tranſplanted out either into a Nurſery, or the Places where they are to remain: They may alſo be propagated by Cuttings, which ſhould be planted on a moiſt Soil about the Beginning of *April*, which, if duly water'd, will take Root, and the *Spring* following may be remov'd, as was directed for the *Layers*.

The Time for tranſplanting theſe Plants is the ſame with moſt other Ever-green Trees, (*viz.*) in *April*, obſerving to do it in cloudy Weather, laying a little Mulſh upon the Surface of the Ground about their Roots to prevent their drying: After they are rooted, they will require no farther Care but to keep them clear from Weeds, and to dig the Ground about their Roots every *Spring*, which will greatly promote their Growth.

SAFFRON; *vide* Crocus.

SAGE; *vide* Salvia.

SALICARIA; [takes its Name from *Salix*, a *Sallow* or *Willow*, becauſe it grows on the Banks of Ditches under Willows. The Ancients call'd it *Lyſimachia*] Willow-wort, *or* ſpiked Loſe-ſtrife.

The *Characters* are;

The Flowers conſiſt of ſeveral Leaves, which are placed circularly, and do expand in form of a Roſe; theſe Leaves are produced from the Inciſures of the Flower-cup; from the Centre of the Flower-cup riſes the Pointal, which afterwards becomes a Fruit or oval Huſk, conſiſting of two Cells, and generally full of ſmall Seeds, which adhere to the Placenta, and are commonly wrapped up in the Flower-cup.

The *Species* are;

1. SALICARIA *vulgaris purpurea, foliis oblongis. Tourn.* Purple-ſpiked Willow-herb, *or* Loſe-ſtrife, with long Leaves.
2. SALICARIA *purpurea, foliis ſubrotundis. Tourn.* Purple-ſpiked Willow-herb, *or* Loſe-ſtrife, with roundiſh Leaves.
3. SALICARIA *hyſſopi folio latiore. Inſt. R. H.* Broad hyſſop-leaved Willow-wort, or Hedge-hyſſop.
4. SALICARIA *hyſſopi folio anguſtiore. Inſt. R. H.* Narrow hyſſop-leaved Willow-wort, or Graſs-poly.
5. SALICARIA *Luſitanica, anguſtiore folio. Inſt. R. H.* *Portugal* Willow-wort, with a narrow Leaf.
6. SALICARIA *Hiſpanica, hyſſopi folio, floribus oblongis, ſaturatè cœruleis. Inſt. R. H.* *Spaniſh* Willow-wort, with a Hyſſop-leaf, and oblong deep blue Flowers.
7. SALICARIA *minima Luſitanica, nummulariæ folio. Inſt. R. H.* The leaſt *Portugal* Willow-wort, with a money-wort Leaf.
8. SALICARIA *Orientalis, ſalicis folio acutiſſimo & glabro. Tourn. Cor.* Eaſtern Willow-wort, with a ſharp-pointed ſmooth willow Leaf.
9. SALICARIA *Cretica, punicæ folio. Tourn. Cor.* Candy Willow-wort, with a pomegranate Leaf.

Theſe Plants are very common by the Sides of Ditches and other moiſt Places in divers Parts of *England*, and are rarely cultivated in Gardens; yet, for the Beauty of their long Spikes of purple Flowers, they deſerve a Place in a good Garden, as alſo for their long Continuance in Flower: However, if there happens to be a moiſt boggy Place in a Garden where few other Plants will thrive, theſe may be placed there to Advantage, and will afford a great deal of Pleaſure. They propagate themſelves very faſt by their creeping Roots, ſo that if they delight in the Soil, they will in a ſhort Time multiply exceedingly. Theſe produce their Flowers in *June* and *July*, and do often continue till *Auguſt* in Beauty.

The third and fourth Sorts are found wild in *England*, on moiſt Soils, where the Water ſtands in *Winter*; but they are pretty rare near *London*. Theſe are ſeldom preſerved in Gardens, but are here mentioned to introduce the next Sort, which is a very beautiful Plant, and deſerves a Place in every curious Garden, for its long Continuance in Flower. This Sort is a Native of *Portugal*, but is a tolerable hardy Plant, and will endure the Cold of our ordinary *Winters* in the open Air; but in very ſevere Froſts, it is ſometimes deſtroyed; ſo that ſome Plants of this Kind may be planted in Pots, which may be ſheltered under a common Frame in *Winter*, where they ſhould have as much free Air as poſſible in mild Weather; for they only require to be protected from very hard Froſts. In *Summer* they may be placed abroad with other flowering Plants; but in dry Weather they muſt be duly watered, otherwiſe they will not flower ſtrong, nor continue ſo long in Beauty. Theſe Flowers are produced from the Wings of the Leaves, beginning at the Bottom of the Stalks near the Root, and are continued all the Way up to the Top of the Stalks, which are about two Feet in Length, for this Sort ſeldom riſes any higher: the Flowers are pretty large, and of a bright purple Colour. This Plant begins to flower the Beginning of *June*, and continues till *Auguſt*.

As this Sort very rarely produces ripe Seeds in *England*, ſo it muſt be propagated by parting of the Roots, or by laying down of the Branches, which will take Root in a few Months (provided they are conſtantly watered in dry Weather); and may then be taken from the old Plants, and planted into Pots, that they may be ſheltered in *Winter*; and the *Spring* following, ſome of them may be ſhaken out of the Pots, and planted into a Border, where they may have the morning Sun; and in dry Weather, if they are watered conſtantly, they will flower very well, and make a fine Appearance.

The ſixth Sort is alſo a very beautiful Plant, and well deſerves a Place in every good Garden. This grows about the ſame Height with the former, ſo may be interſperſed with it in the Borders of the Flower-garden; as may alſo the ſeventh and ninth Sorts, for Variety, tho' they are not near ſo beautiful as either of the former Sorts. Theſe may be treated in the ſame manner as hath been directed for the fifth Sort: with which Management they will thrive very well.

The eighth Sort grows much taller than either of the other, ſo ſhould be placed amongſt larger Plants. This is very hardy, and may be propagated either by Seeds, or by parting of the Roots, which is the ſureſt way, becauſe the Seeds do not ripen every Year in this Climate. The beſt time to part the Roots, is in *Autumn*, that they may be well fixed in the Ground before the *Spring*; becauſe thoſe which are parted in the *Spring*, ſeldom flower very ſtrong, eſpecially if the Seaſon proves dry. This ſort may be intermixed with the firſt and ſecond, and will grow in almoſt any Situation, provided they are watered in dry Weather.

SALICORNIA, Jointed Glaſſwort, or Saltwort.

The *Characters* are;

It hath an apetalous Flower, wanting the Empalement; for the Stamina (or Chives) and the Embryo's grow on the extreme Part of the Leaves. Theſe Embryo's afterwards become Pods or Bladders, which for the moſt part contain one Seed.

The *Species* are;

1. SALICORNIA *geniculata ſempervirens. Tourn. Cor.* Jointed evergreen Glaſſwort.
2. SALICORNIA *geniculata annua. Tourn. Cor.* Annual Jointed Glaſſwort.

Theſe Plants grow on the Sea-coaſt in many Parts of *Europe*, and upon the Shores in ſeveral Places in *England*, which are waſhed every Tide with the Salt-water; but are rarely planted in Gardens, becauſe it is very difficult to make them grow in any other Situation, than in ſalt Marſhes, and on the Shores, where the Salt-water frequently flows. Of theſe Plants there ſeem to be two or three Varieties, which appear remarkably different, but are not ſuppoſed to be diſtinct Species.

The Inhabitants near the Sea-coaſt, where theſe Plants grow, cut them up toward the latter End of *Summer*, when they are fully grown; and after having dried them in the Sun, they burn them for their Aſhes, which are uſed in making of Glaſs and Soap. Theſe Herbs are by the Country People, called *Kelp*; and are promiſcuouſly gathered for Uſe.

From the Aſhes of theſe Plants is extracted the Salt, called *Sal Kali* or *Alkali*, which is much uſed by the Chymiſts.

The manner of gathering and burning of theſe Herbs is already mentioned under the Article of *Kali*; ſo I ſhall not repeat it in this Place.

In ſome Parts of *England*, theſe Herbs are gathered and Pickled for Samphire, tho' it is very different there from.

SALIX; takes it Name of *ſalio*, to *leap* or *dance*, becauſe of its quick Growth] The Sallow *or* Willow-Tree.

The *Characters* are;

It hath amentaceous Flowers, conſiſting of ſeveral Stamina, which are collected into a Spike, but are barren; the Embryo's are produced upon different Trees from the Male Flowers, and do afterwards become a Fruit or Husk, ſhaped like a Cone, opening in two Parts, and containing downy Seeds.

The *Species* are;

1. Salix *vulgaris alba arboreſcens. C. B. P.* The common White Willow.

2. Salix *folio laureo, ſeu lato glabro odorato. Phyt. Brit.* The Bay-leav'd Sweet Willow.

3. Salix *folio longo, utrinque virente odorato.* The Long-leav'd Sweet Willow.

4. Salix *folio longo, latoque ſplendente, fragilis. Raii Syn.* The Crack Willow.

5. Salix *folio Amygdalino, utrinque aurito, corticem abjiciens. Raii Syn.* The Almond-leav'd Willow that caſts its Bark.

6. Salix *folio auriculato ſplendente, flexilis. Cat. Cant.* The round-ear'd ſhining Willow.

7. Salix *folio longo ſubluteo, non auriculato, viminibus luteis. Raii Syn.* The long-leav'd yellowiſh Willow.

8. Salix *latifolia rotunda. C. B. P.* Round-leav'd Sallow.

9. Salix *latifolia rotunda variegata.* The ſtrip'd Sallow.

10. Salix *latifolia, folio ſplendente. Raii. Syn.* Broad ſhining-leav'd Sallow.

11. Salix *Orientalis, flagellis deorſum pulchre pendentibus. T. Cor.* The Weeping Willow.

There are a greater Number of *Species* to be found in *England* than are here mentioned, eſpecially of the *Sallows*, as I have been inform'd by a very judicious Basket-maker: There are at leaſt thirty Sorts, which they diſtinguiſh by Name, commonly in uſe in their Trade; and beſides theſe, there are a great Number of Mountain *Willows*, which grow upon dry Grounds; but as theſe are ſeldom cultivated, ſo it would be to little Purpoſe to enumerate them in this Place.

All the Sorts of *Willows* may be eaſily propagated by planting Cuttings or Sets in the *Spring*, which do readily take Root, and are of quick Growth. Thoſe Sorts which grow to be large Trees, and are cultivated for their Timber, are generally planted from Sets, which are about ſeven Feet long: Theſe are ſharpen'd at their larger End, and thruſt into the Ground by the Sides of Ditches and Banks where the Ground is moiſt; in which Places they make a conſiderable Progreſs, and are a great Improvement to ſuch Eſtates, becauſe their Tops will be fit to lop every third or fourth Year. The larger Wood, if ſound, is commonly ſold for making Wooden Heels, or Soles for Shoes, as alſo to the Turners for many Kinds of light Ware.

The *Sallows* are commonly planted in Cuttings, made from ſtrong Shoots for the former Year, and are about three Feet long: Theſe are commonly thruſt down two Feet deep into Ground, and are one Foot above it. The Soil ſhould always be dug or ploughed before they are planted, and the Cuttings placed about three Feet Row from Row, and eighteen Inches aſunder in the Rows, obſerving always to place the Rows the ſloping way of the Ground, (eſpecially if the Tides overflow the Place) becauſe if the Rows are placed the contrary Ways, all the Weeds and Filth will be detain'd by the Plants, which will choak them up. The beſt Seaſon for planting theſe Cuttings is in *February*, for if they are planted ſooner, they are apt to peel, if it proves hard Froſt, which greatly injures them. Theſe Plants are always cut every Year, and if the Soil be good, they will produce a great Crop; ſo that the yearly Produce of one Acre has been often ſold for fifteen Pounds; but ten Pounds is a common Price, which is much better than Corn Land; ſo that it is great Pity theſe Plants are not more cultivated, eſpecially upon moiſt boggy Soils, upon which few other Things will thrive.

SALT is a foſſil Body, fuſible by Fire, and congealable again, in the Cold, into brittle Glebes or Cryſtals; ſoluble withal in Water, ſo as to diſappear therein, never malleable, and having ſomething in it, which, to the Organ of Taſte, affords a Senſation of Acrimony and Sharpneſs.

Dr. *Grew* ſuppoſes, That the chief governing Principle in the Juices of Plants is, the *Saline* or *Salt*; which *ſaline Principle* is to be underſtood as a general Term. The *vegetable Salts* ſeem to be four, *viz.* the *Nitrous*, the *Acid*, the *Alkaline*, and the *Marine*.

The *nitrous Salts* ſeem by Nature to be aſſign'd chiefly to the Growth of Plants; and the other three *Salts* are exhibited by the ſeveral Ways of reſolving the Principles of a Plant.

Salt is accounted good for cold Lands, becauſe the Nature of it is ſuch, that the drier and hotter it is kept, the more it keeps its own Body, and does not turn to Water; and when it ſtands in a cold moiſt Place, then in a little Time it diſſolves to Water; and when it is turn'd to Water, then it is fit for the Nouriſhment and Feeding of Seeds, eſpecially Annuals.

The Reaſon why *Salt*, viz. *Salt-water*, is accounted a Feeder of Seeds or Plants, is, that it has been often obſerv'd, that *Salt* falling on a Board, *&c.* will be long a drying; and if it has been dry'd by Heat, Dews or Rain will make it moiſt again, and then it ſteams forth, and that is it which nouriſhes all Plants: But if it be upon a hot and dry Ground, late in the *Spring*, and dry Weather comes, then it does not, nor can, yield its Steam or Fume.

Pigeons Dung is by many eſteem'd good for cold Lands, becauſe it is hotter and ſalter than any other Dung, it being natural to Pigeons to eat *Salt*; for they fly to the Sea-ſide early on Mornings to pick up that *Salt* which the Heat of the Sun makes by drying up the Salt-water, and leaves upon the Sand.

The Reverend Dr. *Hales*, in his excellent Treatiſe of *Vegetation*, obſerves, That Plants of a leſs durable Texture, as they abound with a greater Proportion of *Salt* and *Water*, which is not ſo ſtrongly attracting as *Sulphur* and *Air*, ſo they are the leſs able to endure the Cold: And as Plants are obſerved to have a greater Proportion of *Salt* and *Water* in them in the *Spring* than in *Autumn*, ſo they are more eaſily injured by Cold in the *Spring* than in a more advanced Age, when their Quantity of Oil is increaſed, with their greater Maturity.

Whence we find that Nature's chief Buſineſs in bringing the Parts of a Vegetable, eſpecially its Fruit and Seed, to a Maturity, is to combine together, in a due Proportion, the more active and noble Principles of *Sulphur* and *Air*, that chiefly conſtitute Oil, which in its moſt refined State is never found without ſome Degree of *Earth* and *Salt* in it.

SALVIA; [ſo called of *Salvus*, or *Salus Vitæ*, i. e. the *Health of Life*] Sage.

The *Characters* are;

It hath a labiated Flower, conſiſting of one Leaf, whoſe Upper-lip is ſometimes arched, and ſometimes hooked; but the Under-lip (or Beard) is divided into three Parts, bunching out, and not hollowed, as the Clary; *out of the Flower-cup riſes the Pointal, attended, as it were, by four Embryo's, which afterwards become ſo many Seeds, which are roundiſh, ſhut up in a Husk, which was before the Flower-cup: To which may be added, that the Stamina do ſomewhat reſemble the* Os Hyoidis.

The *Species* are;

1. Salvia *major, an ſphacelus Theophraſti. C. B. P.* The greater or common Sage.

2. Salvia *nigra. C. B. P.* Common Red Sage.

3. Salvia *major, foliis ex viridi & albo variegatis. Boerh. Ind.* The greater Sage, with Leaves variegated with White and Green.

4. Salvia *foliis verſicoloribus. C. B. P.* Party-coloured Sage.

5. Salvia *latifolia ſerrata. C. B. P.* Broad-leav'd notch'd Sage.

6. Salvia *latifolia ſerrata, foliis ex albo variegatis.* Broad-leav'd Sage, with variegated Leaves.

7. Salvia *abſinthium redolens. J. B.* Worm-wood Sage.

8. Salvia *minor aurita, & non aurita. C. B. P.* Sage of Virtue.

9. Salvia *minor, foliis variegatis. H. R. Par.* Sage of Virtue, with ſtrip'd Leaves.

10. Salvia *Orientalis latifolia abſinthium redolens, flore carneo magno. Boerh. Ind.* Broad-leav'd Eaſtern Sage ſmelling like Worm-wood, with a large Fleſh-colour'd Flower.

11. Salvia *Orientalis latifolia hirſutiſſima viſcoſa pinnata, flore & calice purpureis, inodora. Boerh. Ind.* Eaſtern Sage, with broad, hairy, clammy-wing'd Leaves, with a purpl Flower and Flower-cup, without Smell.

12. Salvia *Africana fruteſcens, folio ſcorodoniæ, flore violaceo. H. A.* Shrubby African Sage, with a Wood Sag Leaf, and a Violet-colour'd Flower.

13. Salvi

13. SALVIA *Africana fruteſcens, folio ſubrotundo, glauco, flore aureo magno. H. A.* Shrubby African Sage, with roundiſh Sea-green Leaves, and a large golden Flower.

14. SALVIA *Orientalis abſinthium redolens, foliis pinnatis, flore carneo, elatior. Sher.* Eaſtern Upright Wormwood Sage, with winged Leaves, and a Fleſh-colour'd Flower.

15. SALVIA *Hiſpanica, folio lavendulæ. Tourn.* Spaniſh Sage, with a Lavender Leaf.

There are ſeveral other *Species* of this Plant, which are preſerved in ſome curious Botanick Gardens abroad; but thoſe here mentioned are what I have obſered in the *Engliſh* Gardens.

The firſt Sort tho' the moſt common in many Parts of *Europe*, yet is but rarely to be ſeen in the *Engliſh* Gardens; but the red Sort is moſt commonly cultivated in this Country, which many Perſons ſuppoſe to be only a Variety of the common Sort; but it conſtantly preſerves its Difference when rais'd from Seeds, as I have two or three times experimented; ſo that I don't ſcruple to make it a diſtinct *Species*, ſince its Difference from the common is much greater than in ſome of the other Sorts of *Sage*, particularly the *Sage of Virtue* and the *Lavender-leav'd Sage*; both which, when cultivated in a good Soil, are ſo nearly alike, as not to be diſtinguiſhed by the beſt Botaniſts. This *Red Sage*, the *Wormwood Sage*, and *Sage of Virtue* are the principal Sorts which are cultivated for Uſe in *England*; though the *Broad-leav'd Sage* is much preferable to the *Sage of Virtue* for Tea, it giving the Water a much more grateful Flavour, and is eſteem'd to be of a leſs drying Quality; ſo that moſt Perſons, who are Lovers of *Sage-Tea*, do prefer this for that Purpoſe.

All the Sorts of *Sage* (except the eleventh Sort, which is but annual) may be propagated by planting Cuttings or Slips, during any of the *Summer* Months, obſerving to water and ſhade them until they have taken Root; after which they may be taken up, and planted where they are deſigned to remain, which ſhould always be upon a dry Soil, and where they may have the Benefit of the Sun; for if they are planted on a moiſt Soil, or in a ſhady Situation, they are very ſubject to be deſtroy'd in *Winter*; nor will theſe Plants endure the Cold ſo well, when planted upon a rich Soil, as thoſe which have a barren, dry, rock Soil, which is the Caſe of moſt of the Verticillate Plants. The Side-ſhoots and Tops of theſe Plants may be gathered in the *Summer*, and dried, if deſigned for Tea, otherwiſe they are beſt taken green from the Plants for moſt other Uſes.

The twelfth, thirteenth and fourteenth Sorts are ſomewhat tender, therefore theſe muſt be planted into Pots fill'd with freſh, light, ſandy Earth; and in Winter muſt be removed into the Conſervatory, where they ſhould be plac'd as near the Windows as poſſible, that they may have a great Share of freſh Air whenever the Seaſon is mild; for if they are too much drawn, they ſeldom flower well, and make but an indifferent Appearance: In Summer they muſt be expos'd amongſt other Exotick Plants in ſome well ſhelter'd Situation, for they are pretty hardy, and do only require to be ſhelter'd from Froſt and ſtrong Winds. Theſe Plants muſt be often refreſh'd with Water, (eſpecially in warm Weather) otherwiſe they will ſhrivel and decay; and they ſhould be tranſplanted at leaſt twice every *Summer*, becauſe their Roots do greatly increaſe; which, if confin'd in the Pots too long, will turn mouldy, and decay. The other Oriental Sorts are hardy enough to endure the Cold of our ordinary Winters in the open Air, provided they are planted in a dry Soil, and a warm Situation.

Theſe Plants may alſo be propagated by ſowing their Seeds in the *Spring* upon a Bed of freſh Earth, obſerving to keep the Ground clear from Weeds until the Plants are come up; when they ſhould be tranſplanted into Beds of freſh Earth, and treated as thoſe rais'd from Cuttings or Slips.

SALVIA AGRESTIS; *vide* Scordium.

SAMBUCUS; [ſo call'd of *Sambuca*, which was a muſical Inſtrument made of this Wood, uſed by the Ancients. Others derive the Name from one *Sandix*, who found out the Virtues of this Tree] The Elder-Tree.

The *Characters* are;

The Branches are full of Pith, having but little Wood; the Flowers are monopetalous, divided into ſeveral Segments, and expand in form of a Roſe; theſe are for the moſt part collected into an Umbel, and are ſucceeded by ſoft ſucculent Berries, having three Seeds in each.

The *Species* are;

1. SAMBUCUS *fructu in umbella nigro. C. B. P.* Common Elder, with black Berries.

2. SAMBUCUS *fructu in umbella viridi. C. B. P.* Common Elder, with greeniſh Berries.

3. SAMBUCUS *fructu albo. Lob.* The white-berried Elder.

4. SAMBUCUS *racemoſa rubra. C. B. P.* The Mountain red-berried Elder.

5. SAMBUCUS *laciniato folio. C. B. P.* The Cut *or* Parſley-leav'd Elder.

6. SAMBUCUS *vulgaris, foliis ex luteo variegatis.* The blotch'd-leav'd Elder.

7. SAMBUCUS *humilis, ſive Ebulus. C. B. P.* Dwarf-Elder *or* Danewort.

The firſt of theſe Trees is very common in the Hedges in moſt Parts of *England*, but the ſecond and third Sorts are more rare; theſe are propagated for the ſake of their Berries, which are by ſome Perſons uſed for making Wine, and for other Purpoſes. The fourth Sort is leſs common in *England* than either of the former, it being only to be found in ſome curious Gardens at preſent. The fifth and ſixth Sorts are preſerved for the Variety of their Leaves, by ſuch as are curious in collecting the various Kinds of Trees and Shrubs.

All theſe Sorts may be eaſily propagated from Cuttings, or by ſowing their Seeds; but the former being the moſt expeditious Method, is generally practiſed. The Time for planting of their Cuttings is any time from *September* to *March*, in the doing of which there needs no more Care than to thruſt the Cuttings about ſix or eight Inches into the Ground, and they will take Root faſt enough, and may afterwards be tranſplanted where they are to remain, which may be upon almoſt any Soil or Situation; they are extreme hardy, and if their Seeds are permitted to fall upon the Ground, they will produce a Plenty of Plants the ſucceeding *Summer*.

Theſe Trees are often planted for making Fences, becauſe of their quick Growth, but as their Bottoms become naked in a few Years, ſo they are not ſo proper for that Uſe; neither would I recommend them to be planted near Habitations, becauſe at the Seaſon when they are in Flower, they emit ſuch a ſtrong Scent, as will occaſion violent Pains in the Heads of thoſe who abide long near them; beſides, the crude Parts which are continually perſpired through their Leaves, are accounted unwholſome, tho' the Leaves, Bark, and other Parts, are greatly eſteem'd for many Uſes in Medicine.

The *Dwarf-Elder* is found wild in ſome Counties of *England*, but near *London* it is propagated in Gardens for Medicinal Uſe; though very often the Herb-women in the Markets do give the tender Shoots of the *Elder-tree* inſtead of this, to ſuch Perſons as can't diſtinguiſh them aſunder.

This Plant mutiplies exceeding faſt by its creeping Root, which, if permitted to run, will ſoon overſpread a large Spot of Ground; the Off-ſets of theſe Roots may be tranſplanted any time from *September* to *March*, and will grow in any Soil or Situation, but ſhould be allowed Room to ſpread, for if they are planted near other Plants, they will over-run and deſtroy them.

SAMOLOIDES.

The *Characters* are;

It hath a Flower conſiſting of one Leaf, which is cut into four Parts almoſt to the Bottom, and expands in form of a Star. In the Centre of the Flower ariſes the Pointal, which is ſurrounded at Bottom by a Number of ſlender Threads, which are expanded, and accompanied by four Chives. This Pointal afterward becomes an oblong Seed-veſſel, which is bivalve, and contains flat Seeds.

We know but one *Species* of this Plant; which is,

SAMOLOIDES *quæ capraria Curaſavica, Cabritta vulgô dicta. H. A. Boerh. Ind. alt. Weſt-Indian* Thea, *vulgô.*

This Plant is very common in *Jamaica*, and ſeveral other Places in the *Weſt-Indies*, where it hath been by ſome People dried and uſed as Thea, from whence it had the Name. In *Curaſao* the Goats feed on this Plant, from whence the Inhabitants gave it the Name of *Cabritta*. But at preſent it is not uſed by any of the Inhabitants of *America*, ſo far as I can learn.

This Plant is preſerved by the Curious in Botany, for Variety-ſake; but as there is no great Beauty in its Flowers, ſo it is ſeldom preſerved in other Gardens. It is propagated by Seeds, which ſhould be ſown on a Hot-bed early in the *Spring*; and when the Plants are about two Inches high, they ſhould be tranſplanted on another Hot-bed, about four or five Inches aſunder, where they ſhould have a large Share of Air in warm Weather, and muſt be frequently watered. In this Bed the the Plants may remain until they have obtained a large Share of Strength, when they ſhould be tranſplanted into Pots, and plunged into a moderate Hot-bed to promote their taking Root; and after they are well ſettled in the Pots, they may be placed in the Stove, or in an airy Glaſs-caſe, where they may be ſheltered from Cold, but they muſt have a large Share of freſh Air in warm Weather; for if they are expoſed abroad, they will not thrive, nor perfect their Seeds. In *June* theſe Plants will begin to flower, and in *Auguſt* they will perfect their Seeds, and the Plants will live thro' the Winter, provided they are placed in a warm Stove; but as they produce ripe Seeds the firſt Year, ſo it is not worth incumbring the Stove with them in *Winter*.

SAMOLUS, Round-leav'd Water Pimpernel.

The *Characters* are;

It hath a wheel-ſhaped Flower, conſiſting of one Leaf, which is cut into ſeveral Segments; the Pointal ariſes from the Empalement, and is fixed like a Nail in the Centre of the Flower; which uniting with the Empalement, is turned into a Fruit or Pod, opening at the Top, and incloſing many ſmall Seeds.

We have but one *Species* of this Plant; which is,

Samolus *Valerandi. J. B.* Round-leaved Water Pimpernel.

This Plant grows wild in ſwampy Places, where the Water uſually ſtands in *Winter*; and is ſeldom preſerved in Gardens; it is an annual Plant, which flowers in *June*, and the Seeds are ripe in *Auguſt*: at which Time, whoever hath a mind to cultivate this Plant, ſhould ſow the Seeds on a moiſt Soil, where the Plants will come up, and require no farther Care, but to keep them clear from Weeds.

SAND, as Dr. *Boerhave* defines it, is Earth properly ſo called, which is foſſil Body, neither diſſoluble by Fire, Water, nor Air, inſipid and untranſparent, more fuſible than Stone, ſtill friable, and containing uſually a Share of Fatneſs.

Dr. *Liſter* divides the *Engliſh* Sands into two Claſſes; the firſt, *ſharp* or *rag Sand*, conſiſting of ſmall tranſparent Pebbles, naturally found on the Mountains, and not calcinable: Theſe he farther divides into *fine* and *coarſe*, and ſub-divides each according to the Colours, into white, grey, reddiſh, brown, &c.

The ſecond, *ſoft* or *ſmooth*, which he ſub-divides into that with flat Particles broke from Lime-ſtones, that with Silver-like Particles, and that with Gold-like Particles.

As to *Sand*, its Uſe is to make the clayey Earth fertile, and fit to feed Vegetables, &c. for Earth alone, we find, is liable to coaleſce, and gather into a hard coherent Maſs, as is apparent in Clay; and Earth thus imbodied, and, as it were, glued together, is no way diſpoſed to nouriſh Vegatables: But if with ſuch Earth, Sand, &c. *i. e.* hard Cryſtals, (which are not diſſolvable in Water, and ſtill retain their Figure) be intermixed, they will keep the Pores of the Earth open, and the Earth itſelf looſe and incompact, and by that means give room for the Juices to aſcend, and for Plants to be nouriſhed thereby.

Thus a Vegetable, planted either in Sand alone, or in a fat Glebe, or Earth alone, receives no Growth or Increment at all, but is either ſtarved or ſuffocated; but mix the two, and the Maſs becomes fertile. In effect, by means of *Sand* the Earth is render'd, in ſome manner, organical; Pores and Interſtices being hereby maintained, ſomething analogous to Veſſels, by which the Juices may be conveyed, prepared, digeſted, circulated, and at length excerned and thrown off into the Roots of Plants.

Grounds that are ſandy and gravelly, do eaſily admit both of Heat and Moiſture, but then they are liable to theſe Inconveniencies; that they let them paſs too ſoon, and ſo contract no Ligature, or elſe retain it too long, eſpecially where there is a Clay Bottom, and by that means it either parches or chills too much, and produces nothing but Moſs and cancrous Infirmities; but if the *Sand* happens to have a Surface of good Mould, and a Bottom of Gravel or looſe Stone, though it do not hold the Water, it may produce a forward ſweet Graſs, and though it may be ſubject to burn, yet it quickly recovers itſelf with the leaſt Rain.

Sea-ſand is accounted a very good Compoſt for ſtiff Ground, for it effects the two Things following, *viz.* It makes way for the Tree or Seed to root in ſtiff Ground, and makes a fume to feed it.

Sand indeed is apt to puſh the Plants, that grow upon it, early in the *Spring*, and make them germinate near a Month ſooner than thoſe that grow upon Clay, becauſe the Salts in the *Sand* are at full Liberty to be raiſed, and put into Motion upon the leaſt Approach of the Warmth of the Sun; but then, as they are haſty, they are ſoon exhal'd and loſt.

SANGUIS DRACONIS; *vide* Palma,

SANICULA; [ſo called of *ſanando, healing*, becauſe it is good in many Diſtempers] Sanicle.

The *Characters* are;

It is an umbelliferous Plant, whoſe Flower conſiſts of five Leaves placed orbicularly, but are generally bent back to the Centre of the Flower, reſting on the Empalement, which becomes a Fruit compos'd of two Seeds, that are gibbous and prickly on one Side, but plain on the other; ſome of the Flowers are always barren.

There is but one *Species* of this Plant at preſent in *England*; *viz.*

Sanicula *officinarum. C. B. P.* Sanicle *or* Self-heal.

This Plant is found wild in Woods and ſhady Places in moſt Parts of *England*, but being a Medicinal Plant, may be propagated in Gardens for Uſe: It may be increaſed by parting of the Roots, any time from *September* to *March*; but it is beſt to do it in *Autumn*, that the Plants may be well rooted before the dry Weather in *Spring* comes on: They ſhould have a moiſt Soil, and a ſhady Situation, in which they will thrive exceedingly.

SANTOLINA; [ſo called on account of its great Virtue, *q. Sancta Herba*, i. e. the *Holy Herb*] Lavender Cotton.

The *Characters* are;

It hath a globoſe floſculous Flower, conſiſting of many Florets, divided into ſeveral Segments, ſitting on the Embryo, contained in the intermediate little Leaves, hollowed like a Gutter, and a ſquamous hemiſpherical Empalement; the Embryo afterwards becomes a Seed, not at all furniſhed with Down. To theſe Notes muſt be added, larger Flowers than thoſe of Wormwood and Southernwood, and alſo the whole Face of the Plant.

The *Species* are;

1. Santolina *foliis teretibus. Tourn.* Common Lavender Cotton.
2. Santolina *flore majore, foliis villoſis & incanis. Tourn.* Lavender Cotton, with a larger Flower, and hoary Leaves.
3. Santolina *foliis Ericæ vel Sabinæ. Tourn.* Green-leav'd Lavender Cotton, with a Scent like Ointment.
4. Santolina *foliis Cypreſſi. Tourn.* Cypreſs-leav'd Lavender Cotton.
5. Santolina *repens & caneſcens. Tourn.* Creeping and hoary Lavender Cotton.
6. Santolina *foliis minus incanis. Tourn.* Lavende Cotton, with leſs hoary Leaves.
7. Santolina *foliis obſcure virentibus, flore aureo. Tourn* Lavender Cotton, with dark-green Leaves, and a golde Flower.
8. Santolina *foliis Roriſmarini, major. Tourn.* Greater Lavender Cotton, with Roſemary Leaves.
9. Santolina *vermiculata Cretica. Tourn.* Vermiculated Lavender Cotton of Candy.

The firſt of theſe Plants is cultivated in Gardens for Medicinal Uſe; as is the third, for furniſhing Balconies, an other little Places in and near the City, by way of Ornament: but the other Sorts are rarely to be found, but in th Gardens of thoſe who are curious in Botanical Studies.

Moſt of theſe Plants may be cultivated ſo as to becom Ornaments to a Garden, particularly in ſmall Boſquets Ever-green Shrubs; where, if theſe are artfully intermixe with other Plants of the ſame Growth, and placed in th front Line, they will make an agreeable Variety; eſpecially if Care be taken to trim them twice in a *Summer*, keep them within Bounds; otherwiſe their Branches are ap to ſtraggle, and, in wet Weather, to be borne down an diſplaced, which renders them unſightly; but when the are kept in Order, their hoary and different-coloured Leav will have a pretty Effect in ſuch Plantations.

Theſe Plants may be propagated by planting Slips Cuttings of any of the Kinds during the *Spring*, which ſhou be put into a Border of light, freſh Earth, and watered and ſhaded in hot dry Weather, until they have taken Root; after which they will require no farther Care, but to keep them clear from Weeds 'till *Auguſt*, when they ſhould be carefully taken up and tranſplanted where they are deſigned to remain: But if the Ground is not ready by that time to receive them, it will be proper to let them remain in the Border until *Spring*; for if they are tranſplanted late in *Autumn*, they are liable to be deſtroyed by a little Cold in *Winter*.

Theſe Plants are very hardy, and if planted in a lean, gravelly, or ſandy dry Soil, will continue many Years, and reſiſt the Cold very well: But if they are in a wet or rich Soil, they are often deſtroyed in *Winter*.

SAP: The Notion of the *Sap*'s Circulation, was entertained by ſeveral Authors much about the ſame Time, without any Communication from one another; particularly M. *Major* a Phyſician of *Hambourg*, M. *Perrault*, *Mariotte*, and *Malpighi*. It has met, however, with ſome conſiderable Oppoſers, particularly the excellent M. *Dodart*, who could never be reconciled to it.

One of the great Arguments for it is, That the ſame Experiments of Ligature and Inciſion, which evince a Circulation of the Blood in Animals, ſucceed in the like Manner in Plants, particularly in ſuch as abound with *Sap*, as the *Great Tithymale*, *Milk-thiſtle*, &c. if the Ligature be faſtened tight round the Stem, the Part above it is found to ſwell very conſiderably, and that below it a little; whence it appears, that there is a Juice aſcending from the Root, and likewiſe another deſcending from the Branches; and that the latter is thicker than the former, which quadrates exactly with the common Syſtem; the Juice being ſuppoſed to ariſe in capillary Veſſels, in form of a ſubtil Vapour, which condenſed in the Extremes of the Plant by the Neighbourhood of the cold Air, turns back in form of a Liquor, thro' the more patent Pipes of the inner Bark.

M. *Dodart*, inſtead of the ſame Juices going and returning, contends for two ſeveral Juices; the one imbibed from the Soil digeſted in the Root, and from thence tranſmitted to the Extremes of the Branches, for the nouriſhing of the Plant; the other received from the Moiſture of the Air entering in at the Extremities of the Branches: So that the aſcending and deſcending Juices are not the ſame.

One of his chief Arguments is, That if two Trees of the ſame Kind be tranſplanted in one Day, after firſt cutting off their Roots and Branches, and if, after they have taken Root again, ſome of the new Shoots put forth each Year be cut off one of them, it will not thrive half ſo well, notwithſtanding its Root and Trunk being entire as the other.

This he conceives to be a Proof of the Plant's deriving Nouriſhment by the Branches, and concludes it to be of an aerial Nature, becauſe formed of the Moiſture of the Air, Dew, &c. whereas that imbibed from the Soil is terreſtrial, &c. *Hiſt. de l' Acad. Roy. Ann.* 1709.

The Humour or *Sap* of a Plant, then, is a Juice furniſhed by the Earth, and changed into the Plant, conſiſting of ſome foſſil Parts, other Parts derived from the Air and Rain, and others from putrefied Animals, Plants, &c. conſequently in Vegetables are contained all Kinds of Salts, Oil, Water, Earth, &c. and, probably, all Kinds of Metals too, inaſmuch as the Aſhes of Vegetables always yield ſomewhat which the Loadſtone attracts.

This Juice enters the Plant in form of a fine and ſubtile Water; which the nearer it is to the Root, the more it retains of its proper Nature; and the farther from the Root, the more Action it has ſuſtained, and the nearer it approaches to the Nature of the Vegetable.

Conſequently, when the Juice enters the Root, the Bark whereof is furniſhed with excretory Veſſels, fitted to diſcharge the excrementitious Part, it is earthy, watry, poor, acid, and ſcarce oleaginous at all.

In the Trunk and Branches it is further prepared, tho' it ſtill continues acid; as we ſee by tapping or perforating of a Tree in the Month of *February*, when it diſtils a watry Juice apparently acid.

The Juice being here carried to the Germs or Buds, is more concocted; and here having unfolded the Leaves, theſe come to ſerve as Lungs for the Circulation, and further Preparation of the Juice.

For theſe tender Leaves being expoſed to the alternate Action of Heat and Cold, moiſt Nights, and hot ſcorching Days, are alternately expanded and contracted, and the more on account of their reticular Texture.

By ſuch Means is the Juice ſtill further altered and digeſted, as it is further in the *Petala* or Leaves of the Flowers which tranſmit the Juice, now brought to a further Subtilty, to the *Stamina*: Theſe communicate it to the *Farina* or Duſt in the *Apices*, which is, as it were, the Male Seed of the Plant, where having undergone a further Maturation, it is ſhed into the *Piſtil*, which performs the Office of an *Uterus* or Womb; and thus having acquired its laſt Perfection, it gives Riſe to a new Fruit or Plant.

The Root or Part whereby Vegetables are connected to their *Matrix*, and by which they receive their nutritious Juice, conſiſts of an infinite Number of *Vaſa abſorbentia*, which being diſperſed through the Interſtices of the Earth, attract or imbibe the Juices of the ſame: conſequently, every Thing in the Earth that is diſſoluble in Water, is liable to be imbibed; as Air, Salt, Oil, Fumes of Minerals, Metal, &c. and of theſe do Plants really conſiſt.

Theſe Juices are drawn from the Earth very crude; but by the Structure and Fabrick of the Plant, and the various Veſſels they are ſtrained through, become changed, further elaborated, ſecreted, and aſſimilated to the Subſtance of the Plant.

The Motion of the nutritious Juices of Vegetables is produced much like that of the Blood in Animals, by the Action of the Air; in effect, there is ſomething equivalent to Reſpiration throughout the whole Plant.

The Diſcovery of this is owing to the admirable *Malpighi*, who firſt obſerved, that Vegetables conſiſt of two Series or Orders of Veſſels.

1. Such as receive and convey the alimental Juices, anſwering to the Arteries, Lacteals, Veins, &c. of Animals.
2. *Tracheæ* or Air-veſſels, which are long hollow Pipes, wherein Air is continually received and expelled, *i. e.* inſpired and expired; within which *Tracheæ* he ſhews all the former Series of Veſſels are contained.

Hence it follows that the Heat of a Year, nay, of a Day, of a ſingle Hour or Minute, muſt have an Effect on the Air included in theſe *Tracheæ*, *i. e.* muſt rarefy it, and conſequently dilate the *Tracheæ*; whence ariſes a perpetual Spring or Source of Action, to promote the Circulation in Plants.

For by the Expanſion of the *Tracheæ*, the Veſſels containing the Juices are preſſed, and by that Means the Juice contained is continually propelled, and ſo accelerated; by which Propulſion the Juice is continually comminuted, and rendered more and more ſubtile, and ſo enabled to enter Veſſels ſtill finer and finer, the thickeſt Part of it being at the ſame time ſecreted and depoſited into the lateral Cells or *Loculi* of the Bark, to defend the Plant from Cold, and other external Injuries.

The Juice having thus gone its Stage, from the Root to the remote Branches, and even the Flower; and having in every Part of its Progreſs depoſited ſomething both for Aliment and Defence; what is redundant, paſſes out into the Bark, the Veſſels whereof are inoſculated with thoſe wherein the *Sap* mounted; and through theſe it re-deſcends to the Root, and thence to the Earth again; and thus a Circulation is effected.

Thus is every Vegetable acted on by Heat and Cold, during the Day-time eſpecially, while the Sun's Force is conſiderable, the Sap-veſſels ſqueezed and preſſed, and the *Sap* protruded and raiſed, and at length evacuated, and the Veſſels exhauſted; and in the Night again, the ſame *Tracheæ* being contracted by the Cold of the Air, the other Veſſels are eas'd and relax'd, and ſo diſpos'd to receive freſh Food for the next Day's Digeſtion and Excretion.

What Courſe the Juice takes after it is imbibed by the Roots, is not very clear; the Veſſels that take it up, to convey it to the Plant, are too fine to be traced: And hence it has been controverted, whether it is by the Bark, or the Pith, or the Woody Part, that the Plant is fed.

The more common Opinion is for the Bark: The Juice raiſed by the Capillaries of the Wood, is here ſuppoſed to deſcend by the larger Fibres, placed in the inmoſt Part thereof, immediately over the Wood; in which Deſcent the *Sap*, now ſufficiently prepared, adds a Part of its Subſtance to the contiguous Wood, and thus increaſes by *Appoſition*: And hence it may be, that hollow, carious, or rotten Trees, which have neither Pith nor Wood, except juſt enough to ſuſtain the Bark, do grow and bear.

Some contend for the Wood, which they obſerve to conſiſt of ſlender capillary Tubes, running parallel to each other from the Root up the Trunk, being proper to receive in a fine Vapour; in the Aſcent whereof the Fibres become opened, and their Subſtance increaſed: And thus the Trunks of Trees are ſaid to increaſe in their Circumference.

As for the Pith; as the Woody Subſtance of the Trunk becomes more woody, the Pith is compreſſed and ſtreightened to ſuch a Degree, that in ſome Trees it quite diſappears:

Whence it ſeems, that its Office in Vegetation is not very important, ſince its Uſe is not perpetual. By its ſpongeous Subſtance, it ſhould ſeem fitted to receive any ſuperfluous Moiſture tranſuding through the Pores of the Woody Fibres: And if by the Exceſs of ſuch Moiſture, or the like Cauſe, it corrupt and rot, as it frequently happens in *Elms*, the Tree does not grow the worſe for it; which is a convincing Proof it is of no great Uſe.

The learned Dr. *Boerhaave* diſtributes the Juices of Plants into ſix Claſſes.

1. The firſt Claſs comprehends the crude *nutritious Juice*, or the Juices of the Root and Stem of Plants, which are little more than the mere Matter of the Element, as drawn by the Root from the Body it adheres to, whether it be Earth, Water, or the like.

This Juice is found in every Part of the Plant, and therefore may be held an *univerſal Juice*; yet he conſiders it as the Juice of the Root and Stem, becauſe it is chiefly found in them.

This he takes to be a ſubacid watery *Lymph*, without any ſpecifick Taſte or Smell, as not being yet arrived to the Maturity of Oilineſs.

To this Claſs belong thoſe Juices which diſtil in great Abundance from Wounds or Inciſions made in the Woody Parts of Plants; ſuch, *e. g.* is that tart Liquor oozing from the Root of the *Walnut-tree*, when cut off in the Month of *May*.

Such alſo is that limpid, ſubacid Humour, flowing out very plentifully at an Inciſion in the *Birch-tree* in the Month of *March*, to the Quantity of ſeveral Gallons in a few Days.

Such alſo is the Juice iſſuing out of the *Vine* wounded in the *Spring-time*, which always taſtes tartiſh, and ferments like the *Grapes* themſelves.

This Juice may be eſteemed as yet foſſil, being generated of and in the Earth; for the Juice of the Earth being received into the Canals of this Plant, retains its Nature during two or three Circulations; nor does immediately commence a vegetable Juice.

This Claſs of Juices therefore he accounts as the *Chyle of the Plant*, being chiefly found in the firſt Order of Veſſels, *viz.* in the Roots and the Body of the Plant, which anſwer to the Stomach and Inteſtines of Animals.

2. The ſecond Claſs of the *Juices* is that of the Leaves, which are the real Lungs of Plants, and accordingly make a further Change of the Juice, which they receive from the Roots and Stem by Force of the Air. The Juice of Leaves is different therefore from the firſt Juice, as being more ſulphureous, and farther elaborated; not that it derives any Sulphur from the Sun, but that its watery Parts exhaling, it becomes more oily, and leſs volatile.

The Juice of Leaves he diſtinguiſhes into three Kinds:

The firſt is the *Nutritious Juice* of the Leaves; which is that already deſcribed, only further elaborated in the minute *Veſiculæ* of the Leaves, and conſequently leſs and watery, and more oily and ſaccharine.

The ſecond is *Wax*, which exſuding out of the Leaves, adheres to the Surface, and is ſcraped off by Bees with their rough Thighs, to build the Combs withal. This is chiefly afforded by *Lavender* and *Roſemary*; upon the latter of which the *Wax* may be plainly perceived ſticking to the Leaves of it.

The third is *Manna*; not that with which the *Iſraelites* were fed in the Deſart, but a Drug ſold among us: It is an eſſential ſaccharine Salt, exſuding chiefly by Night, and in the *Summar* Seaſon, from the Leaves of a Sort of *Aſh* growing in *Calabria* and *Sicily*, and adhering thereto in the form of a Cruſt, to be gathered the next Morning before the Sun is up.

The like Subſtance is found to exſude from the Leaves of the *Linden-tree* and *Poplar*, in the Heats of *May* and *June*; at which Time they have a Honey Taſte, and are even ſeen with a fatty Juice on them, which, at the Approach of the cold Evening, gathers into Grains.

3. The third Claſs of *Juices* are thoſe of Flowers, or the genital Parts of Plants: In theſe are;

Firſt, a pure, elaborated, volatile *Oil* or *Spirit*, wherein the particular Smell of the Plant or Flower reſides, and which, by reaſon of its extreme Volatility, exhales ſpontaneouſly; inſomuch that if the Flower be laid for ſome time in a warm Place, the odorous Juice or Spirit will be all fled.

The *ſecond*, is the Juice expreſſed from the Flower, which in reality is the ſame with that of the Root and Leaves, only farther prepared; it is thicker than the former, and has ſcarce any Smell at all: Thus, if you bruiſe a *Hyacinth*, or other fragrant Flower, and expreſs the Juice, it will be found altogether inodorous.

The *third*, is the ſweet Juice, called *Honey*, which exſudes from all Flowers; *Aloes*, *Colocynthis*, and other bitter Flowers, not excepted.

In all Male Flowers that have Utricles at the Bottom of the *Petala*, is found a viſcid, ruddy, ſweet Juice in ſome Plenty; and accordingly we ſee the Children gather *Cowſlips*, *Fox-gloves*, *Honeyſuckles*, &c. and ſuck the Honey from them: The Bees too viſit theſe Flowers, and putting in their Proboſcides or Trunks, ſuck out the Honey, and load their Stomachs therewith, to be afterwards diſcharged and laid up in their Combs: So that Honey is a vegetable Juice.

4. The fourth Claſs of *Juices* are thoſe of the *Fruit* and *Seed*; the Preparative whereof is Nature's final Work: Which performed, the Plants ſeem to die for a Time, as all Animals are ſeen to languiſh after the Emiſſion of their *Semen*.

The Juice of the Fruit is like that of the Root, only farther elaborated.

The Juice of the Seed is an *eſſential Oil* or *Balm*, elaborated and exalted to its laſt Perfection. This Juice or Oil is not found in the very Point or Embryo in the Centre of the *Placenta*; all we meet with in that Part is a few fine watery Particles ſecreted from the *Placenta*: But it is in the *Placentula* or *Cotyledones* themſelves, which conſiſt of innumerable little *Folliculi* or Cells, wherein this only Juice is contained, ſerving to defend the *Embryo*, and preſerve it from being corrupted by Water, which, it is well known, will hardly paſs through Oil.

Thus if you take, *e. g. Fennel-ſeed*, cut it through the Middle, and apply it to the Microſcope, you will eaſily perceive a clear ſhining Oil in the Cells of each Lobe, inveſting the tender *Embryo*. Without this Oil it were impoſſible a Seed ſhould live a Month, and much leſs a Year or two, entire and uncorrupted in the Ground.

This Oil is found in the Seeds of all Plants; in ſome, *e. g.* in *Almonds*, *Cocoa-nuts*, &c. in very great Quantities; in others leſs, as *Pepper*, *Arum*, &c. where one would ſcarce imagine any Oil at all.

5. The fifth Claſs of *Juices* is thoſe of the *Bark*; which is an artful Congeries or Bundle of perſpirative Ducts, and abſorbent Veſſels.

Of theſe Juices there are divers Species; for the ſeveral Humours raiſed and diſtributed thro' the Leaves, Flowers, and other Parts of the Plants, have all circulated thro' the Bark, and accordingly are frequently found to diſtil from Wounds made therein. In ſome Caſes, even the whole Plant is no more than Bark, the Pulp having been eat out; as in *Willows*, *Poplars*, &c. which will live a long Time in that State.

The *Bark* ſerves divers Purpoſes; for it not only tranſmits the nutritious Juices of the Plant, but alſo contains divers fat, oily Humours, to defend the fleſhy Parts from the Injuries of the Weather.

6. As Animals are furniſhed with a *Panniculus Adipoſus*, uſually replete with Fat, which inveſts and covers all the fleſhy Parts, and ſcreens them from external Cold; ſo are Plants encompaſſed with a Bark replete with fat Juices, by the Means whereof the Cold is kept out, and in *Winter-time* the *Spiculæ* of Ice prevented from fixing and freezing the Juices in their Veſſels; whence it is that ſome Sorts of Trees remain ever green the Year round, by reaſon their Barks have more Oil than can be ſpent, and exhaled by the Sun, *&c.*

All the Juices of Barks are reducible to eight, *viz.*

1. The crude, acid, watery Juice, called the *Chyle* of the Plant.

2. An oily Juice, which burſting the Bark in the Beginning of the *Summer*, exſudes out of ſeveral Plants; as *Beech*, *Pine*, *Fir*, *Savin*, *Juniper*, and other Ever-greens, and ſuch alone: This Oil diſſolves by the ſmalleſt Degree of Warmth, and is eaſily inflamed, and is that which defends the Plant; which is the Reaſon why theſe Plants will not thrive in very hot Climates.

A *Balm* or fatty Liquor more glutinous than Oil, being nothing but the laſt-mentioned oily Juice, which was more fluid during the *Spring-time*; but which, by the greater Heat of the Sun, has evaporated all its moſt ſubtile Parts, and is converted into a denſer Liquor. Thus the finer Part of Oil of *Olives* being exhaled by the *Summer*'s Warmth, there remains a thick Balſam behind: Thus alſo Oil of *Turpentine*, having loſt its more liquid Parts by Heat, becomes of the thick Conſiſtence of a *Balm*.

4. A *pitchy Juice*, which is the Body of the Oil itſelf, inſpiſſated and turn'd black farther than in the *Balm*: This is the moſt obſerv'd in the *Pine* and *Fir*.

5. *Roſin*, which is an Oil ſo far inſpiſſated, as to become friable in the Cold, and may be procur'd from any Oil, by boiling it much and long. Thus, if *Turpentine* be ſet over a gentle Fire, it firſt diſſolves and becomes an Oil, then a Balſam, then Pitch, and then a Roſin; in which State it is friable in the Cold, fuſible by Fire, and withal inflammable and combuſtible; diſſoluble in Spirit of Wine, but not in Water, which makes the Character of *Roſin.*

Hence the Oil is moſt abundant in the Barks in the *Winter-time*, the *Balſams* in *Summer*, and the *Roſin* in *Autumn.*

6. *Colophony*, which is a Roſin ſtill farther exhauſted of its volatile Part, being pellucid, friable, and approaching to the Nature of Glaſs.

7. *Gum*, which is a Humour exſuding out of the Bark, and, by the Warmth of the Sun, concocted, inſpiſſated, and render'd tenacious, but ſtill diſſoluble in Water, and at the ſame time inflammable, and ſcarce capable of being pulverized.

With this the Gems or Buds of Trees are cover'd in *Winter-time.*

8. A *gummous Roſin*, which is a Humour ſecreted in the Bark, and dry'd by the Heat of the Sun; and thus conſtituting a Body that is partly gummous, and, as ſuch, tenacious and ſoluble in Water; and partly reſinous, and therefore friable, and ſoluble in Oil or Spirit of Wine, but not in Water.

Botaniſts are now generally agreed, that all Plants are furniſh'd with Organs and Parts neceſſary both for Chylification and Sanguification; that they have Veins, Arteries, Heart, Lungs, Adipoſe, Celules, &c. If ſo, it is obvious, that there muſt be ſome Difference between the Juices, which have not undergone the Action of thoſe Parts, and ſuch as have already circulated a number of times.

The ſeveral Juices hitherto recounted, are the firſt or *nutritious Juice*, call'd alſo the *Chyle* of the Plant, under ſuch Alterations and new Modifications as it undergoes in being receiv'd and kept ſome time in Parts of a peculiar Structure; as Leaves, Flowers, Seed, &c. This laſt Juice, call'd the *Blood*, is the ſame nutritious Juice farther altered, by being divers times paſs'd through each of thoſe Parts, and remixed, and at length converted into a new Juice, with Properties different from any of them all.

To prove the Circulation of the *Sap*, Inſtances are brought from Experiments made by Mr. *Fairchild*; as, his *budding* or *inoculating* of a *Paſſion-tree*, whoſe Leaves are ſpotted with yellow, into one of that Sort of *Paſſion-tree* whoſe Leaves are plain; for tho' the Buds did not take, yet after it had been budded a Fortnight, the yellow Spots began to ſhew themſelves about three Feet above the Inoculation; and in a little time after that, the yellow Spots appear'd on a Shoot, which came out of the Ground from another Part of the Plant; which has been accounted a plain Proof of the *Sap*'s Circulation.

Another Inſtance is, another Experiment of the ſame Perſon who grafted the Ever-green *Oak*, or *Ilex*, upon the Common *Oak:* The Leaves of the common *Oak*, which was the Stock, decay'd, and fell off at the uſual Seaſon of the Year; but the Ever-green *Oak*, which was the Cyon grafted upon it, held its Leaves, and continued ſhooting in the *Winter*. From whence it is concluded, that when Trees drop their Leaves, the Sap keeps full in Motion, and is not gone into the Root, as ſome Perſons think.

There are alſo other Experiments of the ſame Perſon, which were ſhewn before the *Royal Society*; as the *New-England Cedar*, or rather *Juniper* grafted on the *Virginian:* And what is taken to prove the Circulation in it, is, the Branch which is grafted was left ſeveral Inches below the Grafting, which continued growing as well as the upper Part above the Grafting.

And alſo another, which is the *Viburnum*, with the Top planted in the Ground, which was become Roots; and the Roots turn'd up which were become Branches: which Plant was in as good a State of growing, as it was in its natural State.

A third Experiment of his was on a *Pear-tree*, which he inarched upon two *Pear* Stocks, in *March* 17$\frac{21}{22}$, having the Roots out of the Ground, and was in a good flouriſhing State, with a Branch in bloſſom, that receives no other Nouriſhment but by the Juices that return down the other two Branches; which tho' it had been done above two Years, yet it continu'd ſhooting Suckers out of the Root; which is eſteem'd as a Proof, that the Branches are as uſual to ſupport the Roots, as the Roots the Branches: And thence he infers, that it is not ſtrange that ſo many Trees miſcarry in planting, when there are no Branches left to the Head to maintain the Circulation to the Roots.

A fourth Experiment he made on the *Cedar* of *Lebanon*, grafted on the *Larix*, which drops its Leaves in the *Winter*, yet maintained the *Cedar* in a flouriſhing Condition, as if it had been on a Tree which held its Leaves all the *Winter*, and the Circulation of Juices ſupported the Graft below the Grafting, and kept it in as good Health as above the Grafting.

In Oppoſition to the Notion of the Circulation of the Sap in Trees like to that in Animal Bodies, the reverend Dr. *Hales*, in his excellent Treatiſe on *Vegetable Staticks*, preſents us with various Experiments, and ſays;

When the Sap has firſt paſs'd through that thick and fine Strainer, the Bark of the Root, we then find it in greateſt Quantities in the moſt lax Part, between the Bark and Wood, and *that* the ſame through the whole Tree.

And if in the early *Spring*, the *Oak*, and ſeveral other Trees, were to be examin'd near the Top and Bottom, when the Sap firſt begins to move, ſo as to make the Bark run, and eaſily peel off, he believes it would be found, that the lower Bark is firſt moiſten'd; whereas the Bark of the top Branches ought firſt to be moiſten'd, if the Sap deſcends by the Bark. As to the *Vine*, he ſays, he is pretty well aſſur'd, that the lower Bark is firſt moiſten'd.

He adds, that it is to be ſeen in many of the Examples of the Experiments he has given in that Book, what Quantities of Moiſture Trees do daily imbibe and perſpire: Now the Celerity of the Sap muſt be very great, if that Quantity of Moiſture muſt moſt of it aſcend to the Top of the Tree, then deſcend and aſcend again, before it is carry'd off by Perſpiration.

The Defect of a Circulation in Vegetables, ſeems, in ſome meaſure, to be ſupply'd by the much greater Quantity of Liquor, which the Vegetable takes in, than the Animal, whereby its Motion is accelerated: For, by the firſt Example he gives, we find the *Sun-flower*, Bulk for Bulk, imbibes and perſpires ſeventeen times more freſh Liquor than a Man every twenty-four Hours.

Beſides, Nature's great Aim in Vegetables being only that the Vegetable Life be carry'd on and maintain'd, there was no occaſion to give its Sap the rapid Motion which was neceſſary for the Blood of Animals.

In Animals, it is the Heart which ſets the Blood in Motion, and makes it continually circulate: but in Vegetables we can diſcover no other Cauſe of the Sap's Motion, but the ſtrong Attraction of the Capillary Sap Veſſels, aſſiſted by the briſk Undulation and Vibrations caus'd by the Sun's warmth, whereby the Sap is carry'd up to the Top of the talleſt Trees, and is there perſpir'd off through the Leaves: But when the Surface of the Tree is greatly diminiſhed by the Loſs of its Leaves, then alſo the Perſpiration and Motion of the Sap is proportionably diminiſhed; as is plain from many of his Experiments.

So that the aſcending Velocity of the Sap is principally accelerated by the plentiful Perſpiration of the Leaves, thereby making Room for the fine Capillary Veſſels to exert their vaſtly attracting Power; which Perſpiration is effected by the briſk rarefying Vibrations of Warmth; a Power that does not ſeem to be any ways well adapted to make the Sap deſcend from the Tops of Vegetables, by different Veſſels, to the Root.

If the Sap circulated, it muſt needs have been ſeen deſcending from the upper Part of large Gaſhes, cut in Branches, ſet in Water, and with Columns of Water preſſing on their Bottoms in long Glaſs Tubes, in his 43d and 44th Experiment.

In both which Caſes it is certain, that great Quantities of Water paſſed through the Stem; ſo that it muſt needs have been deſcending, if the Return of the Sap downwards were by Truſion or Pulſion, whereby the Blood in Animals is return'd through the Veins to the Heart; and that Pulſion, if there were any, muſt neceſſarily be exerted with prodigious Force, to be able to drive the Sap through the finer Capillaries.

So that if there be a Return of the Sap downwards, it muſt be by Attraction, and that a very powerful one, as may be ſeen by many of theſe Experiments, and particularly by Experiment 11th. But it is hard to conceive what and where that Power is, which can be equivalent to that Proviſion Nature has made for the Aſcent of the Sap, in Conſequence of the great Perſpiration of the Leaves.

The Inſtances of the *Jeſſamine-tree*, and of the *Paſſion-tree*, have been look'd upon as Proofs of the Circulation of the Sap; becauſe their Branches, which were far below the inoculated Bud, were gilded. But we have many viſible Proofs in the *Vine*, and other bleeding Trees, of the Sap's receding back, and puſhing forwards alternately, at different times of the Day and Night: And there is great Reaſon to think, that the Sap of all other Trees has ſuch an alternate receding, and progreſſive Motion, occaſion'd by the Alternacies of Day and Night, Warm and Cool, Moiſt and Dry.

For the Sap in all Vegetables does probably recede, in ſome meaſure, from the Tops of the Branches, as the Sun leaves them; becauſe its rarefying Power then ceaſing, the greatly rarefy'd Sap and Air mixed with it, will condenſe, and take up leſs Room than they did, and the Dew and Rain will then be ſtrongly imbib'd by the Leaves, as is probable from Experiment 42, and ſeveral others, whereby the Body and Branches of the Vegetable, which have been much exhauſted by the great Evaporation of the Day, may, at Night, imbibe Sap and Dew from the Leaves.

For by ſeveral Experiments in the 1ſt Chapter of the aforeſaid Book of *Vegetable Staticks*, Plants were found to increaſe conſiderably in Weight in dewy and moiſt Nights.

And by other Experiments on the *Vine*, in the 3d Chapter, it was found, that the Trunk and Branches of *Vines* were always in an imbibing State, caus'd by the great Perſpiration of the Leaves, except in the bleeding Seaſon: but when at Night that perſpiring Power ceaſes, then the contrary imbibing Power will prevail, and draw the Sap and Dew from the Leaves, as well as Moiſture from the Roots.

And we have a further Proof of this in Experiment 12, where, by fixing Mercurial Gages to the Stems of ſeveral Trees which do not bleed, it is found, that they are always in a ſtrongly imbibing State, by drawing up the Mercury ſeveral Inches: Whence it is eaſy to conceive, how ſome of the Particles of the gilded Bud in the inoculated *Jeſſamine* may be abſorb'd by it, and thereby communicate their gilding *Miaſma* to the Sap of other Branches; eſpecially when, ſome Months after the Inoculation, the Stock of the inoculated *Jeſſamine* is cut off a little above the Bud; whereby the Stock, which was the counter-acting Part to the Stem, being taken away, the Stem attracts more vigorouſly from the Bud.

Another Argument for the Circulation of the Sap, is, that ſome ſorts of Graſs will infect and canker the Stocks they are grafted on: But by Experiment 12 and 37, where Mercurial Gages were fixed to freſh-cut Stems of Trees, it is evident, that thoſe Stems were in a ſtrongly imbibing State; and conſequently, the cankered Stocks might very likely draw Sap from the Graft, as well as the Graft alternately from the Stock: juſt in the ſame manner as Leaves and Branches do from each other in the Viciſſitudes of Day and Night.

And this imbibing Power of the Stock is ſo great, where only ſome of the Branches of the Stock will, by their ſtrong Attraction, ſtarve thoſe Grafts; for which Reaſon, it is uſual to cut off the greateſt Part of the Branches of the Stock, leaving only a few ſmall ones to draw up the Sap.

The Inſtance of the *Ilex* grafted upon the *Engliſh Oak*, ſeems to afford a very conſiderable Argument againſt a Circulation: For if there were a free, uniform Circulation of the Sap through the *Oak* and *Ilex*, why ſhould the Leaves of the *Oak* fall in *Winter*, and not thoſe of the *Ilex?*

Another Argument againſt an uniform Circulation of the Sap in Trees, as in Animals, may be drawn from Dr. *Hales*'s 37th Experiment, *viz.* where it was found by the three Mercurial Gages fixed to the ſame *Vine*, that while ſome of its Branches chang'd their State of protruding Sap into a State of imbibing, others continu'd protruding Sap, one nine, and the other thirteen Days longer.

That the Sap does not deſcend between the Bark and the Wood, as the Favourers of a Circulation ſuppoſe, ſeems evident from hence, *viz.* That if the Bark be taken off for three or four Inches breadth quite round, the Bleeding of the Tree above that bared Place will much abate: which ought to have the contrary Effect, by intercepting the Courſe of the refluent Sap, if the Sap deſcended by the Bark.

But the Reaſon of the Abatement of the Bleeding in this Caſe may be well accounted for, from the manifeſt Proof we have in theſe Experiments, that the Sap is ſtrongly attracted upwards by the vigorous Operation of the perſpiring Leaves, and attracting Capillaries: But when the Bark is cut off for ſome Breadth below the bleeding Place, then the Sap which is between the Bark and the Wood below that diſbarked Place is deprived of the ſtrong attracting Power of the Leaves, *&c.* and conſequently the bleeding Wound cannot be ſupply'd ſo faſt with Sap, as it was before the Bark was taken off.

But the moſt conſiderable Objection againſt this progreſſive Motion of the Sap without a Circulation, ariſes from hence, *viz.* That 'tis too precipitate a Courſe for a due Digeſtion of the Sap, in order to Nutrition: whereas in Animals, Nature has provided that many Parts of the Blood ſhall run a long Courſe before they are either apply'd to Nutrition, or diſcharged from the Animal.

But when we conſider, that the great Work of Nutrition in Vegetables, as well as Animals, (I mean, after the Nutriment is got into the Veins and Arteries of Animals) is chiefly carry'd on in the fine Capillary Veſſels, where Nature ſelects and combines, as ſhall beſt ſuit her different Purpoſes, the ſeveral mutually attracting nutritious Particles, which were hitherto kept disjoin'd by the Motion of their fluid Vehicle; we ſhall find, that Nature has made an abundant Proviſion for this Work in the Structure of Vegetables: all whoſe Compoſition is made up of nothing elſe but innumerable fine Capillary Veſſels, and glandulous Portions for Veſicles.

Upon the Whole, he thinks we have, from theſe Experiments and Obſervations, ſufficient Ground to believe that there is no Circulation of the Sap in Vegetables; notwithſtanding many ingenious Perſons have been induc'd to think there was, from ſeveral curious Obſervations and Experiments, which evidently prove, that the Sap does, in ſome meaſure, recede from the top, towards the lower Parts of Plants; whence they were, with good Probability of Reaſon, induced to think that the Sap circulated.

SAPINDUS, The Soap-berry.

The *Characters* are;

It hath a Flower which for the moſt part is compoſed of four Leaves, expanding in form of a Roſe: from whoſe four-leaved Empalement ariſes the Pointal, which afterward becomes a ſpherical Fruit, incloſing a Nut of the ſame Form.

We have but one *Species* of this Plant, which is;

SAPINDUS *foliis coſtæ alatæ innaſcentibus. Inſt. R. H.* The Soap-berry or Soap Appletree.

This Tree is very common in *Jamaica*, *Barbados*, and moſt other Places in the *Weſt-Indies*, where it riſes to the Height of thirty Feet or more; but in *Europe* it is preſerved by thoſe Perſons who are curious in cultivating exotic Plants, for the ſingular Structure of the Leaves, which are very long and narrow, having Borders on each Side, which at about every two Inches have *Pinnæ* or Wings, oppoſite to each other, and terminated by an odd one. The Flowers are produced at the Ends of the Branches, which are ſmall and white, growing in Cluſters. Theſe are ſucceeded by ſpherical brown Berries, about the Size of Cherries, which have very little Pulp, but a brown Skin, covering the Nut, which is round, black and hard. Theſe Nuts were formerly brought into *England* to make Buttons, for which purpoſe they were very proper, becauſe they never crack. The Skin which ſurrounds the Nut, will lather like Soap, and is uſed in *America* to waſh Linen, tho, many People ſay it will burn it, when it is often uſed.

This Plant is propagated by Seeds (which muſt be obtain'd from the Countries, where they naturally grow, for they do not produce Fruit in *Europe*): theſe muſt be put into ſmall Pots, filled with freſh rich Earth, and plunged into a Hot-bed of Tanners-bark. Theſe Pots muſt be frequently watered, otherwiſe the Berries whoſe outer Cover is very hard, will not vegetate. In a Month or five Weeks the Plants will begin to appear, when the Glaſſes of the Hot-bed ſhould be raiſed every Day in warm Weather, to admit freſh Air to the Plants; but if the Nights are cold, the Glaſſes ſhould be covered with Mats every Evening, as ſoon as the Sun is gone off from ſhining on the Bed; and the Plants muſt be frequently refreſhed with Water. In three Weeks or a Month after the Plants appear, they will be fit to tranſplant; when they muſt be ſhaken out of the Pots, and carefully parted, ſo as not to injure their Roots, and each planted into a ſeparate ſmall Pot, filled with light rich Earth, and then plunged into the Hot-bed again, obſerving to ſhade them from the Sun every Day, until they have taken new Root; after which Time they muſt have free Air admitted to them every Day, when the Weather is warm; and the Plants will require to be frequently watered.

After the Plants are well rooted, they will make great Progreſs, ſo as to fill theſe Pots with their Roots in a few Weeks Time: therefore they muſt then be ſhifted into larger Pots; and if the Plants have grown ſo tall as to reach the Glaſſes of the Hot-bed, or be in Danger of having their Leaves ſcorched by the Sun thro' the Glaſſes, they ſhould be removed into the Stove, and plunged into the Bark-bed; where if they are duly watered in warm Weather, they will make great Progreſs, and by the Beginning of *Auguſt*, will have Leaves ſixteen or eighteen Inches long. The firſt Leaves of theſe Plants are very long and narrow, having no *Pinnæ* or Wings to them ; but as the Plants advance, ſo they put out firſt one Wing, then two, and afterwards four ; and in old Plants, they have ſometimes ſix or eight Wings, with an odd Wing at the Top.

Theſe Plants are ſo tender as not to live in the open Air in *England*, even at the warmeſt Seaſon of the Year: therefore they ſhould be kept conſtantly in the Stove plunged into the Bark-bed, where they muſt be kept very warm in *Winter* ; but in *Summer*, they muſt have a large Share of freſh Air in warm Weather, with which theſe Plants will thrive very faſt, and they may be expected to flower, tho' for the ſingular Form of the Leaves, they deſerve a Place in the Stove.

SAPONARIA ; *vide* Lychnis.

SAPOTA, The Mammee Sapota.

The *Characters* are ;

It hath a roſe-ſhaped Flower, conſiſting of ſeveral Leaves, which are placed in a circular Order ; from whoſe Empalement ariſes the Pointal, which afterward becomes a large oval ſoft fleſhy Fruit, incloſing an oblong pointed Stone or Fruit, which is finely poliſhed, having a rough Fiſſure on one of the Edges, of an Aſh-colour.

The *Species* are ;

1. Sapota *fructu turbinato minori. Plum. Nov. Gen.* Sapota with a leſſer Fruit, ſhaped like a Top.
2. Sapota *fructu ovato major. Plum. Nov. Gen.* Sapota with a larger oval Fruit.

The Name of *Sapota* is what theſe Fruit are called by the Natives of *America* ; to which ſome add the Apellation of Mammee. But there is no other Name given to theſe Fruits by the *Engliſh*, ſince they have ſettled in the *Weſt-Indies* ; ſo far as I can learn.

The firſt of theſe Trees is common about *Panama*, and ſome other Places in the *Spaniſh Weſt-Indies* ; but is not to be found in any of the *Engliſh* Settlements in *America*. The ſecond Sort is very common in *Jamaica*, *Barbados*, and moſt of the Iſlands in the *Weſt-Indies*, where the Trees are planted in Gardens for their Fruit, which is by many Perſons greatly eſteemed.

Theſe Trees grow in *America* to the Height of thirty five or forty Feet, having a ſtrait Trunk, covered with an aſh-colour'd Bark. The Branches are produced on every Side, ſo as to form a regular Head: theſe are beſet with Leaves, which are a Foot in Length, and near three Inches broad. The Flowers, which are produced from the Branches, are of a cream Colour ; when theſe fall away, they are ſucceeded by large oval or top-ſhaped Fruit, which are covered with a browniſh Skin, under which is a thick Pulp of a ruſſet Colour, very luſcious, called natural Marmelade, from its likeneſs to Marmelade of Quinces.

As theſe Trees are Natives of very warm Countries, ſo they cannot be preſerved in *England*, unleſs they are placed in the warmeſt Stoves, and managed with great Care. They are propagated by planting of the Stones ; but as theſe will not keep good long out of the Ground, ſo the ſureſt Method to obtain theſe Plants, is to have the Stones planted in Tubs of Earth, as ſoon as they are taken out of the Fruit, and theſe Tubs placed in a Situation where they may have the morning Sun, and kept duly watered. When the Plants come up, they muſt be ſecure from Vermin, and kept clear from Weeds ; but ſhould remain in the Country, till they are about a Foot high, when they may be ſhipped for *England* ; but they ſhould be brought over in the *Summer* Seaſon, and, if poſſible, Time enough for the Plants to make good Roots after they arrive. During their Paſſage they muſt have ſome Water, while they continue in a warm Climate ; but as they come into colder Weather, they ſhould have very little Moiſture ; and they muſt be ſecured from Salt-water, which will ſoon deſtroy the Plants, if it gets at them.

When theſe Plants arrive in *England*, they ſhould be carefully taken out of the Tubs, preſerving ſome Earth to their Roots, and planted into Pots filled with freſh Earth, and then plunged into a moderate Hot-bed of Tanners-bark, obſerving, if the Weather is hot, to ſhade the Glaſſes with Mats every Day, to ſcreen the Plants from the Sun, until they have taken new Root, obſerving not to water them too much at firſt, eſpecially if the Earth in which they come over is moiſt ; becauſe too much Water is very injurious to the Plants, before they are well rooted ; but afterward they muſt have plenty of Water in warm Weather, and they muſt have a large Share of Air admitted to them ; otherwiſe their Leaves will be infeſted with Inſects, and become foul ; in which caſe they muſt be waſhed with a Sponge, to clean them, without which the Plants will not thrive.

In the Winter theſe Plants muſt be placed in the warmeſt Stove, and in cold Weather they ſhould have but little Water given to them, tho' they muſt be frequently refreſhed, when the Earth is dry ; eſpecially, if they retain their Leaves all the Winter, they will require a greater Share of Water, than when they drop their Leaves ; ſo that this muſt be done with Diſcretion, according to the State in which the Plants are. As theſe Plants grow in Magnitude, ſo they ſhould be ſhifted into Pots of a larger Size ; but they muſt not be over-potted, for that will infallibly deſtroy them.

SARRACENA, The Side Saddle-flower.

The *Characters* are ;

It hath a Flower conſiſting of ſeveral Leaves, which are placed circularly, and expand in form of a Roſe, and reſting in a many-leaved Empalement ; from the middle ariſes the Pointal, which is membranaceous, and ſhaped like a Hood, and afterwards becomes a roundiſh Fruit divided into five Cells, which contain oblong Seeds.

We have but one *Species* of this Plant ; which is,

Sarracena *Canadenſis, foliis cavis & auritis. Inſt. R. H.* Canady Sarracena, with hollow eared Leaves.

This ſtrange Plant is a Native of *New England*, *Virginia*, and ſeveral Places in *North America* ; where it grows on Bogs, and ſuch Places where the Waters uſually ſtand in *Winter*. The Leaves of this Plant ariſe from the Root every *Spring*, being eight or nine in Number, which are ſmall at the Bottom, but ſwell larger toward the Top, and are hollow like a Pitcher, having a Sort of an Appendage at the Top, ſomewhat reſembling a Flap, ſo that in theſe Leaves there is commonly a large Quantity of Water contained. Between the Leaves ariſes the Flower-ſtem, which hath ſeveral roſaceous Flowers growing on the Top, which are ſucceeded by roundiſh Fruit.

The Name was given to this Plant by Dr. *Tournefort*, in Honour of Dr. *Sarrazin* a curious Botaniſt, who ſent the Plant from *Canady* to Dr. *Tournefort* at *Paris*.

As this Plant grows on Bogs, ſo it is very difficult to cultivate in *England* ; for altho' the *Winters* are much more ſevere in the Places of their natural Growth, than they generally are in *England*, yet their *Summers* being much warmer, they thrive much better, and produce their Flowers and Fruit annually ; whereas it is with great Difficulty they are kept alive for a Year or two in *England* ; and they have not yet flowered in this Country, that I could ever learn. By the Appearance of ſome Plants, which I received from *New England*, there ſeem to be two Sorts of this Plants, one of which is much larger than the other ; but as I never had an Opportunity of ſeeing theſe Plants in Flower, ſo I cannot determine any thing with Certainty about them.

The only Method to obtain theſe Plants is to procure them from the Places of their Growth, and to have them taken up with large Balls of Earth to their Roots, and planted in Tubs of Earth, which muſt be conſtantly watered during their Paſſage, otherwiſe they will decay before they arrive : and there is little Probability of raiſing theſe Plants from Seeds, ſo that young Plants ſhould be taken up to bring over, which are more likely to ſtand here, than thoſe which have flowered two or three times. When the Plants are brought over, they ſhould be planted into pretty large Pots, which ſhould be filled with ſoft ſpongy Earth, mixed with rotten Wood, Moſs and Turf, which is very like the natural Soil in which they grow. Theſe Pots muſt be conſtantly ſupplied with Water, and placed in a ſhady Situation in *Summer* ; but in the *Winter* they muſt be covered with Moſs, or ſheltered under Frame, otherwiſe they will not live in this Country, tho' they have much more ſevere Froſt in the Countries where they naturally grow ; but there they are covered with Snow, which may be a great Protection to them. With this Management I have kept ſome of theſe Plants alive two Years, but they made very little Progreſs.

SATUREJA, [ſo call'd, becauſe it is ſaid to cauſe a *Satyriaſmus* or *Priapiſmus* ; for it very much excites to venery, and carries a Warmth to the *Membrum Virile*] Savory.

The *Characters* are ;

It is a Plant of the verticillate Kind, with a labiated Flower, whoſe Upper-lip (or Creſt) is divided into two Parts ; but the Lower-lip (or Beard) is divided into three Parts, the middle Part being crenated : Theſe Flowers are produced from the

Wings of the Leaves, in a looſe Order, and not in Whorles or Spikes, as are moſt of this Tribe of Plants.

The *Species* are;

1. SATUREJA *ſativa. J. B.* Garden *or* Summer Savory.
2. SATUREJA *montana. C. B. P.* Winter Savory.
3. SATUREJA *Virginiana. Par. Bat.* Virginian Savory.

The firſt of theſe Plants is annual, and is propagated by ſowing of the Seeds upon a Bed of light freſh Earth in *March*; and when the Plants are come up, they muſt be tranſplanted into other Beds, placing them about four or five Inches aſunder each Way; obſerving to do this in moiſt cloudy Weather, becauſe at ſuch times the Plant will ſoon take Root: but if the Seaſon ſhould prove hot and dry, they muſt be diligently watered until they have taken Root; after which they will require no farther Care, but to keep 'em clear from Weeds; and in *July* they will flower, at which time they will be cut for medicinal Uſe: but thoſe Plants which are left will produce ripe Seeds in *September*, provided the *Autumn* be favourable.

The *Winter Savory* is an abiding Plant, and may be propagated by Slips or Cuttings; which, if planted in a Bed of light freſh Earth in the *Spring*, and carefully watered, will take Root in a ſhort time, and may then be tranſplanted where they are to remain. This Plant ſhould have a dry Soil, in which it will endure the Cold very well, as may be ſeen by its growing in ſome Places upon the Tops of Walls, where it defies the ſevereſt Cold of our Climate.

Theſe Plants were formerly more cultivated in *England* than at preſent, they being very little in Uſe to what they were formerly, when they enter'd moſt Diſhes of Soups, *&c.* but at preſent they are very little uſed in the Kitchen, and are chiefly cultivated for medicinal Uſe.

SATYRION; *vide* Orchis.

SAVIN; *vide* Sabina.

SAVORY; *vide* Satureja.

SAURURUS, Lizards-tail.

The *Characters* are;

It hath an apetalous Flower, conſiſting of two Chives, which open two ways, and are full of very ſmall Powder (or Farina.) The Embryo reſts between the two Chives, which afterward becomes an oval ſoft Fruit, incloſing a ſingle Seed. To theſe Notes muſt be added, The Flowers and Fruit are fixed to one Axis, ſo as to reſemble the Tail of a Lizard.

The *Species* are;

1. SAURURUS *racemoſus, ſeu botryites major. Plum. Nov. Gen.* Greater branching Lizards-tail.
2. SAURURUS *racemoſus, ſeu botryites minor. Plum. Nov. Gen.* Leſſer branching Lizards-tail.
3. SAURURUS *cauda adunca. Plum. Nov. Gen.* Lizards-tail, with a crooked Tail.
4. SAURURUS *foliis plantagineis, cauda breviori. Plum. Nov. Gen.* Lizards-tail, with plantain Leaves, and a ſhorter Tail.
5. SAURURUS *botryites major, foliis plantagineis. Plum. Nov. Gen.* Greater cluſtered Lizards-tail, with plantain Leaves.
6. SAURURUS *foliis amplis rotundis & umbilicatis. Plum. Nov. Gen.* Lizards-tail, with large round umbilicated Leaves.
7. SAURURUS *foliis amplis cordatis, non umbilicatis. Plum. Nov. Gen.* Lizards-tail, with large heart-ſhaped Leaves, not umbilicated.
8. SAURURUS *procumbens minor botryites, folio carnoſo cordato. Plum. Nov. Gen.* Smaller creeping cluſtered Lizards-tail, with a fleſhy heart-ſhaped Leaf.
9. SAURURUS *alius humilis, folio carnoſo ſubrotundo. Plum. Nov. Gen.* Low Lizards-tail, with a roundiſh fleſhy Leaf.
10. SAURURUS *repens, folio orbiculari, nummulariæ facie. Plum. Nov. Gen.* Creeping Lizards-tail, with a round Leaf, having the Appearance of Moneywort.
11. SAURURUS *repens tryphyllus, folio rotundo. Plum. Nov. Gen.* Creeping three-leaved Lizards-tail, with a round Leaf.
12. SAURURUS *cauliculis maculoſis, repens. Plum. Nov. Gen.* Creeping Lizards-tail, with a ſpotted Stalk.
13. SAURURUS *fruteſcens, lauro-ceraſi folio, fructu breviore & craſſiore. Houſt.* Shrubby Lizards-tail, with a laurel Leaf, and a ſhorter and thicker Fruit.
14. SAURURUS *arboreſcens latifclia villoſa fructu gracili. Houſt.* Tree-like Lizard's-tail, with a broad, hairy Leaf, and a ſlender Fruit.

The ſeven Sorts firſt mentioned grow to be ſhrubby, and riſe to the Height of four or five Feet, having Leaves placed alternately on their Branches. The *Iulus* comes out from the Wings of the Leaves, which is ſhaped like a Lizard's Tail, from whence they had their Names. By ſome they are called Long Pepper, from the Reſemblance the *Iuli* bear to the Long Pepper: But the Fruit of theſe are not uſed, nor have they the taſte of Pepper. Theſe Sorts were diſcovered to grow in *Jamaica*, by the late Dr. *Houſtoun*; and ſome of them are deſcribed by Sir *Hans Sloane*, in his Natural Hiſtory of *Jamaica*.

The eighth, ninth and tenth Sorts are Plants of humbler Growth: Theſe trail on the Ground, and emit Roots from their Joints, which faſten themſelves into the Earth, whereever it is looſe, by which Method they ſpread to a great Diſtance. The Leaves and Stalks of the ninth Sort are very thick and ſucculent, and remain always green.

The eleventh and twelfth Sorts are creeping Plants, which faſten themſelves to Trees; by which Means they riſe to the Height of eight or ten Feet, faſten their Roots into the Bark of the Trees, and receive Part of their Nouriſhment from thence.

All theſe twelve Sorts were diſcovered by Father *Plumier* in the *Weſt-Indies*, who has figured and deſcribed them in his Hiſtory of *American* Plants; but ſeven of them were before deſcribed by Sir *Hans Sloane*, in his Natural Hiſtory of *Jamaica*.

The two laſt Sorts were diſcover'd by the late Dr. *Houſtoun* at *La Vera Cruz*, from whence he ſent Samples of them into *England*. Theſe two Sorts grow much larger than either of thoſe before-mentioned.

Some of theſe Plants are called by the Inhabitants of *Jamaica*, *Spaniſh Elder*, from their being jointed, and their Branches having a great deal of Pith in them. Others of them, eſpecially thoſe which have Leaves ſhaped like a Heart, are called *Santa Maria* Leaves.

Theſe Plants moſt of them grow in moiſt ſhady Places, in the warmeſt Parts of *America*, where many of them root into the decayed Trunks of Trees, and rotten Wood, (eſpecially thoſe which trail) and thereby they propagate faſter than by Seeds; for as they emit Roots at almoſt every Joint, ſo each of theſe will make a ſeparate Plant.

But as theſe Plants are too tender to bear the open Air in this Climate, ſo they muſt be preſerved in a Stove, where the Air may be kept to a moderate Temperature for Heat; and if they are placed in the Bark-bed, and their Branches permitted to trail on the Surface of the Bark, the Plants will ſend forth Roots at every Joint, and faſten themſelves ſtrongly into the Bark, ſo will thrive exceeding faſt, and produce their Flowers and Fruit.

The Seeds of theſe Plants, when brought from abroad, ſeldom ſucceed in *England*; ſo that the moſt proper Method to obtain the Plants, is to have ſome of their Cuttings planted into Boxes of Earth, in the Countries where they naturally grow; and when they are well rooted, they may be ſent over to *England*, with Directions given to the Perſons to whoſe Care they are entruſted, not to let them have too much Water, (eſpecially when they come into a cool Climate) becauſe Moiſture then will be very prejudicial to them. They muſt alſo be carefully guarded againſt the Salt-water, which will infallibly deſtroy them, if it be ſuffered to come to them. When the Plants arrive in *England*, they ſhould be carefully taken out of the Boxes, and each planted into a ſeparate ſmall Pot, filled with light freſh Earth, and then plunged into a moderate Hot-bed of Tanners-bark, obſerving to ſhade them from the Sun at firſt, until they have taken Root; after which Time they ſhould have freſh Air admitted to them, in Proportion to the Warmth of the Seaſon: But in *Winter* they muſt be kept pretty warm, otherwiſe they will not live in this Country.

The ſureſt Method to make theſe Plants thrive in *England*, is, to plunge the Pots into the Bark-bed in the Stove, and to ſuffer the Branches of the creeping Kinds to trail on the Surface of the Bed, where they will ſtrike Roots into the Tan, and will thrive exceedingly. Theſe Plants merit a Place in every Collection of Plants, for their remarkable Leaves, and the ſingular Structure of their Branches, as alſo for the Oddneſs of their Flowers and Fruit, which are, for the moſt part, produced from the Wings of the Leaves.

SAXIFRAGA, [ſo called, *q. Saxa, Stones*, and *frangens*, Lat. *breaking*; becauſe, as *Bauhinus* ſays, the Juice of it being drank, breaks the Stone in the Reins and Bladder: But the Truth of it is doubted. Others derive it from its growing on ſtony Mountains; as growing out of the Clefts of the Stones] Saxifrage.

The *Characters* are;

The Flower conſiſts of ſeveral Leaves, placed orbicularly, which expand in form of a Roſe; out of whoſe multifid Flower-cup riſes the Pointal; which commonly ends in two Horns, and afterwards turns, together with the Flower-cup, into a roundiſh Fruit, which has likewiſe two Horns and two Cells, which are full of ſmall Seeds.

The *Species* are;

1. SAXIFRAGA *rotundifolia alba. C. B. P.* White round-leafed Saxifrage.
2. SAXIFRAGA *rotundifolia alba, flore pleno. Boerh. Ind.* White round-leafed Saxifrage, with a double Flower.
3. SAXIFRAGA *Alpina ericoides, flore cœruleo. Tourn.* Mountain Heath-like Sengreen, with a blue Flower.
4. SAXIFRAGA *ſedi folio, flore albo, multiflora. Tourn.* Many-flower'd Saxifrage, with an Houſeleek Leaf, and a white Flower, *commonly called* Pyramidal Sedum.
5. SAXIFRAGA *ſedi folio anguſtiore, ſerrato. Tourn.* Saxifrage with a narrow, ſerrated, Houſeleek Leaf.
6. SAXIFRAGA *ad folia bulbos gerens. C. B. P.* Saxifrage bearing Bulbs at the Wings of the Leaves.
7. SAXIFRAGA *verna annua humilior. Inſt. R. H.* Dwarf ſpring annual Saxifrage, *commonly called* Rue-leafed Whitlow-graſs.
8. SAXIFRAGA *muſcoſa, trifido folio. Inſt. R. H.* Moſſy Saxifrage, with a trifid Leaf, *commonly called* Mountain Sengreen, *or* Ladies Cuſhion.
9. SAXIFRAGA *tridactylites Alpina, pallide lutea. Inſt. R. H.* Mountain Saxifrage, of a pale yellow Colour, with a Leaf cut into three Segments.
10. SAXIFRAGA *tridactylites Alpina minor & villoſa. Inſt. R. H.* Smaller hairy Saxifrage of the Alps, with a Leaf cut into three Segments.
11. SAXIFRAGA *alba petræa Ponæ. Inſt. R. H.* White Rock Saxifrage.
12. SAXIFRAGA *ſedi folio, Pyrenaica ſerrata. Inſt. R. H.* Pyrenean Saxifrage, with a ſawed Houſeleek Leaf.
13. SAXIFRAGA *foliis ſubrotundis ſerratis. Inſt. R. H.* Saxifrage with roundiſh ſawed Leaves.
14. SAXIFRAGA *Alpina ſedi foliis crenatis aſperis. Inſt. R. H.* Saxifrage of the Alps, with rough notched Leaves like Houſleek.
15. SAXIFRAGA *foliis oblongo-rotundis dentatis, floribus compactis. Raii Syn. Ed.* 3. Saxifrage with an oblong, roundiſh, indented Leaf, and the Flowers growing in cloſe Bunches.
16. SAXIFRAGA *montana pyramidata, folio longiore. Inſt. R. H.* Mountain pyramidal Saxifrage, with a long Leaf.
17. SAXIFRAGA *Pyrenaica lutea minima, ſedi foliis denſiſſime congeſtis. Inſt. R. H.* The leaſt yellow Pyrenean Saxifrage, with Houſleek Leaves growing very cloſe together.
18. SAXIFRAGA *Alpina minima, foliis cæſiis, deorſum incurvis. Inſt. R. H.* The leaſt Saxifrage of the Alps, with Sky-coloured Leaves which bend downward.
19. SAXIFRAGA *Alpina lutea, ſedi folio. Inſt. R. H.* Yellow Saxifrage of the Alps, with a Houſleek Leaf.
20. SAXIFRAGA *Pyrenaica tridactylites latifolia. Inſt. R. H.* Pyrenean Saxifrage, with broad Leaves, cut into three Segments.
21. SAXIFRAGA *Cantabrica latifolia tridactylites rigidior. Inſt. R. H.* Broad ſtiff-leafed Saxifrage of *Biſcay*, with Leaves cut into three Segments.
22. SAXIFRAGA *tridactylites Pyrenaica, pallidè lutea, minima. Inſt. R. H.* The leaſt pale yellow Saxifrage of the Pyrenees, with Leaves, cut into three Segments.
23. SAXIFRAGA *Pyrenaica, foliis partim integris, partim trifidis. Inſt. R. H.* Pyrenean Saxifrage, with Leaves partly intire, and partly cut into three Segments.
24. SAXIFRAGA *Pyrenaica minima, lutea, muſco ſimilis. Inſt. R. H.* The leaſt yellow Saxifrage of the Pyrenean Mountains, reſembling Moſs.
25. SAXIFRAGA *annua Cretica minima, hederaceo folio. Tourn. Cor.* The leaſt annual Saxifrage of Candia, with an Ivy Leaf.
26. SAXIFRAGA *Penſylvanica, floribus muſcoſis. Hort. Elth.* Saxifrage of Penſylvania, with greeniſh Flowers, growing branchy.

The firſt of theſe Plants is very common in moiſt Meadows in divers Parts of *England*, and is rarely cultivated in Gardens. This is what the *College of Phyſicians* have directed to be uſed in Medicine under the Title of *White Saxifrage*, to diſtinguiſh it from *Meadow Saxifrage*, which is an umbelliferous Plant, of a very different Nature and Appearance from this.

The ſecond Sort is a Variety of the firſt, which was found wild by Mr. *Joſeph Blind*, Gardener at *Barns*, who tranſplanted it into his Garden, and afterwards diſtributed it to ſeveral curious Perſons; ſince which Time it hath been multiplied ſo much, as to become a very common Plant in moſt Gardens near *London*, where it is commonly planted in Pots to adorn Court-yards, *&c.* in the *Spring*.

This Plant is propagated by Off-ſets, which are ſent forth from the old Roots in great Plenty. The beſt Seaſon for tranſplanting them is in *July*, after their Leaves are decay'd, when they muſt be put into freſh undunged Earth, and placed in the Shade until *Autumn*; but in *Winter* they may be expoſed to the Sun, which will cauſe them to flower ſomewhat earlier in the *Spring*. In *April* theſe Plants will flower; and if they are in large Tufts, will at that Time make a very handſome Appearance; for which Reaſon moſt People ſuffer them to remain three or four Years unremov'd, and when they are tranſplanted do always plant them in Bunches, that they may produce a greater Number of Flowers. If theſe Plants are put into the full Ground, they muſt have a ſhady Situation, otherwiſe they will not thrive.

The third Sort is a low, creeping Plant, which lies upon the Surface of the Ground, ſomewhat like Moſs: This grows wild in the Northern Counties of *England*, and is rarely cultivated in Gardens.

The fourth Sort is propagated for the ſake of its ſpecious Flowers: This is brought from the *Alps* and *Pyrenæan* Mountains, where it grows wild. It is uſually planted in Pots filled with freſh light Earth, and in the *Summer* Seaſon placed in the Shade, but in the *Winter* it ſhould be expoſed to the Sun; and all the Off-ſets ſhould be taken off, leaving the Plant ſingle, which will cauſe it to produce a much ſtronger Stem for flowering: For when there are Off-ſets about the old Plant, they exhauſt the Nouriſhment from it, whereby it is rendered much weaker. Theſe Off-ſets muſt be each planted in a ſeparate Half-penny Pot, filled with freſh Earth, in order to ſucceed the older Plants, which generally periſh after flowering: Theſe Off-ſets will produce Flowers the ſecond Year, ſo that there ſhould be annually ſome of them planted, to ſucceed the others. When theſe Plants are ſtrong and healthy, they will produce a Stem of Flowers full three Feet high, which divides into Branches in a pyramidal Order, and are beſet with Flowers from Bottom to Top, ſo as to make a beautiful Figure: And as it uſually flowers in *June*, ſo it is commonly placed in Chimnies or Halls, where it will continue in flower a long Time, provided it have Water duly given it, and will afford an agreeable Proſpect.

The fifth Sort is alſo a Native of the *Alps*, but will grow very well in Gardens: And though the Flowers are not very beautiful, yet, for the Variety of its ſerrated, ever-green Leaves, it may have a Place in every good Garden. This may be propagated by Off-ſets, and requires the ſame Management as the former.

The ſixth Sort here mentioned is a Variety of the common white *Saxifrage*, from which it differs, in bearing ſmall Bulbs at the Leaves. This is not common in *England*, but is found wild on the *Pyrenean* Mountains, and in other mountainous Places in *Spain* and *Italy*: and propagates very faſt by the Bulbs which grow on the Stalks, in the ſame Manner as the fiery Lilly.

The ſeventh Sort is a low annual Plant, which uſually grows on the Tops of Walls, and on dry rubbiſhy Places, and flowers in *April*. This Plant has been eſteemed a very good Remedy for the King's-evil, and other ſcrophulous Diſorders. Mr. *Boyle*, in his Treatiſe concerning the Uſefulneſs of Natural Philoſophy, has recommended this Herb to be infuſed in Small-beer, and drank for ſome Days, which he ſays will cure the King's-evil, without any ſenſible Evacuation, by conſuming the Humour, mitigating the Pain, diſcuſſing the Tumours, and drying up the Ulcers. The Time for gathering of this Herb to dry is in the Middle of *April*, when it is in Flower; for it ſoon after perfects its Seeds, and dies away.

The eighth Sort grows wild in ſeveral Parts of *Yorkſhire*, and other cold Countries. This ſpreads on the Surface of the Ground, and forms itſelf into a roundiſh Tuft, which is exceeding cloſe and ſoft, and has the Appearance of Moſs at a ſmall Diſtance; from whence ſome of the Country People give it the Name of Ladies Cuſhion. This Sort may be propagated in Plenty by its trailing Shoots, which, if they reſt on the Ground, will put out Roots and multiply exceedingly. It loves a moiſt ſhady Situation.

The ninth, tenth, eleventh, ſeventeenth, eighteenth, twentyſecond, twentythird and twentyfourth Sorts are alſo ſmall Plants, which lie cloſe to the Ground, ſomewhat like the eighth Sort; ſo propagate themſelves plentifully, and are all of them very hardy Plants, being Natives of the *Alps*, *Pyrenees*, and other mountainous Places: They require to be planted in a moiſt Soil, and a ſhady Situation; for if they are too much expoſed to the Sun, they will not thrive; nor will they continue long, if they are planted in a rich Soil.

As theſe Plants do not produce very beautiful Flowers, ſo they are ſeldom regarded, and are rarely planted in Gardens, unleſs by ſome Perſons who are curious in Botany, for the ſake of Variety. But yet theſe Plants may be introduced to plant about Rock-work, or between the Joints of ruſtick Buildings, where, if they are in the Shade, they will thrive very well, and have a very good Effect to the Sight: For theſe will ſucceed where Moſs cannot be planted; and having ſo much the Appearance of Moſs, will be by moſt People taken for it at a ſmall Diſtance; and as theſe continue green throughout the Year, ſo they will much better anſwer the Purpoſe.

The twelfth, thirteenth, fourteenth, fifteenth, ſixteenth and nineteenth Sorts have broader Leaves, and appear very much like ſome Sorts of Houſleeks. Theſe are very hardy Plants, being Natives of Northern Countries; ſo muſt be planted in a ſhady Situation, and a poor Soil: but they will grow on drier Places than the former Sorts. Theſe Plants are eaſily propagated by Off-ſets, which they ſend out in great Plenty, and may be adapted to the ſame Purpoſes as the former, to adorn Rock-work, *&c.* and will make a pretty Diverſity.

The twentyfifth Sort is an annual Plant, which was found by Dr. *Tournefort*, in the Iſland of *Crete*, and is by ſome preſerved for the ſake of Variety; but there is no great Beauty in it.

The twentyſixth Sort was brought from *Penſylvania* to Mr. *Peter Collinſon*, who hath diſtributed it to ſeveral Perſons who are curious in preſerving rare Plants. This Sort hath long Leaves, which ſpread on the Surface of the Ground, from between which ariſe the Flower-ſtems, which grow about two Feet high, and branch toward the Top, bearing Cluſters of ſmall greeniſh Flowers. This is propagated by parting of the Roots, and ſhould be planted in a ſhady Situation, where if it is duly watered in dry Weather, it will thrive and flower every Year plentifully, and may be allowed a Place in ſhady Borders, for the ſake of Variety.

SCABIOSA, [ſo called of *Scabies*, Lat. *a Scab*, becauſe this Plant is ſaid to heal the Scab] Scabious.

The *Characters* are;

It hath a floſculous Flower, conſiſting of many unequal Florets, contained in a common Empalement. Some of theſe which occupy the Middle, are cut into four or five Segments; the reſt, which are placed at the Edge, are bilabiated; each of theſe ſit on the Top of an Embryo, which is crowned; and is contained in a proper Empalement, which afterwards becomes a Capſule, either ſimple or Funnel-ſhaped, pregnant with a Seed crowned, which before was the Embryo.

The *Species* are;

1. SCABIOSA *pratenſis hirſuta, quæ officinarum.* C. B. P. Common Field Scabious.

2. SCABIOSA *integrifolia glabra, radice præmorſa.* H. L. Whole-leafed Scabious, *or* Devil's-bit.

3. SCABIOSA *ſtellata, folio non diſſecto.* C. B. P. Starred Scabious, with an undivided Leaf.

4. SCABIOSA *ſtellata, folio laciniato, major.* C. B. P. Greater ſtarred Scabious, with a cut Leaf.

5. SCABIOSA *peregrina rubra, capitulo oblongo.* C. B. P. Red Indian Scabious, with longiſh Heads, *commonly called* Muſk Scabious.

6. SCABIOSA *peregrina, capitulo oblongo, flore carneo.* H. R. Par. Indian or Muſk Scabious, with longiſh Heads, and a Fleſh-coloured Flower.

7. SCABIOSA *peregrina, capitulo oblongo, flore atro-purpureo.* H. R. Par. Indian or Muſk Scabious, with longiſh Heads, and a dark purple Flower.

8. SCABIOSA *peregrina, capitulo oblongo, flore variegato.* H. R. Par. Indian or Muſk Scabious, with oblong Heads, and a variegated Flower.

9. SCABIOSA *Indica prolifera.* H. Edinb. Indian childing Scabious.

10. SCABIOSA *Africana fruteſcens.* Par. Bat. Ic. African ſhrubby Scabious.

11. SCABIOSA *Africana fruteſcens, folio rigido ſplendentem ſerrato, flore albicante.* H. A. African ſhrubby Scabious, with a ſtiff, ſhining, ſerrated Leaf, and a whitiſh Flower.

12. SCABIOSA *Alpina, folio centaurii majoris.* C. B. P. Alpine Scabious, with a greater Centaury Leaf.

13. SCABIOSA *fruticans latifolia alba.* C. B. P. White broad-leafed Shrubby Scabious.

14. SCABIOSA *fruticans latifolia, floribus ad cœruleum inclinantibus.* C. B. P. Broad-leafed ſhrubby Scabious, with Flowers inclining to Blue.

15. SCABIOSA *fruteſcens anguſtifolia alba.* C. B. P. White narrow-leafed ſhrubby Scabious.

16. SCABIOSA *multifido folio, flore flaveſcente.* C. B. P. Scabious, with a variouſly divided Leaf, and a yellowiſh Flower.

17. SCABIOSA *montana glabra, foliis ſcabioſæ vulgaris.* C. B. P. Mountain ſmooth-leafed Scabious.

18. SCABIOSA *montana latifolia non laciniata, rubra & prima.* C. B. P. The firſt red broad-leafed mountain Scabious, not jagged.

19. SCABIOSA *latifolia rubra non laciniata ſecunda.* C.B.P. The ſecond red broad-leafed Scabious, not jagged.

20. SCABIOSA *argentea anguſtifolia.* C. B. P. Narrow ſilver-leafed Scabious.

21. SCABIOSA *Sicula fruticans, laureolæ folio, ſubtus incano.* Inſt. R. H. Shrubby Sicilian Scabious, with a ſpurge Laurel Leaf, hoary underneath.

22. SCABIOSA *fruteſcens foliis leucoii hortenſis.* Hort. Cath. Shrubby Scabious, with Stock-gilly-flower Leaves.

23. SCABIOSA *Cretica fruteſcens, auriculæ urſi folio.* Tourn. Cor. Shrubby Candy Scabious, with a Bear's-ear Leaf.

24. SCABIOSA *fruteſcens, foliis infra integris, flore cœruleo.* Boerh. Ind. Shrubby Scabious, with the lower Leaves intire, and a blue Flower.

25. SCABIOSA *perennis Sicula, flore ſulphureo.* Boerh. Ind. Perennial Sicilian Scabious, with a Brimſtone-coloured Flower.

26. SCABIOSA *ſtellata fruteſcens, leucoii folio minor, unâ alterâve crenâ inciſo.* Flor. Bat. Shrubby ſtarry-ſeeded Scabious, with a ſmaller Stock-gilly-flower Leaf.

27. SCABIOSA *Africana fruteſcens maxima, foliis rugoſis & crenatis minor.* Par. Cat. Greateſt ſhrubby African Scabious, with rough and leſs notched Leaves.

28. SCABIOSA *Africana fruteſcens maxima, foliis tenuiſſimè inciſis.* Boerh. Ind. Alt. Greateſt ſhrubby African Scabious, with Leaves very finely jagged.

29. SCABIOSA *altiſſima annua, foliis agrimoniæ nonnihil ſimilibus.* H. L. The talleſt annual Scabious, with Leaves, ſomething like thoſe of *Agrimony*.

30. SCABIOSA *fraxinellæ foliis.* Inſt. R. H. Scabious with white Dittany Leaves.

31. SCABIOSA *virgæ paſtoris folio.* C. B. P. Scabious with a leſſer Teaſel Leaf.

32. SCABIOSA *Luſitanica, Indicæ ſimilis.* Inſt. R. H. Portugal Scabious, like the Indian one.

33. SCABIOSA *ſtellata Hiſpanica, ampliſſimo folio.* Inſt.R.H. Spaniſh ſtarred Scabious, with a very large Leaf.

34. SCABIOSA *ſtellata annua prolifera.* R. H. Par. Annual proliferous ſtarred Scabious.

35. SCABIOSA *Orientalis ſtellata, foliis variis, flore carneo, ſemifloſculis florum fimbriatis.* Eaſtern ſtarred Scabious, with variable Leaves, and a Fleſh-colour'd Flower, whoſe half-florets are fringed.

The twelve firſt are the principal Sorts which are propagated for the Beauty of their Flowers. The firſt Sort here mentioned grows wild in divers Parts of *England*, upon arable Land; as doth the ſecond in Woods and ſhady Places almoſt every where. The firſt of theſe is what the *College of Phyſicians* have directed to be uſed, under the Title of *Scabious*; though the People who ſupply the Markets do generally bring the ſecond Sort inſtead thereof; but it may be eaſily known therefrom by its hairy, divided Leaves. The ſecond Sort the *College* have directed to be uſed under the Title of *Devil's-bit*, which Name it received from the lower Part of its Root being commonly eaten off.

Both theſe Plants are very common in the Fields and Woods, but may be propagated in Gardens, by ſowing their Seeds in the *Spring* upon a Bed of freſh Earth, and when the Plants are come up, they muſt be tranſplanted into other Beds of freſh Earth, at about eight or ten Inches Diſtance, obſerving to water them until they have taken Root; after which they will require no further Culture, but to keep them clear from Weeds; and the ſecond *Summer* they will flower, and produce Seeds; but their Roots will abide many Years, and may be parted, to propagate the Species.

The third Sort will grow to the Height of four or five Feet, and has a woody Trunk: This is preſerved in Green-houſes in *Winter*, by ſuch as are curious in foreign Plants. It may be propagated by planting Slips or Cuttings in Pots of freſh Earth, during any of the *Summer* Months; which, if placed in a moderate Hot-bed, watered and ſhaded, will take Root in a ſhort Time; after which they may be inured to the open Air by Degrees, into which they ſhould be removed to continue abroad until *October*, when they muſt be carried into Shelter, but muſt have as much free Air as poſſible in mild Weather; for they only require to be protected from hard Froſt, and to be frequently watered. This Plant produces Flowers moſt part of the Year, for which it is chiefly preſerved, tho' the Flowers have not more Beauty nor Scent than the common Field Sort.

The fourth Sort is an annual Plant, which is preſerved in the Gardens of the Curious; but the Flowers of this are very like thoſe of the former Sort, and have no Scent.

The *Indian* or *Muſk Scabious's* are preſerved for the Beauty and ſweet Scent of their Flowers, which continue a long Time: Theſe are propagated by ſowing of their Seeds, the beſt Time for which is about the Latter-end of *May*, or the Beginning of *June*, that the Plants may get Strength before *Winter*; for if they are ſown too early in the *Spring*, they will flower the *Autumn* following; and the *Winter* coming on ſoon, will prevent their ripening Seeds: beſides, there will be fewer Flowers upon thoſe, than if they had remained ſtrong Plants through the *Winter*, and had ſent forth their Flower-ſtems in *Spring*; for theſe will branch out on every Side, and produce a prodigious Number of Flowers, and continue a Succeſſion of them on the ſame Plants from *June* to *September*, and produce good Seeds in Plenty.

The Seeds of theſe Plants ſhould be ſown upon a ſhady Border of freſh Earth; (for if they are ſown upon a Place too much expoſed to the Sun, and the Seaſon ſhould prove dry, few of them would grow). When the Plants are come up, they may be tranſplanted into other Beds or Borders of freſh Earth, obſerving to water and ſhade them until they have taken Root; after which they will require no further Care, but to keep 'em clear from Weeds 'till *Michaelmas*, when they may be tranſplanted into the Middle of the Borders in the Pleaſure-Garden, where the ſeveral Sorts being intermixed, will make an agreeable Variety. They are extreme hardy, being rarely injured by Cold, unleſs they have ſhot up to the flower before *Winter*, but do ſeldom continue after ripening their Seeds.

The two *African* Tree *Scabious's* are abiding Plants, which are preſerved in Pots, and houſed in *Winter*, as the third Sort: Theſe may be propagated by Slips or Cuttings, as the third, and require the ſame Management.

The twelfth Sort is preſerved by ſuch as are curious in collecting Varieties of Plants, but the Flowers have no Scent: however, as it is a hardy Plant, requiring no other Culture than the Common Field Sorts; ſo it may be admitted, for Diverſity, into the Pleaſure-Garden, becauſe it will thrive in ſhady Places, where few other Plants will grow.

The thirteenth, fourteenth, fifteenth, ſixteenth, ſeventeenth, eighteenth, nineteenth, twentieth, twentyfourth, twentyfifth, thirtieth, and thirtyfirſt Sorts, are all of them abiding Plants, which are hardy enough to live in the open Air in *England:* ſo may be managed as hath been above directed for the common Sorts of *Scabious*.

The twentyfirſt, twentyſecond, twentythird, and twentyſixth Sorts, are alſo abiding Plants; but are ſomewhat tenderer than thoſe before mentioned: ſo ſome Plants of each Kind ſhould be kept in Pots, that they may be ſheltered in *Winter* under a common Hot-bed Frame; and the others muſt be planted in warm Borders, otherwiſe they will not live thro' the *Winters* in this Country: and if the Soil in which theſe are planted, is poor and dry, they will grow ſtunted, and bear the Cold much better, than thoſe which are planted in a rich Soil, and grow freely. Thoſe Plants which are in Pots, and are placed in Shelter in *Winter*, muſt have as much free Air as poſſible in mild Weather; otherwiſe they will draw up weak, and appear very unſightly; ſo they ſhould only be covered in very hard Froſts, and continually expoſed in mild Weather.

The twentyſeventh, and twentyeighth Sorts were brought from the *Cape of Good Hope*, ſo are more tender than the former: therefore theſe muſt always be kept in Pots, and in *Winter* ſhould be placed in an airy Glaſs-caſe, where in mild Weather they may have as much free Air as poſſible; they ſhould be frequently watered, for they are very thirſty Plants. In ſevere Froſt they muſt be carefully guarded, but they will bear a little Cold pretty well.

All the ſhrubby Sorts of *Scabious* may be propagated by Cuttings, which may be taken off during any of the *Summer* Months, and ſhould be planted in a ſhady Border, and duly watered in dry Weather, which will promote their taking Root; and then they may be potted, and placed in a ſhady Situation, till they have taken new Root, after which Time they may be placed amongſt other hardy exotic Plants, in a ſheltered Situation, where they may remain until the End of *October*, when they muſt be removed into Shelter. In ſome favourable Seaſons theſe Plants will produce good Seeds in *England*, ſo that the Plants may be raiſed from theſe, by ſowing them in an open Border of light Earth about the middle of *March*; and if the *Spring* ſhould prove very dry, it will be neceſſary to water the Ground now and then, which will forward the Vegetation of the Seed; ſo that the Plants will appear in about three Weeks after the Seeds are ſown. When they come up, they muſt be kept clear from Weeds, and in dry Weather duly watered; and when they are ſtrong enough to tranſplant, they ſhould be planted in Pots, and managed in the ſame Manner as thoſe Plants which are propagated by Cuttings.

The twentyninth, thirtyſecond, thirtythird, thirtyfourth and thirtyfifth Sorts, are annual Plants, which are only propagated by Seeds. Theſe may be managed in the ſame manner as hath been directed for the *Indian Scabious's*.

All the Sorts of *Scabious* continue a long time in Flower, for which they are regarded; for there is no very great Beauty in their Flowers: but as moſt of the hardy Sorts produce Flowers near three Months ſucceſſively, ſo they may be allowed a Place in the Borders of large Gardens, becauſe they require very little Care to cultivate them. And as the ſhrubby Kinds continue in Flower moſt Part of the Year, ſo they make an agreeable Variety amongſt hardy exotic Plants in *Winter*.

SCANDIX, Shepherds Needle or Venus-comb.

The *Characters* are;

It hath a roſe-ſhaped umbellated Flower, conſiſting of ſeveral Petals, which are ranged orbicularly, and reſt on the Empalement; which becomes a Fruit conſiſting of two Parts, having two Seeds, which reſemble a needle, when joined.

The *Species* are;

1. SCANDIX *ſemine roſtrato vulgaris. C. B. P.* Common Shepherds Needle, with beaked Seeds.
2. SCANDIX *Cretica major. C. B. P.* Great Shepherds Needle of *Crete*.
3. SCANDIX *Cretica minor. C. B. P.* Smaller Shepherds Needle of *Crete*.
4. SCANDIX *Orientalis, flore maximo. Tourn. Cor.* Eaſtern Shepherds Needle, with a very large Flower.

The firſt of theſe Plants grows wild amongſt Corn, in moſt Parts of *England*. The ſecond and third Sorts grow wild in the Iſland of *Candia*, and the fourth Sort was diſcovered by Dr. *Tournefort* in the *Levant*.

Theſe Plants are preſerved by the Curious in Botany, for the Sake of Variety; but are ſeldom admitted into other Gardens. The Fruit of theſe Plants, having Beaks, greatly reſemble Cranes Bills at a ſmall Diſtance; but being ranged ſomewhat like the Teeth of a Comb, occaſioned the Name given to it.

They may be propagated by Seeds, which ſhould be ſown in *Autumn*, ſoon after they are ripe, in the Place where they are deſigned to remain, which ſhould be in a ſhady Situation, and when the Plants are come up, they will require no farther Care, but to keep them clear from Weeds. In *June* the Plants will flower, and in the Beginning of *Auguſt* they will perfect their Seeds, and ſoon after decay. But if their Seeds are permitted to ſcatter, the Plants will come up without any manner of Care, and become Weeds in the Garden.

SCILLA, [ſo called of *σκίλλω, to make dry*, becauſe this Plant grows in dry Places; or, as others will have it, of *σκύλλω, I am moleſted*, becauſe the Bulb of this Plant, by its Acrimony, irritates the Parts to which it is apply'd] Squils.

The *Characters* are;

It hath a large, acrid, bulbous Root, like an Onion: *The Leaves are broad: The Flowers are like thoſe of* Ornithogalum, *or the* Starry Hyacinth: *They grow in a long Spike, and come out before the Leaves.*

The *Species* are;

1. SCILLA *vulgaris, radice rubra. C. B. P.* Common Red Squil.
2. SCILLA *radice alba. C. B. P.* The White Squil.

Theſe Plants are very common upon the ſandy Shoars of *Spain* and the *Levant*, from whence their Roots are annually brought to *England*, for Medicinal Uſe. But I was lately inform'd, by a Letter from Dr. *William Stevens*, Profeſſor of Botany at *Dublin*, that the *White Squill* grows in great Plenty upon the Sea-coaſt in the County of *Kerry* in *Ireland*; which is the only Place in which it has been found growing wild in theſe Parts of *Europe*. But altho' theſe Roots are brought over chiefly for Medicinal Uſe, yet are they worthy of being cultivated in every good Garden, for the Beauty of their Flowers, which make a very handſome Appearance when they are ſtrong Roots.

The beſt Time to tranſplant theſe Roots is in *May*, when their Leaves are decay'd: Or if the Roots are brought from Abroad, if they can be procured firm at that Seaſon, or a little after, they ſhould be planted in Pots of light, ſandy Earth, and placed in the Windows of the Green-houſe, where, if they are blowing Roots, they will flower the *July* following.

Theſe Plants muſt be preſerved in Shelter during the *Winter* Seaſon; becauſe, if their Leaves are deſtroy'd by Froſt in *Winter*, the Roots are ſubject to periſh: but in *Summer* they ſhould be expoſed to the open Air, and in dry Weather they muſt be frequently watered, eſpecially during the Seaſon their Leaves are on, or that they are in flower: but when the Roots are in a State of Reſt, they ſhould have but little Moiſture; for Wet at that time will rot them. They are pretty hardy, and do only require to be ſhelter'd from hard Froſt; but muſt have as much free Air as poſſible in open Weather.

SCLAREA, [this Plant is ſo called of σκληρὸς, *hard*, becauſe it has a hard and dry Stalk] Clary.

The *Characters* are;

It is a verticillate Plant with a labiated Flower, conſiſting of one Leaf, whoſe Under-lip (or ~~Creſt) is hooked~~; but the Under-lip (or Beard) is divided into three Parts, the middle Segment being hollow and bifid: Out of the Flower-cup riſes the Pointal, attended by four Embryo's, which afterwards turn to ſo many roundiſh Seeds, incloſed in a Husk, which was before the Flower-cup.

The *Species* are;

1. Sclarea *Tabern. Ic.* Common Garden *Clary*.
2. Sclarea *vulgaris lanuginoſa, ampliſſimo folio. Tourn.* Common Downy *Clary*, with a large Leaf.
3. Sclarea *laciniatis foliis. Tourn. Clary*, with a jagged Leaf.
4. Sclarea *Luſitanica glutinoſa, ampliſſimo folio. Tourn. Portugal Clary*, with a large glutinous Leaf.
5. Sclarea *Indica, flore variegato. Tourn.* Indian *Clary*, with a variegated Flower.
6. Sclarea *rugoſo verrucoſo & laciniato folio. Tourn. Clary* with a rough, warted, and jagged Leaf.
7. Sclarea *glutinoſa, floris lutei variegati barba ampla cava. Boerh. Ind.* Glutinous *Clary*, with a yellow, variegated Flower, having a large hollow Beard, *commonly called* Jupiter's Diſtaff.
8. Sclarea *folio ſalviæ, minor, ſive glabra. Tourn.* Leſſer or Smooth *Clary*, with a Sage Leaf.
9. Sclarea *orientalis, folio Betonicæ acutiſſimo, coma purpuraſcente. T. Cor.* Eaſtern *Clary*, with a ſharp-pointed Betony Leaf, and a purpliſh Top.
10. Sclarea *pratenſis, foliis ſerratis, flore ſuave rubente. Tourn.* Meadow *Clary*, with ſerrated Leaves, and a ſoft red Flower.

The Common *Garden Clary* is chiefly cultivated in *England* for medicinal Uſe; but the other Sorts are preſerved in Botanick Gardens for the ſake of Variety, with many other Sorts of leſs Note: however, thoſe here mentioned are worthy of a Place in large Gardens, where, if they are intermixed among other large-growing Plants, they will afford a pretty Variety, eſpecially the fifth, eighth, ninth, and tenth Sorts, which produce long Spikes of beautiful Flowers, and continue a long time in flower.

All theſe Sorts may be propagated by ſowing of their Seeds upon a Bed of freſh Earth in *March*; and when the Plants are come up, they ſhould be tranſplanted into Beds of freſh Earth, about eight Inches aſunder, obſerving to water 'em until they have taken Root; after which they will require no farther Care, but to keep them clear from Weeds until *Michaelmas*, when they ſhould be tranſplanted into the Places where they are to remain, placing them at a large Diſtance; for they ſpread pretty far, provided the Soil be good. If theſe Plants are planted for a Crop, intended for Medicinal Uſe, they ſhould be planted in Rows two Feet and a half aſunder, and the Plants eighteen Inches diſtant in the Rows: But the other Sorts to be placed in Borders ſhould be planted eight or ten Feet diſtant, being intermixed with other Plants. Some of theſe Sorts will endure many Years, provided they are planted on a freſh Soil, not over moiſt or rich; but others do rarely continue longer than the ſecond Year, periſhing ſoon after they have perfected their Seeds: Theſe ſhould therefore be often renewed from Seeds, to have a Continuance of 'em; but the other Sorts may be increaſed by parting their Roots, the beſt time for which is at *Michaelmas*, when their Stems begin to decay.

SCOLYMUS, The Golden Thiſtle.

The *Characters* are;

The whole Plant hath the Appearance of a Thiſtle: the Flower conſiſts of many Half-florets, which reſt on the Embryo's; each of theſe are ſeparated by a thin Leaf, and on the Top of each Embryo is faſtened a little Leaf. Theſe are contained in a ſcaly Empalement, which incloſes the Seed.

The *Species* are;

1. Scolymus *chryſanthemus. C. B. P.* The golden Thiſtle.
2. Scolymus *Chryſanthemus annuus. A. R. Par.* Annual Golden Thiſtle.
3. Scolymus *Chryſanthemus Africanus procerior. H. R. Par.* Taller *African* golden Thiſtle.

The firſt and ſecond Sorts grow wild in the South of *France* and in *Spain*; but the third Sort is a Native of *Africa*. The firſt and third Sorts are biennial Plants; but the ſecond is an annual, ſo they periſh ſoon after they have perfected their Seeds.

They are propagated by Seeds, which ſhould be ſown in *March*, on a Bed of freſh undunged Earth, in an open Situation; and when the Plants are come up, they ſhould be kept clear from Weeds; and where they grow too cloſe, ſome of them ſhould be pulled out, ſo as to leave thoſe which are deſigned to remain, about two Feet aſunder. This is all the Culture which theſe Plants require; for as they ſend forth tap Roots, ſo they do not bear tranſplanting well: therefore they muſt be ſown where they are to remain, and if they are kept clear from great Weeds, they will thrive very well; and when the Seaſons prove dry, will perfect their Seeds in *Autumn*; but in wet Seaſons they rarely ever produce good Seeds in *England*, which renders it difficult to continue the *Species*, without procuring freſh Seeds from abroad.

Theſe Plants are preſerved by thoſe Perſons who are curious in Botany, for Variety ſake, but are rarely planted in other Gardens.

SCORDIUM, [this Plant takes this Name of Σκόροδον, *Garlick*, becauſe it has the Smell of Garlick] Water-Germander.

The *Characters* are;

The Flowers are like thoſe of Germander, *which are produced from the Wings of the Leaves: The Flower-cup is tubulous; and the whole Plant ſmells like* Garlick.

The *Species* are;

1. Scordium. *C. B. P.* Common Water-Germander.
2. Scordium *alterum, ſive ſalvia agreſtis. C. B. P.* Wild Sage, *vulgo*.
3. Scordium *fruteſcens, folio anguſto ſalviæ flore luteolo. Boerh. Ind.* Shrubby Wild Sage, with a narrow Sage Leaf, and yellowiſh Flowers.

The firſt of theſe Plants grows wild in moiſt Places in the Iſle of *Ely*, in great Plenty; but near *London* it is propagated in Gardens for Medicinal Uſe. This Plant is increaſed by parting the Roots, or from Cuttings or Slips: The beſt Time for this Work is in the Beginning of *March*. Theſe Slips muſt be planted in Beds of moiſt Earth, about four or five Inches aſunder, obſerving to water them well until they have taken Root; after which they will require no further Care but to keep 'em clear from Weeds, and in *July* the Plants will be fit to cut for Medicinal Uſe, being at that time in flower: But it is not proper to tranſplant them every Year, for then the Crop will be ſmaller, therefore every other Year will be ſufficient to renew theſe Beds: nor ſhould they be planted again upon the ſame Ground, but upon a freſh Spot, otherwiſe they will not thrive.

The *Wild Sage* is very common in Woods and ſhady Places in divers Parts of *England*, and is rarely cultivated in Gardens, except by thoſe who are curious in Botany. This may be propagated by ſowing the Seeds in the *Spring*, upon a Bed of freſh Earth; and when the Plants are come up, they ſhould be tranſplanted out, at about a Foot aſunder, upon a light freſh Soil, obſerving to water them until they have taken Root; after which they will require no farther Care but to keep 'em clear from Weeds; for they are extreme hardy and will abide many Years in almoſt any Soil or Situation.

The third ſort is of a more tender Nature, and requires to be ſhelter'd from ſevere Froſt; to which if it be expoſed, it is often deſtroy'd. This may be propagated by ſowing the Seeds as the former: but when the Plants come up, they ſhould be placed in Pots of freſh Earth, and in *Winter* put in an airy Part of the Green-houſe, where they may enjoy the free Air when the Weather is mild; for if they are too much drawn, they are ſubject to mould and decay. In the *Summer* Seaſon they ſhould be expoſed to the open Air, with *Myrtles*, and other foreign Plants, and muſt be frequently refreſh'd with Water.

SCORPIOIDES, [ſo call'd becauſe the Husk being wreathed, reſembles the Tail of a Dragon: It is by ſome called *Campoides* of Καμπὴ, *a Canker-worm*, and Εἶδος, *Form*] Caterpillars.

The *Characters* are;

It hath a papilionaceous Flower, out of whoſe Empalement riſes the Pointal, which afterwards becomes a jointed Pod, convoluted like a Snail, or Caterpillar, having a Seed in each Joint, which is, for the moſt part, of an Oval Figure.

The *Species* are;

1. SCORPIOIDES *bupleuri folio. C. B. P.* The Great Rough Caterpillar.
2. SCORPIOIDES *bupleuri folio, corniculis aſperis, magis in ſe contortis & convolutis. Mor. Hiſt.* Prickly Caterpillar.
3. SCORPIOIDES *bupleuri folio, ſiliquis levibus. Park. Theat.* Smooth-podded Caterpillar.
4 SCORPIOIDES *ſiliqua craſſa. Boelii. Ger. Emac.* Thick-podded Caterpillar.
5. SCORPIOIDES *ſiliqua cochleata & ſtriata Olyſſiponenſis. H. R. Par.* Caterpillar with a cochleated and furrowed Pod.
6. SCORPIOIDES *foliis viciæ, minima. Mor. Hiſt.* The leaſt Caterpillar, with vetch Leaves.

Theſe Plants are preſerved in ſeveral curious Gardens, for their Oddneſs more than for any great Beauty: They are all of them annual Plants, which are propagated by ſowing their Seeds upon a Bed of light freſh Earth; and when the Plants are come up, they ſhould be thinned, ſo as to leave 'em about ten Inches or a Foot aſunder, becauſe their Branches trail upon the Ground; and if they have not Room, they are apt to over-bear each other, and thereby are very often rotted, eſpecially in moiſt Seaſons. The Weeds ſhould alſo be diligently clear'd from 'em, otherwiſe they will grow over, and deſtroy 'em: In *June* theſe Plants will produce ſmall, yellow, papilionaceous Flowers, which are ſucceeded by Pods, ſo much like Caterpillars, that a Perſon at a ſmall Diſtance would imagine they were real Caterpillars feeding on the Plants; and it is for this Oddneſs of their Pods that theſe Plants are chiefly preſerved.

Theſe Plants do ſeldom thrive well if they are tranſplanted; therefore the beſt Method is, to put in three or four good Seeds in each Place where you would have the Plants remain, (which may be in the Middle of large Borders in the Pleaſure-Garden, where being intermix'd with other Plants, they will afford a pleaſing Variety). When the Plants come up, there ſhould be only one of the moſt promiſing left in each Place, which ſhould be conſtantly kept clear from Weeds; and when their Pods are ripe, they ſhould be gathered and preſerved in a dry Place 'till the following *Spring*, in order to be ſown.

The firſt, third, and fourth Sorts are the beſt worth cultivating, their Pods being large and more viſible than the other, and are more in form of a Caterpillar.

SCORZONERA; [of *Eſcorſo*, a *Catalonian* Word, ſignifying a *Viper*, becauſe it is ſaid to be of great Efficacy againſt the Bite of Vipers. Authors write, that the Herb being apply'd, takes away the Venom of the Bite of Vipers. They ſay, that if a Viper be touch'd with this Juice, it languiſhes: And that a Man may touch Vipers ſafely, if his Hand be firſt dipp'd in the Juice of this Plant] Viper's-Graſs.

The *Characters* are;

It hath a ſemi-floſculous Flower, conſiſting of many half Florets, which reſt upon the Embryo's, which are included in one common Empalement, which is ſcaley: The Embryo's do afterwards become oblong Seeds, which are furniſh'd with Down.

The *Species* are;

1. SCORZONERA *latifolia ſinuata. C. B. P.* Common *or* Broad-leav'd *Viper's-Graſs*, with an indented Leaf.
2. SCORZONERA *latifolia altera. C. B. P.* Another Broad-leav'd *Viper's-Graſs.*
3. SCORZONERA *laciniatis foliis. Turn. Vipers-Graſs*, with jagged Leaves.

The firſt of theſe Sorts is what the *College of Phyſicians* have directed for Medicinal Uſe: And it is alſo cultivated for the Uſe of the Kitchen in divers Gardens near *London*; tho' at preſent it is not ſo much propagated as it hath been ſome Years ſince, when it was more commonly brought to the Markets.

The ſecond Sort is equally as good as the firſt for all the Purpoſes for which that is cultivated: but as it is leſs common, ſo it is rarely found in *England*, except in Botanick Gardens, where the third Sort is alſo cultivated for Variety, but is never apply'd to any Uſes.

Theſe Plants may be propagated by ſowing their Seeds in the Spring upon a Spot of light freſh Soil. The beſt Method of ſowing them, is, to draw ſhallow Furrows by a Line about a Foot aſunder, into which you ſhould ſcatter the Seeds, thinly covering them over about half an Inch thick with the ſame light Earth; and when the Plants are come up, they ſhould be thinned where they are too cloſe in the Rows, leaving them at leaſt ſix Inches aſunder; and, at the ſame time, you ſhould hough down all the Weeds to deſtroy them: And this muſt be repeated as often as is neceſſary; for if the Weeds are permitted to grow among the Plants, they will draw them up weak, and prevent their Growth.

There are many People who ſow theſe Seeds promiſcuouſly in a Bed, and afterwards tranſplant them out at the Diſtance they would have them grow: But this is not ſo well as the former Method, becauſe their Roots do commonly ſhoot downright, which, in being tranſplanted, are often broken, ſo that they never will make ſo fair Roots as thoſe which remain in the ſame Place where they are ſown; for when the extreme Part of the Root is broken, it never extends itſelf in Length afterwards, but only ſhoots out into many forked ſmall Roots, which are not near ſo valuable as thoſe which are large and ſtrait. Theſe Roots may be taken up when the Leaves begin to decay, at which time they have done growing; though they may remain in the Ground until *Spring*, and may be taken up as they are uſed: but thoſe which remain in the Ground after *March* will ſhoot up their Flower-ſtems; after which they are not ſo good, being ſticky and ſtrong.

If you intend to ſave Seeds of theſe Plants, you ſhould let a Parcel of the beſt remain in the Places where they grew; and when their Stems are grown to their Height, they ſhould be ſupported with Stakes, to prevent their falling to the Ground, or breaking. In *June* they will flower; and about the Beginning of *Auguſt* their Seeds will ripen, when they ſhould be gathered, and preſerv'd dry 'till the *Spring* following for Uſe.

SCROPHULARIA; [ſo called, on account of its reſembling *Scrophuli*, by its Inequality; not becauſe it is good to cure the *Scrophula* in the Neck, as is vulgarly thought] Figwort.

The *Characters* are;

It hath an anomalous Flower, conſiſting of one Leaf, gaping at both Sides, and generally globular, cut, as it were, into two Lips; under the upper one of which are two ſmall Leaves: The Pointal riſes out of the Flower-cup, which afterwards turns to a Fruit or Husk, with a roundiſh-pointed End, opening into two Diviſions, parted into two Cells, by an intermediate Partition, and full of ſmall Seeds, which adhere to the Placenta.

The *Species* are;

1. SCROPHULARIA *nodoſa fœtida. C. B. P.* Stinking Knobbed-rooted *Figwort.*

2. Scrophularia *aquatica major. C. B. P.* Greater Water *Figwort.*

3. Scrophularia *Hiſpanica, ſambuci folio glabro. Tourn.* Spaniſh *Figwort*, with a ſmooth Elder Leaf.

4. Scrophularia *maxima Luſitanica, ſambuci folio lanuginoſo. Tourn.* Greateſt *Portugal Figwort*, with a woolly Elder Leaf.

5. Scrophularia, *ruta canina dicta vulgaris. C. B. P.* Figwort, *commonly call'd* Dog's-Rue.

6. Scrophularia *ſaxatilis lucida, laſerpitii Maſſilienſis foliis. Boc. Muſ.* Shining Rock *Figwort*, with Leaves like the *Marſeilles* Laſerwort.

7. Scrophularia *glauco folio, in amplas lacinias diviſo. Tourn.* *Figwort* with a Sea-green Leaf, divided into large Segments.

8. Scrophularia *foliis filicis modo laciniatis, vel ruta canina latifolia. C. B. P.* *Figwort*, with Leaves jagged after the manner of Fern, or Broad-leav'd Dog's-Rue.

9. Scrophularia *flore luteo. C. B. P.* Figwort with a yellow Flower.

10. Scrophularia *folio urticæ. C. B. P.* Figwort with nettle Leaf.

11. Scrophularia *betonicæ folio. Inſt. R. H.* Figwort with a betony Leaf.

12. Scrophularia *ſcorodoniæ folio. Mor. Hiſt.* Figwort with a wood-ſage Leaf.

13. Scrophularia *peregrina fruteſcens, foliis teucrii craſſuſculis. Breyn. Cent.* Foreign ſhrubby Figwort, with thick germander Leaves.

14. Scrophularia *minor, Ruta canina dicta. Moriſſ. Hiſt.* Leſſer Figwort, called Dogs rue.

15. Scrophularia *Luſitanica fruteſcens, verbenacæ foliis. Inſt. R. H.* Shrubby *Portugal* Figwort, with vervain Leaves.

16. Scrophularia *Cretica fruteſcens, folio vario craſſiori. Tourn. Cor.* Shrubby Figwort of *Candia*, with a thicker variable Leaf.

17. Scrophularia *Græca fruteſcens & perennis, urticæ folio. Tourn. Cor.* *Greek* ſhrubby and perennial Figwort, with a nettle Leaf.

18. Scrophularia *Epheſia, lunariæ folio, flore rubro. Tourn. Cor.* *Epheſian* Figwort, with a moonwort Leaf, and a red Flower.

19. Scrophularia *Orientalis, foliis cannabinis. Tourn. Cor.* Eaſtern Figwort, with baſtard hemp Leaves.

20. Scrophularia *Orientalis, ampliſſimo folio, caule alato. Tourn. Cor.* Eaſtern Figwort, with a large Leaf, and a winged Stalk.

21. Scrophularia *Orientalis, tiliæ folio. Tourn. Cor.* Eaſtern Figwort, with a lime-tree Leaf.

22. Scrophularia *Orientalis, chryſanthemi folio, flore minimo variegato. Tourn. Cor.* Eaſtern Figwort, with a corn-marygold Leaf, and the leaſt variegated Flower.

The firſt Sort here mentioned grows wild in great Plenty in Woods and other ſhady Places in divers Parts of *England*, and is rarely cultivated in Gardens: but this being the Sort which the *College of Phyſicians* have directed for Medicinal Uſe, under the Title of *Scrophularia Major*, it is by ſome preſerved in their Phyſick-Gardens.

The ſecond Sort is alſo very common in moiſt Places, and by the Sides of Ditches almoſt every-where: This is alſo an officinal Plant, and ſtands in the Catalogue of Simples, under the Title of *Betonica Aquatica*, i. e. *Water-Betony*, becauſe the Leaves are ſomewhat like thoſe of *Betony*.

Theſe two Plants may be eaſily propagated in Gardens, by ſowing their Seeds early in the *Spring* upon a Bed of freſh Earth, in a ſhady Situation; and when the Plants are come up, they ſhould be tranſplanted out into a ſtrong moiſt Soil, about two Feet aſunder, obſerving to water them until they have taken Root; after which they will require no farther Care but to hough down the Weeds between them, from time to time, as they are produced. The ſecond Year theſe Plants will ſhoot up to flower; and if their Stems are ſuffered to remain, they will produce Seeds: but the Herb is generally cut for Uſe juſt as the Flowers begin to open; for if it ſtands longer, the Leaves change, and the whole Plant contains much leſs Juice. Theſe Roots will abide many Years without renewing: but it will be proper to tranſplant them every other Year, otherwiſe their Roots will ſpread over each other, and thereby deſtroy themſelves.

The third and fourth Sorts are very beautiful Plants, being worthy of a Place in every good Garden: Theſe are ſomewhat tenderer than the former Sorts; tho' they will endure the Cold of our ordinary *Winters*, if planted in a light Soil, and a warm Situation. Theſe may be propagated by ſowing their Seeds in the *Spring* upon a Bed of freſh Earth; and when the Plants are come up, they ſhould be tranſplanted into Beds of freſh Earth, at about ſix Inches Diſtance from each other, obſerving to water and ſhade them until they have taken Root; after which they will require no farther Care but to keep them clear from Weeds, and in very dry Weather to refreſh them with Water.

At *Michaelmas* ſome of them may be tranſplanted into the Middle of warm Borders in the Pleaſure-Garden; and the reſt may be planted into Pots fill'd with light freſh Earth, which in *Winter* ſhould be ſhelter'd under a common Hot-bed Frame, where they may be cover'd in froſty Weather; but in mild Weather they ſhould have as much free Air as poſſible. Theſe Plants thus ſhelter'd, will flower very ſtrong in *April*; and if duly watered in dry Weather, will produce ripe Seeds in *July*, which may be gather'd in the Pods, and preſerved for ſowing. The Roots of theſe Plants will abide three or four Years, unleſs deſtroy'd by great Cold, and may be parted, to increaſe them: But theſe Plants which are propagated from Slips do ſeldom flower ſo ſtrong as thoſe produced from Seeds; ſo that it is the beſt way to raiſe every Year ſome from Seeds to ſucceed the old Roots.

The fifth, ſixth, ſeventh, and eighth Sorts are alſo tender, and will rarely endure the Cold of our *Winters* without Shelter, unleſs in ſome very warm Situations; therefore theſe ſhould be planted in Pots fill'd with freſh light Earth, and ſhelter'd in *Winter* as the two former Sorts. Theſe may be propagated either from Seeds, as the former, or from Cuttings; but the former being the beſt way, is generally practis'd; becauſe the Plants rais'd from Seeds do always flower much ſtronger than thoſe produced from Cuttings, and likewiſe grow more regular. Theſe Sorts will abide two or three Years, if defended from Froſt in *Winter*: but if they ſhould continue longer, they are ſeldom ſo beautiful as young Plants; ſo that they ſhould be often renew'd from Seeds.

The ninth, tenth, eleventh, fourteenth, eighteenth and twenty-ſecond Sorts, are biennial Plants, which very rarely live longer than two Years. Theſe ſeldom flower the ſame Seaſon their Seeds are ſown; or if they do, it is generally pretty late in *Autumn*, ſo that they do not produce good Seeds: but when the Plants grow ſhort, and do not put out their Flower-ſtems the firſt Year; they flower very ſtrong early in the following *Summer*, and produce good Seeds. Theſe Sorts are hardy enough to endure the Cold of our ordinary *Winters* very well, provided they are planted in a dry undunged Soil.

The twelfth, thirteenth, fifteenth, ſixteenth, ſeventeenth, nineteenth, twentieth and twenty-firſt Sorts, are abiding Plants, their Roots continuing many Years; and the nineteenth Sort creeps at the Root, ſo that it propagates very faſt that way, as alſo by Seeds, this is an extreme hardy Plant, and will live in almoſt any Soil and Situation; but ſhould not be planted too near other Plants; becauſe it creeps ſo far, as to interfere with ſuch Plants as grow near it.

The other Sorts will endure the Cold of our ordinary *Winters* very well, if they are planted in a ſheltered Situation; and when they are planted in a lean rubbiſhy Soil, they will not grow too freely, ſo will be ſtunted, and will endure a much greater Share of Cold, than when they are planted in a rich Soil, where they become very luxuriant.

All theſe Sorts may be propagated by Seeds, which may be ſown, and the Plants managed in the ſame manner as hath been above directed; and being intermixed with other hardy Plants in a large Garden, will make an agreeable Variety.

SCRUPOSE; full of Gravel-ſtones.

SECALE, [ſo call'd of *Secare*, Lat. *to cut*; becauſe theſe Plants are cut when the Seeds are ripe] Rie.

The *Characters* are;

The Flowers have no Leaves, but conſiſt of ſeveral Stamina, which are produced from the Flower-cup: Theſe Flowers are collected into a flat Spike, and are diſpos'd almoſt ſingly: From the Flower-cup riſes the Pointal; which afterwards becomes an oblong ſlender Seed, inclos'd in a Huſk, which was before the Flower-cup. This differs from Wheat, *in having a flatter Spike, the Awn larger, and more naked.*

The *Species* are;

1. Secale *hybernum, vel majus. C. B. P.* Common *or* Winter *Rie.*

2. SECALE *vernum & minus. C. B. P.* Leſſer *or* Spring *Rie.*

Theſe are all the Sorts of *Rie* which are at preſent known in *England*. The Manner of ſowing and huſbanding theſe Plants being ſo well known to every Farmer, it would be neeleſs to ſay any thing of it in this Place, more than that the firſt muſt be ſown in *Autumn*, as *Wheat:* but the other may be ſown in the *Spring*, at the Seaſon for *Barley*, and will ripen almoſt as ſoon as that which was ſown in *Autumn*; which is a great Advantage in ſuch Countries where it is ſubject to be deſtroy'd in *Winter*.

SECURIDACA, [ſo call'd of *Securis*, Lat. *a Hatchet*; becauſe the Antients fanſied the Seeds of it reſembled a Hatchet] Hatchet-Vetch.

The *Characters* are;

It hath a papilionaceous Flower, out of whoſe Empalement riſes the Pointal, which afterwards becomes an upright, plain, annual, articulated Pod, containing in each Joint a rhomboid Seed, having a Notch on the inner Side.

We have but one *Species* of this Plant in *England*; viz.

SECURIDACA *lutea major. C. B. P.* The Greater Yellow Hatchet-Vetch.

This Plant grows among the Corn in *Spain*, *Italy*, and other warm Countries; but in *England* it is preſerv'd in Botanick Gardens for the ſake of Variety: This may be propagated by ſowing the Seeds in Borders of light freſh Earth in the *Spring*, in the Places where they are to abide; for they ſeldom ſucceed well if they are tranſplanted: They ſhould be allow'd at leaſt two Feet Diſtance, becauſe their Branches trail upon the Ground. In *June* theſe Plants will flower; and in *Auguſt* their Seeds will ripen, when they ſhould be gather'd, and preſerv'd for Uſe. A few of theſe Plants may be admitted into every good Garden for Variety, though there is no great Beauty in their Flowers.

SEDUM, [ſo call'd of *ſedendo*, Lat. *ſitting*; becauſe this Plant does, as it were, ſit upon the Walls where it grows; or of *ſedando*, *appeaſing*, becauſe it appeaſes the Pains of Inflammations] Houſeleek.

The *Characters* are;

The Flower conſiſts of ſeveral Leaves, which are placed orbicularly, and expand in form of a Roſe; out of whoſe Flower-cup riſes the Pointal, which afterwards turns to a Fruit, compos'd, as it were, of many Seed-veſſels, reſembling Huſks, which are collected into a ſort of Head, and full of ſmall Heads.

The *Species* are;

1. SEDUM *majus vulgare. C. B. P.* Common Great *Houſeleek.*
2. SEDUM *minus luteum, folio acuto. C. B. P.* The moſt Ordinary Prickmadam, *or* Sharp-pointed Yellow *Houſeleek.*
3. SEDUM *minus luteum, ramulis reflexis. C. B. P.* Yellow Stonecrop, with reflected Flowers.
4. SEDUM *parvum acre, flore luteo. J. B.* Wall-Pepper, or Stonecrop.
5. SEDUM *minus, à rupe Sancti Vincentii. Raii Syn.* Stonecrop of St. *Vincent*'s Rock.
6. SEDUM *minus, teretifolium album. C. B. P.* White-flower'd Stonecrop, with round-pointed Leaves.
7. SEDUM *minus, circinato folio. C. B. P.* Leſſer Stonecrop, with round Leaves.
8. SEDUM *majus vulgari ſimile, globulis decidentibus. Mor. Hiſt. Houſeleek*, like the Common Sort, throwing off the young ones.
9. SEDUM *montanum tomentoſum. C. B. P.* Mountain Woolly *Houſeleek*, *commonly call'd* Cobweb *Houſeleek.*
10. SEDUM *majus arboreſcens. J. B.* Greater Tree *Houſeleek.*
11. SEDUM *majus arboreſcens, foliis elegantiſſimè variegatis tricoloribus. Boerh. Ind.* Greater Tree *Houſeleek*, with beautiful variegated Leaves.
12. SEDUM *Canarinum, foliis omnium maximis. H. A.* The Greateſt *Houſeleek* of the *Canaries*.
13. SEDUM *Afrum ſaxatile, foliolis ſedi vulgaris, in roſam verè compoſitis. Boer. Ind.* African Rock *Houſeleek*, with ſmall Leaves, like the Common ſort, collected like a Roſe.
14. SEDUM *Afrum montanum, foliis ſubrotundis, dentibus albis ſerratis confertim natis. Boerh. Ind.* African Mountain Houſeleek, with roundiſh, indented, ſerrated Leaves, with white Edges.
15. SEDUM *Africanum fruteſcens, folio longo ſerrato confertim nato. Boerh. Ind.* African ſhrubby Houſeleek, with long, ſerrated Leaves.
16. SEDUM *majus montanum, dentatis foliis, alterum. C. B. P.* Another great Mountain Houſeleek, with indented Leaves.
17. SEDUM *majus montanum, foliis non dentatis, floribus rubentibus. C. B. P.* The great Mountain Houſeleek, with indented Leaves and reddiſh Flowers.
18. SEDUM *teretifolium majus, flore albo. Mor. Hort. R. Blæſ.* Greater Houſeleek, with taper Leaves, and a white Flower.
19. SEDUM *minus, lato & craſſo caule, Portlandicum Belgarum. H. R. Par.* Small Portland Houſeleek, with a broad and thick Stalk.
20. SEDUM *Alpinum roſeum, acuto folio, hæmatodes majus. H. R. Par.* Greater bloody roſe Houſeleek of the Alps, with a ſharp-pointed Leaf.
21. SEDUM *Alpinum roſeum medium, aculeo rubente. H. R. Par.* Middle roſe Houſeleek of the Alps, with reddiſh Prickles.
22. SEDUM *Alpinum roſeum minus, viride & ſubhirſutum. H. R. Par.* Small roſe, green and hairy Houſeleek of the Alps.
23. SEDUM *Alpinum ſubhirſutum, folio longiore. H. R. Par.* Hairy Houſeleek of the Alps, with a longer Leaf.
24. SEDUM *Alpinum ſubhirſutum, corona floris purpuraſcente, diſco viridi. H. R. Par.* Hairy Houſeleek of the Alps, with the Borders of a purpliſh Colour, and the Middle green.
25. SEDUM *minus teretifolium luteum. C. B. P.* Small taper-leafed yellow Houſeleek.
26. SEDUM *minus teretifolium alterum. C. B. P.* Another ſmall taper-leafed Houſeleek.
27. SEDUM *longifolium, citrino flore. Mor. H. R, Blæſ.* Long-leafed Houſeleek, with a citron-coloured Flower.
28. SEDUM *minimum luteum, non acre. J. B.* The ſmalloſt yellow Houſeleek, which is not acrid.
29. SEDUM *minimum non acre, flore albo. Raii Hiſt.* The leaſt Houſeleek, which is not acrid, with a white Flower.
30. SEDUM *Alpinum, flore pallido. C. B. P.* Alpine Houſeleek, with a pale Flower.
31. SEDUM *Alpinum, rubro magno flore. C. B. P.* Alpine Houſeleek, with a large red Flower.
32. SEDUM *Hiſpanum, folio glauco acuto, flore albido. Boerh. Ind. alt.* Spaniſh Houſeleek, with a pointed ſea-green Leaf, and a whitiſh Flower.
33. SEDUM *paluſtre ſubhirſutum purpureum. C. B. P.* Hairy purple marſh Houſeleek.
34. SEDUM *echinatum, vel ſtellatum, flore albo. J. B.* Starry Houſeleek, with white Flowers,
35. SEDUM *echinatum, flore luteo. J. B.* Prickly Houſeleek, with a yellow Flower.

The firſt ſort is very common in *England*, being often planted upon the Tops of Houſes, and other Buildings, where being preſerved dry, it will endure the greateſt Cold of our Climate. This is directed by the *College of Phyſicians* to be uſed in Medicine, as a great Cooler. It may be propagated by planting the Off-ſets (which are produced in great Plenty from the old Plants) any time in *Summer*. It requires to be placed very dry; for if its Roots are moiſt, the Plants will rot in cold Weather.

The ſecond, third, fourth, fifth, ſixth and ſeventh Sorts grow in plenty upon Walls in divers Parts of *England*, where they propagate themſelves by their trailing Branches, ſo as in a ſhort Time to cover the whole Place, provided they are not cut off. The ſixth Sort is alſo preſcribed by the *College of Phyſicians* to enter ſome officinal Compoſitions; but the People who ſupply the Markets do commonly ſell the *Wall-pepper* inſtead of this: Which is a very wrong Practice; becauſe the ſixth Sort is a very cold Herb, and is accordingly directed to be put into cooling Ointments: And the *Wall-pepper* is an exceeding ſharp, acrid Plant, (from whence it received the Name of *Wall-pepper*) which renders it contrary to the Intention of the Phyſician; therefore, whoever makes uſe of theſe Plants, ſhould be very careful to have the right; otherwiſe it is better to uſe the common great ſort, in which they are not ſo liable to be impoſed on.

The fifth ſort is a Native of St. *Vincent's Rock* in *Cornwall*, from whence it hath been taken, and diſtributed into the ſeveral Gardens of ſuch Perſons as are curious in preſerving a Variety of Plants.

Theſe Plants are all extreme hardy, and will thrive exceedingly, if planted in a dry Soil, and an open Situation, where they will propagate themſelves by their trailing Branches, which take Root wherever they touch the Ground.

The eighth and ninth ſorts do propagate themſelves by Off-ſets, in the Manner as the common ſort; though the eighth throws off the young ones from the Top of the old Plants, which falling on the Ground take Root, and thereby are increaſed very plentifully. Theſe are both very hardy; and if planted in a dry rubbiſh Soil will thrive, and endure the ſevereſt Cold of our Climate.

The tenth ſort is propagated by planting Cuttings during any of the *Summer* Months, which ſhould be laid in a dry Place a Fortnight after they are cut from the old Plants, that their wounded Plants may heal over before they are planted, otherwiſe they are ſubject to rot. Theſe ſhould be planted in Pots filled with light, freſh, ſandy Earth, and placed in a ſhady Situation, (but not under the Drip of Trees) obſerving to give them now and then a little Water, when the Earth is dry: But you muſt be very careful not to let them have too much Moiſture, which will rot them.

When they have taken Root, they may be removed into a more open Situation, placing them amongſt other exotick Plants, in a Place where they may be defended from ſtrong Winds, in which Situation they may remain until *Autumn*, when they muſt be removed into the Conſervatory, to be preſerved from Cold in *Winter*, which will deſtroy them. Though they do not require any artificial Heat, but only to be protected from Froſt, yet do they require to have as much free Air as poſſible in mild Weather: therefore the beſt Way of preſerving theſe Plants is to have an airy Glaſs-caſe, in which many ſorts of *Ficoides's*, and other ſucculent Plants, may be intermixed with theſe, where they will thrive much better than if placed amongſt *Oranges*, *Myrtles*, and other Trees in a Green-houſe; becauſe the Perſpiration of thoſe Trees renders the Air of the Place damp; and when the Houſe is cloſely ſhut up, this Air is often rancid, which being imbibed by the *Houſeleeks*, will cauſe their Leaves to fall off, and the Plants will decay ſoon after; whereas in an open airy Glaſs-caſe, where there are none but ſucculent Plants, there will never be near ſo much Damp in the Air; and in ſuch Places they will thrive and flower almoſt every *Winter*, when the Plants have gotten ſufficient Strength. Theſe Plants, in moiſt Weather, will ſend forth long Roots from their Branches, four or five Feet from the Ground: And if the Earth is placed near to theſe Roots they will ſtrike into it, and the Branches may be afterwards ſeparated from the old Plants.

The eleventh ſort is a Variety of the tenth, which was accidentally obtained in the Gardens of the late Dutcheſs of *Beaufort* at *Badmington*, from a Branch which broke off from one of the plain ſort of *Houſeleek* Trees by Accident, and being planted in Lime-rubbiſh afterwards, became beautifully variegated; from which Plant there have been vaſt Numbers raiſed, and diſtributed into many curious Gardens, both at home and abroad. This is propagated in the ſame Manner as the former, and requires the ſame Management in *Winter:* But the Soil in which it is planted ſhould be one half freſh ſandy Soil, and the other half Lime-rubbiſh and Sea-ſand, equally mix'd, in which it will thrive much better than in a rich Soil: You muſt alſo be very careful not to give it too much Water in *Winter*, which will cauſe it to caſt its Leaves and decay. With this Management theſe Plants will grow to be eight or ten Feet high, and will produce beautiful Spikes of Flowers every Year, which are commonly in Beauty in *Winter*, and are thereby more valuable for coming at a Seaſon when few other Plants do flower. Sometimes theſe Plants will produce ripe Seeds, which, if permitted to fall upon the Earth of the Pots, will come up the *Summer* following, from whence a great Stock of the Plants may be produced; though as they do eaſily take Root from Cuttings, there will be no occaſion to propagate them any other Way.

The twelfth ſort ſeldom produces any ſide Branches, but grows up to one ſingle large Head, with very large Leaves. This is only propagated from Seeds; for when the Plants produce their Flowers, they always decay ſo ſoon as the Seed is ripe: Therefore the Seed ſhould be either ſown in Pots filled with light, ſandy Earth as ſoon as it is ripe, or permitted to ſhed upon the Pots where they grew; which muſt be ſheltered from the Froſt in *Winter*; and the *Spring* following the young Plants will come up in Plenty, when they ſhould be tranſplanted into Pots filled with freſh, light Earth, and expoſed in *Summer* with other exotick Plants, in ſome well-ſheltered Situation, where they may remain until *October*, when they ſhould be houſed with the foregoing Sorts, and managed in the ſame Manner as hath been directed for them. Theſe Plants will flower in four or five Years from Seed, provided they are well managed; after which (as was before ſaid) they uſually decay; therefore it is neceſſary to have a Succeſſion of young Plants, that there may be annually ſome to flower.

The thirteenth and fourteenth ſorts are of ſmaller Growth: Theſe do rarely riſe above ſix Inches high, but ſend forth a great Quantity of Heads from their Sides; which, if taken off and planted in freſh, light, ſandy Earth, will take Root, and make freſh Plants, which may be preſerved in Pots, and houſed in *Winter* with the other Sorts before-mentioned, and require to be treated in the ſame Way.

The fifteenth ſort grows to be ſhrubby, and may be propagated by planting the Cuttings, in the Manner directed for the Tree *Houſeleek*, and muſt alſo be houſed in *Winter*, and treated in the ſame Manner as hath been already directed for that ſort.

Theſe are all of them very ornamental Plants in the Green-houſe, and add greatly to the Variety, when placed amongſt other curious exotick Plants.

The laſt twenty ſorts of *Houſeleek* are very hardy Plants, which will thrive in the open Air in *England*, and may be eaſily propagated by Off-ſets or Branches, which will readily take Root. Thoſe Kinds which trail on the Ground (as many of theſe do) will puſh out Roots from their Branches, and thereby ſpread themſelves to a great Diſtance. But the thirtyſecond, thirtyfourth and thirtyfifth ſorts are annual Plants, which are only propagated by Seeds; but if their Seeds are permitted to ſcatter on the Ground, the Plants will come up in *Autumn*, and require no other Care, but to clear them from great Weeds, which, if permitted to grow amongſt them, would overthrow and deſtroy the Plants.

Theſe Plants are preſerved in the Gardens of ſome Perſons who are curious in Botany; but are very rarely admitted into other Gardens; tho' they may be very ornamental, when rightly diſpoſed. For there are no Plants ſo proper to plant on the Walls of Ruins, or other ruſtick Buildings, where they will thrive without any Trouble, and endure the greateſt Drought, and are never injured by Froſts. And as there is a great Variety of *Species*, which differ greatly from each other, not only in their Flowers, but alſo in the whole Face of the Plants; ſo they will afford an agreeable Variety, if they are properly diſpoſed. In planting of theſe Plants, there is no other Care required but to lay a little moiſt Earth on the Joints of the Walls or Buildings, where they are deſigned to grow, and therein to plant ſome of the Plants in ſmall Bunches, which will ſoon take Root, and in one Year's Time will ſpread to a conſiderable Diſtance. The beſt Seaſon for this Work is a little before *Michaelmas*, that the Plants may be rooted before the hard Froſt comes on. The annual Kinds will alſo grow in the ſame Manner, and will ſhed their Seeds and maintain themſelves without any Trouble, when they are once fixed in the Place. Theſe ſorts will moſt of them grow from the Joints of Walls, which are perpendicular, where ſcarce any other Plants will live; which renders them more valuable, eſpecially as they are ſo eaſily propagated.

The eighteenth, twentyfifth and twentyſixth ſorts produce long Branches, which hang down from the Walls where they grow; therefore ſhould be diſpoſed near the Edges of Buildings, or on the Tops of ruſtic Houſes, and near the Sides, where they will trail, and make a pretty Appearance.

The twentyeighth, twentyninth and thirtyſecond ſorts have the Appearance of the Stone-crop; theſe have ſhort Branches, and ſmall Leaves, producing their Flowers on the Tops of the Shoots, which are ſeldom above three or four Inches high, but ſpread and form into cloſe large Bunches; and where they ſcatter their Seeds, if there is but a ſmall Share of Earth, the Plants will come up, and multiply ſo faſt as to cover the Top of a Houſe in a few Years.

The ſixteenth, ſeventeenth, nineteenth, twentieth, twentyfirſt, twentyſecond, twentythird, twentyfourth, twentyſeventh, thirtieth, thirtyfirſt and thirtythird ſorts, grow in cloſe Heads, ſomewhat like the common *Houſeleek*, and are propagated by Off-ſets in the ſame Manner: Theſe may be diſpoſed on the Tops of Walls and Buildings, intermixed with the common ſorts of *Houſeleek*, where they will make a pretty Diverſity, being very different in their Appearance, and producing a great Variety in their Flowers.

SEED. The *Seed* of a Plant conſiſts of an Embryo, with its Coat or Cover. The Embryo, which contains the whole Plant in Miniature, and which is called the *Germ* or *Bud*, is rooted in the *Placenta* or *Cotyledon*, which makes the

Coat, or *Involucrum*, and ſerves the ſame Purpoſes as the *Secundines*, *i. e.* the *Chorion* and *Amnis* in Animals.

The *Placenta* or *Cotyledon* of a Plant is always double; and in the Middle and common Centre of the two is a Point or Speck, which is the Embryo or *Plantule*. This *Plantule* being acted on, and moved by the Warmth of the Sun and the Earth, begins to expand, and protrudes or ſhoots out its *Radicle* or Root both upward and downward. By this it abſorbs the nutritious Juice from the Earth, and ſo grows and increaſes; and the requiſite Heat continuing, the Growth continues.

Thus, *e. g.* a *Pea* or *Bean* being committed to the Ground, is firſt found to cleave into two Parts, which are, as it were, two Leaves or Lobes of the *Placenta*; and in the Fiſſure appears a Point, which ſhoots out a Root downwards, and a Bud upwards; the firſt ſpreading itſelf in the Soil to catch the Moiſture thereof; and the latter mounting into the Air, and becoming the Stem or Body of the new Plant.

It is very remarkable how the *Plumule* or future Stem ſhould always get uppermoſt, and the *Radicle* or Root be turned downwards, and this too perpendicularly to the Horizon: And not only this, but if, by any external Means, the Stem be diverted from this Perpendicular, and bent, for Inſtance, towards the Earth, inſtead of perſevering in that Direction, it makes an Angle or Elbow, and redreſſes itſelf.

The ſame is obſerved in Trees, &c. blown down, with their Roots, by the Wind; or in thoſe planted in Pots, upon turning the Pot on one Side.

Now the *Seed* from which a Plant ariſes, being the Plant itſelf in Miniature, 'tis eaſy to ſuppoſe, that if it be depoſited in the Ground with the *Plumule* perpendicularly upward, and the *Radicle* downward, the Diſpoſition ſhould be maintain'd in its future Growth.

But it is known, that *Seeds* ſown either of themſelves, or by the Help of Man, fall at Random, or among an infinite Number of Situations of the *Plumule*, &c. the perpendicular one upwards is but one; ſo that in all the reſt, 'tis neceſſary the Stem and Root do each make a Bend, to be able the one to emerge directly upwards, the other downwards. Now what Force is it that effects this Change, which is certainly an Action of Violence?

M. *Dodart*, who firſt took Notice of the *Phænomenon*, accounts for it by ſuppoſing the Fibres of the Stem of ſuch a Nature, as to contract and ſhorten by the Heat of the Sun, and lengthen by the Moiſture of the Earth; and, on the contrary, the Fibres of the Root to contract by the Moiſture of the Earth, and lengthen by the Heat of the Sun.

On this Principle, when the *Plantule* is inverted, and the Root a-top, the Fibres of the Root being unequally expos'd to the Moiſture, *viz.* the lower Parts more than the upper, the lower will contract; and this Contraction be promoted by the lengthening of the upper from the Action of the Sun. The Conſequence whereof will be, the Roots recoiling, inſinuating farther into the Earth, and getting beneath the Body of the Seed.

In a Word: The Earth draws the Root toward itſelf, and the Sun promotes its Deſcent: On the contrary, the Sun draws up the Plume, and the Earth, in ſome meaſure, ſends it towards the ſame.

M. *De la Hire* accounts for the ſame Perpendicularity, by only conceiving the Root to draw a coarſer and heavier Juice; and the Stem a finer and more volatile one. In the *Plantule* therefore we may conceive a Point of Separation, ſuch as, that all on one Side, *e. g.* the radial Part, is unfolded by the groſſer; and all on the other, by more ſubtile Juices.

If the *Plantule* then be inverted, and the Root a-top, as it ſtill imbibes the groſſer and heavier Juices, and the Stem the lighter; the Point of Separation being conceived as the fixed Point of a Lever, the Root muſt deſcend, and at the ſame Time that the volatile Juices imbibed by the Stem, tend to make it mount. Thus is the little Plant turned on its fixed Point of Separation, until it be perfectly erect.

The Plant thus erected, M. *Parent* accounts for the Stem's continuing to riſe in the virtual Direction, thus: The nutritious Juice being arrived at the Extremity of a riſing Stalk, and there fixing into a vegetable Subſtance, the Weight of the Atmoſphere muſt determine it to fix in a virtual Poſition; ſo that the Stalk will have acquired a new Part of Perpendicularity over the reſt; juſt as in a Candle, which held any how obliquely to the Horizon, the Flame will ſtill continue vertical by the Preſſure of the Air.

The new Drops of Juice that ſucceed, will follow the ſame Direction; and as all together form the Stem, that muſt of courſe be vertical, unleſs ſome particular Circumſtance intervene.

And, that whereas the Branches are likewiſe obſerved, as much as poſſible, to affect Perpendicularity; inſomuch, that tho' they be forced to ſhoot out of the Stem horizontally, yet in their Progreſs they erect themſelves: M. *Parent* ſolves this, from the vertical Tendency of the nutritious Juice up the Stem: For the Juice being received in this Direction into the new tender Bud, finds, at firſt, little Reſiſtance; and afterwards, as the Branch grows firmer, it furniſhes a longer Arm of a Lever to act by.

Mr. *Aſtrue* accounts for the perpendicular Aſcent of the Stems, and their redreſſing themſelves when bent, on theſe two Principles:

1. That the nutritious Juice ariſes from the Root to the Top in longitudinal Tubes, parallel to the Side of the Plant, which communicate either by themſelves, or by means of other horizontal Tubes, proceeding from the Circumference of the Plant, and terminated in the Pith.

2. That Fluids contained in Tubes, either parallel or oblique to the Horizon, gravitate on the lower Part of the Tubes, and not all on the upper.

From hence it eaſily follows, that in a Plant, poſited either obliquely or parallel to the Horizon, the nutritious Juice will act more on the lower Part of the Canals than the upper; and by that Means inſinuate more into the Canals communicating therewith, and be collected more copiouſly therein: Thus the Parts on the lower Side will act more on the lower Part, and will receive more Accretion(and be more nouriſhed than thoſe on the upper: The Conſequence whereof muſt be, that the Extremity of the Plant will be obliged to bend upward.

The ſame Principle brings the *Seed* into its due Situation at firſt. In a *Bean* planted upſide down, the Plume and Radicle are eaſily perceived with the naked Eye, to ſhoot at firſt directly for about an Inch; but thenceforth they begin to bend, the one downward and the other upward.

The two *Placentulæ* or *Cotyledones* of a *Seed*, are, as it were, a Caſe to this little tender *Plantule* or Point, covering it up, ſheltering it from Injuries, and feeding it from their own proper Subſtance; which the *Plantule* receives and draws to itſelf, by an infinite Number of little Filaments or Ramifications, called *Funes Umbilicales*, or Navel-ſtrings, which it ſends into the Body of the *Placenta*.

Now when the *Seed* is committed to the Earth, the *Placenta* ſtill adheres to the *Embryo* for ſome time, guards it from the Acceſs of noxious Colds, &c. and even prepares and purifies the cruder Juice the Plant is to receive from the Earth, by ſtraining it, &c. thro' its own Body.

This it continues to do, till the *Placentula* being a little inured to its new Element, and its Root tolerably fixed in the Ground, and fit to abſorb the Juice thereof; it then periſhes, and the Plant may be ſaid to be delivered; ſo that Nature obſerves the ſame Method in Plants, contained in Fruits, as in Animals in the Mother's Womb.

It is very ſurprizing, how many ſorts of *Seeds* will continue good for ſeveral Years, and retain their growing Faculty: whereas, many other ſorts will not grow when they are more than one Year old; which is, in a great meaſure, owing to their abounding more or leſs with Oil, and the Texture of their outward Covering. As for Example; the *Seeds* of *Cucumbers*, *Melons* and *Gourds*, which have thick, horny Coverings, do continue good eight ot ten Years; and *Radiſh*, *Turnip*, *Rape*, &c. with other oily *Seeds* (whoſe Coats, though they are not ſo hard and cloſe as the others) yet abounding with Oil, the *Seeds* will keep good three or four Years: Whereas the *Seeds* of *Parſley*, *Carrots*, *Parſnips*, and moſt other umbelliferous Plants, whoſe *Seeds* are, for the moſt part, of a warm Nature, do loſe their growing Faculty often in one Year, but do ſeldom remain good longer than two Years. But all Sorts of *Seeds* are preſerved beſt, if kept in the Pods or Huſks wherein they grew, So that whoever would ſend *Seeds* to a diſtant Country, ſhould always take Care they are full ripe before they are gathered, and that they are preſerved in their Pods or Huſks, and not ſhut up too cloſely from the Air, which is abſolutely neceſſary to maintain the Principle of Vegetation in the *Seed*, (tho' in a leſs Degree) as to nouriſh the Plant when germinated; as I found by trying the following Experiment, *viz.* Having ſaved a Parcel of freſh *Seeds* of ſeveral Kinds, as *Lettuce*, *Parſley*, *Onions*, &c. I took a Parcel of each Kind and put into Glaſs Phials; theſe I ſtopped down cloſe, and ſealed hermetically, then put them up in a Trunk: The other Parts of the ſame *Seeds* I put into Bags, and hung them up in a dry Room, where they remained a whole Year: and in the following *Spring* I took out a Part of each Parcel of *Seeds* from the Phials, as alſo from the Bags, and ſowed them at the ſame Time, and upon the ſame Bed, where they had an equal Advantage of Sun, Air, *&c.* The Conſequence of this was, almoſt all the *Seeds* which I took out of the Bags grew extremely well; but thoſe which were kept in the Phials did not one come up: After which I ſow'd the remaining Part of the *Seeds* in the Phials, but had not one ſingle Plant from the whole; whereas thoſe preſerved in the Bags grew very well both the ſecond and third Years. And this Experiment was afterwards try'd by one of my particular Friends, with whom the Effect was the ſame as with me. So that thoſe Perſons who ſend *Seeds* to a diſtant Country, ſhould never put them up in Glaſſes, as hath by ſome unſkilful Perſons been directed.

The Earth, which is the natural Nurſe to all *Seeds*, will preſerve them much longer than any other Body, provided they are buried ſo deep as to be beyond the Influence of *Sun* and *Showers*, whereby they are prevented from vegetating. I have known Seeds of ſeveral Plants remain buried three Feet deep above twenty Years, and when turn'd up to the Air have grown as well as freſh *Seeds*; and a particular Friend of mine, ſhew'd me a Spot of Ground which was cover'd with *Corn-ſallet*, the *Seeds* of which he aſſured me had been buried thirty-two Years in that Place; and when turn'd up again to the Air, were as productive as new *Seeds.*

A Method for raiſing ſuch Seeds *which have hard Coats or Shells ſurrounding them, and that have been judged very difficult, if not impoſſible, to be raiſed in* England.

In the Year 1724. I had a Parcel of freſh *Cocoa-Nuts* given me, which was brought over from *Barbadoes:* Part of theſe *Nuts* I diveſted of their outward Coat or Husk, and the other Part I left intire, as I receiv'd them.

Both theſe Parcels I planted in large Pots, fill'd with good freſh Earth, and plunged the Pots into Hot-beds made of Tanners-bark, giving them gentle and frequent Waterings, as the Earth in the Pots ſeem'd to require; but not one out of the whole Number had made any Attempt to ſhoot, as I could perceive; and upon taking them out of the Pots, I found they were rotten.

About four Months after I receiv'd another freſh Parcel of *Cocoa-Nuts* from *Barbadoes*, which I treated in another Manner: from Part of theſe I cut off the Outer-Coat or Husk, and the other Part I left intire, as before: but ſuppoſing it was owing to my planting the other Parcel in Pots, that they did not ſucceed, I made a freſh Hot-bed (with Horſe-dung) and cover'd it over with freſh Earth about eighteen Inches thick, in which I planted the Nuts; obſerving, as before, to ſupply it with convenient Moiſture, as alſo to keep the Hot-bed in an equal Temper of Heat which I was guided to do by a *Thermometer*, graduated for the Uſe of Hot-beds; but, with all my Care, I had no better Succeſs than before, not one of the Nuts making any Eſſay towards ſhooting.

The Year following, I had another Parcel of Cocoa-Nuts given me, which conſidering of my former ill Succeſs, I planted in a different manner, as follows:

Having a Hot-bed, which had been lately made with Tanners-bark, and which was fill'd with Pots of Exotick Plants, I removed two of the largeſt Pots, which were placed in the Middle of the Bed; and opening the Tanners-Bark under the Place where the two Pots ſtood, I placed the two Cocoa-Nuts therein, laying them Side-ways, to prevent the Moiſture (which might deſcend from the Pots) from entering the Hole at the Baſe of the Fruit, and thereby rot the ſeminal Plant upon its firſt germinating.

I then cover'd the Nuts over with the Bark two or three Inches thick, and placed the two Pots over them in their former Station.

In this Place I let the Nuts remain for ſix Weeks; when removing the two Pots, and uncovering the Nuts, I found them both ſhot from the Hole in the Baſe of the Fruit an Inch in Length, and from the other End of the Fruit were ſeveral Fibres emitted two or three Inches in Length.

Upon finding them in ſuch a Forwardneſs, I took them out of the Bark, and planted them in large Pots, fill'd with good freſh Earth; plunging the Pots down to the Rims in Tanners-bark, and covering the Surface of the Earth in the Pots half an Inch with the ſame; ſoon after which, the young Shoots were above two Inches long, and continued to thrive very well.

I communicated this Method to ſome of my Acquaintance, who have try'd it with the ſame Succeſs, and if the Nuts are freſh, ſcarce any of them miſcarry.

This led me to try, if the ſame Method would ſucceed as well with other hard-ſhell'd Exotick *Seeds*; which I could not, by any Method I had before try'd, get to grow; as the *Bonduc* or *Nickar-tree*, the *Abrus* or *Wild Liquorice*, the *Phaſeolus Braſilianus lobis villoſis pungentibus, maximus Hermanni* or *Horſe-eye Bean*, with ſeveral others; and I have found it both a ſure and expeditious Way to raiſe any Sort of hard-ſhell'd Fruits or Seeds.

For the Heat and Moiſture (which are abſolutely neceſſary to promote Vegetation) they here enjoy in an equal and regular Manner: The Tanners-bark (if rightly managed) keeping near an Equality of Heat for ſix Months, and the Water which deſcends from the Pots, when they are watered, is by the Bark detain'd from being too ſoon diſſipated; which cannot be obtain'd in a common Hot-bed, the Earth in ſuch being work'd away by the Water, and thereby leaving the *Seeds* often deſtitute of Moiſture.

Some of theſe *Seeds* I have had ſhoot in a Fortnight's time; which, I am inform'd, would not have ſo done in a Month, in their natural Soil and Climate.

I have alſo found this to be an excellent Method to reſtore *Orange* (or any other Exotick) Trees, which have ſuffer'd by a tedious Paſſage, in being too long out of the Ground; inſomuch that I recover'd two *Orange-trees*, which had been ten Months without either Earth or Water.

Having thus ſet down the general Definition of a Seed, and an Explanation of the Manner how Seeds vegetate; as alſo a Method how to raiſe ſuch exotick Seeds as have hard Covers, which will not vegetate in the ſame eaſy manner, as moſt other ſorts do; it may not be amiſs to add in this place a Table of the ſeveral Sorts of Seeds which are uſually ſown in the *Engliſh* Gardens, and to diſtinguiſh the Sorts which will keep good but a ſhort Time out of the Ground, from thoſe which, if well ſaved, and carefully preſerved, will grow, if kept ſome Years before they are ſown.

The firſt Claſs of Seeds which I ſhall enumerate, is of thoſe which ſhould be ſown in the *Autumn*, ſoon after they are ripe; otherwiſe many of them will not ſucceed, and others of them will often remain in the Ground a whole Seaſon, if they are kept out of the Ground till *Spring*, ſo that a full Year is thereby loſt:

Adonis *or* Flos Adonis, *ſee* Adonis.
Alexanders *or* Aliſſanders, *ſee* Smyrnium.
Anemony *or* Windflower, *ſee* Anemone.
Angelica.
Arſmart the Eaſtern Sort, *ſee* Perſicaria.
Aſh-keys, *ſee* Fraxinus.
Aſphodel *or* Kingſpear, *ſee* Aſphodelus.
Auricula.
Beech-maſt, *ſee* Fagus.
Biſhopſweed *ſee* Ammi.
Chriſtopher-herb, *ſee* Chriſtophoriana.
Ciceli, *ſee* Myrrhis.
Colchicum *or* Baſtard-ſaffron.
Cornſallet, *ſee* Valerianella.
Cornflag *ſee* Gladiolus.
Crocus.
Crown Imperial, *ſee* Corona Imperialis.
Fennel-grant, *ſee* Ferula.
Flower-de-luce, *ſee* Iris.
Fraxinella.
Fritillaria *or* Chequered Tulip.
Gentian, *ſee* Gentiana.
Ground-pine, *ſee* Champæpytis.
Hares-ear, *ſee* Bupleurum.
Hart-wort, *ſee* Bupleurum *and* Seſeli.
Hogs-fennel, *ſee* Peucedanum.
Hornbeam, *ſee* Carpinus.
Hyacinth, *ſee* Hyacinthus.
Juniper, *ſee* Juniperus.
Laſerwort, *ſee* Laſerpitium.
Lily, *ſee* Lilium.
Lily, Aſphodel, *ſee* Lilio-Aſphodelus.
Lily Hyacinth, *ſee* Lilio-Hyacinthus.
Lily Narciſſus, *ſee* Lilio-Narciſſus.
Lovage, *ſee* Liguſticum.
Mandrake, *ſee* Mandragora.
Maple tree, *ſee* Acer.
Maſterwort, *ſee* Imperatoria and Aſtrantia.
Mercury, *ſee* Mercurialis.
Moly.
Muſcari.
Narciſſus *or* Daffodil.
Oak *ſee* Quercus.
Oak of Jeruſalem, *ſee* Chenopodium.

Paſque-flower, *ſee* Pulſatillea.
Piony, *ſee* Pæonia.
Polyanthus, *ſee* Primula Veris.
Ranunculus *or* Crowfoot.
Samphire, *ſee* Crithmum.
Scurvy-graſs, *ſee* Cochlearia.
Seſeli *or* Sermountain, *ſee* Siler.
Snow-drop, *ſee* Narciſſo-lucoium.
Sowbread, *ſee* Cyclamen.
Spiderwort, *ſee* Phalangium.
Spignel, *ſee* Meum.
Star of Bethlehem, *ſee* Ornithogalum.
Staves-acre, *ſee* Delphinium.
Tulip, *ſee* Tulipa.
Turnſole, *ſee* Heliotropium.
Yew-tree, *ſee* Taxus.

In the next Claſs I ſhall enumerate thoſe Sorts of Seeds, which are beſt the firſt *Spring* after they are ſaved, many of which will not grow, if they are kept longer; ſo that whoever deals in Seeds, ſhould deſtroy the Seeds they have remaining after the Seaſon is over, and not ſell them to impoſe on their Dealers to the great Loſs of their Crops, nor keep them to mix with new Seeds, as is too often practiſed.

African Marygold, *ſee* Tagetes.
Agrimony, *ſee* Agrimonia.
Alkanet, *ſee* Anchuſa.
Amaranthoides *or* Globe-Amaranthus.
Aniſe, *ſee* Aniſum.
Aſparagus *or* Spearage.
Balſamina, *ſee* Balſamina.
Baſil, *ſee* Ocymum.
Baſtard-ſaffron, *ſee* Carthamus.
Bay-tree, *ſee* Laurus.
Bean, *ſee* Faba.
Beet, *ſee* Beta.
Blue-bottle, *ſee* Cyanus.
Borrage, *ſee* Borago.
Buckwheat, *ſee* Fagopyrum.
Bugloſs, *ſee* Bugloſſum.
Canterbury-bell, *ſee* Campanula.
Caraway, *ſee* Carum.
Carnation, *ſee* Caryophyllus.
Carrot, *ſee* Daucus.
Caterpillar, *ſee* Scorpioides.
Celery, *ſee* Apium.
Chervil, *ſee* Chærophyllum.
Cheſnut, *ſee* Caſtanea.
Chickling-pea, *ſee* Cicer.
Clary, *ſee* Horminum.
Columbine, *ſee* Aquilegia.
Coriander, *ſee* Coriandrum.
Cranesbill, *ſee* Geranium.
Creſs, *ſee* Naſturtium.
Cummin, *ſee* Cuminum.
Cypreſs, *ſee* Cupreſſus.
Dames-violet, *ſee* Heſperis.
Everlaſting-pea, *ſee* Lathyrus.
Fennel, *ſee* Fœniculum.
Fennel-flower, *ſee* Nigella.
Fenugreek, *ſee* Fœnum Græcum.
Finochia, *ſee* Fœniculum.
Firr, *ſee* Abies.
French-honeyſcukle, *ſee* Hedyſarum.
French-marygold, *ſee* Tagetes.
Goats-rue, *ſee* Galega.
Globe-thiſtle, *ſee* Echinopus.
Gromwel *or* Gray-mil, *ſee* Lithoſpermum.
Henbane, *ſee* Hyoſcyamus.
Hemp, *ſee* Cannabis.
Hollyhock, *ſee* Malva-roſea.
Hyſſop, *ſee* Hyſſopus.
Indian-pepper, *ſee* Capſicum.
Kidney-bean, *ſee* Phaſeolus.
Larch-tree, *ſee* Larix.
Larkſpur, *ſee* Delphinium.
Lavender, *ſee* Lavendula.
Laurel, *ſee* Lauroceraſus.
Leek, *ſee* Porrum.
Lentil, *ſee* Lens.
Love-apple, *ſee* Lycoperſicon.
Lupine, *ſee* Lupinus.
Lychnis *or* Catchfly.
Mad--apple, *ſee* Melongena.
Mallow the Venetian, *ſee* Ketmia.
Marjoram, *ſee* Majorana.
Marvel of Peru, *ſee* Jalapa.
Marygold, *ſee* Caltha.
Millet, *ſee* Milium.
Mullein, *ſee* Verbaſcum.
Moth-mullein, *ſee* Blattaria.
Navew, *ſee* Napus.
Oil-nut *or* Palma Chriſti, *ſee* Ricinus.
Roman-nettle, *ſee* Urtica.
Onion, *ſee* Cepa.
Orach, *ſee* Atriplex.
Origany, *ſee* Origanum.
Panic, *ſee* Panicum.
Parſley, *ſee* Apium.
Parſnip, *ſee* Paſtinaca.
Peaſe, *ſee* Piſum.
Pine, *ſee* Pinus.
Pink, *ſee* Caryophyllus.
Poppy, *ſee* Papaver.
Purſlain, *ſee* Portulaca.
Radiſh, *ſee* Raphanus.
Rape, *ſee* Napus.
Rue, *ſee* Ruta.
Savory, *ſee* Satureia.
Scabious, *ſee* Scabioſa.
Skirret, *ſee* Siſarum.
Snails, *ſee* Medica.
Snapdragon, *ſee* Antirrhinum.
Spinarch, *ſee* Spinarchia.
Stock Gilly-flower, *ſee* Leucoium.
Succory, *ſee* Cichorium.
Sun-flower, *ſee* Corona-ſolis.
Thyme, *ſee* Thymus.
Tobacco, *ſee* Nicotiana.
Trefoil, *ſee* Trifolium.
Turnep, *ſee* Rapa.
Venus Looking-glaſs, *ſee* Campanula.
Venus Navelwort, *ſee* Omphalodes.
Vetch, *ſee* Vicia.
Woad, *ſee* Iſatis.
Walflower, *ſee* Leucoium.

The next Claſs of Seeds are ſuch as may be kept two Years, and will not be the worſe, provided they are well ſaved. Tho' theſe are equally good for Uſe the firſt Year.

Amaranthus *or* Flower-gentle.
Citrul *or* Water-melon, *ſee* Anguria.
Cabbage, *ſee* Braſſica.
Clover, *ſee* Trifolium.
Colliflower, *ſee* Braſſica.
Convolvulus *or* Bindweed.
Endive, *ſee* Endivia.
Flax, *ſee* Linum.
Indian Flowering-reed, *ſee* Cannacorus.
La-lucern, *ſee* Medica.
Lavender, *ſee* Lavendula.
Lettuce, *ſee* Lactuca.
Melilot, *ſee* Melilotus.
Muſtard, *ſee* Sinapi.
Sorrel, *ſee* Acetoſa.

The third Claſs of Seeds are ſuch as may be kept three Years or more, and will grow very well afterward, provided they are well ſaved; and ſome of the Sorts are generally preferred for being three Years old, particularly the *Cucumber* and *Melon* Seeds; becauſe when the Seeds are new, the Plants grow too vigorous, and produce a ſmall Quantity of Fruit: but it is not proper to keep theſe longer than three Years, notwithſtanding they will grow at eight or nine Years old; becauſe when the Seeds are old, the Plants will be weak, and the Fruit which they produce will be ſmall:

Amaranthus *or* Flower-gentle.
Cabbage, *ſee* Braſſica.
Cedar of Libanus, *ſee* Cedrus, *if kept in the Cones.*
Cucumber, *ſee* Cucumis.
Gourd, *ſee* Cucurbita.
Lettuce, *ſee* Lactuca.
Melon, *ſee* Melo.
Pumpio, *ſee* Pepo.
Savoy, *ſee* Braſſica.
Semnel *or* Squaſh, *ſee* Melopepo.
Water Melon, *ſee* Anguria.

The following is a Liſt of ſuch Seeds, as do frequently remain in the Earth a whole Year, eſpecially if they are ſown in the *Spring* of the Year; ſo that whenever the Plants do not come up the firſt Year, the Ground ſhould remain undiſturbed till the following *Spring*, (but muſt be kept clear from Weeds) when the Plants will come up:

Adonis *or* Flos Adonis.
Alaternus.
Alexanders, *ſee* Smyrnium.
Angelica, *ſee* Valerianella.
Corn-ſallet Fennel, *ſee* Fœniculum.
Fraxinella *or* white Dittany.
Grom-well *or* Gray-mill, *ſee* Lithoſpermum.
Hareſear, *ſee* Bupleurum.
Hartwort, *ſee* Bupleurum.
Hawthorn, *ſee* Meſpilus.
Hogs-fennel, *ſee* Peucedanum.
Holly, *ſee* Aquifolium.
Juniper, *ſee* Juniperus.
Laſerwort, *ſee* Laſerpitium.
Lovage, *ſei* Liguſticum.
Maple *ſee* Acer.
Maſterwort, *ſee* Aſtrantia.
Mercury, *ſee* Mercurialis.
Moly.
Piony, *ſee* Pœonia.
Seſeli *or* Sermountain, *ſee* Siler.
Spignel, *ſee* Meum.
Staves-acre, *ſee* Delphinium.
Turnſole, *ſee* Heliotropium.
Yew, *ſee* Taxus.

If the Seeds mentioned in this Liſt are ſown after they are ripe, many of the Sorts will come up the following *Spring*; but whenever they fail ſo to do, there will be no Danger of their growing the following Year, provided the Seeds were good; therefore People ſhould not deſpair of them the firſt Year. Moſt of the *Umbelliferous* Plants have this Property of remaining in the Ground ſeveral Months, and ſometimes a whole Year, before the Plants appear; therefore they ſhould be managed accordingly, by ſowing their Seeds on a Border, which can be ſuffered to remain undiſturbed till the Plants come up. There are ſome particular ſorts of Seeds, which I have known remain in the Ground eighteen Months, and ſometimes two Years; after which Time the Plants have come up very well; of theſe Sorts are the *Morina*, *Tribulus terreſtris*, *Staveſacre*, *Mercury*, and ſome others; but as they do not conſtantly remain ſo long in the Ground, ſo there can be no Certainty of the Time when the Plants will appear.

The Rules here laid down, concerning the Length of Time which Seeds may be kept out of the Ground, and prove good, will in general be found true, being drawn up from ſeveral Years Experience, having taken Notes every Year from the Times of ſowing great Varieties of Seeds, to the Appearance of the Plants above Ground. And in this, I have obſerved ſuch Oddneſs in the Growth of Seeds, as is not to be accounted for; as that of ſowing Seeds of the ſame Plant for two or three Years ſucceſſively, and not having had one Plant ariſe; and the fourth Year from the remaining Part of the Seeds, I have had ſome Plants come up, notwithſtanding the Age of the Seeds. At other times it has happened, that ſome Seeds have grown the ſame *Spring* they were ſown, and a great Part of them have remained in the Ground till the following *Autumn*, when the Plants have come up; ſo that there have been two different Crops, from the ſame ſowing.

I have alſo tried many Experiments in keeping of Seeds, and find the beſt Method to preſerve them good, is to keep them in moderate Temperature of Warmth, where they may not ſuffer from any Inclemencies in the outward Air, nor have too much Warmth, which will exhale the Moiſture too freely, and cauſe the Seeds to decay ſooner than they otherwiſe would do. This is well known to moſt People who cultivate *Melons*; who, when their Seeds are new, which would occaſion the Plants being too vigorous, and therefore not ſo fruitful, put them into the inner Pocket of their Breeches, which are in conſtant Wear, where they keep them for ſix Weeks or two Months before they ſow them; which will weaken the Seeds, as much as two Years longer keeping in the ordinary Way.

All Sorts of Seeds will keep much longer in their Pods, or outer Coverings, where they can be thus preſerved; becauſe the Covering not only preſerves them from the Injuries of the outward Air, but if the Seeds are not ſeparated from them, they ſupply them with Nouriſhment, and thereby keep them plump and fair. But the Seeds of all ſoft Fruits, ſuch as *Cucumbers*, *Melons*, &c. muſt be cleanſed from the Fruit and Mucilage which ſurrounds them; otherwiſe the rotting of theſe Parts will corrupt and decay the Seeds in a ſhort time.

When Seeds are gathered, it ſhould always be done in dry Weather, when there is no Moiſture upon them; and then they ſhould be hung up in Bags, (eſpecially thoſe which Vermin eat) in a dry Room; in which Situation they will keep good, longer than if they were more cloſely ſhut up, and Air excluded from them.

There are but few People ſo curious as they ſhould be, in ſaving of their Seeds: ſome, for want of Judgment, do not diſtinguiſh the beſt Plants of their Kinds, to let grow for Seeds; and others out of Covetouſneſs, to ſave a great Quantity of Seeds, frequently let a whole Spot of Ground, filled with any particular Sort of Plants, run up to Seed; ſo that the good and bad Plants are ſaved indifferently, which is the Occaſion of the general Complaint of the Badneſs of the Seeds which are commonly vended, and is what the Dealers in Seeds ſhould endeavour to remedy.

In the Tables here ſubjoined, I have given the common *Engliſh* Names of the Seeds, oppoſite to which I have added the *Latin* Names, that the Reader may with Eaſe turn to the ſeveral Articles in the Dictionary; where each Sort is particularly treated of, and Directions are given for their Management.

SEGMENT-LEAVES, are Leaves of Plants divided or cut into many Shreds.

A SEMINARY, is a Seed-plot, which is adapted or ſet apart for the ſowing of Seeds. Theſe are of different Natures and Magnitudes, according to the ſeveral Plants intended to be raiſed therein. If it be intended to raiſe Timber or Fruit-Trees, it muſt be proportionably large to the Quantity of Trees deſigned, and the Soil ſhould be carefully adapted to the various Sorts of Trees. Without ſuch a Place as this, every Gentleman is obliged to buy, at every Turn, whatever Trees he may want to repair the Loſſes he may ſuſtain in his Orchard, Wilderneſs, or larger Plantations; ſo that the Neceſſity of ſuch a Spot of Ground will eaſily be perceiv'd by every one. But as I have already given Directions for the preparing the Soil, and ſowing the Seeds in ſuch a *Seminary*, under the Article of *Nurſery*, I ſhall not repeat it in this Place, but refer the Reader to that Article.

It is alſo as neceſſary for the Support of a curious Flower-Garden, to have a Spot of Ground ſet apart for the ſowing of all Sorts of Seeds of choice Flowers, in order to obtain new Varieties; which is the only Method to have a fine Collection of valuable Flowers; as alſo for the ſowing of all Sorts of biennial Plants, to ſucceed thoſe which decay in the Flower-Garden; ſo that the Borders may be annually repleniſh'd, which without ſuch a *Seminary* could not be ſo well done.

This *Seminary* ſhould be ſituated at ſome Diſtance from the Houſe, and be intirely incloſed either with a Hedge, Wall, or Pale, and kept under Lock and Key, that all Vermin may be kept out, and that it may not be expoſed to all Comers and Goers, who, many times, do Miſchief before they are aware of it. As to the Situation, Soil, and Manner of preparing the Ground, it has been already mention'd under the Article of *Nurſery*, and the particular Account of raiſing each Sort of Plant, being directed under their proper Heads, it would be needleſs to repeat it here.

SEMIFISTULAR FLOWERS, are ſuch whoſe upper Part reſembles a Pipe, cut off obliquely, as in *Ariſtolochy* or *Birth-wort*.

SEMINAL LEAVES, are two plain, ſoft, and undivided *Leaves*, that firſt ſhoot forth from the greateſt Part of all ſown Seeds; which *Leaves* are very different from thoſe of the ſucceeding Plant in Size, Figure, Surface, and Poſition.

SEMINIFEROUS, Bearing or producing Seed.

SENECIO, [ſo call'd of *Seneſcere*, Lat. *to wax old*, becauſe in a hot Climate or Weather it ſoon flouriſhes, and grows old, and the Seed afterwards repreſents the Heads of Old Men. It is alſo call'd *Erigeron*, of ἦρ, *in the Spring*, and γεράω, to *wax old*; q. d. the *Old Man of the Spring*; becauſe it flouriſhes in *Winter*, and ſo becomes old in the *Spring*. It is alſo call'd *Herba Pappa*, becauſe its Seeds are very downy] Groundſel.

The *Characters* are;

It hath a floſculus Flower, conſiſting of many Florets, divided into ſeveral Segments, ſitting on the Embryo, contain'd in an

Empalement, conſiſting of one Leaf, and divided into many Parts, afterwards becoming of a conical Figure: the Embryo afterwards becomes a Seed, furniſh'd with Down; at which time, the Empalement is reflex'd, to make way for the Seeds to eſcape.

The *Species* are;

1. Senecio *minor vulgaris. C. B. P.* Common Groundſel.

2. Senecio *Africanus arboreſcens, folio ſerrato. Boerh. Ind.* African Tree-like Groundſel, with a ſerrated Leaf.

3. Senecio *Virginianus arboreſcens, atriplicis folio. Par. Bat.* Virginian Groundſel-Tree, with an Orach Leaf.

The firſt Sort here mention'd is one of the moſt common Weeds upon Dunghills, old Walls, and Gardens, that we have in *England*; ſo that inſtead of cultivating it, it requires ſome Pains to deſtroy it in Gardens: for if it be ſuffer'd to ſeed in a Garden, (which it ſoon will do, if permitted to ſtand) it will be very difficult to extirpate it. This is ſometimes uſed in Medicine; but its chief Uſe in *England* is to feed Birds.

The ſecond Sort grows to a Shrub of ſeven or eight Feet high, and produces its Flowers, in *Summer* and *Autumn*, at the Extremity of the Branches, in Bunches; which, tho' of no great Beauty, yet ſerves to add to the Variety of Exotick Plants in the Green-houſe. This Plant may be propagated by planting the Cuttings, during any of the *Summer* Months, in a Bed of freſh rich Earth, obſerving to water and ſhade them until they have taken Root; after which they will require no farther Care, but to keep them clear from Weeds until *Auguſt*, when they ſhould be taken up carefully, and planted into Pots fill'd with light rich Earth, and placed in a ſhady Situation until they have taken Root; after which they may be removed to a more open Situation, where they may remain till the latter End of *October*; when they ſhould be removed into the Green-houſe, placing them in the coldeſt Part thereof; for they only require to be ſhelter'd from ſevere Froſt, and muſt have as much free Air as poſſible in mild Weather; and be after refreſh'd with Water: in *Summer* they may be expoſed with *Myrtles*, *Oleanders*, and other hardy Exotick Plants, where they will add to the Variety.

The third Sort doth grow to be a large woody Shrub, about ten or twelve Feet high, but is hardly to be train'd up into a regular Figure; for the Branches are produced ſo irregularly, that it makes but an indifferent Figure in a Garden; but it being a hardy Shrub, it is often preſerved by ſuch as are curious in collecting the various Sorts of hardy Plants.

This may be propagated by planting Cuttings, taken from the tender Wood, in the *Spring* of the Year, obſerving to water and ſhade them until they have taken Root; after which they muſt be carefully kept clear from Weeds, which is all the Management they will require until the ſucceeding *Spring*, when they ſhould be tranſplanted either into the Places where they are deſign'd to grow, or into a Nurſery, where they may be train'd up another Seaſon; tho' it is the beſt Way to plant them where they are to remain, when they are taken from the Bed where they were raiſed, becauſe theſe Plants are with Danger removed, when they are grown very woody.

The beſt Time to remove them is in the Beginning of *April*, juſt before they ſhoot; and they ſhould be placed in a light Soil, and a warm Situation, where they will endure the Cold of our ordinary *Winters* without any Shelter; but in very ſharp *Winters* they are ſometimes deſtroy'd. This Shrub produces its Flowers in *October*, which, although not very beautiful, yet are eſteem'd by ſome, for their coming ſo late in the Seaſon.

SENNA, [ſo call'd of *Sana*, Lat. *Healthy*, becauſe its Leaves reſtore Health.]

The *Characters* are;

The Flower for the moſt part conſiſts of five Leaves, which are placed orbicularly, and do expand in form of a Roſe; the Pointal afterwards becomes a plain, incurved, bivalve Pod, which is full of Seeds, each being ſeparated by a double thin Membrane.

The *Species* are;

1. Senna *Italica, foliis obtuſis. C. B. P.* Italian *Senna*, with blunt-pointed Leaves.

2. Senna *Americana, Liguſtri folio. Plum.* American *Senna*, with a Privet Leaf.

3. Senna *Alexandrina, ſive foliis acutis. C. B. P.* Alexandrian *Senna*, with ſharp-pointed Leaves.

The two firſt *Species* are preſerv'd in ſeveral curious Gardens in *England*; but the third Sort, which is that uſed in Medicine, is at preſent very rare in this Country.

Theſe Plants may be propagated by ſowing their Seeds upon a Hot-bed early in the *Spring*; and when the Plants are come up, they ſhould be tranſplanted into ſmall Pots, fill'd with light freſh Earth, and plunged into a new Hot-bed, obſerving to water them and ſhade them until they have taken Root; after which they ſhould have Air admitted to them, by raiſing the Glaſſes in Proportion to the Warmth of the Seaſon, and the Bed in which they are placed; you muſt alſo obſerve to refreſh them with Water from time to time, as the Earth in the Pots ſhall require; and when the Roots of the Plants have fill'd the Pots, they ſhould be ſhifted into other Pots a Size larger, obſerving to take off the Roots which are matted round the Outſide of the Ball of Earth next the Pot, and then fill up the Pots with the ſame freſh Earth, and plunge them into the Hot-bed again, giving them Air and Water in Proportion to the Warmth of the Seaſon, and the Bed in which they are placed; in this Manner they muſt be treated until *Autumn*, when they muſt be removed into the Stove, and plunged into the Bark-bed, where, during the *Winter* Seaſon, they muſt be carefully preſerved, refreſhing them with Water every three or four Days, according as the Earth in the Pots dries. This Stove ſhould be kept above temperate Heat in *Winter*, otherwiſe the Plants will not live therein. The *Summer* following, the two firſt *Species* will flower, and produce Seed; but the third Sort doth ſeldom flower ſo young; however, in a few Years, if it be rightly managed, it will produce both Flowers and Seeds.

SENNA-SPURIA, Baſtard-Senna.

Doctor *Tournefort*, in his Method, makes the Character of *Senna* to have a flat Pod, for the moſt part incurved; and the Character of *Caſſia* to have ſwelling Pods, and the Seeds ſurrounded with Pulp; ſo that there are many Plants, which agree in the Flower, and outward Appearance, with the *Caſſia* and *Senna*, that by this Method are removed from them; therefore Dr. *Herman* has given the Name of *Senna-Spuria* to theſe Plants.

The *Characters* of which are;

It hath an irregular roſaceous Flower, (which ſomewhat reſembles a Butterfly-Flower) whoſe Pointal afterwards becomes a Pod, having for the moſt part two Rows of Seeds.

The *Species* are;

1. Senna-Spuria *Americana minor herbacea, plerumque hexaphylla, folio obtuſo. Houſt.* Small *American* herbaceous Baſtard-Senna, having for the moſt part ſix obtuſe *Pinnæ*, or Wings, on each Leaf.

2. Senna-Spuria *Americana herbacea, ore gravi, orobi Pannonici foliis mucronatis & hirſutis. Houſt.* Stinking herbaceous *American* Baſtard-Senna, with Leaves like the *Portugal* Bitter-Vetch, which are pointed and hairy.

3. Senna-Spuria *Americana fruteſcens, foliis mucronatis glabris minoribus, ſiliquis teretibus, duplici ſeminum ordine fœtis. Houſt.* Shrubby *American* Baſtard-Senna, with the leaſt ſmooth pointed Leaves, and taper Pods, containing two Rows of Seeds.

4. Senna-Spuria *Americana, plerumque hexaphylla, flore magno, ſiliquâ pentagonâ alatâ. Houſt.* *American* Baſtard-Senna, for the moſt part having ſix Wings to the Leaf, a large Flower, and a five-cornered winged Pod.

5. Senna-Spuria *Americana herbacea, orobi Pannonici foliis rotundioribus, flore parvo, ſiliquis erectis. Houſt.* *American* herbaceous Baſtard-Senna, with rounder *Portugal* bitter-vetch Leaves, a ſmall Flower, and an erect Pod.

6. Senna-Spuria *Americana arborea villoſa, foliis latis mucronatis, ſiliquis articulatis. Houſt.* Hoary *American* tree-like Baſtard-Senna, with broad pointed Leaves, and jointed Pods.

7. Senna-Spuria *Americana arborea, ſiliquis compreſſis anguſtis longiſſimis pendulis. Houſt.* *American* tree-like Baſtard-Senna, with narrow flat Pods, which are very long, and hang downward.

8. Senna-Spuria *Americana tetraphylla herbacea procumbens, ſiliquis hirſutis. Houſt.* *American* four-leav'd herbaceous trailing Baſtard-Senna, with hairy Pods.

9. Senna-Spuria *Americana, ſiliquâ multiplici, foliis herbæ mimoſæ. Houſt.* *American* Baſtard-Senna with many Pods, and Leaves like thoſe of the Senſitive Plant.

10. Senna-Spuria *Americana fruteſcens, mimoſæ foliis, flore parvo, ſiliquis hirſutis, breviſſimis pediculis inſidentibus. Houſt.* Shrubby *American* Baſtard-Senna, with Leaves like

thoſe of the Senſitive Plant, a ſmall Flower, and hairy Pods growing on ſhort Footſtalks.

11. Senna-Spuria *Americana fruteſcens & procumbens, flore maximo, ſiliquis glabris. Houſt.* Shrubby and trailing *American* Baſtard-Senna, with a large Flower, and ſmooth Pods.

12. Senna-Spuria *Americana minima procumbens, foliorum pinnis ſubrotundis, glabra. Houſt.* The leaſt trailing *American* Baſtard-Senna, with roundiſh Wings to the Leaves, which are ſmooth.

13. Senna-Spuria *Americana, foliis herbæ mimoſæ, ſiliquâ ſingulari, floribus pediculis longioribus inſiſtentibus. Sloan. Hiſt.* *American* Baſtard-Senna, with Leaves like thoſe of the Senſitive Plant, and a ſingle Pod ſuſtained by a long Footſtalk.

14. Senna-Spuria *fruteſcens, foliorum pinnis latioribus, caulibus piloſis, ſiliquis longiſſimis pediculis inſidentibus. Houſt.* Shrubby Baſtard-Senna, with broader Wings to the Leaves, a hairy Stalk, and Pods growing on long Footſtalks.

15. Senna-Spuria *minima procumbens, foliorum pinnis ſubrotundis, caule pubeſcente. Houſt.* The leaſt trailing Baſtard-Senna, with roundiſh winged Leaves, and a downy Stalk.

Theſe Plants are all of them Natives of the warm Parts of *America*: ſome of them were diſcovered in *Jamaica*, and the others were found at *Campechy*, and *La Vera Cruz*, by the late Dr. *William Houſton*, who ſent their Seeds to *England*, where many of the Plants are now growing.

They are propagated by Seeds, which ſhould be ſown on a Hot-bed early in the *Spring*; and when the Plants come up, they muſt be frequently watered; and if the Nights ſhould prove cold, the Glaſſes of the Hot-bed ſhould be covered with Mats every Evening, to keep the Bed in a moderate Temperature of Heat: but in the Day-time, when the Sun ſhines warm, the Glaſſes ſhould be raiſed with Stones, to admit freſh Air to the Plants, which will prevent their drawing up weak. When the Plants are about two Inches high, they ſhould be carefully tranſplanted, each into a ſeparate ſmall Pot, filled with light freſh Earth, and plunged into a moderate Hot-bed of Tanners-bark, being careful to ſhade them from the Sun, until they have taken new Root; after which Time they muſt have freſh Air admitted to them every Day, in proportion to the Warmth of the Seaſon; and ſo long as the Nights continue cold, the Glaſſes muſt be every Evening covered with Mats, ſoon after the Sun is gone off from the Bed. Theſe Plants do moſt of them grow in moiſt Places; ſo they ſhould be frequently refreſhed with Water, and in *Summer* they muſt have it given to them plentifully, otherwiſe they will not thrive.

In about five or ſix Weeks after planting, if the Plants have thriven well, they will have filled theſe ſmall Pots with their Roots; therefore they ſhould then be ſhaken out of the ſmall Pots, and their Roots trimmed, and then planted into larger Pots, and plunged again into the Hot-bed. Such of them as may have grown too tall to remain under the Frames, ſhould be plunged into the Tan-bed in the Stove; but the others may be plunged into the former Hot-bed again, after having ſtirr'd up the Tan. As theſe Plants obtain Strength, ſo they ſhould have a larger Share of freſh Air admitted to them; otherwiſe they will draw up very weak, and become very tender, and very ſubject to be infeſted by Inſects, which will render them unſightly, and prevent their Flowering.

The firſt, ſecond, fourth, fifth, eighth, ninth, twelfth, thirteenth and fifteenth Sorts, frequently flower the firſt Seaſon; but if they do not flower pretty early in *Auguſt*, they will not produce ripe Seeds, unleſs they are placed in a warm Stove, and plunged into the Bark-bed; ſo that where this Conveniency is wanting, they muſt be raiſed early in the *Spring*, and brought as forward as poſſible in the *Spring* Seaſon, otherwiſe good Seeds cannot be obtained in this Country.

The third, ſixth, ſeventh, tenth, eleventh and fourteenth Sorts, are abiding Plants, which grow ſhrubby; therefore ſhould be inured to bear a large Share of Air, that they may become hardy in *Autumn*; for theſe may be placed in the dry Stove in *Winter*, where, if they are kept moderately warm, they will thrive and produce their Flowers in plenty. In the *Summer* Seaſon, theſe Plants may be placed abroad in a warm Situation, where they are ſecured from ſtrong Winds; but they muſt be removed into the Stove in *September*, when the Nights begin to grow cold; otherwiſe they will loſe their Leaves, and become very unſightly. Moſt of theſe Plants produce their Flowers in *Winter*, which renders them valuable, becauſe in that Seaſon there are not many Plants which make a better Appearance. The ſeventh Sort will grow to the Height of twelve or fourteen Feet, and will abide many Years. This conſtantly produces Flowers in the middle of *Winter*; which being large, and produced in Cluſters at the Extremity of the Branches, make a fine Appearance at that Seaſon.

SENNA THE BLADDER: *vide* Colutea.

SENNA THE SCORPION: *vide* Emerus.

SENSIBLE PLANT: *vide* Mimoſa.

SEPTEMBER.

Work to be done in the Kitchen Garden.

The Beginning of this Month you muſt prick out your Cauliflower Plants which were ſown the laſt Month, placing them either upon old Cucumber or Melon Beds; for if they are put upon Beds without any Dung under them, the Worms will draw them out of the Ground; but if the Seaſon proves cold, and your Plants are backward, it will be proper to make ſome new Beds with warm Dung, which will bring them forward. The Diſtance which theſe Plants ſhould be allow'd in theſe Beds, is three Inches, Row from Row, and about two Inches aſunder in the Rows, which will be ſufficient Room for them to grow till *October*, when they muſt be tranſplanted again into their *Winter* Beds.

You may now make Muſhroom Beds, in doing of which, you muſt obſerve to make choice of ſuch Dung as hath lain about three Weeks or a Month on a Heap, whereby its great Heat is loſt; and let your Knobs of Spawn be laid to dry in a ſhady Place, three or four Days before you put them into the Bed.

Hough and clean Turnips, and the Spinach, which was ſown the laſt Month, from Weeds, cutting out the Plants where they are too cloſe, obſerving, if poſſible, to do this in dry Weather, otherwiſe the Weeds will take Root again, and be very troubleſome. You ſhould alſo weed the Beds of Onions, Carrots, Cabbage Plants, and Coleworts, which were ſown the laſt Month; for if the Weeds are permitted to grow, they will ſoon over-top the Plants, and ſpoil them.

Earth up your Celery as it advances in Height, obſerving always to do it in dry Weather; and be careful not to earth it above the Hearts of the Plants, becauſe that would prevent its growing tall, and many times occaſion its rotting.

The Beginning of this Month you may ſafely tranſplant moſt Sorts of perennial Aromatick Plants, as Roſemary, Lavender, Stœchas, *&c.* which will take Root again before the Froſt comes on to prevent them.

Continue to ſow ſmall Sallet-herbs, ſuch as Radiſh, Turnip, Creſſes, Muſtard, Chervil, *&c.* but as the Cold increaſes, they ſhould have a warmer Situation, otherwiſe the Morning Froſts will looſen the Ground, and cauſe the Herbs to turn their Roots out, whereby they will be deſtroy'd.

Draw the Earth up about Chardoons, in order to blanch them; but this muſt be done in dry Weather.

Gather all ſorts of Seeds as they ripen, and ſpread them to dry them upon Mats or Cloths; and then beat them out of their Huſks, and put them up in a dry Place until the Seaſons for ſowing of them.

In moiſt Weather you may tranſplant your Colewort Plants, which were ſown in *July*, into the Places where they are to remain till *Spring*: and you ſhould alſo tranſplant your Cabbage Plants which were ſown the Beginning of *Auguſt*, that they may acquire Strength before they are planted out for good.

Tranſplant ſome of your late ſown Endive on Borders under warm Wall, Pales, or Hedges, to ſtand till *February* before it is blanched; and in dry Weather tie up ſuch Endive as is full grown, to blanch it for Uſe.

If the Seaſon ſhould prove dry, you ſhould water your late Crop of Cauliflowers, which are to come the next Month, otherwiſe their Heads will be very ſmall, eſpecially if the Ground be dry.

Continue to keep all your late Crops clear from Weeds; for if they are not well clean'd before the great Rains of *Autumn* fall, it will be difficult to deſtroy the Weeds afterward.

Toward the latter End of this Month you ſhould tranſplant Lettuces of ſeveral ſorts upon warm Borders, where they may remain to cabbage early in the *Spring*; but you may plant them pretty cloſe together at this Seaſon, becauſe if they live thro' the *Winter*, Part of them may be tranſplanted out in the *Spring*, into an open Spot of Ground, where they will grow larger than thoſe left in the Borders, but will not be fit for Uſe ſo ſoon by a Fortnight or three Weeks, which is an Advantage, in having them continue ſo much longer, to ſupply the Table.

You may now cut down the Haulm of Aſparagus, which is beginning to wither, and clear the Weeds off from the Beds into the Alleys, where they ſhould be buried, and the Earth of the Alleys ſhould be laid upon the Beds, to new mould them; and where the Beds want dunging, there ſhould be ſome very rotten Dung taken out of old Cucumber and Melon Beds, and laid upon the Aſparagus Beds, after the Weeds are houghed off, and then covered over with the Earth from the Alleys.

If there ſhould happen much Rain at this Seaſon, your Cauliflower Plants muſt be protected therefrom, otherwiſe it will rot their tender Stems, and decay them in a ſhort Time.

Moſt of your *Summer* Crops being entirely cleared from off the Ground, you ſhould in dry Weather hough and clear the Ground from Weeds, which will preſerve the Ground neat until you ſhall prepare it for freſh Crops.

At the End of this Month you may plant ſome Beans, and ſow ſome early Peas, in warm Borders, where, if they abide the *Winter*, they will produce their Crops early the ſucceeding *Spring*.

Products of the KITCHEN-GARDEN.

Cabbages, Carrots, Artichokes, Parſnips, Potatoes, Shallots, Onions, Leeks, Garlick, Chardoons, Celery, Endive, Cabbage-lettuce of ſeveral Sorts, Scorzonera, Salſafy, Muſhrooms, Cucumbers for pickling, Melons, Kidney-beans, Rouncival Peas, Marrow-fat Peas, Garden Beans planted late, Beets, Turnips, Radiſhes, Sprouts, and all Sorts of young Sallet-herbs.

Work to be done in the FRUIT-GARDEN.

Your Fruits ſhould now be gathered as they ripen; for thoſe which are in Eating this Month ſeldom continue long good; but toward the End of the Month moſt Sorts of *Winter* Fruit will be fit to gather; but you ſhould always ſuffer them to remain as long upon the Trees as the Weather will permit; for when they are gathered too early, their Skins will ſhrivel, and the Fruit will not keep well; and there will be no Danger of their ſuffering upon the Trees until the Mornings begin to be froſty, when you muſt not let the Fruit hang longer, becauſe if the Froſt ſhould pinch their Skins, it would greatly injure them. You muſt always obſerve to gather your Fruit when the Trees are perfectly dry, otherwiſe your Fruit will not keep.

The latter End of this Month you may ſafely tranſplant moſt Sorts of *Summer* Fruit-trees, altho' their Leaves have not yet fallen, ſuch as Cherries, Nectarines, Peaches, Summer Pears and Apples: You may alſo begin to prune Cherries, Peaches, Nectarines, Grapes and Figs, at the End of the Month, eſpecially if their Leaves begin to decay; and by performing this Work early, the Wounds will heal before the cold Weather comes on, and the Garden will be clear from the Litter which is occaſioned by the Leaves falling.

The Grapes of the Vineyard, which are now almoſt ripe, muſt be guarded from Birds, which will make great Havock of them, where they are ſuffered to feed upon them without Moleſtation; and where the Birds have peck'd any of the Grapes, the Flies and Waſps will immediately attack them, and eat them up.

Tranſplant Strawberries, Raſpberries, Gooſberries, and Currants, toward the End of this Month, if the Weather proves moiſt, otherwiſe it will be better to defer it until the next Month.

Your Fruits againſt the Wall of your Forcing-frame muſt now be pruned and trained cloſe to the Wall or Eſpalier, that their Buds may be preparing before the Seaſon for applying the Heat.

Fruits in prime, or yet laſting.

Peaches; The Nivette, Portugal Peach, Purple Alberge, Old Newington, Teton de Venus, Pavy Royal, Admirable, Monſtrous Pavy of Pompone, Catharine, Rumbullion, Malacoton.

Plums; White Pear Plum, Bonum Magnum, Imperatrice, Damſons, and Bullace.

Pears; Poire de Prince, Autumn Bergamot, Swiſs Bergamot, Brute Bonne, Beurre-rouge, Doyenne or St. Michael, Verte-longue, Mouille Bouche d'Automne.

Grapes; The Chaſſelas, White Muſcadine, Red Muſcadine, Black Morillon, Red Morillon, White Morillon, Currant Grape, Parſley-leafed Grape, Black, Red, and White Frontiniacs, Warner's Red Hamburgh, Black Hamburgh, St. Peter or Heſperian Grape, Orleans, Malmſey, Miller Grape, Damaſk Grape, Pearl Grape, Party-colour'd Grape, with ſome others.

Several Sorts of Figs, Walnuts, Filberts, Hazle-nuts; and againſt North Walls, ſome Currants, and Morello Cherries.

Apples; Embroidered Apple, Pearmain, Golden Rennet, Red Calville, White Calville, Courpendu, Aromatick Pippen, Rennet Griſe, with ſome others.

In the Bark-bed, the Anana's or Pine-apple.

Work to be done in the NURSERY.

The Beginning of this Month you may plant Cuttings of Laurel in ſhady Borders, obſerving to water them frequently in dry Weather, which will promote their taking Root; for at this Seaſon there is little Danger of their growing, provided they are duly watered.

You may alſo plant Cuttings of Honeyſuckles, Gooſberries, Currants, and ſeveral other hardy Trees and Shrubs, which will grow from Cuttings; for at this Seaſon they generally ſucceed better than in *Spring*.

The Ground where you intend to plant out your young Stocks, Trees and Shrubs, ſhould now be well dug, (if it was not done the former Month) that the Rain may ſoak into it, and moiſten it before the Trees are planted.

Toward the End of the Month you may tranſplant moſt Sorts of Fruit-trees, Foreſt-trees, hardy Shrubs, *&c.* obſerving to remove thoſe firſt whoſe Leaves are moſt decay'd: But if the Seaſon ſhould prove dry, they muſt be now and then watered, otherwiſe their Bark will ſhrink, and thoſe Trees which are thus early removed, will puſh out new Fibres in a Fortnight or three Weeks time: But theſe Trees ſhould be well ſupported with Stakes, otherwiſe the ſtrong Winds will blow them out of the Ground in *Winter*, and deſtroy their young Roots. You ſhould alſo lay ſome Mulch upon the Surface of the Ground about their Roots, to prevent the Froſt from penetrating the Ground, which would greatly damage the new Fibres; but this need not be done till the froſty Weather begins. The Trees thus managed will be ſo well ſettled before the ſucceeding *Summer*, that dry Weather will not injure them near ſo much as thoſe planted in the *Spring*; for which Reaſon moſt good Nurſery-men chuſe to plant out their Quarters of Stocks for Fruit, Foreſt Trees, and Flowering Shrubs at this Seaſon; becauſe where there are large Quantities, it would be very expenſive to water them. But for very moiſt Land, it will be better to defer this planting till *Spring*, becauſe the Wet in *Winter* will rot the tender Fibres of new-planted Trees.

Work to be done in the FLOWER-GARDEN.

Dig the Borders of your Flower-garden, and, if they require it, add ſome freſh Earth, or very rotten Dung to them, and plant all Sorts of hardy Flowers therein, obſerving to mix them in ſuch a manner, that there may be a regular Succeſſion of Flowers throughout the Seaſon, in the different Parts of the Garden.

Now is the Time for tranſplanting your biennial and perennial Flowers, which were ſown in the Flower-nurſery, into the Borders of the Pleaſure-garden, where they are deſigned to flower.

Your Layers of Pinks, Carnations and Sweet-Williams, which have not been tranſplanted from the old Roots the former Month, ſhould be no longer deferred; becauſe if they are not planted early in *September*, they will not have Time enough to take Root before the froſty Weather comes on, ſo that they will be in Danger of ſuffering thereby.

Plant Early Tulips in a warm Situation, where they may be defended from cold Winds, in which Places they will flower in *March*, or earlier, according as the Seaſon is more or leſs favourable.

You muſt now plant your choice Hyacinth Roots; in doing of which, you ſhould take the Earth out of the Bed about ſix Inches deep: then make the Bottom level, and draw the Lines acroſs at the Diſtance which the Roots are to be placed, that they may ſtand in Rows at equal Diſtances, and then place the Roots exactly in the Middle of each Square, and lay the Earth on them gently, being careful not to diſplace the Roots; the Beds muſt be fill'd up about five Inches thick with Earth, above the Top of the Bulbs.

Your Box-edgings which are grown too thick, ſhould now be taken up and parted, and planted down again; and thoſe Edgings which were planted the laſt Seaſon, and have not ſucceeded well, may now be repaired.

Prepare your Beds for the choice Anemonies, Ranunculus's, and Tulips, the Beginning of this Month, if it was not done the laſt; for the Earth ſhould be allowed ſome Time to ſettle, before the Roots are planted, otherwiſe it will ſettle unequally afterwards, when there will be Danger of loſing the Roots in thoſe Places where the Beds do ſettle in Holes, becauſe the Wet will be detained there, which will rot them.

The Beginning of the Month you ſhould plant ſome of your ordinary double Anemonies in warm Borders, where they may be ſcreened from cold Winds, in which Places they will flower early in the *Spring*, provided the Seaſon proves favourable.

Slip and plant out Polyanthus's, Primroſes, London Pride, Thrift, and all Sorts of hardy fibroſe-rooted Plants, which are propagated by parting their Roots; obſerving to cloſe the Earth faſt to their Roots when you plant them, otherwiſe the Worms will draw them out of the Ground.

Cut down the Stalks of ſuch Flowers as are decay'd, and if you do not tranſplant them, dig the Ground about them, and add ſome rotten Dung or freſh Earth to the Borders, which will greatly ſtrengthen their Roots.

You may yet ſow the Seeds of Iris's, Tulips, Crown Imperials, Hyacinths, Fritillaria's, Colchicums, Cyclamens, Ranunculus's, Anemonies, and moſt other bulboſe or tuberoſe-rooted Flowers, though it were better if done the Middle of the laſt Month, eſpecially if the Seaſon was moiſt, otherwiſe it is as well this Month, provided it be done early. Theſe Seeds ſhould be ſown in Pots or Tubs, filled with light freſh Earth, and the Seeds ſhould be ſown pretty thick, obſerving not to cover them too thick with Earth, eſpecially the Ranunculus's and Anemonies, whoſe Seeds are very thin, and ſubject to rot, if buried too deep. Theſe Pots muſt be placed to have the Morning Sun until the Beginning of the next Month, when they muſt be removed into a warmer Situation. You muſt alſo obſerve, if the Seaſon ſhould prove dry, to refreſh them gently with Water.

Sow the Seeds of Auricula's and Polyanthus's, in Pots or Boxes of light rich Earth, being very careful not to bury the Seeds too deep, which often deſtroys them, or at leaſt will cauſe them to remain in the Ground until the ſecond *Spring*, before the Plants will come up.

Toward the latter End of the Month, you may plant your choice Anemonies, Ranunculus's, and Tulips, obſerving always to do it in ſhowry Weather, when the Earth is not over dry; for if it ſhould continue dry Weather any conſiderable Time after the Roots are planted, they will grow mouldy, and decay. Theſe Roots muſt be planted about four Inches aſunder, and the Anemonies and Ranunculus's ſhould be covered about two Inches with Earth, over the Top of their Roots; but the Tulips ſhould have at leaſt ſix Inches of Earth above their Roots, which will cauſe them to flower very ſtrong.

If the Seaſon ſhould prove very wet, you ſhould ſhelter your Pots of choice Auricula's and Carnations therefrom, or elſe lay the Pots down on one Side, that the Wet may run off; for great Rains at this Seaſon will fill the Mould in the Pots ſo full of Moiſture, that it will not be dry again before *Winter*, and ſo will rot your choice Flowers.

Toward the End of the Month you may tranſplant moſt Sorts of hardy flowering Trees and Shrubs, which will ſucceed better at this Seaſon than in the *Spring* upon dry Grounds, and will not require ſo much Watering the following *Summer*; for they will at this Seaſon take Root in a ſhort Time, and ſo being well rooted before the Drought of the *Spring* comes on, there will be little Danger of their miſcarrying thereby.

This is a proper Seaſon for parting and tranſplanting all the Sorts of flag-leafed Iris's, that they may be well rooted before the *Spring*, otherwiſe they will not flower well the following *Summer*. You may alſo part the Roots of the early flowering After's, and Virga Aurea's, which are beginning to wither, and plant them out into large Borders, allowing them proper Room, otherwiſe their Roots will ſpread over whatever Plants do grow near them.

Plants now in Flower in the PLEASURE-GARDEN.

Annual Stock-gillyflowers, Scabious's, Sweet-ſultan, Marvel of Peru, Female Balſamine, China Pinks, Africans, French Marygolds, Hollyhocks, Chryſanthemums, Capſicums, Lupines of ſeveral Sorts, Sweet-ſcented Peas, Tangier Peas, Double Ptarmica or Sneezingwort, True Saffron, Carthamus or Baſtard Saffron, Autumnal Crocus's, Cyclamens, Colchicums, Autumnal Hyacinth, After's of ſeveral Sorts, five or ſix Sorts of Golden Rod, Double Sopewort, Double Camomile, Larkſpurs, Tree Primroſe, Polyanthus's, Spiderwort, Auricula's, Snap-dragon, Venus Looking-glaſs, Lychnis's, Campanula's, Gentianella Autumnalis, Scarlet Bean, Oriental Perſicaria, Stramoniums, Amaranthoides, Xeranthemums, Jacea's, Oriental Mallow, Lavaterra, Dwarf Annual Stock, Ketmia Veſicaria, ſeveral Sorts of Sun-flower, Elychryſums, Red Garden Valerian, with ſome others.

Hardy Trees and Shrubs now in Flower.

Jaſmine, Monthly Roſe, Muſk Roſe, Paſſion Flower, Arbutus's, Pomegranate with double Flowers, Shrub Cinquefoil, Mallow Tree, Althæa Frutex, Ketmia Syriaca, Lauruſtinus, Honeyſuckles, Scorpion Senna, with ſome others.

Work to be done in the GREEN-HOUSE *and* STOVE.

Your tender Sorts of ſucculent Plants, which were removed out of the Stove in *Summer*, muſt now be carried in again, eſpecially if the Seaſon proves wet, or the Nights cold; for by the Favourableneſs of the Weather theſe Plants are ſometimes permitted to remain abroad until the End of this Month: when at other Times the Weather will oblige you to carry them in at the Beginning of the Month; for much Wet is very prejudicial to them, and a ſmall Morning Froſt would deſtroy them; therefore you muſt be directed by the Seaſon when to remove your Plants into the Houſe.

If the Bark-beds in which your Pine-apples are plunged, have loſt their Heat, they ſhould be refreſhed by ſtirring the Bark up with a Dung-fork, and adding ſome freſh Bark thereto, which will renew the Heat; and if the Nights prove cold, the Glaſſes ſhould be carefully covered, that the Plants may be kept in a growing State; for it is better to keep them in the Bark until the Middle of *October*, if the Seaſon be not too cold, than to place them in the Stove too early, becauſe whenever you remove them into the Stove, there muſt be Fires made every Night, which will dry the Earth in the Pots ſo faſt, that they will require to be frequently watered, which is not ſo proper for theſe Plants at this Seaſon.

Toward the latter End of this Month you ſhould remove your Orange-trees into the Green-houſe, obſerving always to do it in a dry Day, when the Leaves have no Moiſture upon them; and place them thinly in the Houſe, and as near the Windows as poſſible; for there will be no Occaſion for placing them where they are to ſtand during the *Winter*, until the Myrtles, and other hardy Plants are brought into the Houſe, which need not be done until the End of *October*, unleſs the Nights ſhould prove very cold and froſty; for the longer you can keep theſe Plants abroad, the better they will thrive, and be in leſs Danger of ſuffering in *Winter*.

Your other Kinds of exotick Plants, which are to be placed in the Stove, or in Glaſs-caſes without Fires, muſt be removed into Shelter as the Seaſon grows cold, beginning with the tendereſt firſt, and ſo proceed on to the more hardy Kinds, and never place them in exact Order until they are houſed.

The latter End of this Month, or the Beginning of the next, you ſhould prepare your Tan-beds in the Stove, to receive the tendereſt exotick Plants, which ſhould be placed therein when the Bark begins to warm; but you muſt be careful not to ſuffer the Bark to heat violently, for that would injure the Roots of the Plants, and endanger their Health; becauſe when they receive Damage at this Seaſon, it is almoſt impoſſible to recover them in *Winter*; therefore if you find the Bark too hot, you muſt not plunge your Pots therein until the Heat be abated.

When you place your exotick Plants in the Houſe, you ſhould obſerve to pick off all decayed Leaves from them, and clear their Leaves and Branches from Filth or Inſects, which, if permitted to remain upon them, will greatly injure them; and you muſt ſtir the Earth in the Pots with a ſmall Trowel, being careful not to injure the Roots of the Plants.

Plants now in Flower in the GREEN-HOUSE *and* STOVE.

Oleanders with double and ſingle Flowers, Colutea Æthiopica, Amomum Plinii, Myrtles, Tree Candy-tuft, Scabious Tree, Sedum Arboreſcens, ſeveral Sorts of Ficoides's, Cotyledons, Aloes, Indian Fig, Double Naſturtium, Spaniſh Jaſmine, Arabian Jaſmine, Yellow Indian Jaſmine, Azorian Jaſmine, Blue African Hyacinth, Guernſey Lily, Belladonna Lily, Leonurus, Cytiſſus incanus, Capers, Granadilla's, Senſitive and Humble Plants, Heliotropium arboreſcens, Amber Tree, Apocynums, Viburnums, Abutilons, Fritillaria Craſſa, Canna Indica, Bean Caper, Indian Arrowroot, African Alcea, African Groundſel Tree, Indigo, Palma Chriſti, Spurges, Euphorbium, Phyſick-nut, Elychriſums, Guidonia, Papaw, Turnera, Stramoniums, Alaternoides Africana Ericæ folio, Anemonoſpermos's, Solanums, Spartiums, Doria's, Lotus Hæmorrhoidalis, Cardinal's Flower, Caſſia's, Senna Alexandrina, Senna Spuria, Ketmia's, Phytolacca fructu minore, with ſome others.

SEPTIFOLIOUS PLANTS, are ſuch as have juſt ſeven Leaves.

SERJANIA.

This Name was given to this Genus of Plants by Father *Plumier*, who diſcovered them in *America*, in Honour to the Reverend Father *Philip Serjeant*, who was of the Order of the *Minims*, and a Perſon well verſed in the Knowledge of Botany and Phyſic.

The *Characters* are;

It hath a roſe-ſhaped Flower, conſiſting of four or more Leaves, which are placed in circular Order; from whoſe Flower-cup ariſes the Pointal, which afterward becomes a Fruit compoſed of three Cells, having three Wings, and each Cell containing one round Seed.

The *Species* are;

1. SERJANIA *ſcandens, polyphylla & racemoſa. Plum. Nov. Gen.* Climbing and branching Serjania, with many Leaves.
2. SERJANIA *ſcandens enneaphylla & racemoſa. Plum. Nov. Gen.* Climbing and branching Serjania, with nine Leaves.
3. SERJANIA *ſcandens, triphylla & racemoſa. Plum. Nov. Gen.* Climbing and branching Serjania, with three Leaves.

Theſe Plants were found by the late Dr. *William Houſtoun*, at *La Vera Cruz* and *Campechy*; where they grow to a great Height, whenever they grow near large Trees to ſupport them; for they have Tendrils by which they faſten themſelves to whatever Trees grow near them.

They may be propagated either by Seeds, or from Layers; for if their Branches are laid in the Ground in the Spring, they will make good Roots before *Winter*; ſo may be taken off from the old Plants, and planted into ſeparate Pots.

If they are propagated by Seeds, (which muſt be obtained from the Countries of their natural Growth, for they do not perfect them in *England*) they muſt be ſown on a Hot-bed early in the *Spring*; and when the Plants are come up, and are fit to tranſplant, they ſhould be each put into a ſeparate Pot, filled with light freſh Earth, and plunged into a moderate Hot-bed of Tanners-bark, obſerving to ſhade them until they have taken new Root; after which Time they ſhould have a large Share of free Air admitted to them every Day, when the Weather is warm, otherwiſe they will draw up too weak. As theſe Plants advance ſo their Branches muſt be ſupported by Stakes, to prevent their trailing over other Plants, which grow near them; and when their Shoots are too tall to remain under the common Frames, they ſhould be ſhifted into larger Pots, and plunged into the Bark-bed in the Stove; where they muſt be placed on the Backſide, with *Granadilla's* and other climbing Plants, which ſhould be ſupported by an Eſpalier, on which they will climb to the Top of the Stove, and make a Variety, as their Leaves always remain green.

In the *Summer* Seaſon, when the Weather is warm, they ſhould have a great Share of free Air admitted to them, by drawing down the Glaſſes of the Stove every Day; but they are too tender to thrive in the open Air in *England*, even in the middle of *Summer*; ſo they ſhould be conſtantly kept in Stove, where they ſhould have a moderate Degree of Warmth in winter, in which they will thrive better than in a greater Share of Heat.

SERPYLLUM, [ſo call'd of *ſerpere*, Lat. to *creep*, becauſe while it is growing, it creeps ſo as to over-run whole Mountains] Mother of Thyme.

The *Characters* are;

It hath trailing Branches, which are not ſo woody and hard as thoſe of Thyme, but in every other reſpect is the ſame.

The *Species* are;

1. SERPYLLUM *vulgare majus, flore purpureo. C. B. P.* Greater common Mother of Thyme, with a purple Flower.
2. SERPYLLUM *vulgare minus. C. B. P.* Common ſmaller Mother of Thyme.
3. SERPYLLUM *vulgare, flore amplo. Raii Syn.* Common Mother of Thyme, with a large Flower.
4. SERPYLLUM *citratum. Ger. Emac.* Lemon Thyme.
5. SERPYLLUM *odore juglandis. J. B.* Mother of Thyme ſmelling like Walnuts.
6. SERPYLLUM *vulgare hirſutum. Raii Syn.* Hairy wild Thyme.
7. SERPYLLUM *latifolium hirſutum. C. B. P.* Broad-leav'd hairy wild Thyme.
8. SERPYLLUM *vulgare majus, flore albo. C.B.P.* Greater wild Thyme, with a white Flower.
9. SERPYLLUM *vulgare minus, folio ex albo & viridi vario. H. L.* Leſſer wild Thyme, with variegated Leaves.

The eight firſt mention'd Sorts do grow wild upon Heaths, and other large open Places, in divers Parts of *England*, where in the *Summer* Time, when they are in Flower, they afford an agreeable Proſpect, and being trod upon, do emit a grateful aromatick Scent. Their common Places of Growth are upon ſmall Hillocks, where the Ground is dry and uncultivated, where in a ſhort Time, they propagate themſelves plentifully, both from Seeds and by their trailing Branches, which take Root at their Joints, and ſo extend themſelves every way.

There are but two of theſe *Species* commonly cultivated in Gardens; *viz.* the *Lemon Thyme*, and that with *ſtriped Leaves*; the firſt for its agreeable Scent, and the other for the Beauty of its variegated Leaves; theſe were formerly planted to edge Borders; but as they are very apt to ſpread, and difficult to preſerve in Compaſs, ſo they are diſuſed at preſent for that Purpoſe.

All theſe do propagate themſelves very faſt, by their trailing Branches, which ſtrike out Roots from their Joints into the Earth, and thereby make new Plants; ſo that from a Root of each, there may ſoon be a large Stock increaſed. They may be tranſplanted either in *Spring* or *Autumn*, and love an open Situation, and a dry undung'd Soil, in which they will thrive and flower exceedingly, and continue ſeveral Years.

SERRATULA, Saw-wort.

The *Characters* are;

It hath a floſculous Flower, conſiſting of ſeveral Florets, divided into many Parts reſting on the Embryo, and contained in a ſcaly Empalement, like to the greater Centaury, from which this differs in having ſmaller Heads, and from the Knapweed in having the Borders of the Leaves cut into ſmall ſharp Segments, the Teeth of a Saw.

The *Species* are;

1. SERRATULA *vulgaris, flore purpureo. C. B. P.* Common Saw-wort with a purple Flower.
2. SERRATULA *flore candido. C. B. P.* Common Saw-wort with a white Flower.
3. SERRATULA *Virginiana, foliis rigidis. Par. Bat.* Saw-wort of *Virginia*, with ſtiff Leaves.
4. SERRATULA *præalta altera, anguſto plantaginis folio. Bocc. Muſ.* The talleſt Saw-wort, with a narrow Plantain-leaf.
5. SERRATULA *præalta centauroides montana Italica. Bocc. Muſ.* The talleſt Saw-wort of the *Italian* Mountains, reſembling Centaury.
6. SERRATULA *Noveboracenſis altiſſima, foliis doriæ mollibus ſubincanis. Par. Bat.* The talleſt Saw-wort of *New York*, with ſoft doria Leaves, which are white on the Underſide.

The firſt and ſecond Sorts are pretty common in the Woods, in divers Parts of *England*, ſo are ſeldom admitted into Gardens; but as they are Plants which will grow in the cloſeſt Shade, they may be introduced to plant under Trees in large Plantations, where they will thrive and flower extremely well, and add to the Variety. Theſe Plants are eaſily propagated by parting of their Roots in *Autumn*, ſo as that they may be well rooted before *Spring*; otherwiſe they will not flower very ſtrong the following Seaſon.

The third and ſixth Sorts are Natives of North *America*, where they are very common in their Woods. Theſe are hardy Plants, and will endure the Cold of our ordinary *Winters* very well; but if they are planted in the full Ground, they ſhould have a moiſt light Soil; otherwiſe they will periſh in dry Weather, unleſs they are duly watered. The third Sort ſeldom riſes above two Feet High in this Country, but the ſixth Sort will ſometimes grow to the Height of five or ſix Feet, if it is planted in a moiſt rich Soil; but this laſt Sort is very late in Flowering, ſo that if the Seaſon proves cold, it many times will not flower in this Country. Theſe are both abiding Plants, which may be propagated by parting of their Roots; the beſt Time for which is in the *Spring*, juſt before they begin to ſhoot; for as theſe continue growing in *Autumn*, until the Froſt puts a Stop to them, it would be dangerous to tranſplant them in *Winter*.

The fourth and fifth Sorts grow wild in the mountainous Parts of *Italy* and *Spain*, but are hardy enough to reſiſt the Cold of this Climate; ſo may be intermixed with the other Sorts, in Woods or under Plantations of Trees, where they will make an agreeable Variety. Theſe Plants may be propagated by Seeds, which ſhould be ſown early in the *Spring* on a Border of freſh Earth; and when the Plants appear, they ſhould be carefully weeded, and in very dry Weather they muſt be frequently watered; which will bring them forward, ſo that they will ſoon be fit to tranſplant. When they are removed, they muſt be planted in a ſhady Border, about ſix Inches apart, and kept duly watered, until they have taken new Root; after which Time they will require no farther Care, but to keep them clear from Weeds, till *Michaelmas*. when they ſhould be tranſplanted where they are deſigned to remain.

SESAMUM, Oily-grain.

The *Characters* are;

The Flowers are produced from the Wings of the Leaves, without any Foot-ſtalk; the Flower-cup conſiſts of one Leaf, divided into five long ſlender Segments; the Flower is of one Leaf, in Shape like thoſe of the Fox-glove; the Pointal, which riſes in the Middle of the Flower, afterwards becomes an oblong four-corner'd Pod, divided into four diſtinct Cells, which are replete without eſculent Seeds.

The *Species* are;

1. Sesamum. *J. B.* Common Oily-grain.

2. Sesamum *alterum, foliis trifidis, Orientale, ſemine obſcuro. Pluk. Phyt.* Another Eaſter Oily-grain, with trifid Leaves, and dark-colour'd Seeds.

3. Sesamum *Orientale trifidum, flore niveo. Hort. Compt.* Eaſtern Oily-grain, with trifid Leaves, and white Flowers.

Theſe three Sorts are often promiſcuouſly cultivated in the Fields of *Syria*, *Egypt*, *Candia*, &c. where the Inhabitants uſe the Seeds for Food; and of late Years theſe Plants have been introduced in *Carolina*, where they ſucceed extremely well: the Inhabitants of that Country make an Oil from the Seed, which will keep many Years, and not take any rancid Smell or Taſte, but in two Years becomes quite mild; ſo that when the warm Taſte of the Seed, which is in the Oil when firſt drawn, is worn off, they uſe it as Sallad Oil, and for all the Purpoſes of Sweet Oil.

In *England* theſe Plants are preſerved in Botanick Gardens, as Curioſities: their Seeds muſt be ſown in the *Spring* upon a Hot-bed; and when the Plants are come up they muſt be tranſplanted into a freſh Hot-bed, to bring them forward; after they have acquired a tolerable Degree of Strength, they ſhould be planted into Pots fill'd with rich light ſandy Soil, and plunged into another Hot-bed, managing them as hath been directed for *Amaranthus's*, to which I ſhall refer the Reader, to avoid Repetition: For if theſe Plants are not brought forward thus in the former Part of the *Summer*, they will not produce good Seeds in this Country; tho' after they have flower'd, if the Seaſon is favourable, they may be expoſed in a warm Situation with other annual Plants. When theſe Plants have perfected their Seeds, they decay, and never continue longer than one Seaſon.

The Seed of the firſt Sort is mention'd in the Liſt of *Officinal Simples* in the *College Diſpenſatory*, but is rarely uſed in Medicine in *England*. From Nine Pounds of this Seed, which came from *Carolina*, there were upwards of two Quarts of Oil produced, which is as great a Quantity as hath been known to be drawn from any Vegetable whatever; and this, I ſuppoſe, might occaſion its being call'd *Oily-grain*.

SESELI, Wild-ſpignel.

The *Characters* are;

It hath a roſe and umbellated Flower, conſiſting of ſeveral Leaves placed in a Circle, and reſting on the Empalement, which afterward becomes a Fruit, compoſed of two long Seeds, which are channelled. To theſe Notes muſt be added, That the Leaves are broader and ſhorter than thoſe of Fennel.

The *Species* are;

1. Seseli *perenne, folio glauco breviori. Vaill.* Perennial Wild-ſpignel, with a ſhorter ſea-green Leaf.

2. Seseli *perenne, folio glauco longiori. Vaill.* Perennial Wild-ſpignel, with a longer ſea-green Leaf.

3. Seseli *quæ ferulæ facie, thapſia ſive Turbith Gallorum. J. B. Boerh. Ind. alt.* Wild-ſpignel, with the Face of Giant-fennel, ſuppoſed to be the Turbith of the *Gauls*.

4. Seseli, *quæ Saxifraga Pannonica. Cluſ. Hiſt. Boerh. Ind. alt.* Wild-Spignel, or the *Portugal* Saxifrage of *Cluſius*.

The three firſt Sorts are abiding Plants, whoſe Roots will continue ſeveral Years; but the fourth Sort is a biennial Plant, which periſhes ſoon after it has perfected its Seeds.

Theſe may be propagated by ſowing of their Seeds, which is beſt done in the *Autumn*; for when the Seeds are ſown in the *Spring*, they frequently lie in the Ground till the next Year, before the Plants will appear; whereas thoſe which are ſown in the *Autumn* always riſe the following *Spring*. Theſe Seeds ſhould be ſown in Drills, about eighteen Inches aſunder, in a Bed of freſh Earth, where they are deſigned to remain; and in the *Spring*, when the Plants come up, they ſhould be thinned where they are too cloſe, leaving them about ſix Inches Diſtance in the Rows; after this the Plants will require no farther Care, but to keep them conſtantly clear from Weeds, and the ſecond Seaſon they will produce Seeds. Theſe Sorts which are permitted to remain after they have ſeeded, ſhould have the Ground gently dug every *Spring* between the Rows, to looſen the Earth; but there ſhould be Care taken not to injure their Roots with the Spade. The Plants love a moiſt Soil, for when they are ſown on a dry Soil, they do not thrive near ſo well, and ſeldom perfect their Seeds, unleſs the Seaſon proves moiſt, or they are duly watered.

SHERARDIA.

This Name was given to this Genus of Plants by Mr. *Vaillant*, who was Profeſſor of Botany at *Paris*, in Honour to Dr. *William Sherard*, who was the moſt famous Botaniſt of the Age.

The *Characters* are;

It hath a labiated Flower conſiſting of one Leaf, which is divided into five Parts at the Brim; the upper Lip being divided into two, and the under Lip into three Parts: the Ovary, which is at the Bottom of the Flower-cup, afterward becomes a dry Capſule, containing two oblong Seeds. To theſe Notes may be added, That the Leaves grow oppoſite by Pairs.

The *Species* are;

1. Sherardia *repens, nodiflora. Vaill. Nov. Gen.* Creeping Sherardia, with Flowers growing in round Heads.

2. Sherardia *repens, folio ſubrotundo craſſo, nodiflora. Vaill. Nov. Gen.* Creeping Sherardia, with a roundiſh thick Leaf, and Flowers collected in round Heads.

3. Sherardia *incana nodiflora. Vaill. Nov. Gen.* Hoary Sherardia, with Flowers collected into round Heads.

4. Sherardia *nodiflora, ſtœchadis ſerrati folii folio. Vaill. Nov. Gen.* Round-flowering Sherardia, with a Leaf like the ſawed-leaved Stœchas.

5. Sherardia *ocymi folio lanuginoſo, flore purpureo. Vaill. Nov. Gen.* Woolly Sherardia, with a Baſil-leaf, and a purple Flower.

6. Sherardia *teucrii folio, flore purpureo. Vaill. Nov. Gen.* Sherardia with a Tree-germander Leaf, and a purple Flower.

7. Sherardia *fruteſcens, teucrii folio, flore cæruleo purpuraſcente ampliſſimo. Vaill. Nov. Gen.* Shrubby Sherardia, with a Tree-germander Leaf, and a large purpliſh blue Flower.

8. Sherardia *teucrii folio, flore coccineo. Vaill. Nov. Gen.* Sherardia with a Tree-germander Leaf, and a ſcarlet Flower.

9. Sherardia *ſpicata, folio anguſto ſerrato, flore cæruleo. Houſt.* Spiked Sherardia, with a narrow ſawed Leaf, and a blue Flower.

10. Sherardia *ſpicata, flore purpureo, ſeminibus majoribus, longioribus & laxius digeſtis. Houſt.* Spiked Sherardia, with a purple Flower, and larger longer Seeds, which are looſely diſpoſed in the Spike.

11. SHERARDIA *verbenæ folio ſubrotundo craſſo, floribus cæruleis, ſpicâ longiſſimâ & craſſiſſimâ. Houſt.* Sherardia with a thick roundiſh vervain Leaf, and blue Flowers, growing in a very long thick Spike.

12. SHERARDIA *foliis oblongis ſerratis, flore cæruleo, ſpicâ longiſſimâ. Houſt.* Sherardia with oblong ſawed Leaves, a blue Flower, and a very long Spike.

13. SHERARDIA *arboreſcens nodiflora, foliis rugoſis & ſerratis, flore purpureo. Houſt.* Tree-like Sherardia, with rough ſawed Leaves, and purple Flowers growing in a round Head.

The firſt of theſe Plants is a Native of *Europe*, ſo will thrive in the open Air in this Country. The Seeds of this Kind ſhould be ſown in the *Spring*, on a Bed of light freſh Earth, in a warm Situation, and where the Plants are deſigned to remain (for they do not bear tranſplanting very well). And when the Plants are come up, they ſhould be thinned ſo as to leave them a Foot aſunder; and if they are kept clear from Weeds, they will require no farther Care. The Branches of this Plant trail on the Ground, and ſend forth Roots from their Joints, whereby they may be propagated; but if they are not confined, they will not produce many Flowers.

All the other ſorts are Natives of the warm Parts of *America*, ſo are too tender to thrive in the open Air of *England*; but as moſt of them are annual, they may be raiſed by ſowing of their Seeds on a Hot-bed; and if the Plants are brought forward early in the *Spring*, they will flower and produce ripe Seeds before *Winter*.

The ſecond ſort was found by Dr. *William Houſtoun*, growing plentifully in *Jamaica*. This Plant trails its Branches on the Ground, emits Roots from the Joint as the former ſort, ſo doth not produce many Flowers.

The fourth ſort was found in great Plenty at *La Vera Cruz*, by Dr. *Houſtoun*, as were the ninth, tenth, eleventh, twelfth and thirteenth ſorts, at *Campechy*, by the ſame Gentleman.

The third, fifth and ſixth ſorts, grow plentifully in *Jamaica*, and ſeveral other Places in the *Weſt-Indies*, from whence I have received their Seeds.

The ſeventh Sort is a very ſpacious Plant which merits a Place in every good Collection of Plants. This produces long Spikes of large blue Flowers, which continue a long Time, and make a fine Appearance. This is alſo an annual Plant, notwithſtanding it has the Epithet of Shrubby given to it; for it always flowers the ſame *Summer* it is raiſed: but if it is not brought forward early in the *Spring*, and conſtantly kept in the Stove or Glaſs-caſe, it will not perfect Seeds in this Country. The Seeds of this Kind were ſent to *England* by Mr. *Robert Millar*, Surgeon, who gathered them near *Panama*.

The thirteenth ſort riſes to be nine or ten Feet high, and hath a woody Stem. This will abide many Years, provided it is preſerved in a Stove in *Winter*. During the *Summer* Seaſon, this ſort may be placed in the open Air in a warm Situation, and in hot Weather muſt be frequently watered; but in *Autumn*, when the Nights grow cold, the Plants muſt be removed into the Stove, and in *Winter* they ſhould have a moderate ſhare of Heat; with which Management the Plants will thrive very well.

All theſe Plants are propagated by Seeds, which ſhould be ſown early in the *Spring* on a moderate Hot-bed; and when the Plants are come up, they ſhould be each tranſplanted into a ſeparate ſmall Pot, filled with light rich Earth, and plunged into a moderate Hot-bed of Tanners-bark, obſerving to ſhade them from the Sun every Day, until they have taken new Root; after which Time they ſhould have a large ſhare of free Air admitted to them in warm Weather, and they muſt be frequently watered. When the Plants have filled theſe Pots with their Roots, they muſt be ſhifted into larger Pots; and if there is Room for the Plants to grow under the Glaſſes of the Hot-bed, without being ſcorched by the Sun, they ſhould be plunged into the ſame Bed again; but if there is not Room, they muſt be placed in the Stove, where they may have Room to grow in Height. In *July* theſe ſorts which are annual, will begin to flower, and their Seeds will ripen the Beginning of *September*.

SICYOIDES, Single-ſeeded Cucumber.

The *Characters* are:

It hath an expanded bell-ſhaped Flower, conſiſting of one Leaf, which is cut into ſeveral Segments at the Brim; of theſe Flowers, ſome are Male, which adhere to no Embryo; and others are Female, which reſt on the young Fruit, which is afterward inlarged to the ſize of an almond Kernel, and is flat and prickly, containing one Seed of the ſame ſhape.

The *Species* are;

1. SICYOIDES *Americana, fructu echinato, foliis angulatis. Inſt. R. H. American* Sicyoides, with a prickly Fruit, and angular Leaves.

2. SICYOIDES *Americana, fructu echinato, foliis laciniatis. Plum. American* Sicyoides, with a prickly Fruit, and jagged Leaves.

Theſe Plants are preſerved in ſome curious Gardens, for the ſake of Variety; but as they have little Beauty, and are not uſeful, ſo they are not much cultivated in *England*. They are both annual Plants, which may be propagated by ſowing of their Seeds in the Beginning of *April*, on a Border of freſh Earth, in the Place where they are deſigned to remain; and in about a Fortnight's Time the Plants will appear; which at firſt are very like Cucumber-plants, and, as they grow, will trail on the Ground, and faſten themſelves to whatever Plants grow near them, by their Tendrils; ſo that they ſhould be either ſown near a Hedge, where they may climb up, or be allowed a conſiderable ſhare of Room, otherwiſe they will run over the Plants which are near them. When the Plants are come up, they will require no farther Care, but to keep them clear from Weeds, and to thin them where they grow too cloſe together. In *June* they will produce their Flowers, and in *Auguſt* their Seeds will ripen, which, if permitted to ſcatter, will produce a Supply of young Plants the following *Spring*, without any Care.

SIDERATION, a Blaſting of Trees or Plants by an Eaſterly Wind, or exceſſive Heat or Drought.

SIDERITIS; [of σίδηρος, *Iron*, q. *Iron-herb*, ſo *Dioſcorides* calls thoſe Herbs that are good againſt Wounds made by the Sword: It is alſo called *Ferrum Matrix*, on the ſame Account. It is alſo called *Herba Judaica*, becauſe the *Jews* in old Time made uſe of this Herb in Medicine] Ironwort.

The *Characters* are;

It is a Plant with a labiated Flower, conſiſting of one Leaf, whoſe upper Lip or Creſt is upright, but the under Lip or Beard is divided into three Parts; out of the Flower-cup riſes the Pointal, attended, as it were, by four Embryo's, which afterwards turn to ſo many oblong Seeds, ſhut up in a Husk, which was before the Flower-cup: To theſe Marks muſt be added, the Flowers growing in Whorles at the Wings of the Leaves, which are cut like a Creſt, and differ from the other Leaves of the Plant.

The *Species* are;

1. SIDERITIS *hirſuta procumbens. C. B. P.* Hairy trailing Ironwort.

2. SIDERITIS *Alpina, hyſſopi folio. C. B. P.* Hyſſop-leafed Ironwort of the Alps.

3. SIDERITIS *Orientalis, phlomidis folio. T. Cor.* Eaſtern Ironwort, with a Phlomis Leaf.

4. SIDERITIS *Anglica, ſtrumoſa radice. Park. Theat.* Engliſh Ironwort, with a ſtrumoſe Root, *commonly called* Clowns All-heal.

5. SIDERITIS *arvenſis rubra. Park. Theat.* Narrow-leafed All-heal *or* Ironwort.

6. SIDERITIS *foliis hirſutis, profunde crenatis. C. B. P.* Ironwort *or* All-heal, with hairy crenated Leaves.

7. SIDERITIS *Hiſpanica erecta, folio anguſtiore. Inſt. R. H.* Upright Spaniſh All-heal, with a narrow Leaf.

8. SIDERITIS *Hiſpanica crenata procumbens, flore albo, major. Inſt. R. H.* Greater trailing Spaniſh All-heal, with a white Flower.

9. SIDERITIS *Hiſpanica bituminoſa anguſtifolia crenata. Inſt. R. H.* Spaniſh All-heal, with a bituminous Scent, and a narrow crenated Leaf.

10. SIDERITIS *Hiſpanica fœtidiſſima glabra, flore purpuraſcente, & comâ caneſcente. Inſt. R. H.* Spaniſh ſtinking ſmooth All-heal, with a purpliſh Flower, and whitiſh Tops.

11. SIDERITIS *Hiſpanica fruteſcens, ſeu lignoſior. Inſt. R. H.* Shrubby or more woody Spaniſh All-heal.

12. SIDERITIS *Pyrenaica hyſſopifolia minima procumbens. Inſt. R. H.* The leaſt trailing hyſſop-leafed All-heal of the Pyrenees.

13. SIDERITIS *montana, trifido folio. Barrel. Icon.* Mountain All-heal, with a trifid Leaf.

they ſhould have a moiſt light Soil; otherwiſe they will periſh in dry Weather, unleſs they are duly watered. The third Sort ſeldom riſes above two Feet High in this Country, but the ſixth Sort will ſometimes grow to the Height of five or ſix Feet, if it is planted in a moiſt rich Soil; but this laſt Sort is very late in Flowering, ſo that if the Seaſon proves cold, it many times will not flower in this Country. Theſe are both abiding Plants, which may be propagated by parting of their Roots; the beſt Time for which is in the *Spring*, juſt before they begin to ſhoot; for as theſe continue growing in *Autumn*, until the Froſt puts a Stop to them, it would be dangerous to tranſplant them in *Winter*.

The fourth and fifth Sorts grow wild in the mountainous Parts of *Italy* and *Spain*, but are hardy enough to reſiſt the Cold of this Climate; ſo may be intermixed with the other Sorts, in Woods or under Plantations of Trees, where they will make an agreeable Variety. Theſe Plants may be propagated by Seeds, which ſhould be ſown early in the *Spring* on a Border of freſh Earth; and when the Plants appear, they ſhould be carefully weeded, and in very dry Weather they muſt be frequently watered; which will bring them forward, ſo that they will ſoon be fit to tranſplant. When they are removed, they muſt be planted in a ſhady Border, about ſix Inches apart, and kept duly watered, until they have taken new Root; after which Time they will require no farther Care, but to keep them clear from Weeds, till *Michaelmas*, when they ſhould be tranſplanted where they are deſigned to remain.

SESAMUM, Oily-grain.

The *Characters* are;

The Flowers are produced from the Wings of the Leaves, without any Foot-ſtalk; the Flower-cup conſiſts of one Leaf, divided into five long ſlender Segments; the Flower is of one Leaf, in Shape like thoſe of the Fox-glove; the Pointal, which riſes in the Middle of the Flower, afterwards becomes an oblong four-corner'd Pod, divided into four diſtinct Cells, which are replete without eſculent Seeds.

The *Species* are;

1. SESAMUM. *J. B.* Common Oily-grain.

2. SESAMUM *alterum, foliis trifidis, Orientale, ſemine obſcuro. Pluk. Phyt.* Another Eaſter Oily-grain, with trifid Leaves, and dark-colour'd Seeds.

3. SESAMUM *Orientale trifidum, flore niveo. Hort. Compt.* Eaſtern Oily-grain, with trifid Leaves, and white Flowers.

Theſe three Sorts are often promiſcuouſly cultivated in the Fields of *Syria*, *Egypt*, *Candia*, &c. where the Inhabitants uſe the Seeds for Food; and of late Years theſe Plants have been introduced in *Carolina*, where they ſucceed extremely well: the Inhabitants of that Country make an Oil from the Seed, which will keep many Years, and not take any rancid Smell or Taſte, but in two Years becomes quite mild; ſo that when the warm Taſte of the Seed, which is in the Oil when firſt drawn, is worn off, they uſe it as Sallad Oil, and for all the Purpoſes of Sweet Oil.

In *England* theſe Plants are preſerved in Botanick Gardens, as Curioſities: their Seeds muſt be ſown in the *Spring* upon a Hot-bed; and when the Plants are come up they muſt be tranſplanted into a freſh Hot-bed, to bring them forward; after they have acquired a tolerable Degree of Strength, they ſhould be planted into Pots fill'd with rich light ſandy Soil, and plunged into another Hot-bed, managing them as hath been directed for *Amaranthus's*, to which I ſhall refer the Reader, to avoid Repetition: For if theſe Plants are not brought forward thus in the former Part of the *Summer*, they will not produce good Seeds in this Country; tho' after they have flower'd, if the Seaſon is favourable, they may be expoſed in a warm Situation with other annual Plants. When theſe Plants have perfected their Seeds, they decay, and never continue longer than one Seaſon.

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It hath a roſe and umbellated Flower, conſiſting of ſeveral Leaves placed in a Circle, and reſting on the Empalement, which afterward becomes a Fruit, compoſed of two long Seeds, which are channelled. To theſe Notes muſt be added, That the Leaves are broader and ſhorter than thoſe of Fennel.

The *Species* are;

1. SESELI *perenne, folio glauco breviori. Vaill.* Perennial Wild-ſpignel, with a ſhorter ſea-green Leaf.

2. SESELI *perenne, folio glauco longiori. Vaill.* Perennial Wild-ſpignel, with a longer ſea-green Leaf.

3. SESELI *quæ ferulæ facie, thapſia ſive Turbith Gallorum. J. B. Boerh. Ind. alt.* Wild-ſpignel, with the Face of Giant-fennel, ſuppoſed to be the Turbith of the *Gauls*.

4. SESELI, *quæ Saxifraga Pannonica. Cluſ. Hiſt. Boerh. Ind. alt.* Wild-Spignel, or the *Portugal* Saxifrage of *Cluſius*.

The three firſt Sorts are abiding Plants, whoſe Roots will continue ſeveral Years; but the fourth Sort is a biennial Plant, which periſhes ſoon after it has perfected its Seeds.

Theſe may be propagated by ſowing of their Seeds, which is beſt done in the *Autumn*; for when the Seeds are ſown in the *Spring*, they frequently lie in the Ground till the next Year, before the Plants will appear; whereas thoſe which are ſown in the *Autumn* always riſe the following *Spring*. Theſe Seeds ſhould be ſown in Drills, about eighteen Inches aſunder, in a Bed of freſh Earth, where they are deſigned to remain; and in the *Spring*, when the Plants come up, they ſhould be thinned where they are too cloſe, leaving them about ſix Inches Diſtance in the Rows; after this the Plants will require no farther Care, but to keep them conſtantly clear from Weeds, and the ſecond Seaſon they will produce Seeds. Theſe Sorts which are permitted to remain after they have ſeeded, ſhould have the Ground gently dug every *Spring* between the Rows, to looſen the Earth; but there ſhould be Care taken not to injure their Roots with the Spade. The Plants love a moiſt Soil, for when they are ſown on a dry Soil, they do not thrive near ſo well, and ſeldom perfect their Seeds, unleſs the Seaſon proves moiſt, or they are duly watered.

SHERARDIA.

This Name was given to this Genus of Plants by Mr. *Vaillant*, who was Profeſſor of Botany at *Paris*, in Honour to Dr. *William Sherard*, who was the moſt famous Botaniſt of the Age.

The *Characters* are;

It hath a labiated Flower conſiſting of one Leaf, which is divided into five Parts at the Brim; the upper Lip being divided into two, and the under Lip into three Parts: the Ovary, which is at the Bottom of the Flower-cup, afterward becomes a dry Capſule, containing two oblong Seeds. To theſe Notes may be added, That the Leaves grow oppoſite by Pairs.

The *Species* are;

1. SHERARDIA *repens, nodiflora. Vaill. Nov. Gen.* Creeping Sherardia, with Flowers growing in round Heads.

2. SHERARDIA *repens, folio ſubrotundo craſſo, nodiflora. Vaill. Nov. Gen.* Creeping Sherardia, with a roundiſh thick Leaf, and Flowers collected in round Heads.

3. SHERARDIA *incana nodiflora. Vaill. Nov. Gen.* Hoary Sherardia, with Flowers collected into round Heads.

4. SHERARDIA *nodiflora, ſtœchadis ſerrati folii folio. Vaill. Nov. Gen.* Round-flowering Sherardia, with a Leaf like the ſawed-leaved Stœchas.

5. SHERARDIA *ocymi folio lanuginoſo, flore purpureo. Vaill. Nov. Gen.* Woolly Sherardia, with a Baſil-leaf, and a purple Flower.

6. SHERARDIA *teucrii folio, flore purpureo. Vaill. Nov. Gen.* Sherardia with a Tree-germander Leaf, and a purple Flower.

7. SHERARDIA *fruteſcens, teucrii folio, flore cæruleo purpuraſcente ampliſſimo. Vaill. Nov. Gen.* Shrubby Sherardia, with a Tree-germander Leaf, and a large purpliſh blue Flower.

8. SHERARDIA *teucrii folio, flore coccineo. Vaill. Nov. Gen.* Sherardia with a Tree-germander Leaf, and a ſcarlet Flower.

9. SHERARDIA *ſpicata, folio anguſto ſerrato, flore cæruleo. Houſt.* Spiked Sherardia, with a narrow ſawed Leaf, and a blue Flower.

10. SHERARDIA *ſpicata, flore purpureo, ſeminibus majoribus, longioribus & laxius digeſtis. Houſt.* Spiked Sherardia, with a purple Flower, and larger longer Seeds, which are looſely diſpoſed in the Spike.

11. SHERARDIA *verbenæ folio ſubrotundo craſſo, floribus cæruleis, ſpicâ longiſſimâ & craſſiſſimâ. Houſt.* Sherardia with a thick roundiſh vervain Leaf, and blue Flowers, growing in a very long thick Spike.

12. SHERARDIA *foliis oblongis ſerratis, flore cæruleo, ſpicâ longiſſimâ. Houſt.* Sherardia with oblong ſawed Leaves, a blue Flower, and a very long Spike.

13. SHERARDIA *arboreſcens nodiflora, foliis rugoſis & ſerratis, flore purpureo. Houſt.* Tree-like Sherardia, with rough ſawed Leaves, and purple Flowers growing in a round Head.

The firſt of theſe Plants is a Native of *Europe*, ſo will thrive in the open Air in this Country. The Seeds of this Kind ſhould be ſown in the *Spring*, on a Bed of light freſh Earth, in a warm Situation, and where the Plants are deſigned to remain (for they do not bear tranſplanting very well). And when the Plants are come up, they ſhould be thinned ſo as to leave them a Foot aſunder; and if they are kept clear from Weeds, they will require no farther Care. The Branches of this Plant trail on the Ground, and ſend forth Roots from their Joints, whereby they may be propagated; but if they are not confined, they will not produce many Flowers.

All the other ſorts are Natives of the warm Parts of *America*, ſo are too tender to thrive in the open Air of *England*; but as moſt of them are annual, they may be raiſed by ſowing of their Seeds on a Hot-bed; and if the Plants are brought forward early in the *Spring*, they will flower and produce ripe Seeds before *Winter*.

The ſecond ſort was found by Dr. *William Houſtoun*, growing plentifully in *Jamaica*. This Plant trails its Branches on the Ground, emits Roots from the Joint as the former ſort, ſo doth not produce many Flowers.

The fourth ſort was found in great Plenty at *La Vera Cruz*, by Dr. *Houſtoun*, as were the ninth, tenth, eleventh, twelfth and thirteenth ſorts, at *Campechy*, by the ſame Gentleman.

The third, fifth and ſixth ſorts, grow plentifully in *Jamaica*, and ſeveral other Places in the *Weſt-Indies*, from whence I have received their Seeds.

The ſeventh Sort is a very ſpacious Plant which merits a Place in every good Collection of Plants. This produces long Spikes of large blue Flowers, which continue a long Time, and make a fine Appearance. This is alſo an annual Plant, notwithſtanding it has the Epithet of Shrubby given to it; for it always flowers the ſame *Summer* it is raiſed: but if it is not brought forward early in the *Spring*, and conſtantly kept in the Stove or Glaſs-caſe, it will not perfect Seeds in this Country. The Seeds of this Kind were ſent to *England* by Mr. *Robert Millar*, Surgeon, who gathered them near *Panama*.

The thirteenth ſort riſes to be nine or ten Feet high, and hath a woody Stem. This will abide many Years, provided it is preſerved in a Stove in *Winter*. During the *Summer* Seaſon, this ſort may be placed in the open Air in a warm Situation, and in hot Weather muſt be frequently watered; but in *Autumn*, when the Nights grow cold, the Plants muſt be removed into the Stove, and in *Winter* they ſhould have a moderate ſhare of Heat; with which Management the Plants will thrive very well.

All theſe Plants are propagated by Seeds, which ſhould be ſown early in the *Spring* on a moderate Hot-bed; and when the Plants are come up, they ſhould be each tranſplanted into a ſeparate ſmall Pot, filled with light rich Earth, and plunged into a moderate Hot-bed of Tanners-bark, obſerving to ſhade them from the Sun every Day, until they have taken new Root; after which Time they ſhould have a large ſhare of free Air admitted to them in warm Weather, and they muſt be frequently watered. When the Plants have filled theſe Pots with their Roots, they muſt be ſhifted into larger Pots; and if there is Room for the Plants to grow under the Glaſſes of the Hot-bed, without being ſcorched by the Sun, they ſhould be plunged into the ſame Bed again; but if there is not Room, they muſt be placed in the Stove, where they may have Room to grow in Height. In *July* theſe ſorts which are annual, will begin to flower, and their Seeds will ripen the Beginning of *September*.

SICYOIDES, Single-ſeeded Cucumber.

The *Characters* are:

It hath an expanded bell-ſhaped Flower, conſiſting of one Leaf, which is cut into ſeveral Segments at the Brim; of theſe Flowers, ſome are Male, which adhere to no Embryo; and others are Female, which reſt on the young Fruit, which is afterward inlarged to the ſize of an almond Kernel, and is flat and prickly, containing one Seed of the ſame ſhape.

The *Species* are;

1. SICYOIDES *Americana, fructu echinato, foliis angulatis. Inſt. R. H. American* Sicyoides, with a prickly Fruit, and angular Leaves.

2. SICYOIDES *Americana, fructu echinato, foliis laciniatis. Plum. American* Sicyoides, with a prickly Fruit, and jagged Leaves.

Theſe Plants are preſerved in ſome curious Gardens, for the ſake of Variety; but as they have little Beauty, and are not uſeful, ſo they are not much cultivated in *England*. They are both annual Plants, which may be propagated by ſowing of their Seeds in the Beginning of *April*, on a Border of freſh Earth, in the Place where they are deſigned to remain; and in about a Fortnight's Time the Plants will appear; which at firſt are very like Cucumber-plants, and, as they grow, will trail on the Ground, and faſten themſelves to whatever Plants grow near them, by their Tendrils; ſo that they ſhould be either ſown near a Hedge, where they may climb up, or be allowed a conſiderable ſhare of Room, otherwiſe they will run over the Plants which are near them. When the Plants are come up, they will require no farther Care, but to keep them clear from Weeds, and to thin them where they grow too cloſe together. In *June* they will produce their Flowers, and in *Auguſt* their Seeds will ripen, which, if permitted to ſcatter, will produce a Supply of young Plants the following *Spring*, without any Care.

SIDERATION, a Blaſting of Trees or Plants by an Eaſterly Wind, or exceſſive Heat or Drought.

SIDERITIS; [of σίδηρος, *Iron*, q. *Iron-herb*, ſo *Dioſcorides* calls thoſe Herbs that are good againſt Wounds made by the Sword: It is alſo called *Ferrum Matrix*, on the ſame Account. It is alſo called *Herba Judaica*, becauſe the *Jews* in old Time made uſe of this Herb in Medicine] Ironwort.

The *Characters* are;

It is a Plant with a labiated Flower, conſiſting of one Leaf, whoſe upper Lip or Creſt is upright, but the under Lip or Beard is divided into three Parts; out of the Flower-cup riſes the Pointal, attended, as it were, by four Embryo's, which afterwards turn to ſo many oblong Seeds, ſhut up in a Husk, which was before the Flower-cup: To theſe Marks muſt be added, the Flowers growing in Whorles at the Wings of the Leaves, which are cut like a Creſt, and differ from the other Leaves of the Plant.

The *Species* are;

1. SIDERITIS *hirſuta procumbens. C. B. P.* Hairy trailing Ironwort.

2. SIDERITIS *Alpina, hyſſopi folio. C. B. P.* Hyſſop-leafed Ironwort of the Alps.

3. SIDERITIS *Orientalis, phlomidis folio. T. Cor.* Eaſtern Ironwort, with a Phlomis Leaf.

4. SIDERITIS *Anglica, ſtrumoſa radice. Park. Theat.* Engliſh Ironwort, with a ſtrumoſe Root, *commonly called* Clowns All-heal.

5. SIDERITIS *arvenſis rubra. Park. Theat.* Narrow-leafed All-heal *or* Ironwort.

6. SIDERITIS *foliis hirſutis, profunde crenatis. C. B. P.* Ironwort *or* All-heal, with hairy crenated Leaves.

7. SIDERITIS *Hiſpanica erecta, folio anguſtiore. Inſt. R. H.* Upright Spaniſh All-heal, with a narrow Leaf.

8. SIDERITIS *Hiſpanica crenata procumbens, flore albo, major. Inſt. R. H.* Greater trailing Spaniſh All-heal, with a white Flower.

9. SIDERITIS *Hiſpanica bituminoſa anguſtifolia crenata. Inſt. R. H.* Spaniſh All-heal, with a bituminous Scent, and a narrow crenated Leaf.

10. SIDERITIS *Hiſpanica fœtidiſſima glabra, flore purpuraſcente, & comâ caneſcente. Inſt. R. H.* Spaniſh ſtinking ſmooth All-heal, with a purpliſh Flower, and whitiſh Tops.

11. SIDERITIS *Hiſpanica fruteſcens, ſeu lignoſior. Inſt. R. H.* Shrubby or more woody Spaniſh All-heal.

12. SIDERITIS *Pyrenaica hyſſopifolia minima procumbens. Inſt. R. H.* The leaſt trailing hyſſop-leafed All-heal of the Pyrenees.

13. SIDERITIS *montana, trifido folio. Barrel. Icon.* Mountain All-heal, with a trifid Leaf.

14. SIDERITIS *Cretica maxima, ocymaſtri Valentini facie, Tourn. Cor.* The greateſt All-heal of Candy, with the Face of *Ocymaſtrum Valentinum.*

15. SIDERITIS *Cretica tomentoſa candidiſſima, flore luteo. Tourn. Cor.* The whiteſt Woolly All-heal of Candy, with a yellow Flower.

There are ſeveral of theſe Plants which are preſerved in ſome curious Botanick Gardens for Variety; but as they are Plants of little Beauty, ſo they are ſeldom cultivated in other Gardens.

All theſe Plants may be propagated by ſowing their Seeds in the *Spring*, upon a Bed of freſh light Earth; and when the Plants are come up, they may be tranſplanted out into other Beds, allowing them a Foot Diſtance from each other, obſerving to water them until they have taken Root; after which they will require no farther Care, but to keep them clear from Weeds; the ſecond Year they will produce Flowers and Seeds, and ſome of the Sorts will periſh ſoon after, but others will abide ſeveral Years, provided they are not planted in a Soil too moiſt.

The fourth Sort grows plentifully by the Sides of Ditches, and in other moiſt Places, in divers Parts of *England*, ſo is very rarely introduced in Gardens, becauſe it is a very bad Weed, wherever it once gets Place; for the Roots creep very far under Ground, and will ſoon over-run a large Spot of Ground, if they are not confined. This Plant received the Name of *Clowns All-heal* from Mr. *Gerard*, who was looking for Herbs in *Kent*, where he ſaw a Man who had cut his Leg to the Bone with a Scyth, as he was mowing the Graſs, to whom he offered his Aſſiſtance to cure his Wound; which the Countryman churliſhly refuſing, crept to the Ditch-ſide, where there was Plenty of this Plant growing; ſome of which he gathered and bruiſed, and apply'd it to the Wound, tying it cloſe with his Handkerchief, which in few Days healed the Wound, without any other Application; for which Reaſon *Gerard* has recorded the Story in his Herbal, for the Benefit of Mankind.

The fifth Sort is alſo a Native of *England*, and grows amongſt the Corn, or other Crops, on arable Land. This is an annual Plant, which periſhes ſoon after it has ripened Seeds.

The other Sorts are moſt of them biennial Plants, which commonly perfect their Seeds the ſecond *Summer*, and ſeldom continue much longer. Theſe may be all propagated by Seeds, which ſhould be ſown in *Autumn*, ſoon after they are ripe; for when they are kept out of the Ground till *Spring*, they very often fail. Theſe Seeds ſhould be ſown on a Bed of freſh undunged Earth, in an open Situation; and when the Plants come up, they ſhould be thinned where they grow too cloſe; and if they are kept clear from Weeds, it is all the Culture they require. If, when theſe Plants are eſtabliſhed in a Garden, their Seeds are permitted to ſcatter, the Plants will come up, and maintain their Place, provided they are not overborn by large Weeds.

All the Sorts of *All-heal* are ſuppoſed to have an aſtringent Quality, and are accounted good to heal Wounds, and may be apply'd either inwardly or outwardly.

SILAUM, Meadow-Saxifrage.

The *Characters* are;

It hath a roſe and umbellated Flower, conſiſting of ſeveral Leaves, placed circularly, and reſting upon the Empalement, which afterward becomes a Fruit compoſed of two ſhort channelled Seeds: To which Notes muſt be added, that the Leaves are very narrow, and the Flowers are of a pale yellow Colour.

The *Species* are;

1. SILAUM *quibuſdam, flore luteolo. J. B.* Common Meadow-ſaxifrage.

2. SILAUM *quod Liguſticum, ferulæ folio. Inſt. R. H. Boerh. Ind. alt.* Saxifrage with the Leaf of Giant Fennel.

3. SILAUM *quod Liguſticum Creticum, folio fœniculi, caule nodoſo. Tourn. Cor. Boerh. Ind.* Candy Meadow-ſaxifrage, with a Fennel Leaf, and a knobby Stalk.

4. SILAUM *quod Liguſticum, cicutæ folio, glabrum. Tourn. Boerh. Ind. alt.* Meadow-ſaxifrage, with a ſmooth Hemlock Leaf.

The firſt Sort is directed by the *College of Phyſicians* to be uſed in Medicine: This grows wild in Meadows, and other moiſt Paſtures, in divers Parts of *England*; but the other Sorts are not Natives of this Country, ſo are only to be met with in Botanick Gardens, where they are preſerved for the ſake of Variety.

All theſe Sorts are propagated by Seeds, which may be ſown in *Autumn* on a Border of freſh Earth in a ſhady Situation; and when the Plants are come up, they will require no farther Care, but to keep them clear from Weeds, and, where they grow too cloſe, to thin them, ſo as to leave them about eight or ten Inches aſunder, which may be done by houghing of them in the ſame Manner as is practiſed for Carrots. Theſe Plants will flower and ſeed the ſecond *Summer*, and the Roots of the three firſt Sorts will abide ſome Years; but the fourth Sort commonly periſhes ſoon after it has produced Seed.

SILER, Seſeli, *or* Sermountain.

The *Characters* are;

It hath a roſe and umbellated Flower, conſiſting of ſeveral Leaves, which are ranged orbicularly, and reſt on the Empalement, which becomes a Fruit compoſed of two large oblong furrowed Seeds, having foliaceous Ridges on one Side: To theſe Notes may be added, that the Lobes of the Leaves are large, long, and intire, excepting their Extremity, where they are ſlightly cut into three Parts.

The *Species* are;

1. SILER *montanum majus. Mor. Umb.* Greater Sermountain.

2. SILER *montanum anguſtifolium. Park.* Narrow-leafed Sermountain.

The firſt Sort is uſed in Medicine by the Direction of the *College of Phyſicians*. The Seeds of this Sort are the *Semen Seſeleos* of the Shops, which enters in Compoſitions; and the green Herb alſo is uſed, for which ſome of the People who ſupply the Shops, often impoſe on their Cuſtomers the *Mountain Oſier*, which, by tranſlating *Siler* an *Oſier*, may afford them ſome Pretence.

The ſecond Sort differs from the firſt, in being ſomewhat leſs, and having narrow Leaves: This is found wild in *Auſtria*, and the former Sort grows on the *Alps* and *Apennines*, and other mountainous Parts of *Italy* and *Spain*.

Theſe Plants may be propagated by Seeds, which ſhould be ſown in *Autumn* (ſoon after they are ripe) on a Border of freſh undunged Earth; and in the *Spring*, when the Plants will appear, they ſhould be kept conſtantly clear from Weeds, and in very dry Weather ſhould be watered, which will greatly promote their Growth. Where the Plants come up too cloſe together, they ſhould be thinned ſo as to leave them three or four Inches apart, which will be ſufficient Room for them the firſt Seaſon; and at *Michaelmas*, when their Leaves decay, ſome of the Plants may be carefully taken up, ſo as not to cut or break their Roots, and tranſplanted into a moiſt ſhady Border, about eighteen Inches aſunder, where they may remain for good. If theſe Plants thrive well, they will produce Seeds the ſecond Seaſon, otherwiſe it will be the third *Summer* before they flower and ſeed; after which the Roots will abide many Years, and increaſe greatly in their Size, and will produce Seeds every Year.

The Culture which theſe Plants require, is only to keep them clear from Weeds, and every *Spring*, juſt before the Plants put out their Leaves, to dig the Ground between them gently, ſo as not to injure their Roots; and when their Flower-ſtems are advanced, to place ſome Stick down by them, to which their Stems ſhould be faſtened with Baſs, to ſupport them from being broken down by Winds; for as theſe Stems riſe to the Height of four or five Feet, ſo when their Umbels of Seeds are formed, which are generally pretty large and heavy, they often occaſion their Stems falling to the Ground, where they are not ſupported.

Theſe Plants flower the latter End of *June*, and their Seeds ripen toward the latter End of *Auguſt*, or the Beginning of *September*.

SILIQUA, Carob *or* St. John's Bread.

The *Characters* are;

It hath an apetalous Flower, having many Stamina, *which grow from the Diviſions of the Flower-cup; in the Centre of which riſes the Pointal, which afterwards becomes a Fruit or Pod, which is plain and fleſhy, containing ſeveral roundiſh plain Seeds.*

We have but one *Species* of this Plant in *England*, viz.

SILIQUA *edulis. C. B. P.* The Carob Tree, *or* St. John's Bread: *vulgo.*

This Tree is very common in *Spain*, and in ſome Parts of *Italy*, as alſo in the *Levant*, where it grows in the Hedges, and produces a great Quantity of long, flat, brown-colour'd Pods, which are thick, mealy, and of a ſweetiſh Taſte. Theſe Pods are many times eaten by the poorer Sort of Inhabitants, when they have a Scarcity of other Food: but they are apt to looſen the Belly, and cauſe Gripings of the Bowels. Theſe Pods are directed by the *College of Phyſicians* to enter ſome medicinal Preparations, for which Purpoſe they are often brought from abroad.

In *England* the Tree is preſerved, by ſuch as delight in exotick Plants, as a Curioſity: The Leaves do always continue green, and being different in Shape from moſt other Plants, afford an agreeable Variety when intermixed with *Oranges*, *Myrtles*, &c. in the Green-houſe.

Theſe Plants are propagated from Seeds, which, when brought over freſh in the Pods, ſhould be ſown in the *Spring* upon a moderate Hot-bed; and when the Plants are come up, they ſhould be carefully tranſplanted, each into a ſeparate ſmall Pot, filled with light rich Earth, and plunged into another moderate Hot-bed, obſerving to water and ſhade them until they have taken Root; after which you muſt let them have Air in Proportion to the Heat of the Weather. In *June* you muſt inure them to the open Air by Degrees, and in *July* they ſhould be removed out of the Hot-bed, and placed in a warm Situation, where they may remain until the Beginning of *October*, when they ſhould be removed into the Green-houſe, placing them where they may have free Air in mild Weather; for they are pretty hardy, and do require only to be ſheltered from hard Froſts. When the Plants have remained in Pots three or four Years, and have gotten Strength, ſome of them may be turned out of the Pots in the *Spring*, and planted into the full Ground, in a warm Situation, where they will endure the Cold of our ordinary *Winters* very well; but muſt have ſome Shelter in very hard Weather.

I have not as yet ſeen any of theſe Trees produce Flowers; tho' from ſome which have been planted ſome time againſt Walls, it is probable there may be Flowers and Fruit in a few Years.

SILIQUASTRUM, the Judas-tree.

The *Characters* are;

It hath a papilionaceous Flower, whoſe Wings are placed above the Standard; the Keel is compoſed of two Petals; the Pointal which riſes in the Centre of the Flower-cup, and is encompaſſed with the Stamina, *afterwards becomes a long flat Pod, containing ſeveral Kidney-ſhaped Seeds: To which may be added, roundiſh Leaves growing alternately on the Branches.*

The *Species* are;

1. SILIQUASTRUM *Caſt. Durant.* The Judas-tree: *vulgo.*
2. SILIQUASTRUM *Canadenſe. Tourn.* Canada Judas-tree.
3. SILIQUASTRUM *quæ Ceratia agreſtis, mucronato folio, floribus parvis, Caroliniana. Pluk. Alm.* Carolina Judas-tree, with pointed Leaves.

The firſt of theſe Trees is very common in the South Parts of *France*, *Italy* and *Spain*, from whence it was formerly brought into *England*, and preſerved as a Curioſity in Green-houſes; but of late Years they have been tranſplanted into the open Air, where they thrive very well, and produce great Quantities of beautiful Flowers in the *Spring*, and in favourable Seaſons do perfect their Seeds extremely well.

The ſecond Sort is very common in *Virginia*, *New-England*, *Canada*, and moſt of the Northern Countries of *America*, where it is called *Red-bud*; which Name, I ſuppoſe, it received from the beautiful Colour of its Flower-buds, which, when fully expanded, are of a ſoft purple Colour. Theſe Flowers are produced in large Cluſters from the old Wood of the Tree; and being opened before the green Leaves come out, they make a beautiful Appearance, eſpecially when the Trees are old, and productive of Flowers; when, many times, the large Branches of the Tree are entirely covered with theſe beautiful Flowers, ſo as to afford as great Pleaſure as any Sort of flowering Tree whatever. Theſe Flowers are commonly gathered in *America*, and put into their Sallets, to which they add a quick poignant agreeable Flavour; and in *England* they are by ſome curious Perſons uſed for the ſame Purpoſe.

The third Sort was brought from *Carolina*, where it grows in the Woods in great Plenty. This differs greatly in the Shape of its Leaves from the other two Sorts, and the Flowers are much ſmaller. At preſent this is leſs common in the *Engliſh* Gardens, and will not endure the Cold of our Climate ſo well, being ſubject to have the young Shoots deſtroy'd in very hard *Winters*; and if the Plants are young, ſometimes they will die to the Ground.

Theſe Plants may be propagated by ſowing their Seed upon a Bed of light Earth, towards the latter End of *March*, or the Beginning of *April*, (and if you put a little hot Dung under the Bed, it will greatly facilitate the Growth of the Seeds;) when your Seeds are ſown, you ſhould ſhift the Earth over them about half an Inch thick; and, if the Seaſon prove wet, it will be proper to cover the Bed with Mats, to preſerve it from great Rains, which will burſt the Seeds, and cauſe them to rot.

When the Plants are come up, they ſhould be carefully clear'd from Weeds, and in very Weather muſt be now and then refreſh'd with Water, which will greatly promote their Growth. The *Winter* following, if the Weather be very cold, it will be proper to ſhelter the Plants, by covering them either with Mats or dry Straw in hard Froſts; but they ſhould conſtantly be open'd in mild Weather, otherwiſe they will grow mouldy, and decay.

About the Beginning of *April* you ſhould prepare a Spot of good freſh Ground, to tranſplant theſe out, (for the beſt Seaſon to remove them is juſt before they begin to ſhoot;) then you ſhould carefully take up the Plants, being careful not to break their Roots, and plant them in the freſh Ground as ſoon as poſſible, becauſe if their Roots are dried by the Air, it will greatly prejudice them.

The Diſtance theſe ſhould be planted muſt be proportionable to the Time they are to remain before they are again tranſplanted; but commonly they are planted two Feet Row from Row, and a Foot aſunder in the Rows, which is full Room enough for them to grow two or three Years, by which Time they ſhould be tranſplanted where they are deſigned to remain; for if they are too old when removed, they ſeldom ſucceed ſo well as younger Plants.

The Ground between the Plants ſhould be carefully kept clean from Weeds in *Summer*, and in the *Spring* ſhould be well dug, to looſen the Earth, that their Roots may better extend themſelves every Way: you ſhould alſo at that Seaſon prune off all ſtrong Side-Branches, (eſpecially if you intend to train them up for Standard Trees) that their Top-Branches may not be chek'd by their Side-Shoots, which do often attract the greateſt Part of the Nouriſhment from the Roots; and if their Stems are crooked, you muſt place a ſtrong Stake down by the Side of each Plant, and faſten the Stem to it in ſeveral Places, ſo as to render it ſtrait, which Direction it will ſoon take as it grows larger, and thereby the Plants will be render'd beautiful.

When they have remain'd in this Nurſery three or four Years, they ſhould be tranſplanted in the *Spring* where they are deſign'd to remain, which may be in Wilderneſs Quarters, among other flowering Trees, obſerving to place them with Trees of the ſame Growth, ſo as they may not be over-hung, which is a great Prejudice to moſt ſorts of Plants.

The uſual Height to which theſe Trees grow with us, is from twelve to twenty Feet, according to the Goodneſs of the Soil; tho' I don't remember ever to ſee any of them exceed that Growth, where they have enjoy'd the greateſt Advantages, nor do I believe the *Carolina* Sort will arrive to near that Height.

SILIQUOUS, having Seed-veſſels, Huſk, Pod or Shell.

SINAPI,

[Σίνηπι, of σίνειν ὀφθαλμοῦς, becauſe it forces Tears from the Eyes of thoſe that uſe it uncautiouſly, makes the Noſe red, and the Eyes ſwell] Muſtard.

The *Characters* are;

The Flower conſiſts of four Leaves, which are placed in form of a Croſs, out of whoſe Flower-cup riſes the Pointal, which afterwards becomes a Fruit or Pod, divided into two Cells by an intermediate Partition, to which the Valves adhere on both Sides, and are fill'd with roundiſh Seeds: theſe Pods generally end in a fungous Horn, containing the like Seeds: to theſe Marks muſt be added, an acrid burning Taſte, peculiar to Muſtard.

The *Species* are;

1. SINAPI *ſiliqua latiuſcula glabra, ſemine ruſo, ſive vulgare. J. B.* Common or Red Muſtard.
2. SINAPI *hortenſe, ſemine albo. C. B. P.* Garden or White Muſtard.
3. SINAPI *Indicum, lactucæ folio. Par. Bat.* Indian Muſtard, with a Lettuce Leaf.

There are ſeveral other *Species* of this Plant, which are preſerv'd in curious Botanick Gardens, for Variety; but as they are not in Uſe, nor have any thing valuable to recommend them, I ſhall not enumerate them here.

The firſt Sort is very common in the *Iſle of Ely* in *Cambridgeſhire*, and in many other Places, where the Land has been flooded with Water for many Years; but upon being drain'd, this Plant comes up in a moſt plenteous Manner, which has given Occaſion for ſome Perſons to imagine that it was produced ſpontaneouſly without Seeds; but the contrary of this has been fully proved by ſeveral learned Gentlemen, and therefore would be needleſs to repeat here; for the Reaſon why theſe Seeds do remain good for ſo many Years, when cover'd with Water, is, becauſe they abound with ſo ſharp an Oil, that it prevents the Water from pervading its Body, and being kept from the Air, is preſerved from Corruption.

This Sort is alſo cultivated in Gardens and Fields, in divers Parts of *England*, for the ſake of its Seeds. The Method of cultivating this Plant, is to ſow the Seeds upon an open Spot of Ground (which hath been well dug or plough'd) in the *Spring*, and when the Plants are come up, they ſhould be hough'd, in order to deſtroy the Weeds, as alſo to cut out the Plants where they are too thick, leaving them about ten Inches aſunder, (for when they are left too thick, they draw up weak, and the Seeds are never ſo large, and well nouriſh'd) and if the Weeds ſhould grow again before the Plants have gotten Strength enough to bear them down, they muſt be hough'd a ſecond time; after which they will require no farther Care until the Seeds are ripe, when the Haulm ſhould be cut down and ſpread upon the Ground to dry, and then the Seeds may be threſh'd out.

The ſecond Sort is chiefly cultivated in Gardens, for a Sallet-Herb in the *Winter* Seaſon. The Seeds of this are commonly ſown very thick in Drills, either upon a warm Border, or in very cold Weather upon a Hot-bed, with *Creſſes*, and other ſmall Sallet-Herbs, which are commonly fit for Uſe in three Weeks or a Month from ſowing; for if they are large, they are too ſtrong to put into Sallets. In order to ſave the Seeds of this Plant, a Spot of Ground muſt be ſown with it in the *Spring*, which ſhould be managed in the ſame Manner as the former.

The third Sort may alſo be uſed in Sallets when it is very young, at which Time it has no diſagreeable Taſte; but as it grows large, ſo its Strength increaſes, and a certain Bitterneſs, which renders it very diſagreeable. This is very hardy, and when allow'd ſufficient Room, will ſpread very far, and produce large Leaves.

The Seeds of the firſt two *Species* are order'd for Medicinal Uſe; but the third is ſeldom cultivated for Uſe in *England*.

SINAPISTRUM, [ſo call'd as tho' *Sinapi parvum, diminutive Muſtard*; becauſe it is like Muſtard in Shape and Acrimony.]

The *Characters* are;

The Flower conſiſts of four Leaves, which are placed in form of a Croſs, but are erected; under theſe Petals are placed ſix Stamina, which occupy the under Part of the Flower; out of whoſe Flower-cup riſes the Pointal, which afterwards becomes a Cylindrical Pod, with two Valves, and fill'd with roundiſh Seeds.

The *Species* are;

1. SINAPISTRUM *Indicum pentaphyllum, flore carneo, minus non ſpinoſum. H. L.* Indian five-leav'd *Sinapiſtrum*, with a Fleſh-colour'd Flower, and not prickly.
2. SINAPISTRUM *Ægyptiacum, heptaphyllum, flore carneo, majus ſpinoſum. H. L.* Greater prickly ſeven-leav'd Egyptian *Sinapiſtrum*, with a Fleſh-colour'd Flower.
3. SINAPISTRUM *Zeylanicum triphyllum & pentaphyllum viſcoſum, flore flavo. Boerh.* Three and five-leav'd viſcous *Sinapiſtrum* from *Ceylon*, with a yellow Flower.

The firſt and ſecond Sorts are very common in *Jamaica*, *Barbadoes*, and other warm Countries in the *Weſt-Indies*; but the third Sort I received from Dr. *Boerhaave*, who had it from *Ceylon*, with many other curious Seeds.

Theſe Plants are preſerv'd as Curioſities by thoſe who delight in Botanick Studies; but as they are not very beautiful, nor of any great Uſe, ſo they are rarely cultivated in other Gardens. They are all annual Plants, which periſh ſoon after their Seeds are ripe; and in *England* muſt be raiſed in a Hot-bed in the *Spring*, and when the Plants have acquired Strength, they ſhould be planted into Pots, and managed as hath been directed for the *Female Balſamines*, to which Article the Reader is deſired to turn, to avoid Repetition. In *July* theſe Plants may be placed in the open Air, at which Time they will flower, and in *September* their Seeds will ripen, when they ſhould be gather'd, and preſerved in their Pods until the Seaſon for ſowing them.

SISARUM, [ſo call'd on account of its ſweet Taſte, ſcarce any Plant being of a ſweeter] Skirret.

The *Characters* are;

It produces its Flowers in an Umbel, which conſiſt of ſeveral Leaves placed circularly, and expand in form of a Roſe; the Empalement afterwards becomes a Fruit, compoſed of two narrow Seeds, that are gibbous and furrow'd on one Side, but plain on the other: to theſe Marks muſt be added, that the Roots are ſhaped like long Turnips, and are join'd to one Head.

We have but one *Species* of this Plant, *viz.*

SISARUM *Germanorum. C. B. P.* Skirret.

This is one of the wholſomeſt and moſt nouriſhing Roots that is cultivated in Gardens, and yet it is at preſent very rare to meet with it in the Gardens near *London*: What may have been the Cauſe of its not being more commonly cultivated, I can't imagine, ſince there are many Kitchen-Gardens which are proper for this Plant.

It may be propagated two Ways, *viz.* either by ſowing the Seeds, or planting the Slips. The former Method is what I would chiefly recommend; becauſe the Roots which come from Seeds, are much larger than thoſe produced from Off-ſets, and are much tenderer. The Seaſon for ſowing the Seed is in the Beginning of *February*, and upon a moiſt rich Soil, which ſhould be well dug and looſen'd, and being laid level, the Seeds ſhould be ſown thereon, and then trod in, after the common Method of ſowing *Radiſhes*, raking the Ground over them ſmooth.

In *April* the Plants will come up, at which Time the Ground ſhould be hough'd over, (as is practiſed for *Carrots*) to deſtroy the Weeds, and to cut out the Plants where they are too cloſe, leaving them the firſt houghing about three Inches aſunder; but at the ſecond houghing, which ſhould be perform'd about a Month after the firſt, they ſhould be cut out to ſix Inches apart at leaſt, obſerving to cut down all the Weeds; and during the *Summer* Seaſon, the Weeds ſhould be diligently hough'd down as faſt as they are produced; for if theſe Plants are ſtifled by Weeds, *&c.* they ſeldom come to good.

When their Leaves are decay'd, their Roots may be taken up for Uſe; but this ſhould be done only as they are wanted; for if they are kept long above Ground, they will be good for little. The Leaves commonly decay in *October*; ſo that from that Time till the Middle of *March*, when they begin to ſhoot again, they are in Seaſon; but after they have ſhot forth green Leaves, the Roots become ſticky, and are not ſo good.

The Method of propagating this Plant from Off-ſets, is as follows: About the latter End of *February*, or Beginning of *March*, you ſhould dig a moiſt rich Spot of Ground, in Size proportionable to the Quantity of Plants intended; then you ſhould carefully dig up the old Roots, from which you ſhould ſlip off all the Off-ſets, preſerving their Buds on the Crown of each intire; after this you ſhould open a Drill croſs the Spot of Ground with a Spade, in a ſtrait Line, about eight or nine Inches deep, into which you ſhould place the Off-ſets, about ſix Inches apart, as upright as poſſible; then fill the Drill up again with the Earth which came out of it, and at a Foot Diſtance from the firſt make another Trench, laying the Off-ſets therein, as before, and ſo continue the Drills at a Foot Diſtance, thro' the whole Spot of Ground; and if the Seaſon ſhould prove very dry, it will be proper to water them until they have taken Root in the Ground; after which they will require no other Care, but to keep the Weeds conſtantly deſtroy'd as they are produced, in the Manner before directed for the ſeedling Plants, and when their Leaves decay, they will be fit for Uſe, as before; but after any of theſe Roots have ſeeded, they are ſticky, and good for nothing; ſo that they ſhould never be more than one Year old.

SISYMBRIUM, Water-creſſes.

The *Characters* are;

It hath a Flower compoſed of four Leaves, which are placed in form of a Croſs, out of whoſe Empalement riſes the Pointal, which afterward becomes a Fruit or Pod, which is divided into two Cells by an intermediate Partition, to which the

Valves adhere on both Sides, and furniſhed with Seeds which are roundiſh. To theſe Marks muſt be added, That the whole Appearance of the Plants is peculiar to the Species of this Genius.

The *Species* are;

1. SISYMBRIUM *aquaticum. Matth.* Common Water-creſſes.

2. SISYMBRIUM *aquaticum, foliis minoribus, præcocius. Raii Syn.* Early flowering Water-creſſes, with ſmaller Leaves.

3. SISYMBRIUM *aquaticum, raphani folio, ſiliquâ breviori. Inſt. R. H.* Water-radiſh.

4. SISYMBRIUM *aquaticum, foliis in profundas lacinias diviſis, ſiliquâ breviori. Inſt. R. H.* Water-radiſh, with deeply jagged Leaves.

5. SISYMBRIUM *paluſtre repens, naſturtii folio. Inſt. R. H.* Water-rocket.

6. SISYMBRIUM *paluſtre minus, ſiliquâ aſperâ. Inſt. R. H.* The leſſer Marſh-rocket, with a rough Pod.

7. SISYMBRIUM *erucæ folio glabro, flore luteo. Inſt. R. H.* Common Winter-creſs.

8. SISYMBRIUM *erucæ folio glabro, flore pleno. Inſt. R. H.* Winter-creſs, with a double Flower.

9. SISYMBRIUM *erucæ folio glabro, minus & præcocius. Inſt. R. H.* Small early-flowering Winter-rocket.

10. SISYMBRIUM *erucæ folio, aſpero, flore luteo. Inſt. R. H.* Winter-creſs, with a rough rocket Leaf, and a yellow Flower.

The firſt and ſecond Sorts of Water-creſſes grow promiſcuouſly in ſtanding Waters in moſt Parts of *England*, and are indifferently gathered for Uſe. Theſe Plants have of late Years been generally uſed as Sallet-herbs in the *Spring* of the Year, and are by many People preferred to all other Sorts of Sallets for the agreeable warm bitter Taſte, and being accounted an excellent Remedy for the Scurvy, and to cleanſe the Blood, as alſo a good Diuretic, they have greatly obtained with moſt People. Theſe are generally gathered in the Ditches, and in other ſtanding Waters near *London*, to ſupply the Markets; but whoever hath a mind to cultivate them, may eaſily do it by taking ſome of the Plants from the Places of their natural Growth, early in the *Spring*, being careful to preſerve their Roots as intire as poſſible, and plant them into Mud, and then let the Water in upon them by Degrees. When they have taken Root, they will ſoon flouriſh and ſpread over a large Compaſs of Water: They ſhould not be cut the firſt Seaſon, but ſuffered to run to Seed, which will fall into the Water, and furniſh a ſufficient Supply of Plants afterward.

But where the Water is ſo deep, that it will not be eaſy to plant theſe Plants, the beſt Method will be to get a Quantity of the Plants, juſt as their Seeds are ripening, and throw them on the Surface of the Water, where they are deſigned to grow; and their Seeds will ripen, and fall to the Bottom, where they will take Root, and produce a Supply of the Plants. Theſe Plants produce Seed the latter End of *June*, or the Beginning of *July*, which is the proper Time for this Work.

The third, fourth, fifth and ſixth Sorts are Water-plants, which grow in ſtanding Waters; ſo are not admitted into Gardens, except for the ſake of Variety.

The ſeventh and ninth Sorts grow wild on dry Banks in ſeveral Parts of *England*: Theſe were formerly uſed as a *Winter* Sallet; but ſince there has been a great Number of other Herbs introduced into the *Engliſh* Gardens, they have been entirely rejected. Theſe may be propagated by Seeds, which ſhould be ſown ſoon after they are ripe; and when the Plants are come up, they ſhould be houghed, to ſeparate them where they are too cloſe, as alſo to deſtroy the Weeds, which is all the Culture they require. The *Summer* following they will produce Seed, and the Plants periſh ſoon after. But if the Seeds are permitted to ſcatter, the Plants will come up, and become troubleſome Weeds.

The eighth Sort is a Variety of the ſeventh, which accidentally aroſe from Seeds, and is preſerved in ſome curious Gardens, for having a double Flower. This is propagated by parting of the Roots, ſo that in order to preſerve this Kind, the Plants ſhould not be ſuffered to ſend forth too many Flower-ſtems, leſt they ſhould exhauſt the Root too much to ſend forth any Side-heads for parting. The beſt Time to tranſplant and part theſe Roots, is at *Michaelmas*, when they ſhould be planted into a Bed or Border of freſh undunged Earth, in an open Expoſure.

The tenth Sort is very like the ſeventh, from which it differs in having a rough Leaf, ſo may be cultivated in the ſame Manner; tho' theſe are rarely allowed a Place in any Gardens, unleſs for the ſake of Variety.

SISYRINCHIUM, Spaniſh Nut.

The *Characters* are;

It hath a Flower reſembling the IRIS, *from which it differs in having a double Root, one lying over the other, after the ſame Manner as thoſe of the* CROCUS *and* GLADIOLUS.

The *Species* are;

1. SISYRINCHIUM *majus, flore luteâ maculâ notato. C. B. P.* Greater Spaniſh Nut, with a Flower marked with a yellow Spot.

2. SISYRINCHIUM *majus, flore albâ maculâ notato. C. B. P.* Greater Spaniſh Nut, with a Flower marked with a white Spot.

3. SISYRINCHIUM *medium. C. B. P.* Middle Spaniſh Nut.

4. SISYRINCHIUM *Creticum montanum, anguſtiſſimo folio. Tourn. Cor.* Mountain Siſyrinchium of Candy, with a very narrow Leaf.

5. SISYRINCHIUM *Africanum, foliis longiſſimis, flore albo, radice venenatâ.* African Siſyrinchium, with very long Leaves, a white Flower, and a poiſonous Root.

The three firſt Sorts grow wild in *Portugal* and *Spain*, where the Roots are ſought after, and dug up by Children and the Shepherds, who eat them, as alſo the Hogs; for they are ſweet, and in Taſte reſemble the Earth-nut. The fourth Sort was diſcovered in the Iſland of *Crete* by Dr. *Tournefort*, who ſent it to the Royal Garden at *Paris*.

Theſe Plants are preſerved by the Curious for their Flowers, which make a fine Appearance when they are in Beauty, which is commonly in *May*, or the Beginning of *June*, about the ſame Time with the *Bulbous Iris*. The Flowers come out alternately from their Sheaths or Coverings, after the Manner of the *Iris*; ſo that there is ſeldom more than one Flower open upon each Stalk at one time; but they ſucceed each other: For there are commonly four or five Flowers produced on each Stalk, when the Roots are ſtrong. Theſe Flowers are in ſome of a fine blue Colour, ſpotted with yellow; and in other Sorts they are of a pale purple Colour, ſpotted with white.

The four firſt Sorts are hardy Plants, which are multiplied by Off-ſets, and may be treated in the ſame Manner as the *Bulbous Iris*, to which the Reader is deſired to turn, where there are full Directions exhibited, both for the propagating them by Off-ſets and Seeds, with which Management theſe Flowers may be cultivated.

The fifth Sort was brought from *Africa*, where the Inhabitants uſe the Root to fuddle the Fiſh in the Rivers, in order to catch them in plenty. The green Leaves of this Sort are poiſonous; for as a Tub of theſe Plants, which were bringing to *England*, was placed on the Deck of the Ship, ſome Hogs getting to it eat down all the Leaves; which ſwelled two of the Hogs, and killed them.

This Plant, being a Native of a warm Country, is too tender to live in this Climate, unleſs it is preſerved in a good Stove; ſo the Roots ſhould be planted into Pots filled with light rich Earth, and plunged into the Bark-bed in the Stove, where if it is preſerved in a kindly Warmth, the Roots will multiply greatly. The Leaves of this Sort die away in *Winter*, and new ones ariſe in the *Spring*; ſo the beſt Time to tranſplant the Roots is juſt before they put out new Leaves, which is commonly in the Beginning of *April*; at which Time the Bark-bed ſhould be ſtirred up and renewed with ſome freſh Tan, and the Pots muſt be plunged again, and frequently refreſhed with Water in warm Weather, which will make them grow very vigorous; but during the *Winter* Seaſon, while the Leaves are decayed, they muſt not have much Wet, leſt it rot the Roots.

SIUM, Water Parſnip.

The *Characters* are;

It hath a Roſe-ſhaped umbellated Flower, conſiſting of ſeveral Petals, which are commonly equal, and placed orbicularly, reſting upon the Empalement, which afterward becomes a roundiſh Fruit, compoſed of two Seeds, which are gibbous and furrowed on one Side, but plain on the other: To theſe Notes muſt be added, that the Leaves are joined together, and adhere to the Rib, with an odd Lobe at the End.

The *Species* are;

1. SIUM *ſive Apium paluſtre, foliis oblongis. C. B. P.* Water Parſnip, with oblong Leaves.

2. SIUM *umbellatum repens. Ger. Emac.* Creeping Water Parſnip.

3. SIUM *latifolium. C. B. P.* Broad-leafed Water Parſnip.

4. SIUM *paluſtre alterum, foliis ſerratis. Inſt. R. H.* Another Water Parſnip, with ſawed Leaves.

5. SIUM *foliorum conjugationibus laciniatis. Inſt. R. H.* Water Parſnip, with the Wings of the Leaves jagged.

6. SIUM *aquaticum, ad alas floridum. Mor. Umb.* Water Parſnip, with Flowers growing at the Wings of the Leaves.

7. SIUM *minimum umbellatum, foliis variis. Pluk. Alm.* The leaſt Water Parſnip, with variable Leaves.

8. SIUM *alterum, oluſatri facie. Lob. Icon.* Long-leafed Water Hemlock.

9. SIUM *arvenſe, ſive ſegetum. Inſt. R. H.* Corn-parſley, *or* Honewort.

10. SIUM *aromaticum, Siſon officinarum. Inſt. R. H.* Stone-parſley, *or* German Amomum.

The firſt, ſecond, third, ſeventh and eighth Sorts, grow pretty common in Ditches, Ponds, and other ſtanding Waters, in divers Parts of *England*; ſo are not cultivated, becauſe they will not live on dry Ground. The ſecond Sort is directed to be uſed in Medicine by the College of Phyſicians, and is eſteemed very good in ſcrophulous Caſes. The firſt Sort is by ſome People miſtaken for *Water-creſſes*, and is ſometimes gathered as ſuch and eaten, though they are very different Plants.

The eighth Sort is a very poiſonous Plant, which was by Dr. *Wepſer* taken for the *Hemlock* of the Ancients; who has written a large Treatiſe of this Plant, in which he has mentioned a Number of Inſtances of the noxious Quality thereof: So that this Plant ſhould be extirpated from Places near Habitations, to prevent any Miſchief which may happen by Perſons uſing of it thro' Ignorance.

The fourth, fifth and ſixth Sorts grow in ſtanding Waters in *France*, *Germany*, and ſome other Parts of *Europe*, but are not Natives of this Country. Theſe are ſometimes preſerv'd in Botanick Gardens for Variety-ſake, but are not uſed in Medicine.

The ninth and tenth Sorts grow on dry Banks, and under Hedges, in ſeveral Parts of *England*, ſo are rarely cultivated in Gardens. The ninth Sort has been by ſome Writers greatly eſteemed for diſcuſſing hard Swellings of the Face, which by ſome Country People are called *Hones*, ſo the Name of *Honewort* was given to this Plant, on account of that Quality. The Seeds of the tenth Sort are uſed in Medicine, as one of the leſſer warm Seeds. This is called *Amomum* by the *Germans*, tho' it is not what the Antients meant by that Name.

All theſe Sorts may be cultivated by Seeds, which ſhould be ſown in the *Autumn* ſoon after they are ripe: Thoſe Sorts which grow in ſtanding Waters, muſt be ſcattered into ſuch Places; but the other Sorts may be ſown on a ſhady Border, where the Plants will come up in the *Spring*, and require no farther Care, but to keep them clear from Weeds, and, where they grow too cloſe together, to thin them, ſo as to allow them Room to grow. The ſecond Year theſe Plants will produce Flowers and Seeds, ſoon after which the Roots will periſh.

SMALLAGE: *vide* Apium.

SMILAX, [ſo called of σμάω, Gr. *to ſcrape*, becauſe it is a rough Plant] Bindweed.

The *Characters* are;

The Flower conſiſts of ſeveral Leaves, which are placed circularly, and expand in form of a Roſe, whoſe Pointal afterwards becomes a Fruit, or ſoft roundiſh Berry, containing oval-ſhaped Seeds.

The *Species* are;

1. SMILAX *aſpera fructu rubente. C. B. P.* Rough Bindweed, with a red Fruit.

2. SMILAX *viticulis aſperis, foliis longis anguſtis, mucronatis, lævibus auriculis ad baſim rotundioribus. Pluk. Phyt.* Rough Bindweed, with long narrow-pointed ſmooth Leaves: having round Ears at the Baſe.

3. SMILAX *viticulis aſperis, Virginiana, folio hederaceo lævi, Zarza nobiliſſima nobis. Pluk. Phyt.* Rough Virginian Bindweed, with a ſmooth Ivy Leaf, commonly called *Zarzaparilla*.

4. SMILAX *Orientalis, ſarmentis aculeatis, altiſſimas arbores ſcandentibus, foliis non ſpinoſis. Tourn. Cor.* Eaſtern Rough Bindweed, with prickly Shoots and ſmooth Leaves.

5. SMILAX *lævis, lauri folio, baccis nigris. Cateſb. Hiſt. Nat. Carol.* Smooth Bindweed, with a Bay Leaf and black Berries.

6. SMILAX *non ſpinoſa humilis, folio ariſtolochiæ baccis rubris. Cateſb. Hiſt. Nat. Carol.* Dwarf ſmooth Bindweed, with a Birthwort Leaf and red Berries.

7. SMILAX *bryoniæ nigræ foliis, caule ſpinoſo, baccis nigris. Cateſb. Hiſt. Nat. Carol.* Bindweed with black briony Leaves, a prickly Stalk and black Berries.

8. SMILAX *Caroliniana, ſtipite quadrato leni, foliis anguſtis aſperis, auriculis ad baſim anguloſis. Pluk. Phyt.* Carolina Bindweed, with ſquare ſmooth Shoots, and rough narrow Leaves, which have cornered Ears at their Baſe.

9. SMILAX *foliis latis, in margine ſpinoſis, Caroliniana ſtipite leni quadrato. Pluk. Phyt.* Carolina Bindweed, with broad Leaves, having Spines on their Edges, and a ſmooth ſquare Shoot.

10. SMILAX *aſpera Bermudenſis, grandioribus foliis cordiformibus, radice ſurculoſâ. Pluk. Phyt.* Rough Bindweed of Bermudas, with larger heart-ſhaped Leaves, and a Root full of Shoots.

11. SMILAX *claviculata, Hederæ folio, tota levis, è Terrâ mariana. Pluk. Phyt.* Smooth Bindweed, with Tendrils, and an Ivy Leaf from Maryland.

12. SMILAX *viticulis aſperis, Virginiana, foliis anguſtis lævibus, nullis auriculis prædita. Pluk. Phyt.* Virginian Bindweed, with rough Shoots and ſmooth narrow Leaves, having no Ears.

13. SMILAX *Virginiana, ſpinus innocuis armata, latis Canellæ foliis. radice arundinaceâ craſſâ & carnoſâ. Pluk. Phyt.* Virginian Bindweed, armed with innocent Spines, broad Cinnamon Leaves, and a thick fleſhy Root, called *Baſtard China*.

14. SMILAX *Americana lævis, Canellæ foliis, baccis rubris.* Smooth American Bindweed, with Cinnamon Leaves and red Berries.

15. SMILAX *aſpera, Americana, Ariſtolochiæ foliis longioribus, ad baſim auriculatis.* Rough American Bindweed, with longer Birthwort Leaves, with Ears at their Baſe, whoſe Root is the *Zarza Parilla* of the Shops.

16. SMILAX *Americana levis, Tamni folio, claviculis longioribus donatis.* Smooth American Bindweed, with a black briony Leaf, ſending forth long Tendrils.

17. SMILAX *Americana, levis, latiſſimo folio, auriculis ad baſim rotundioribus.* Smooth American Bindweed, with a very broad Leaf, having round Ears at the Baſe.

18. SMILAX *unifolia, humillima. Inſt. R. H.* The loweſt Bindweed or one Blade.

12. SMILAX *aſpera racemoſa, polygonati folio. Inſt. R. H.* Rough branching Bindweed, with a Solomons-ſeal Leaf.

20. SMILAX *ſpicata, Polygonati folio. Inſt. R. H.* Spiked Bindweed, with a Solomons-ſeal Leaf.

Moſt of the *Species* of this Plant grow wild in *Virginia*, *Carolina*, and other Parts of *America*, in the Woods, where they climb round the Stems of Trees and Shrubs, to ſupport themſelves; for their Branches are very weak and trailing, and if not ſupported do lie upon the Ground.

Theſe Plants are preſerved in the Gardens of ſuch as are curious in Botany, for their Variety; but there is no great Beauty or Uſe in them; ſo that they are not very commonly cultivated in other Gardens.

They are moſt of them hardy enough to endure the Cold of our Climate, if planted in a light Soil, and under the Shelter of Trees, where they delight to grow. They may be eaſily propagated by Off-ſets, taken from the old Roots in *March*, juſt before they begin to ſhoot, and tranſplanted where they are to remain; where, if it be in a good Soil they will flower very well; but they ſeldom produce Fruit in this Country.

But as the Seeds are often brought into *England*, ſo they may be ſown in Pots of light rich Earth, and placed in a ſhady Situation in *Summer*; but in *Winter* they muſt be removed into Shelter, obſerving always to keep the Earth moiſt, and the following *Spring* the Plants will come up, when the Pots ſhould be again removed into the Shade, and kept clear from Weeds, watering them in dry Weather; and the *Spring* following they may be tranſplanted, where they are to remain.

The fourth Sort here mentioned, was diſcovered by Dr. *Tournefort* in the *Levant*. This is a very rambling Plant, which climbs up Trees, and riſes to a great Height in the Places of its Natural Growth; but is an humbler Plant in this Country. This may be propagated by Seeds, or from Off-ſets taken from the old Roots, and is hardy enough to live in the open Air in this Country, provided it is planted ed under Trees, where it may be a little protected in *Winter*.

The fifth, ſixth, ſeventh, eighth, ninth, tenth, eleventh, twelfth and thirteenth Sorts, are Natives of *Carolina*, *Virginia* and the other northern Parts of *America*, where they grow in the Woods in the greateſt Shade. Theſe may alſo be propagated by Seeds or Off-ſets, from the old Roots as the former. Moſt of theſe Plants are preſerved in Pots in the Gardens of the Curious, but they will endure the Cold of our *Winters* in the open Air very well, and may be rendred ornamental by planting them under Trees in Wilderneſs Quarters, where they will fill up and cover the Ground, and may be diſpoſed ſo as to make an agreeable Variety. Theſe Plants require a Soil rather moiſt than dry ; and if it be tolerably light, they will thrive much better, than in a very ſtrong Soil.

The fourteenth, fifteenth, ſixteenth and ſeventeenth Sorts, are Natives of the warmer Parts of *America*, ſo are more tender than either of the former. Theſe Sorts were diſcovered at *Campechy* by Mr. *Robert Millar* Surgeon, who ſent Samples of them to *England* ; the Root of the fifteenth Sort is the *Zarza Parilla*, which is directed by the College of Phyſicians to be uſed in Medicine.

Theſe Sorts are propagated by Seeds or Off-ſets, in the ſame Manner as thoſe before-mentioned, but theſe muſt be preſerved in Pots, and ſheltered in *Winter*, otherwiſe they will not live in this Country. As theſe Plants rarely produce Seeds in *England*, ſo they are commonly increaſed by parting of their Roots ; the beſt Time for doing of this, is in *March*, juſt before they ſend forth new Shoots from their Roots ; for altho' the old Shoots abide and retain their Leaves throughout the Year, yet there are every *Spring* new Shoots ſent forth from their Roots, which come up, like the ſmall Shoots of *Aſparagus*, with a naked Stem, but afterwards they ſend forth ſide Branches, which are beſet with Leaves. Some of theſe Sorts multiply greatly by their creeping Roots, which will extend to a great Diſtance, provided they are not confined ; but when they extend their Roots very far, they ſeldom produce very ſtrong Shoots, nor do they make ſo good an Appearance, as when they grow cloſe and thick.

When the Seeds of theſe Plants are obtained from abroad, they ſhould be ſown in Pots filled with freſh light Earth, and plunged into a moderate Hot-bed, obſerving to water the Earth frequently to keep it moiſt, becauſe the Seeds being hard, will not vegetate without a conſiderable Share of Moiſture, and many times remain in the Ground a whole Year, before they grow ; ſo that if the Plants do not come up the firſt Seaſon, the Pots ſhould be kept clean from Weeds all the *Summer*, and in *Winter* they ſhould be ſheltered from Froſt under a common Frame ; the following *Spring* they muſt be again plunged into the Hot-bed, which will bring the Plants up very ſoon. When the Plants are come up, they muſt be conſtantly kept clear from Weeds, and frequently watered in warm Weather, and toward the End of *May*, they ſhould be inured to the open Air by degrees, and in *June* they may be removed out of the Bed, and placed abroad in a ſheltered Situation, where they ſhould remain till the Froſt comes on in *Autumn*, when they muſt be removed into ſhelter. Theſe Plants ſhould remain untranſplanted in the Seed-pots, till the following *Spring*, when they ſhould be turned out of the Pots, and carefully ſeparated, the tender Sorts ſhould be planted in Pots filled with freſh Earth ; and if they are plunged into a very temperate Hot-bed, it will cauſe them to take new Root very ſoon, and greatly ſtrengthen the Plants. But the hardy Kinds may be planted abroad under Trees, where (if they are kept clear from Weeds, until they have obtained ſufficient Strength to overbear the Weeds) they will make an agreeable Variety, amongſt other hardy Wood Plants.

The eighteenth, nineteenth and twentieth Sorts, die to the Root every Year, and riſe in the *Spring* ; the fifteenth Sort is a very humble Plant, ſeldom riſing above four Inches high, this increaſes by its creeping Root, for it rarely produces Seeds in this Country. It is a very hardy Plant, and grows in Woods, but it is not a Native of *England*. I obſerved it growing plentifully in a Wood near the *Hague*, in a moiſt light ſandy Soil ; ſo that whoever would cultivate this Plant, ſhould plant it in ſuch Situations. The beſt time to tranſplant this Plant, is in the *Autumn*, when the Leaves are decayed.

The nineteenth and twentieth Sorts ; are alſo propagated by parting of their Roots, which may be done either in the *Autumn*, ſoon after their Leaves decay, or in the *Spring* before they ſend forth new Shoots. Theſe Plants uſually grow between two and three Feet high, and have very much the Appearance of *Solomons-ſeal*, until they produce their Flowers. Theſe Sorts are very hardy, ſo will grow in almoſt any Situation, but ſhould have a freſh light Soil, inclining to Moiſture.

SMYRNIUM, [of Σμύρνια, *Myrrha*, becauſe it reſembles *Myrrh* in Taſte and Smell ; or becauſe that Plant which the Ancients call'd *Smyrnium*, by Inciſion yielded a like Liquid] Alexanders.

The *Characters* are ;

The Flowers are produced in Umbels, conſiſting of ſeveral Leaves, which are placed orbicularly, and expand in form of a Roſe : theſe reſt upon the Empalement, which afterwards becomes an almoſt globular Fruit, compoſed of two pretty thick Seeds, ſometimes ſhaped like a Creſcent, gibbous, and ſtreak'd on one Side, and plain on the other.

The *Species* are ;

1. Smyrnium. *Matth.* Common Alexanders.
2. Smyrnium *peregrinum, rotundo folio. C. B. P.* Foreign Alexanders, with a round Leaf.
3. Smyrnium *peregrinum, folio oblongo. C. B. P.* Foreign Alexanders, with an oblong Leaf.
4. Smyrnium *Creticum, paludapii foliis. T. Cor.* Candy Alexanders, with a Smallage Leaf.

The firſt of theſe Sorts (which is that order'd by the College for Medicinal Uſe) grows wild in divers Parts of *England*, and at preſent is ſeldom cultivated in Gardens ; tho' formerly it was greatly uſed in the Kitchen, before *Celery* was ſo much cultivated, which hath taken Place of *Alexanders*, in moſt Peoples Opinion. The other Sorts are preſerv'd in Botanick Gardens for Variety, but may either of them be cultivated for the Uſe of the Kitchen. The ſecond ſort is much preferable to the firſt for blanching, as I have tried, and will be tenderer, and not quite ſo ſtrong.

All theſe Plants may be propagated by ſowing their Seeds upon an open ſpot of Ground in *Auguſt*, ſo ſoon as they are ripe ; for if they are preſerv'd till *Spring*, they often miſcarry, or at leaſt do not come up until the ſecond Year ; whereas thoſe ſown in *Autumn* do rarely fail of coming up ſoon after *Chriſtmas*, and will make much ſtronger Plants than the other.

In the *Spring* theſe Plants ſhould be hough'd out, ſo as to leave them ten Inches or a Foot apart each Way ; and during the following *Summer* they muſt be conſtantly clear'd from Weeds, which, if permitted to grow amongſt them, will draw them up ſlender, and render them good for little. In *February* following, the Plants will ſhoot up again vigorouſly, at which Time the Earth muſt be drawn up to each Plant, to blanch them ; and in three Weeks after, they will be fit for Uſe, when they may be dug up, and the white Part preſerved, which may be ſtew'd, and eaten as *Celery*.

SNAP-DRAGON : *vide* Antirrhinum.

SNEEZ-WORT : *vide* Ptarmica.

SNOW, is defined to be a Meteor form'd in the middle Region of the Air, of Vapour raiſed by the Action of the Sun, or ſubterraneous Fire, there congeal'd, its Parts conſtipated, its ſpecifick Gravity increaſed, and thus return'd to the Earth in the Form of little *Villi* or Flakes.

The *Snow* we receive may properly enough be aſcribed to the Coldneſs of the Atmoſphere thro' which it falls : When the Atmoſphere is warm enough to diſſolve the *Snow* before it arrives at us, we call it *Rain* ; if it preſerves itſelf undiſſolved, we call it *Snow*.

Snow is very uſeful ; it fructifies the Ground, it guards Corn or other Vegetables from the intenſer Cold of the Air, eſpecially the cold piercing Winds.

It is ſuppoſed to abound with ſalifick and fertile Particles, as much or more than Rain ; however, it is accounted more ponderous, and by that means ſinks deeper into the Ground than Rain does, and therefore is in ſome Caſes of more Benefit to planting ; for which Reaſon, ſome lay Heaps of *Snow* round the Feet of their Foreſt-Trees, eſpecially in hot burning Land.

Monſ. *Le Clerc* ſays, that ſome Parts of a Cloud which ſhould turn into Rain, are ſometimes prevented by the Cold, and form'd into a Conſiſtence which we call *Snow* ; which appears to be form'd of watery Particles, from hence, that when it diſſolves, it turns into Water ; ſo that we may eaſily conceive *Snow* to be made of watery Particles, harden'd by Cold, and gather'd into Flakes, in ſuch a manner as to leave large Interſtices between one another ; which *Snow* is not tranſparent, as the Water, becauſe its more rigid Particles being huddled together by Chance, don't leave ſtrait

Pores between one another, and ſo keep out the Matter of Light.

But when it happens that the Region of the Air under the Cloud is very cold, the Drops of Rain are congeal'd as they fall, and come down in Lumps, which are call'd *Hail*; and theſe Lumps are greater or leſs, according to the Bigneſs of the Rain-Drops of which they are form'd; and theſe Lumps of Hail are alſo variouſly figured.

Dr. *Grew*, in a Diſcourſe of the Nature of *Snow*, obſerves, that many Parts thereof are of a regular Figure, for the moſt part, being, as it were, ſo many little Rowels or Stars of perfect and tranſparent Ice; upon each of which Points are ſet other collateral Points, at the ſame Angles as the main Points themſelves: amongſt theſe there are divers other irregular, which are chiefly broken Points and Fragments of the regular ones; others alſo, by various Winds, ſeem to have been thaw'd, and frozen again into irregular Cluſters, ſo that it ſeems as if the whole Body of *Snow* were one intire Maſs of Iſicles irregularly figured; that is, a Cloud of Vapours being gather'd into Drops, the Drops do forthwith deſcend, and in their Deſcent meeting with a freezing Air, as they paſs thro' a colder Region, each Drop is immediately frozen into an Iſicle, ſhooting itſelf forth into ſeveral Points; but ſtill continuing to deſcend, and meeting with ſome intermitting Gales of warmer Air, or by their being continually wafted to and fro, touching upon one another, ſome are a little thaw'd, blunted, and again frozen into Cluſters, or intangled ſo as to fall again in what we call Flakes; altho' *Snow* is firm Ice, and the Lightneſs of it is owing to the Exceſs of its Surface, in Compariſon to the Matter contain'd in it; as Gold itſelf may be extended in Surface, till it will ride upon the leaſt Breath of Air.

SNOW-DROP: *vide* Narciſſo-Leucojum.

SOIL: *vide* Earth.

SOLANOIDES, Baſtard Nightſhade.

The *Characters* are;

It hath a roſe-ſhaped Flower, conſiſting of five Leaves, whoſe Pointal afterward becomes a roundiſh Fruit, having one hard Seed, which is covered with a thin Pulp, ſo as to have the Appearance of a Berry.

The *Species* are;

1. SOLANOIDES *Americana, Circeæ foliis caneſcentibus. Tourn. American* Solanoides, with hoary Inchanters Nightſhade Leaves.

2. SOLANOIDES *Americana, Circeæ foliis glabris. Tourn. American* Solanoides, with ſmooth Inchanters Nightſhade Leaves.

The firſt Sort was mentioned under the Title of *Phytolacca*, but as Dr. *Tournefort* has eſtabliſhed a new Genus in the Memoirs of the *Academy of Sciences* for theſe two Plants, ſo I have taken the Liberty to place them here under their proper Name.

Theſe Plants are Natives of the warmer Parts of *America*, from whence their Seeds have been brought into *Europe*, and the Plants are now become pretty common in the Gardens of the Curious. They are propagated by Seeds, which ſhould be ſown on a Hot-bed early in the *Spring*; and when the Plants are come up, they ſhould be tranſplanted, each into a ſeparate ſmall Pot, filled with light freſh Earth, and plunged into a moderate Hot-bed of Tanners-bark, obſerving to ſhade them from the Sun, until they have taken new Root, after which Time they muſt have a large Share of Air admitted to them in warm Weather, and they muſt be conſtantly watered; when the Plants have obtained Strength, they ſhould be inured to bear the open Air by degrees, and in *June* they ſhould be ſhifted into larger Pots, and removed either into the Stove, or an airy Glaſs-caſe, where they may have a large ſhare of Air in warm Weather, and if they are duly watered, they will thrive and produce Flowers in *July*, and their Fruit will ripen in *September*; but there will be a Succeſſion of Flowers and Fruit all the *Winter*, provided the Plants are preſerved in a moderate Temperature of Heat; ſo that the Fruit of theſe Plants afford an agreeable Variety in the Stove in *Winter*, for being of a bright red Colour, and growing in long Bunches, they make a fine Appearance. Theſe Plants will abide ſeveral Years, and produce plenty of Flowers and Fruit, but they ſhould conſtantly remain in Shelter, for if they are expoſed in *Summer*, they will loſe their large Leaves, and appear ſtunted, nor will the Fruit continue on the Plants; ſo that the beſt way is, to let them remain always in the Stove, giving them a large ſhare of Air in *Summer*, which will keep them in Vigour, and render them beautiful.

The Fruit of theſe Plants afford a fine red Colour, when bruiſed, but it ſoon fades on Paper, which renders it worth little. If a Quantity of theſe Fruit is ſqueez'd into a Glaſs of fair Water, ſo as to colour the Water, of a deep Red, and a Stem of Flowers of the *Tuberoſe* put into the Glaſs, it will in one Night imbibe ſo much of the Liquor as to variegate the Flowers with a roſe Colour.

SOLANUM, [ſo call'd of *ſolari*, Lat. *to comfort*, becauſe this Plant ſweetens the Humours] Nightſhade.

The *Characters* are;

The Flower conſiſts of one Leaf, which is divided into five Parts, and expands in form of a Star; from the Flower-cup riſes the Pointal, which afterwards becomes a round or oval ſoft ſucculent Fruit, containing many flat Seeds in each.

The *Species* are;

1. SOLANUM *officinarum, acinis nigricantibus. C. B. P.* Common Nightſhade of the Shops, with black Fruit.

2. SOLANUM *officinarum, acinis puniceis. C. B. P.* Nightſhade, with red Fruit.

3. SOLANUM *officinarum, acinis luteis. C. B. P.* Nightſhade, with yellow Fruit.

4. SOLANUM *ſcandens, ſeu dulcamara. C. B. P.* Perennial climbing Nightſhade, *commonly called* Bitter-ſweet.

5. SOLANUM *ſcandens, ſeu dulcamara, flore albo. C. B. P.* Perennial climbing Nightſhade, with a white Flower.

6. SOLANUM *ſcandens, foliis variegatis. H. R. Par.* Perennial climbing Nightſhade, with variegated Leaves.

7. SOLANUM *fruticoſum bacciferum. C. B. P.* Shrubby Berry-bearing Night-ſhade, *commonly called* Amomum Plinii.

8. SOLANUM *Guineenſe, fructu magno inſtar ceraſi nigerrimo umbellato. Boerh. Ind.* Night-ſhade from *Guiney*, with large Fruit, reſembling Black Cherries, which grow in an Umbel.

9. SOLANUM *ſpiniferum fruteſcens, ſpinis igneis, Americanum. Pluk. Phyt.* Shrubby and thorny American Nightſhade, with Fire-colour'd Thorns.

10. SOLANUM *ſpinoſum, maxime tormentoſum. Bocc. Rar. Plant.* Thorny Nightſhade, very much cover'd with a Wooll or Down.

11. SOLANUM *Americanum ſpinoſum, foliis melongenæ, fructu mammoſo. D. Lig. Tourn.* Thorny American Nightſhade, with Leaves like thoſe of Mad-Apple, and a Fruit ſhaped like an inverted Pear, *commonly call'd* in *Barbados* Batchelors-Pear.

12. SOLANUM *pomiferum fruteſcens Africanum ſpinoſum nigricans, flore boraginis, foliis profunde liciniatis. H. L.* Shrubby African Apple-bearing Nightſhade, with black Thorns, a Flower like Borage, and deeply jagged Leaves, *commonly call'*d Pomum Amoris.

13. SOLANUM *tuberoſum eſculentum. C. B. P.* Potatoes.

14. SOLANUM *tuberoſum eſculentum, flore albo. H. R. Par.* White Potatoes.

15. SOLANUM *Americanum ſpinoſum herbaceum, Acanthi folio, flore amplo cæruleo. Houſt.* Prickly herbaceous *American* Nightſhade, with a Bears-breech Leaf, and a large blue Flower.

16. SOLANUM *Americanum ſpinoſiſſimum, herbaceum Anguriæ folio, flore luteo. Houſt.* The moſt prickly *American* Nightſhade, with a Water-melon Leaf, and a yellow Flower.

17. SOLANUM *Americanum fruteſcens, & ſpinoſum, Quercus folio, baccis rubris. Houſt.* Shrubby and prickly *American* Nightſhade, with an Oak Leaf, and red Berries.

18. SOLANUM *Americanum bacciferum, caule & foliis tomento incanis, ſpinoſis flore luteo, fructu croceo. Sloan. Cat.* Berry-bearing *American* Nightſhade, with hoary Stalks and Leaves, a yellow Flower, and Saffron-coloured Fruit.

19. SOLANUM *Americanum fruticoſum, bacciferum ſpinoſum, flore cæruleo. Sloan.* Shrubby Berry-bearing *American* Nightſhade, with a blue Flower.

20. SOLANUM *Americanum, fruteſcens & ſpinoſum, flore magno albo. Houſt.* Prickly and ſhrubby *American* Nightſhade, with a large white Flower.

21. SOLANUM *Americanum, ſcandens, & fruteſcens, flore magno cæruleo, fructu rubro. Houſt.* Shrubby climbing *American* Night-ſhade, with a large blue Flower, and a red Fruit.

22. SOLANUM *Americanum fruteſcens, non ſpinoſum, Lauri folio, flore racemoſo cæruleo. Houſt.* Smooth ſhrubby *American* Nightſhade, with a Bay-leaf and blue Flowers, growing in Cluſters.

23. Solanum *Americanum, fruteſcens & ſpinoſum, foliis infra tomentoſis, flore magno cæruleo. Houſt.* Shrubby and prickly *American* Nightſhade, with Leaves which are hoary underneath, and a large blue Flower.

24. Solanum *Americanum, arboreſcens, Verbaſci folio, fructu flaveſcente majori. Plum.* Tree-like *American* Nightſhade, with a Mullein Leaf, and a larger yellow Fruit.

25. Solanum *Bonarienſe arboreſcens, Papas floribus; Hort. Elth.* Tree-like Nightſhade of *Beunos Ayres*, with Flowers like the Papaw.

26. Solanum *Bahamenſe, arboreſcens, folio ſinuato. Hort. Elth.* Tree-like Nightſhade from the *Bahama Iſlands*, with a ſinuated Leaf.

27. Solanum *lignoſum Africanum, ſempervirens Laurinis foliis. H. Amſt.* Woody ever-green *African* Nightſhade, with Bay Leaves.

28. Solanum *Americanum ſcandens, foliis tomentoſis. Plum.* Climbing *American* Nightſhade, with woolly Leaves.

29. Solanum *Americanum ſcandens, aculeatum, Hyoſcyami folio, flore intus albo extus purpureo. Plum.* Climbing prickly *American* Nightſhade, with a Henbane-leaf, and a Flower white within, and purple on the Outſide.

30. Solanum *Americanum fruticoſum, Perſicæ foliis aculeatum. Plum.* Shrubby and prickly *American* Nightſhade, with Peach-Leaves.

31. Solanum *Dulcamarum Africanum, foliis craſſis hirſutis. Hort. Elth.* Climbing *African* Nightſhade with hairy thick Leaves.

32. Solanum *Americanum arboreſcens, non ſpinoſum, flore parvo rubente, fructu aureo. Houſt.* Smooth *American* Tree-like Nightſhade, with a ſmall reddiſh Flower and a Gold-coloured Fruit.

33. Solanum *Americanum arboreſcens, non ſpinoſum, Lauri folio, aſpero, floribus umbellatis albis. Houſt.* Smooth Tree-like *American* Night-ſhade, with a rough Bay-leaf, and white Flowers growing in Umbels.

The firſt Sort is now very common upon Dunghills, and on rich cultivated Soils, in many Parts of *England*, where it often becomes a troubleſome Weed. This is the Sort which the College of Phyſicians have directed to be uſed in Medicine, under the Title of *Solanum hortenſe*. The ſecond and third Sorts are very near to the firſt, differing from it in the Colour of their Fruits, and the Plants being woolly. The eighth Sort produces much larger Fruit than either of the former, and the Plants grow proportionably larger.

All theſe Sorts are annual Plants, which may be propagated by ſowing their Seeds in *March*, upon a Bed of light rich Earth, in a warm Situation; and when the Plants come up, they ſhould be tranſplanted out into freſh Beds of rich Earth, at about ſix Inches Diſtance, obſerving to water and ſhade them until they have taken Root, as alſo to keep them clear from Weeds, and in very dry Weather they ſhould be often refreſh'd with Water: in theſe Beds they may remain until they have grown ſo large as to meet each other, when they may be taken up, with a good Ball of Earth to each Plant, and planted where they are to remain, obſerving to allow them at leaſt two Feet Diſtance, otherwiſe they will ſpread over each other, or any other Plants which grow near them. This Care may be taken with a few Plants of the red and yellow-berry'd and *Guiney* Sorts, for the ſake of Variety; but the common Sort, if permitted to ſcatter its Seeds, will come up in plenty, without any Care.

The fourth Sort is a climbing woody Plant, which grows in the Hedges in divers Parts of *England*, and is by ſome planted in Gardens, to cover Arbours or ſhady Walls, in *London*, and other cloſe Places, where few other Plants will thrive. This Plant is alſo uſed in Medicine, for ſome particular Preparations; but the Herb-folks in the Markets do often ſell this inſtead of the Garden *Nightſhade*, which is a cooling Plant, and this a hot acrid one, which renders it contrary to the Intention of the Ointment, wherein *Nightſhade* is one of the Ingredients.

The Sort with white Flowers is a Variety of the former, as is alſo that with variegated Leaves, both which are preſerv'd by thoſe who are very curious in collecting the various Kinds of Plants.

Theſe may be eaſily propagated by laying down their Branches, or by planting their Cuttings in the *Spring* upon a moiſt Soil, where they will ſoon take Root, and may afterwards be tranſplanted where they are to remain.

The *Amomum Plinii* is propagated in great plenty, for the Beauty of its large red Fruit, which is always ripe in *Winter*, ſo that when the Trees have plenty of Fruit, they make a very handſome Appearance in a Green-houſe, when intermix'd with *Orange*, *Myrtle*, and other Exotick Trees.

This Plant may be propagated by ſowing its Seeds in a Pot of rich Earth in the *Spring*, placing it upon a moderate Hot-bed, which will greatly facilitate the Growth of the Seeds: the Earth in the Pot ſhould be frequently water'd; for if it is kept too dry, the Seeds will not grow. When the Plants are come up, you ſhould make a gentle Hot-bed, which muſt be cover'd with rich Earth about ſix Inches thick; in this they ſhould be planted about ſix Inches Diſtance each Way, and the Bed arch'd over with Hoops, &c. and cover'd with Mats, to ſhade them from the Sun and Cold, obſerving frequently to water them.

When the Plants have acquired Strength, and the Seaſon becomes favourable, you muſt inure them to bear the open Air by degrees, to which they ſhould be fully expoſed in *June*, when alſo they ſhould be taken up, with a Ball of Earth to the Root of each Plant, and placed ſeparately in Pots fill'd with rich Earth, which muſt be ſet in a ſhady Situation, and frequently water'd until they have taken Root; after which they may be removed into a more open Expoſure, and placed amongſt other Exotick Plants; but they do require a great Plenty of Water in dry Weather, without which they ſeldom produce much Fruit

In *Winter* they muſt be removed into the Green-houſe, and placed in the coldeſt Part of the Houſe, where they may have as much free Air as poſſible in mild Weather, being ſo hardy as many times to endure the Cold of our ordinary *Winters* abroad, when planted in a warm Situation, ſo that they only require to be ſheltered from ſevere Froſt.

Theſe Plants ſhould be annually ſhifted about the latter End of *April*, when their Roots ſhould be pared round, cutting off all the mouldy Fibres which were next the Pot, and the Pots fill'd up with rich Earth, which will ſtrengthen their Flowers, and cauſe them to produce Plenty of Fruit, which (as I ſaid before) ripens in *Winter*, and being of the Shape and Size of Cherries, are commonly call'd *Winter-Cherries* by the Gardeners.

The ninth and eleventh Sorts are much tenderer than the former, being brought from the warm Parts of *America*: Theſe are alſo propagated by ſowing their Seeds in the *Spring* upon a good Hot-bed, and when the Plants are come up, they ſhould be each tranſplanted into a ſeparate ſmall Pot fill'd with rich Earth, and plunged into a freſh Hot-Bed, obſerving to water and ſhade them until they have taken Root; after which they ſhould have Air and Water in proportion to the Heat of the Seaſon, and the Bed in which they are placed; and when their Roots have fill'd the Pots in which they were planted, (which they will do in a Month's time, if they thrive) they muſt be ſhaken out, and after having gently pared off the Fibres which grew next the Pot, they ſhould be placed in Pots a Size larger, which muſt be fill'd with freſh rich Earth, and plung'd into a freſh Hot-bed, to bring the Plants forward, obſerving to water them frequently; for they will not thrive without plenty of Moiſture in warm Weather.

In *July* theſe Plants may be inured to bear the open Air by degrees, into which they may be removed, if the Seaſon be warm; but otherwiſe they muſt always be preſerv'd either under Glaſſes or in the Stove; and if they are placed in the open Air, they ſhould not remain there longer than the Middle of *Auguſt*, leſt the Nights growing cold, ſhould hurt them. During the *Winter* Seaſon they muſt be preſerv'd in the Stove, obſerving to water them frequently, and the ſecond Year they will produce Flowers and Fruit.

The tenth and twelfth Sorts are not ſo tender as the laſt, but require an open airy Glaſs-caſe, or a warm Green-houſe in *Winter*; but in *Summer* may be expoſed in the open Air with other Exotick Plants. Theſe may be propagated by ſowing their Seeds on a Hot-bed, as the former, and ſhould be managed as hath been directed for them, with this Difference, that they may be much ſooner expoſed to Air, and ſhould not be bred ſo tenderly. Theſe are preſerved for their odd Appearance, by ſuch as are curious in cultivating Exotick Plants: their Fruits being ripe in *Winter*, do afford a Variety in the Green-houſe, and their Leaves and Flowers being remarkable in their Colour, Shape, &c. do render them worthy of a Place in every good Collection of Plants.

There is alſo another Variety, which differs very much from the tenth Sort, tho' call'd by that Name in moſt of the *Engliſh* Gardens where it is preſerv'd, which I believe came from *Virginia*, and being ſomewhat like the Figure given by *Pere Boccone* of the tenth Sort, I ſuppoſe was taken for the ſame Plant; but they are very different from each other, as appear'd by ſome Plants which I raiſed from Seeds ſent me by *Signior Tilli*, Profeſſor of Botany at *Piſa*, of *Boccone*'s Plant, and others raiſed from the old Sort which came from *Virginia*, both which being cultivated together, retain'd a ſpecifick Difference.

The Red and White *Potatoes* are both indifferently cultivated in *England*; tho' the red Sort is moſt commonly brought to the Markets. Theſe Plants were originally brought from *Virginia* into *Europe*, where they are at preſent ſo generally eſteem'd, as to be one of the moſt common eſculent Roots now in Uſe.

Theſe Plants are propagated by planting the ſmalleſt Roots in the *Spring*, which, in a good Soil, will multiply exceedingly; for I have many times ſeen ten, twelve, or more Roots produced from a ſingle Off-ſet in one Year.

The Soil on which theſe ſhould be planted, ought to be rather moiſt than dry, and of a rich ſoft looſe Texture; for if the Ground be too dry or binding, they will produce but very ſmall Roots, and thoſe but ſparingly. This Soil ſhould be well dug or plough'd, and the ſmall Roots laid in Trenches or Furrows ſix Inches deep, and about ſix Inches aſunder in the Furrows; but the Furrows muſt be a Foot Diſtance from each other; for when they are too cloſe, their Roots will not be large, which is what People uſually covet.

In the *Spring* and *Summer* Months, the Weeds ſhould be carefully hough'd down between the Plants, until their Haulm is ſtrong enough to bear them down, and prevent their Growth: and when their Haulm decays in *Autumn*, the Roots may be taken up for Uſe; which may be done as they are wanted, till the Froſt begins to ſet in; when there muſt be a Quantity taken up, and laid in Sand in a dry Cellar, where they may be protected from Froſt. The beſt of theſe may be taken out for Uſe in *Winter*, and the ſmall ones reſerved to plant in the *Spring*.

The fifteenth, ſixteenth, ſeventeenth, twentieth, twenty-firſt, twenty-third, thirty-ſecond and thirty-third Sorts, were diſcovered by the late Dr. *Houſtoun*, near *La Vera Cruz*, in *America*, from whence he ſent their Seeds to *England*, many of which have ſucceeded in ſeveral curious Gardens, where the Plants are now growing.

The fifteenth and ſixteenth Sorts are annual Plants, ſo, rarely produce ripe Seeds in *England*; but the others are abiding Plants, which flower every year, and ſometimes they perfect their Fruit in this Country.

Theſe being Natives of a warm Country, muſt be raiſed on a Hot-bed early in the *Spring*, and when the Plants are fit to tranſplant, they muſt be each planted in a ſeparate ſmall Pot filled with freſh rich Earth, and plunged into a moderate Hot-bed of Tanners-bark, obſerving to ſhade them from the Sun until they have taken new Root; after which Time, they ſhould have a large Share of freſh Air admitted to them in warm Weather, and they muſt be plentifully watered. Toward the latter end of *June*, it will be proper to harden the Plants to endure the open Air, and ſoon after they ſhould be removed into the Stove, where they muſt have as much free Air as poſſible in warm Weather; but as the Cold approaches in *Autumn*, they muſt be carefully protected there from, and in *Winter* they ſhould be kept in a moderate Temperature of Warmth, otherwiſe they will not live in this Country.

Some of theſe Sorts will bear to be expoſed in the open Air, in the Heat of *Summer*, provided they are placed in a warm Situation, but if the Seaſon ſhould prove cold, they will not thrive abroad, ſo it will be the better Method to let them remain in the Stove, and open the Glaſſes in Front, and at the Top of the Stove every Day, to admit as much Air as poſſible in hot Weather, with which Management they will thrive much better than in the open Air.

The eighteenth and nineteenth Sorts were diſcovered by Sir *Hans Sloane* in *Jamaica*, where they grow in plenty. The Seeds of theſe were alſo ſent to *England* by the late Dr. *William Houſtoun*.

The twenty-ſecond Sort was diſcovered by the late Dr. *William Houſtoun*, at *Campechy*, where it hath ſince been found in great plenty by Mr. *Robert Millar* a Surgeon, who ſent the Seeds to *England*.

The twenty-fourth, twenty-eighth and twenty-ninth Sorts, were diſcovered by Father *Plumier* in ſome of the *French* Settlements in the *Weſt-Indies*, and have ſince been found by Mr. *Robert Millar*, near *Carthagena* in *America*, from whence he ſent their Seeds.

The twenty-fifth Sort was ſent from *Beunos Ayres*, and the twenty ſixth Sort is a Native of the *Bahama Iſlands*.

All theſe being Natives of warm Countries, muſt be treated in the ſame Manner, as hath been directed for the former Sorts, otherwiſe they will not thrive in *England*.

The twenty-ſeventh and thirty-firſt Sorts are Natives of the *Cape of Good Hope*, ſo are leſs tender than any of the other Kinds. Theſe muſt be preſerved in Pots, and placed in a good Green-houſe in *Winter*, where they ſhould have a large Share of free Air in mild Weather, but muſt be ſecured againſt Froſt, during the *Winter* Seaſon; theſe Plants will require to be frequently refreſhed with Water, but in cold Weather it muſt be given to them in moderate Quantities; and in *Summer* the Plants ſhould be placed in the open Air, in a warm ſheltered Situation, during which Seaſon, they will require a more plentiful Supply of Water in dry Weather, for they are thirſty Plants, as are all of this Tribe.

The climbing Sorts of Nightſhade may be propagated by Cuttings, which ſhould be taken off in *May*, and thoſe of the tender Kinds ſhould be planted in Pots filled with freſh Earth, and plunged into a Hot-bed of Tanners-bark, where they ſhould be carefully ſcreened from the Heat of the Sun every Day, until they have taken Root; after which Time they may be treated in the ſame Manner, as thoſe Plants which come from Seeds. But the thirty-firſt Sort, which is more hardy, will not require ſo much Care; for if the Cuttings of this Kind are planted in a ſhady Border, they will take Root, and may be afterwards taken up and potted, and placed in a warm Situation in the open Air till *October*, when they muſt be removed into the Green-houſe for the *Winter* Seaſon.

Theſe Plants, when they thrive well, and produce plenty of Fruit, make an agreeable Variety amongſt other exotick Plants, in the Stove, and Green-houſe, eſpecially in the *Winter* Seaſon, at which time they commonly have plenty of Fruit, which make a pretty Appearance, when there are not many other Plants in Beauty. And ſome of theſe Sorts, whoſe Flowers are large and of beautiful Colours, make a fine Appearance, and are worthy of a Place in the Stove, tho' they do not conſtantly produce Fruit in this Climate, eſpecially the fifteenth Sort, whoſe Flowers are very large and of a fine blue Colour; and the twenty-ſecond Sort, whoſe Flowers, tho' ſmall, yet being produced in long Cluſters, and being of a fine blue Colour, make a fine Appearance; and theſe do frequently flower in the *Winter* Seaſon.

SOLDANELLA, Soldanel.

The *Characters* are;

It hath a Bell-ſhaped Flower, conſiſting of one Leaf, which is for the moſt part fringed; the Pointal, which ariſes from the lower Part of the Empalement, afterwards becomes a Fruit of a cylindrical Figure, opening at the Top, and full of Seeds, which adhere to a Placenta.

The *Species* are;

1. SOLDANELLA *Alpina rotundifolia. C. B. P.* Round-leav'd Soldanel of the *Alps*.
2. SOLDANELLA *Alpina rotundifolia, flore niveo. C. B. P.* Round-leav'd Soldanel of the *Alps*, with a Snow-white Flower.
3. SOLDANELLA *Alpina, folio minus rotundo. C. B. P.* Soldanel of the *Alps*, with a Leaf leſs round.

Theſe Plants grow on the *Alps*, and ſeveral other mountainous Places of *Italy*, *Germany*, and *Hungary*, from whence the Plants have been obtained by ſome curious Perſons, who preſerve them in their Gardens for the ſake of Variety. They are Plants of humble Growth, ſeldom riſing above ſix or eight Inches high; their round Leaves grow cloſe to the Ground, from between which the Flower Stems ariſe; each of which have four or five Flowers, which in the firſt Sort are of a fine blue Colour, but the ſecond of a Snow-white, which hang down and are ſhaped like Bells. They flower the latter End of *April*, or the Beginning of *May*, and their Seeds are ripe in *July*.

The beſt Method to propagate theſe Plants, is, by parting of their Roots, becauſe their Seeds do not ſucceed unleſs they are perfectly ripe and well nouriſhed, and this rarely happens in *England*; nor do the Seeds which are brought from abroad ſucceed, for they ſeldom grow, unleſs they are ſown ſoon after they are ripe.

The Time for tranſplanting and parting of theſe Roots is in *September*, that they may have Time to make good Roots before *Winter*; for if they are removed in the *Spring*, they never flower very ſtrong, and if the Seaſon ſhould prove dry, the Plants will decay, unleſs they are conſtantly ſupplied with Water.

The Soil in which theſe Plants thrive beſt, is a ſtrong cool Loam, and they muſt have a ſhady Situation, for if they are expoſed to the Sun, they will not live, nor will they thrive in a warm light Soil. In dry Weather theſe Plants ſhould be frequently watered, which will cauſe them to flower ſtrongly, and make a good Increaſe.

If the Seeds ripen in *England*, and any Perſon is deſirous to propagate the Plants that Way, they ſhould be ſown in Boxes or Pots, filled with freſh loamy Earth, ſoon after they are ripe; and the Boxes muſt be placed in a ſhady Situation, and frequently watered in dry Weather. The Plants will ſometimes appear the ſame *Autumn* the Seeds are ſown, but more frequently they do not come up till the following *Spring*, ſo that the Earth muſt not be diſturbed, nor Weeds permitted to grow in the Boxes. When the Plants come up, they muſt be duly watered in dry Weather, and conſtantly placed in a ſhady Situation. The following *Autumn* the Plants ſhould be taken out of the Boxes, and planted in a ſhady Border, about ſix or eight Inches aſunder, where they may remain to flower: or they may be intermixed with other low Alpine Plants in North Borders, where they will make an agreeable Variety.

SOLSTICE, is the Time when the *Sun* is in one of the Solſtitial Points; that is, when he is at his greateſt Diſtance from the *Equator*, which is twenty three Degrees and an half: Thus called, becauſe he then appears to ſtand ſtill, and not to change his Place in the Degrees of the *Zodiack* any Way; an Appearance owing to the Obliquity of our Sphere, and which thoſe who live under the *Equator* are Strangers to.

The *Solſtices* are two in each Year; the *Eſtival* or *Summer Solſtice*, and the *Hyemal* or *Winter Solſtice*.

The *Summer Solſtice* is, when the Sun is in the Tropick of *Cancer*, which is on the 11th of *June*, when he makes our longeſt Day.

The *Winter Solſtice* is, when the Sun enters the firſt Degree of *Capricorn*, which is on the 11th of *December*, when he begins to return toward us, and make our ſhorteſt Day.

This is to be underſtood, as in our Northern Hemiſphere; for in the Southern, the Sun's Entrance into *Capricorn* makes the *Summer Solſtice*, and that into *Cancer* the *Winter Solſtice*.

SONCHUS, Sowthiſtle.

Theſe are moſt of them Weeds in *England*, and are not planted in Gardens; for if their Seeds are once permitted to ſcatter upon the Ground, they will ſoon ſtock it with Plants; for which Reaſon they ſhould always be extirpated, not only thoſe in the Garden, but alſo in the Parts near it, becauſe their Seeds being furniſhed with Down, are wafted in the Air to a conſiderable Diſtance, where falling to the Ground, they ſoon come up and prove troubleſome.

SORBUS, [ſo called of *ſorbere*, Lat. *to ſup*, becauſe the Fruit, being ripe, is ſo ſoft that it may be ſupped] The Service-tree.

The *Characters* are;

The Flower conſiſts of ſeveral Leaves, which are placed orbicularly, and expand in form of a Roſe, *whoſe Flower-cup afterwards becomes a Fruit ſhaped like a* Pear *or* Medlar; *To which muſt be added, pennated Leaves, like thoſe of the* Aſh.

The *Species* are;

1. SORBUS *ſativa. C. B. P.* The manured Service-tree.
2. SORBUS *ſativa, fructu pyriformi, medio rubente. H. Cath.* The manured Service, with Pear-ſhaped Fruit, red in the Middle.
3. SORBUS *ſativa, fructu ſerotino minori turbinato rubente. Tourn.* The leſſer late-ripe Service, with a Medlar-ſhaped Fruit.
4. SORBUS *aucuparea. J. B.* The Wild Service *or* Quick-beam, *by ſome called* The Quicken-tree.
5. SORBUS *ſylveſtris, foliis ex luteo variegatis.* The Wild Service *or* Quick-beam, with ſtriped Leaves.
6. SORBUS *ſativa fructu ovato, medio rubente. Hort. Cath.* The manured Service, with an oval Fruit, which is red within.
7. SORBUS *ſativa, magno fructu turbinato, pallidè rubente. Inſt. R. H.* The manured Service, with a large turbinated Fruit of a pale red Colour.
8. SORBUS *ſativa, magno fructu nonnihil turbinato, rubro. Inſt. R. H.* The manured Service, with a large red Fruit not turbinated.
9. SORBUS *ſativa, fructu turbinato, omnium minimo. Inſt. R. H.* The manured Service, with the leaſt Fruit.
10. SORBUS *Orientalis, Fraxini folio. Tourn. Cor.* Eaſtern Service, with an Aſh Leaf.
11. SORBUS *Orientalis, fructu magno, compreſſo & flaveſcente. Tourn. Cor.* Eaſtern Service, with a large, flat, yellowiſh Fruit.

The manured *Service* was formerly ſaid to be growing wild in *England*; but this I believe was a Miſtake; for ſeveral curious Perſons have ſtrictly ſearched thoſe Places where it was mentioned to grow, and could not find it; nor could they learn from the Inhabitants of thoſe Countries, that any ſuch Tree had grown there.

In *Italy* theſe Trees are very common, where they have a great Variety of Sorts, which were obtained from Seeds; but I have not obſerved in the *Engliſh* Gardens more than the five firſt Sorts, and thoſe are yet very ſcarce; for I have not ſeen more than one large Tree of the true *Service* in *England*, which was lately growing in the Gardens formerly belonging to *John Tradeſcant* at *South Lambeth*, near *Vauxhall* in *Surrey*, who was a very curious Collector of rare Plants in King *Charles the Second*'s Time; which Tree was near forty Feet high, and did produce a great Quantity of Fruit annually. There are, indeed, ſome Trees of middling Growth in the Gardens of *Henry Marſh*, Eſq; at *Hammerſmith*, which produce Fruit, (from whence ſeveral young Plants have been raiſed of late in the Nurſeries near *London*) but theſe are ſmall, when compared to that in *John Tradeſcant*'s Garden.

Theſe Fruits do nearly reſemble *Medlars* in their Nature, being of a very auſtere Taſte, till they are rotten, when they have a more agreeable Flavour: But in *England* their Fruit does not ripen ſo well as in warmer Countries, and is therefore leſs eſteemed: However, the Trees are propagated by ſuch Perſons as are curious in collecting the various Kinds of hardy Trees and Shrubs, for the Oddneſs of their Leaves and Fruit.

They may be propagated by ſowing their Seeds on a moderate Hot-bed in the *Spring*; and when the Plants are come up, they ſhould be carefully kept clear from Weeds, and in dry Weather watered; but they ſhould be expoſed to the open Air: For the only Reaſon of making a Hot-bed, is to forward the Growth of the Seeds; but if when the Plants are come up, the Bed is covered, it will draw the Plants, and ſpoil them. In this Bed the Plants ſhould remain until the Middle of *March* the ſucceeding *Spring*, when there ſhould be a warm light Spot of Ground prepared to receive them; into which they ſhould be planted in Rows two Feet aſunder, and a Foot diſtant in the Rows; obſerving to take them up carefully, and to plant them as ſoon as poſſible, that their Roots may not dry.

During the *Summer*, the Ground ſhould be kept conſtantly clear from Weeds, and in *Winter* there ſhould be a little Mulch laid upon the Surface of the Ground about their Roots, to protect them from being injured by Froſt; but in the *Spring* the Ground between them ſhould be dug, burying the Mulch therein: In doing of which, you muſt be careful not to cut or injure the Roots of the Plants.

In this Nurſery they may continue three or four Years, according to their Growth, when it will be proper to tranſplant them out where they are to remain: The beſt Seaſon for which is in *March*, juſt before they begin to ſhoot. The Soil ſhould be warm in which they are planted, and the Situation defended from cold Winds: In which Place they will thrive, and produce Fruit in a few Years; but as the Fruit will vary from thoſe which the Seeds were taken from, (as is the Caſe of moſt Sorts of Fruit) ſo the ſureſt Method to have the particular Sorts which you intend to cultivate, is to bud or graft them either upon their own or the Wild *Service* Stock; upon which they will take and produce Fruit in a few Years.

The Wild *Service* or *Quick-beam* grows wild in divers Parts of *England*; but it is often cultivated in Gardens, for Variety. This produces large Bunches of Flowers at the Extremity of its Branches in *May*, which are ſucceeded by large roundiſh Fruit, which change to a beautiful ſcarlet Colour in *Autumn*, when they afford an agreeable Variety in Wilderneſs Quarters.

This Tree ſeldom grows above twenty Feet high, ſo ſhould be always placed in Lines of Trees of the ſame Growth.

The Wood of this Tree is much commended by the *Wheelwright* for being all Heart; and it is of great Uſe for *Huſbandmens* Tools, Goads, *&c.* The Flowers of this Tree ſmell very ſweet, and the Fruit is extraordinary Food for *Thruſhes*, ſo that where theſe Trees are planted they will greatly frequent.

The Sort with variegated Leaves is preſerved by ſuch as are curious in collecting the ſeveral Sorts of ſtriped Plants; but there is no great Beauty in it. This may be propagated by Layers, or by being budded on the plain Sort; but they will become plain again, if planted on a very rich Soil.

Theſe Trees ſhould have a moiſt ſtrong Soil, but will grow in the moſt expoſed Places, being extremely hardy, which renders them worthy of Care, ſince they will thrive where few other Trees will ſucceed.

The ſixth, ſeventh, eighth and ninth Sorts are very common in the *Italian* Gardens, and of late Years they have been brought into *England*, by the Perſons who bring over Orange Trees, *&c.* ſo that in a few Years, they may be common in *England*. But the great Difficulty is in keeping of the Sorts; becauſe when theſe Trees are propagated by Seed, they vary as much in their Kinds as do *Apples* and *Pears*. And it is very difficult to propagate them by grafting or budding; for they ſeldom ſucceed when grafted on *Pears*, *Apples*, or *Medlars*, and it is not eaſy to raiſe Stocks of their own Kind, for the Fruit do not always ripen in this Country.

The tenth and eleventh Sorts were diſcovered by Dr. *Tournefort* in the *Levant*, but at preſent they are not in the *Engliſh* Gardens. Theſe Sorts may be all propagated by Seeds, after the manner above directed. The beſt Way to procure good Seeds of theſe Plants, is to have the Fruit, when duly ripened abroad, put up in Boxes of Sand and ſent over, in which Method they may be brought over very well; for if the Fruit ſhould rot, the Seeds will remain good by being preſerved in Sand.

SORREL: *vide* Acetoſa.

SOUTHERNWOOD: *vide* Abrotanum.

SOWBREAD: *vide* Cyclamen.

SPARTIUM, [ſo called of *Sparum*, a *Dart*, becauſe the Ruſhes of this Plant repreſent a Dart; or elſe of the *Greek* σπάρτον, of σπείρεσθαι, *to ſow*, becauſe it ſows itſelf. It is alſo called *Monoſpermum*, of μόνος, *ſingle*, and σπέρμα, *Seed*, becauſe the Fruit of this Plant contains but one ſingle Seed] The Broom-tree.

The *Characters* are;

It hath a papilionaceous Flower, whoſe Pointal, which riſes from the Flower-cup, afterwards becomes a ſhort, roundiſh, ſwelling Pod, containing, for the moſt part, one Kidney-ſhaped Seed in each.

The *Species* are;

1. SPARTIUM *alterum monoſpermum, ſemine reni ſimile. C. B. P.* Another Spaniſh Broom, with Pods containing one Kidney-ſhaped Seed.
2. SPARTIUM *tertium, flore albo. C. B. P.* The white Spaniſh Broom.
3. SPARTIUM *Orientale, humile fructu villoſo & roſtrato. Tourn. Cor.* Dwarf Eaſtern Broom, with a hairy-beaked Fruit.
4. SPARTIUM *Orientale, ſiliquâ compreſſâ, glabrâ & annulata. Tourn. Cor.* Eaſtern Broom, with a flat, ſmooth, circular Pod.
5. SPARTIUM *Americanum, portulacæ foliis aculeatum, Ebeni materie. Plum.* Prickly American Broom, with Purſlain Leaves, whoſe Wood is taken for Ebony.
6. SPARTIUM *Americanum ſcandens, Citri foliis, floribus albis, ad nodos confertim naſcentibus. Plum.* Climbing American Broom, with Citron Leaves and white Flowers, which are produced in Bunches at the Joints.

The firſt and ſecond of theſe Plants are propagated by ſowing their Seeds upon a moderate Hot-bed in the *Spring*; and when they are come up, they muſt be each planted in a ſeparate ſmall Pot, filled with freſh, light Earth, and plunged into a freſh Hot-bed, obſerving to water and ſhade them until they have taken Root; after which they muſt have a good Share of free Air, by raiſing the Glaſſes when the Weather is favourable; and when the Plants begin to have Strength, they muſt be inured to the open Air by Degrees: Into which they ſhould be removed in *July*, placing them in a warm Situation, and during the *Summer* Seaſon, they muſt be frequently watered; and the Beginning of *October* they muſt be removed into the Green-houſe, placing them where they may have Air and Sun, and as the Earth of the Pots dries, they muſt be refreſhed with Water.

The *Spring* following they ſhould be ſhaken out of the ſmall Pots, and put into others a Size larger, filling them up with freſh, light Earth; and as the Seaſon advances, ſo they muſt be inured to the open Air again; and in *May* they ſhould be carry'd abroad, and placed amongſt other exotick Plants, where they will add to the Variety.

While theſe Plants are young, they are ſomewhat tender; but when they are woody, they will endure a greater Degree of Cold; and if planted in a very warm Situation, will endure the Cold of our ordinary *Winters* in the open Air.

The Flowers of theſe Plants are ſmall, and generally produced thinly upon the Branches, ſo that they do not make a very great Appearance; however, for Variety, they may have a Place in every good Collection of Plants. The ſort with white Flowers will often produce ripe Seeds in *England*, when the *Summer* is warm; but the Seeds of both ſorts may eaſily be obtained from *Spain* or *Portugal*, where they grow wild in great Plenty.

The third and fourth Sorts were diſcovered by Dr. *Tournefort* in the *Levant*, from whence he ſent the Seeds to the *Royal Garden* at *Paris*. Theſe Plants are as hardy as the two firſt mentioned, and ſhould be propagated and managed in the ſame Manner.

The fifth Sort is very common in *Jamaica*, and ſeveral other Places in the *Weſt-Indies*, where the Wood is cut and ſent to *England*, under the title of *Ebony*, tho' it is not the true black *Ebony*, which is a Native of the Eaſtern Country, and is a Plant of a very different Genus. The Wood of this *American Ebony* is of a fine greeniſh-brown Colour, and poliſhes very well, ſo is much coveted by the Inſtrument-makers, and is uſed for ſeveral Purpoſes, being of a very hard durable Nature.

The ſixth Sort is pretty common in the *Spaniſh Weſt-Indies*, from whence I have received the Seeds, which were collected by Mr. *Robert Millar*. This is a climbing Plant, which will twiſt round whatever Trees grow near it, and will riſe to a great Height. The Leaves of this Plant are thick and ſtrong, ſomewhat reſembling thoſe of the Citron Tree, and continuing green the whole Year, they make an agreeable able Variety in the Stove, amongſt other tender exotick Plants.

The four laſt Plants are propagated by Seeds, which muſt be procured from the Countries of their natural Growth, for they do not produce Seeds in this Climate; theſe Seeds ſhould be ſown in Pots filled with light freſh Earth, early in the *Spring*, and plunged into a good Hot-bed of Tanners-bark, where they ſhould be frequently refreſhed with Water, and if the Nights ſhould prove cold, the Glaſſes of the Hot-bed ſhould be covered with Mats, to keep the Bed in a good Temperature of Warmth: In the Middle of the Day, when the Sun ſhines warm, the Glaſſes ſhould be raiſed to let the Steam of the Bed paſs off, as alſo to admit freſh Air. In about a Month after the Seeds are ſown the Plants will appear, when they muſt be carefully treated (being very tender while young); they muſt have freſh Air admitted to them every Day, when the Weather is warm, and ſhould be frequently refreſhed with Water, when the Earth in the Pots appears dry. In about five or ſix Weeks after the Plants appear they will be fit to tranſplant, when they ſhould be carefully ſhaken out of the Pots, and ſeparated, planting each into a ſmall Pot filled with light rich Earth, and then plunge them into the Hot-bed again, being careful to ſhade them from the Sun every Day, until they have taken new Root; after which Time they muſt be treated in the ſame Manner as other very tender exotick Plants, by giving them Air every Day in warm Weather, and watering them every other Day gently, and when the Nights are cold to cover the Glaſſes. In this Hot-bed the Plants may remain till *Autumn*, when they muſt be removed into the Stove, and plunged into the Bark-bed: Thoſe of them whoſe Roots have filled the Pots, ſhould be carefully ſhifted into Pots one Size larger, before they are plunged; but as theſe Plants are not of quick Growth while young, ſo they do not require to be often ſhifted out of the Pots. During the *Winter* Seaſon theſe Plants muſt be kept very warm (eſpecially the firſt Year) and they muſt be frequently refreſhed with Water, but in cold Weather it muſt be given to them in ſmall Quantities, and if their Leaves ſhould contract Filth, they muſt be waſhed with a Sponge to clean them, otherwiſe the Plants will not thrive. As theſe Plants are very tender, ſo they will not live in the open Air in this Country, even in the warmeſt Part of the Year, therefore they muſt be conſtantly kept in the Stove, and ſhould be plunged in the Bark-bed; obſerving in the *Summer* Seaſon, when the Weather is warm, to admit a large Share of freſh Air to the Plants, but in *Winter* they muſt be kept very warm. With this Management the Plants will thrive very well, and in a few Years will produce their Flowers, when they will make a pretty Appearance in the Stove.

SPERGULA, Spurrey.

The *Characters* are;

It hath a Roſe-ſhaped Flower, conſiſting of five Leaves, which are included in a five-leafed Empalement; in the Centre of the Flower ariſes the Pointal, which afterward becomes a roundiſh membranaceous Fruit, which opens in three Parts, and is filled with ſmall Seeds, which in ſome Species have a Border round them.

The *Species* are;

1. SPERGULA. *J. B.* The common Spurrey.
2. SPERGULA *marina noſtras. J. B.* The Sea Spurrey.
3. SPERGULA *purpurea. J. B.* Purple Spurrey.
4. SPERGULA *minima, ſeminibus marginatis.* The leaſt Spurrey, with bordered Seeds.

Theſe Plants grow wild in ſeveral Parts of *England*. The ſecond Sort is found on the Sea Shores where the ſalt Water uſually flows, but the other Sorts grow on ſandy Commons, and amongſt Corn in great Plenty.

The firſt Sort is cultivated in *Holland* and *Flanders*, for feeding their Cattle; the uſual Time of ſowing the Seed is in *Auguſt*, that the Plants may have Time to get Strength before the *Winter*'s Cold. The Uſe that is made of this Graſs, is to feed Sheep and other Cattle in *Winter*, when the common Graſs hath done growing. This Plant ſeldom riſes above ſix Inches high, ſo will not afford a very great Quantity of Food; but as it will grow on the pooreſt Sand, ſo it may be cultivated in many Places to good Advantage, where no other Graſs will thrive ſo well; and by feeding it off the Ground, the Dung of the Cattle will improve the Land. This Paſture, 'tis affirmed, will make excellent Butter, and the Mutton fed on it, is ſaid to be well taſted, ſo is by many preferred to that fed on Turneps. Hens will greedily eat this Herb, and it makes them lay more Eggs.

This Plant being annual, muſt be ſown every Year, and whoever is willing to ſave the Seeds, ſhould ſow it in *April*, that the Plants may flower the Beginning of *July*, and the Seeds will ripen in *Auguſt*, when it muſt be cut before the Heads are quite brown, otherwiſe the Seeds will ſoon ſcatter.

The Seeds being very ſmall, about twelve Pounds will be ſufficient to ſow an Acre of Land. The Ground ſhould be well dreſſed before the Seeds are ſown, for if the larger Clods are not broken, there will be an uneven Crop of Graſs: People in the low Country ſow this Seed, after a Crop of Corn is taken off the Land. The fourth Sort is now much cultivated in *Flanders*, though it is a much lower Plant than the common Sort, but they eſteem it a much better Graſs. The Seeds of this Kind are ſmaller and flatter than thoſe of the common Sort, and have a white Border round each.

SPHONDYLIUM, Cow-parſnep.

The *Characters* are;

It is an umbelliferous Plant, with a Roſe-ſhaped Flower, conſiſting of five uneven Heart-ſhaped Leaves, which are placed circularly, and reſt on the Empalement; which afterward becomes a Fruit, compoſed of two large Seeds, which are flat and oval, having a Point that wants a Border within, channelled, and generally caſting off their Cover, and marked with dark Spots in the Part where they adhere to each other.

The *Species* are;

1. SPHONDYLIUM *vulgare hirſutum. C. B. P.* Common hairy Cow-parſnep.
2. SPHONDYLIUM *vulgare hirſutum, floribus purpureis. C. B. P.* Common hairy Cow-parſnep, with purple Flowers.
3. SPHONDYLIUM *majus, ſive panax Herculeum quibuſdam. J. B.* Greater Cow-parſnep, *or* Hercules's All-heal.
4. SPHONDYLIUM *criſpum. J. B.* Curled Cow-parſnep.
5. SPHONDYLIUM *hirſutum, foliis anguſtioribus. C. B. P.* Hairy Cow-parſnep, with narrower Leaves.
6. SPHONDYLIUM *foliis anguſtioribus, atro-purpureis. H. R. Monſp.* Cow-parſnep, with narrower dark purple Leaves.
7. SPHONDYLIUM *Alpinum parvum. C. B. P.* Small Cow-parſnep of the *Alps*.
8. SPHONDYLIUM *Alpinum glabrum. C. B. P.* Smooth Cow-parſnep of the *Alps*.
9. SPHONDYLIUM *Orientale maximum. Tourn. Cor.* Greateſt Eaſtern Cow-parſnep.
10. SPHONDYLIUM *Orientale ampliſſimo folio, caule brevi. Tourn. Cor.* Eaſtern Cow-parſnep, with a very large Leaf, and a ſhort Stalk.
11. SPHONDYLIUM *Orientale, longiſſimo & anguſtiſſimo folio. Tourn. Cor.* Eaſtern Cow-parſnep, with a very long and very narrow Leaf.
12. SPHONDYLIUM *Orientale, anguſtifolium glabrum, aniſum olens. Tourn. Cor.* Smooth narrow-leafed Eaſtern Cow-parſnep, ſmelling like *Aniſe*.
13. SPHONDYLIUM *Orientale, foliis ammi perennis. Tourn. Cor.* Eaſtern Cow-parſnep, with perennial Biſhops-weed Leaves.
14. SPHONDYLIUM *Orientale humilius, foliis abſinthii. Tourn. Cor.* Dwarf Eaſtern Cow-parſnep, with Wormwood Leaves.
15. SPHONDYLIUM *Orientale, Dauci vulgaris folio, aſphodeli radice. Tourn. Cor.* Eaſtern Cow-parſnep, with a common Carrot Leaf, and an Aſphodel Root.

The firſt and fifth Sorts grow wild in *England*; the firſt is very common on the Sides of Ditches, and the Borders of Fields, in moiſt Land every where. The other Sorts are not Natives of this Country, but are many of them preſerved in Botanick Gardens, for the ſake of Variety.

They are all very hardy Plants, which may be propagated by Seeds; the beſt Time for ſowing them is in *Autumn*, ſoon after the Seeds are ripe. They ſhould be ſown where the Plants are deſigned to remain, becauſe they ſend forth tap Roots, ſomewhat like thoſe of the Parſnep, ſo do not thrive ſo well when tranſplanted, as if ſuffered to remain where they are ſown. The Plants grow very large, ſo the Seeds ſhould be ſown in Drills, at two Feet and a half Diſtance, and in the *Spring*, when the Plants appear, they ſhould be thinned, ſo as to leave them at leaſt eighteen Inches aſunder in the Rows; after which they will require no farther Care, but to keep them clear from Weeds; and when the Plants have obtained Strength, they will not eaſily be injured by Weeds, for they will overbear them, and prevent their getting up. The ſecond Year theſe Plants will produce Flowers and Seeds, and their Roots will abide many Years, and produce Seeds every Year, which if permitted to ſcatter, will fill the neighbouring Ground, and become troubleſome Weeds.

The third Sort (which is very common in *Germany*) hath been by ſome of the *German* Writers taken for the *Acanthus*, or Bears-breech, and the ſame Qualities applied to it.

The Name of *Cow-Parſnep* was given to this Plant, from the Cows eating of it, but they do not chuſe to eat the Leaves of this Plant, if they can get any other Food, as may be obſerved in the Fields where the Plant is in great Plenty; for the Cows will eat the Graſs very cloſe about theſe Plants, though they are rarely found to be touched by them, unleſs when the Graſs is burnt up. Rabbits will eat the Leaves of this Plant, and ſeem fond of it.

SPINA ALBA, *vide* Meſpilus.

SPINACHIA; Spinach *or* Spinage.

The *Characters* are:

It hath an apetalous Flower, conſiſting of many Stamina *included in the Flower-cup, which are produc'd in Spikes upon the Male Plants which are barren; but the* Embryo's *are produc'd from the Wings of the Leaves on the Female Plants, which afterwards becomes a roundiſh or angular Seed, which in ſome Sorts have Thorns adhering to them.*

The *Species* are;

1. SPINACHIA *vulgaris, capſula ſeminis aculeata. Tourn.* The common prickly *or* narrow-leav'd *Spinach*.
2. SPINACHIA *vulgaris, capſula ſeminis non aculeata. Tourn.* Common ſmooth-ſeeded *Spinach*, with broader Leaves.
3. SPINACHIA *vulgaris, capſula ſeminis non aculeata, folio maximo rotundo. Spinach*, with ſmooth Seeds, and a very large round Leaf.

The firſt of theſe Sorts is commonly cultivated in Gardens for *Winter* Uſe, it being much hardier than any of the other Sorts.

The Seeds of this Kind ſhould be ſown upon an open ſpot of Ground towards the latter End of *July*, obſerving, if poſſible, to do it when there is an Appearance of Rain; for if the Seaſon ſhould prove dry for a long time after the Seed is ſown, the Plants will not come up regularly, and many times there will not be half a Crop. When the *Spinach* is come up, the Ground ſhould be houghed to deſtroy the Weeds, and alſo to cut up the Plants where they are too cloſe, leaving the remaining Plants about four or five Inches aſunder: But this ſhould always be done in dry Weather, that the Weeds may be deſtroy'd after they are cut.

About a Month or five Weeks after the firſt Houghing, the Weeds will begin to grow again, therefore the Ground ſhould be then houghed again the ſecond Time, obſerving as before, to do it in dry Weather: But if the Seaſon ſhould prove moiſt, it will be proper to gather the Weeds up after they are cut, and carry 'em off the Ground; for if the *Spinach* is not clean'd before *Winter* from Weeds, they will grow up, and ſtifle it ſo that in wet Weather the *Spinach* will rot away.

In *October* the *Spinach* will be fit for Uſe, when you ſhould only crop off the largeſt Leaves, leaving thoſe in the Centre of the Plants to grow bigger; and thus you may continue croping it all the *Winter* and *Spring*, until the young *Spinach* ſowed in the *Spring*, is large enough for Uſe, which is commonly in *April*; at which time the *Spring* advancing, the *Winter Spinach* will run up to Seed, ſo that you ſhould cut it up, leaving only a ſmall Parcel to produce Seeds.

But the Ground in which this *Winter Spinach* is ſown, being commonly planted with early *Cabbages*, it is not proper to let any of the *Spinach* remain there for Seed, but it ſhould be cleared off as ſoon as ever the *Spinach* is fit for Uſe. that the *Cabbages* may be earth'd up, and laid clear, which is of great Service to them; therefore you ſhould ſow a ſmall Spot of Ground with this Sort of *Spinach* on Purpoſe to ſtand for Seed, where there ſhould be no other Plants among it.

The two Sorts with ſmooth Seeds do produce much larger and thicker round Leaves than the former, but being ſomewhat tenderer, are always ſown in the *Spring*, eſpecially the third Sort, which is preferable to either of the former for *Summer* Uſe.

Theſe are either ſown upon an open Spot of Ground by themſelves, or elſe mix'd with *Radiſh-ſeed*, as is the common Practice of the *London* Gardeners, who always endeavour to have as many Crops from their Land in a Seaſon as poſſible: But, where Land is cheap in the Country, it will be the better Method to ſow it alone without any other Sort of Seed mix'd with it; and when the Plants are come up, the Ground ſhould be houghed to deſtroy the Weeds, and cut out the Plants where they are too cloſe, leaving the remaining about three Inches aſunder; and when they are grown ſo large as to meet, you may then cut out a Part of it to uſe, thinning them, that they may have Room to ſpread; and this Thinning may be twice perform'd, as there is Occaſion for the *Spinach*, at the laſt of which the Roots ſhould be left eight or ten Inches aſunder; and if then you hough the Ground over again, to deſtroy the Weeds, it will be of great Service to the *Spinach*; for if the Land is good upon which it was ſown, the third Sort, with this Management, will many times produce Leaves as large as the Broad-leav'd Dock, and be extremely fine.

But in order to have a Succeſſion of *Spinach* through the Seaſon, it will be proper to ſow the Seed at three different Times in the *Spring*; the firſt early in *January*, which muſt be on a dry Soil; the ſecond the Beginning of *February*, upon a moiſter Soil; and the third the Beginning of *March*, which ſhould be on a very moiſt Soil; and this third Sowing ſhould be houghed out thinner the firſt Time of houghing it, than either of the former Sowings; for there will be no Neceſſity to leave it for cutting out thin for uſe, becauſe the former Sowings will be ſufficient to ſupply the Table 'till this third Sowing is full grown; beſides, by leaving it thin at firſt, it will not be apt to run up to Seed ſo ſoon as it would if the Plants were cloſe.

In order to ſave Seed of either of theſe Kinds, you ſhould ſow an open rich Spot of Ground, with the Sort you intend, in *February*, after the Danger of being injur'd by Froſt is over; and when the Plants are come up, they ſhould be houghed out to ſix or eight Inches Diſtance, obſerving to cut down the Weeds at the ſame Time; and when the Plants have grown about three Weeks or a Month longer, they ſhould be houghed a ſecond Time, when they ſhould be left twelve or fourteen Inches aſunder at leaſt; for when they have ſhot out their Side-branches, they will ſufficiently ſpread over the Ground.

You muſt alſo obſerve to keep 'em clear from Weeds, which if ſuffer'd to grow amongſt the *Spinach*, will cauſe it to run up weak, and greatly injure it. When the Plants have run up to Flower, you will eaſily perceive two Sorts amongſt them, *viz.* *Male* and *Female*; the *Male* will produce Spikes of ſtamineous Flowers, which contain the *Farina*, and are abſolutely neceſſary to impregnate the Embryo's of the *Female* Plants, in order to render the Seeds prolifick. Theſe *Male* Plants are by the Gardeners commonly called *She Spinach*, and are often by the Ignorant pulled up as ſoon as they can be diſtinguiſhed from the *Female*, in order, as they pretend, to give Room for the Seed-bearing to ſpread; but from ſeveral Experiments which I made on theſe Plants, I find, where-ever the *Male* Plants are intirely removed before the *Farina* is ſhed over the *Female* Plants, the Seed will not grow which they produce, ſo that it is abſolutely neceſſary to leave a few of them in every Part of the Spot; though there may be a great many drawn out where they are too thick; for a ſmall Quantity of *Male* Plants (if rightly ſituated) will be ſufficient to impregnate a great Number of *Female*, becauſe they greatly abound with the *Farina*, which, when ripe, will ſpread to a conſiderable Diſtance, when the Plants are ſhaken by the Wind.

SPIRÆA FRUTEX, [ſo called of σπεῖρα, a *Rope*, becauſe this Shrub is flexible like a Rope] Spiræa Frutex, *vulgo*.

The *Characters* are;

The Flower is compoſed of many Leaves, which are plac'd in a circular Order, and expand in form of a Roſe; out of whoſe Flower-cup riſes the Pointal, which afterwards becomes a Fruit compoſed of ſeveral Pods, in which are contain'd ſeveral oblong Seeds.

The *Species* are;

1. SPIRÆA *ſalicis folio. Tourn.* Spiræa Frutex, *vulgo.*
2. SPIRÆA *opuli folio. Tourn.* Spiræa with a Marſh-Elder Leaf, *commonly call'd* Virginian Gelder-Roſe with a Currant Leaf.
3. SPIRÆA *Hyperici folio non crenato. Tourn.* Hypericum Frutex, *vulgo.*
4. SPIRÆA *Africana odorata, foliis piloſis. Com. Rar.* Sweet-ſcented African Spiræa with hairy Leaves.
5. SPIRÆA *Hiſpanica, Hyperici folio crenato. Inſt. R. H.* *Spaniſh* Spiræa, with a notched St. Johns-wort Leaf, commonly called Hypericum frutex, with a notched Leaf.

The firſt of theſe Shrubs is very common in the Nurſeries near *London*, where it is ſold with other flowering Shrubs at a certain Price by the Hundred. This Shrub ſeldom riſes above five Feet high, ſo is proper to intermix with other Shrubs of the ſame Growth, in ſmall Wilderneſs Quarters, and other Plantations of flowering Trees.

This Plant may be propagated from Suckers, which are ſent forth in Plenty from the Stems of the old Plants, or by laying down the tender Branches, which, when rooted, ſhould be tranſplanted out in Rows at three Feet diſtance, and the Plants a Foot aſunder in the Rows: In this Nurſery they may remain two Years, obſerving to keep the Ground clear from Weeds, and in the *Spring* to dig up the Ground between the Rows, ſo that their Roots may the more eaſily extend themſelves; and if they ſhoot out many Side-branches, they ſhould be prun'd off, ſo as to reduce the Shrubs to a regular Figure, and afterwards they may be tranſplanted where they are to remain, either in ſmall Wilderneſs Quarters, or in Clumps of flowering Shrubs, obſerving to place them amongſt other Sorts of equal Growth.

The ſecond ſort is not quite ſo common in *England* as the former. This was originally brought from *America*, but it being full as hardy as the former, and increaſing as faſt by Suckers, it may ſoon be obtain'd in Plenty. This is nearly of the ſame Growth with the former, and may be intermixed therewith in Wilderneſs Quarters, to add to the Variety; it may be propagated and manag'd in the ſame Manner as the former.

The third Sort is very common in the Nurſeries near *London*, where it is generally known by the Name of *Hypericum Frutex*, and is ſold amongſt other flowering Shrubs at a common Rate. This may be propagated by laying down the under Branches, which will take Root in the Compaſs of one Year, when they may be taken off, and planted in a Nurſery for two or three Years (as hath been directed for the former) after which they may be tranſplanted out where they are deſign'd to remain, placing 'em with the two former, being nearly of the ſame Growth, where they will add to the Variety.

The two firſt Sorts do produce their Flowers at the Extremity of their Shoots, the firſt in a long Spike, and the ſecond in Form of an Umbel, but the third ſort produces its Flowers at the Joints of the former Year's Wood, in Bunches, ſo that the whole Tree ſeems covered with white Flowers, when they are blown. They all three produce their Flowers in *May*, and ſometimes continue in Beauty 'till *June*, in a cool Seaſon, for which they are eſteemed by the Curious.

Theſe Shrubs do require no other Pruning but to cut out all the dead Branches, and ſuch as grow irregular, and take off all their Suckers every Year, for if theſe are permitted to grow, they will ſtarve the old Plants, by drawing away their Nouriſhment. The Ground between 'em ſhould alſo be dug every *Spring*, to encourage their Roots, and every third Year a little rotten Dung buried therein, which will cauſe 'em to flower very ſtrong.

The fourth ſort is a Native of the *Cape of Good Hope*, where the Inhabitants call it *Buchu*, and eſteem it extremely for many medicinal Purpoſes, but particularly for expelling the Venom of Snakes.

This Plant is at preſent very rare in *England*, and I believe in moſt Parts of *Europe*, though formerly it was growing in ſeveral curious Gardens in *Holland*, but hath been loſt in that Country for ſome Time, 'till two Years ago it was retrieved again from the *Cape of Good Hope*, by Mr. *George Clifford* of *Amſterdam*, a Gentleman who is extremely curious in Botany and Gardening, from whom I was furniſh'd with it.

This Plant is propagated from Seeds, which ſhould be ſown upon a moderate Hot-bed in the *Spring*, and when the Plants are come up, they muſt be tranſplanted each into a ſeparate ſmall Pot, fill'd with light, freſh Earth, and plung'd into a freſh Hot-bed, obſerving to water 'em, and ſhade the Glaſſes in the Heat of the Day until they have taken Root, after which they ſhould have Air in proportion to the Heat of the Weather, and the Bed in which they are placed. In *June* they ſhould be inured to the open Air by Degrees, and the Beginning of *July* they ſhould be remov'd out of the Hot-bed, and placed in a warm Situation, where they may remain until the End of *September*, at which Time they muſt be removed into the Green-houſe, placing 'em in a warm Part, but not too cloſe under other Plants. During the *Winter* Seaſon they muſt be now and then gently refreſh'd with Water, but they ſhould not have it given them in large Quantities at that Seaſon; but in the *Summer* they do require to be water'd more plentifully; and at leaſt once a Year they muſt be ſhifted into other Pots of a larger Size, as the Plants advance their Growth, giving 'em freſh Earth, which ſhould be light and rich.

This Plant produces its Flowers near the extreme Parts of the Branches, which altho' not very beautiful, yet for the ſingular Appearance of the hairy Leaves, which adds to the Variety of exotick Plants in the Green-houſe, it deſerves a Place in every curious Garden, eſpecially as it requires no artificial Heat in *Winter*.

The fifth is equally hardy with the common Sort, and riſes to the ſame Height, ſo may be diſpoſed in the ſame manner in Plantations of flowering Shrubs. It may be propagated by laying down the Branches, or by Suckers from the Root, in the ſame Manner as hath been before directed for the common Sort.

SQUASHES, *vide* Melopepo.

SQUILS, *vide* Scilla.

STACHYS, [of Στάχυς, an *Ear of Corn*, becauſe the Flowers of this Plant reſemble an Ear of Corn] Baſe Horehound.

The *Characters* are;

It hath a labiated Flower conſiſting of one Leaf, whoſe Upper-lip is ſomewhat arch'd and erect, and the Under-lip is cut into three Segments, the middle one being larger than the other two; out of the Flower-cup riſes the Pointal, attended by four Embryo's, which afterwards become ſo many Seeds, which are roundiſh, and inclos'd in a Husk, which before was the Flower-cup: To theſe Marks may be added, downy hoary Leaves.

The *Species* are;

1. STACHYS *major Germanica. C. B. P.* Greater German Baſe Horehound.
2. STACHYS *Cretica. C. B. P.* Baſe Hore-hound of Candia.
3. STACHYS *Cretica latifolia. C. B. P.* Broad-leav'd Baſe Horehound of Candia.
4. STACHYS *minor Italica. C. B. P.* Leſſer Italian Baſe Horehound.
5. STACHYS *Canarienſis fruteſcens, verbaſci folio. Tourn.* Canary ſhrubby Baſe Horehound, with a Mullein Leaf.

There are ſeveral other *Species* of this Plant which are preſerv'd in ſome curious Botanick Gardens for Variety; but as they have little Beauty or Uſe, I ſhall not enumerate them here.

The four Sorts firſt mentioned do ſeldom abide longer than two or three Years; for after they have produced Flowers and Seeds, the old Roots are very apt to decay, unleſs part of their Flower-ſtems are taken off early in the *Summer*, which will cauſe them to break out again at Bottom, whereby the Roots may be preſerved.

They are all propagated by Seeds, which ſhould be ſown in *March*, upon a Bed of light, freſh Earth, and when the Plants are come up, they may be planted out into other Beds about ſix Inches aſunder, obſerving to water 'em until they have taken Root, after which they will require no farther Care, but to keep 'em clear from Weeds, 'till *Michaelmas*, when they ſhould be tranſplanted where they are to remain, which muſt be in an open Situation, and upon a dry, light Soil, not too rich, in which they will endure the *Winter* much better than in a rich, ſtrong Soil. The *Summer* following theſe Plants will flower, and in *Auguſt* their Seeds will ripen, when they may be gathered and preſerv'd 'till *Spring* for ſowing.

The fifth Sort is a ſhrubbly Plant, which with us riſes to be ſix or ſeven Feet high; this is propagated by ſowing the Seeds upon a Bed of light, freſh Earth (as the former); and when the Plants are come up, they muſt be tranſplanted into Pots fill'd with freſh, light, ſandy Soil, placing 'em in a ſhady Situation until they have taken Root, after which they may be removed into a more open Expoſure, but in dry Weather muſt be frequently watered: In this Place they may remain until the Middle or Latter-end of *October*, when they muſt be removed into the Green-houſe, placing them in the cooleſt Part, where they may have as much free Air as poſſible, and muſt be often watered, otherwiſe they will ſoon decay.

In *Summer* time theſe Plants will require to be ſhifted twice, adding freſh Earth to their Roots; and if they are only ſhelter'd from hard Froſt in *Winter*, it will be ſufficient, for they are very hardy. The ſecond Year after ſowing, they will produce Flowers and Seeds, and will continue ſo to do every Year after; and although their Flower has no great Beauty, yet, for the Variety of its large, ſoft, woolly Leaves, it deſerves a place amongſt other exotick Plants.

STAMINA or CHIVES, are the ſmall Threads which encompaſs the Style in the Centre of Flowers, upon the Tops of which the Apices or Summits, which contain the Male Duſt, hang.

STAMINEOUS FLOWERS, are ſuch as have a Number of Stamina or Chives, but are deſtitute of the fine colour'd Leaves, which are called Petala, the Stamina being only encompaſſed by the Flower-cup; of this Claſs are *Nettles*, *Spinach*, *Hemp*, *&c.*

STAPHYLODENDRON, [ſo called of ϛαφυλὴ, a *Grape*, and δένδρον, a *Tree*, becauſe its Fruit grows in Cluſters] Bladder-nut.

The *Characters* are;

The Flower conſiſts of ſeveral Leaves, which are placed circularly, and expand in form of a Roſe, out of whoſe many-leav'd Flower-cup riſes the Pointal, which afterwards becomes a membraneous Fruit, ſomewhat like the inflated Bladder of Fiſhes, and divided into two or three Cells, containing Seeds in form of a Skull.

The *Species* are;

1. STAPHYLODENDRON *ſylveſtre & vulgare. H. L.* The common wild Bladder-nut.
2. STAPHYLODENDRON *Virginianum trifoliatum. H. L.* Three-leav'd Virginian Bladder-nut.
3. STAPHYLODENDRON *Africanum, folio ſingulari lucido. Par. Bat.* African Bladder-nut with ſingle ſhining Leaves.
4. STAPHYLODENDRON *Americanum, foliis lauri anguſtis. Plum. Cat.* American Bladder-nut, with narrow Bay-leaves.
5. STAPHYLODENDRON *Americanum, trifoliatum, foliis inciſis. Houſt.* Three leav'd American Bladder-nut, with cut Leaves.

The firſt of theſe Trees is found wild in the Woods and other ſhady Places near *Pontefract* in *Yorkſhire*, and in ſome other Northern Parts of *England*, but near *London* it is preſerved in the Gardens of thoſe who are curious in collecting the various Kinds of hardy Trees.

The ſecond Sort is a Native of *America*, but is ſo hardy as to indure the ſevereſt Cold of our Climate in the open Air, and produces Flowers and Fruit as plentifully in *England* as the common wild Sort.

Both theſe Kinds may be propagated by ſowing their Seeds early in the *Spring*, in Beds of light, freſh Earth, and when the Plants are come up, they muſt be carefully kept clear from Weeds, and in very dry Weather if they are now and then refreſh'd with Water, it will greatly promote their Growth; in theſe Beds they may remain until *March* following, at which Time they ſhould be carefully taken up and planted in a Nurſery, placing 'em in Rows three Feet aſunder, and the Plants eighteen Inches diſtance in the Rows; obſerving to lay a little Mulch upon the Surface of the Ground about their Roots, to prevent the Sun and Wind from penetrating the Ground to dry them; and if the *Spring* ſhould prove very dry, it will be convenient to give 'em a little Water, to encourage their taking Root; after which they will require no farther Care, but to keep the Ground clear from Weeds in *Summer*, and every *Spring* to prune off irregular Branches, and dig the Ground between the Rows, to looſen the Earth, that their Roots may the more eaſily extend. In this Nurſery they may remain two or three Years, by which Time it will be proper to tranſplant them out where they are to remain, either in Wilderneſs Quarters, or in Clumps of various Trees, where they will add to the Diverſity. The beſt Seaſon for tranſplanting theſe Trees is in the *Spring*, juſt before they begin to ſhoot, though they may be tranſplanted in *October* and *November*, as is practis'd for other deciduous Trees.

Theſe do commonly grow in *England* to the Height of twelve or fourteen Feet, ſo ſhould be plac'd with other Trees of the ſame Growth.

They may alſo be propagated by laying down their tender Branches, which will take Root in the Compaſs of one Year, and may afterwards be taken off and tranſplanted, as hath been directed for the *Seedling* Plants.

The *African* Sort does not produce Seeds in this Country, as I could ever obſerve; ſo is only propagated by laying down the tender Branches in the *Spring*, obſerving to notch 'em at a Joint, as is practis'd in laying down Carnations. Theſe, if duly watered in dry Weather, will take Root in the Compaſs of one Year, and may the ſucceeding *Spring* be taken off, and tranſplanted into Pots, fill'd with light, freſh, rich Earth, and placed in a ſhady Part of the Greenhouſe, until they have taken Root, and in *May* they ſhould be carried into the open Air, placing 'em amongſt other exotick Plants, in a warm Situation. During the *Summer* Seaſon they muſt be frequently watered, and when their Roots have fill'd the Pots, they ſhould be removed into larger, obſerving always in ſhifting theſe Plants, to pare off the Earth and Fibres on the Outſide of the Ball, before they are placed into the other Pots, which muſt alſo be filled up with the ſame light rich Earth as before directed. In *Winter* they muſt be houſed with *Oranges*, *Myrtles*, *&c.* being too tender to endure the Cold of our Climate in the open Air, but do require no artificial Warmth in *Winter*; and though the Flowers of this Tree (which it often produces in *England*) are not very beautiful, yet as it retains its Leaves all the *Winter*, which have a very ſhining Appearance, when the Trees are train'd up to regular Heads, it adds greatly to the Beauty of a Green-houſe, when intermix'd with exotick Plants, and deſerves a Place in every good Collection.

The fourth Sort is pretty common in *Jamaica*, *Barbadoes*, and ſome other Places in the warm Parts of *America*, where it uſually riſes to the Height of ten or twelve Feet, and produces its Branches regularly, which are beſet with Leaves, ſhaped in ſome meaſure like thoſe of the Bay-tree, but are narrower and full of Veins, and of a lighter green Colour, the Flowers are ſmall, and of an herbaceous Colour, which are ſucceeded by flat Bladders, having a Border round them, and encloſing two or three roundiſh Seeds.

It may be propagated by Seed, which ſhould be ſown early in the *Spring*, on a moderate Hot-bed, and when the Plants are come up, they ſhould be frequently refreſhed with Water, and kept clear from Weeds, until they have obtained Strength enough to tranſplant, when they ſhould be carefully taken up, and each planted into a ſeparate ſmall Pot filled with freſh light Earth, and then plunged into a Hot-bed of Tanners-bark, where they muſt be carefully ſhaded until they have taken new Root, after which Time they ſhould have free Air admitted to them every Day in warm Weather, by raiſing the Glaſſes of the Hot-bed, and they muſt be conſtantly watered every other Day, during the *Summer* Seaſon. If the Plants thrive they will fill the ſmall Pots with their Roots by the Beginning of *July*, when they muſt be ſhaken out of the Pots, and their Roots trimmed, and then put into Pots a little larger, which ſhould be filled with freſh light Earth, and then plunged again into the Hot-bed, to facilitate their making new Roots; but after this, they ſhould have a larger Share of Air to harden them before *Winter*. At *Michaelmas*, when the Nights begin to be cold, the Plants ſhould be removed into the Stove, where, during the *Winter* Seaſon, they ſhould be kept in a moderate Temperature of Warmth, and muſt be frequently refreſhed with Water, but it ſhould be given to them in ſmall Quantities when the Weather is cold. The following *Summer* the Plants ſhould be by Degrees inured to bear a large Share of Air, but while they are young, they ſhould not be intirely expoſed abroad, tho' when the Plants are become woody, they will bear to be ſet abroad every *Summer*, in a warm ſheltered Situation, and in *Winter* will live in a good Greenhouſe, without any artificial Heat. This Plant doth frequently produce Flowers in this Country, and in warm Seaſons, will ſometimes perfect Seeds. It continues green throughout the Year, ſo will make an agreeable Variety in the Conſervatory in the *Winter* Seaſon, for which it is chiefly preſerved.

The fifth Sort was diſcovered by the late Dr. *William Houſtoun*, at *Campechy*; this Sort hath weak flexible Branches, ſo doth not make a regular Stem like the former, but forms it's ſelf into a rude Buſh. The Flowers of this Kind are produced in Bunches, at the Extremity of the Branches, which are ſucceeded by compreſſed Bladders, very like thoſe of the former Sort.

This Kind may be propagated by Seeds, which muſt be ſown in the ſame Manner as hath been directed for the former Sort, and the Plants muſt be treated much after the ſame Way; but as theſe are ſomewhat tenderer than thoſe, they ſhould not be expoſed abroad in *Summer*, nor will they live tho' the *Winter*, unleſs they are preſerved in a moderate Degree of Warmth.

STAR-WORT, *vide* Aſter.

STAR-FLOWER, *vide* Ornithogalum.

STATICE; Thrift *or* Sea Pink.

The *Characters* are;

It is a Plant with a Flower gathered into an almoſt ſpherical Head, furniſh'd with a common ſcaly Empalement. This Head is compoſed of ſeveral Clove-Gilliflower Flowers, conſiſting of ſeveral Leaves in a proper Empalement, ſhap'd like a Funnel. In like manner the Pointal riſes out of the ſame Empalement, and afterwards turns to an oblong Seed, wrapt up in the Empalement as in a Huſk.

The *Species* are;

1. STATICE. *Lugd.* Thrift, Sea-Gilliflower *or* Sea-Cuſhion.

2. STATICE *montana minor. Tourn.* Leſſer Mountain Thrift *or* Sea-Gilliflower.

3. STATICE *foliis anguſtioribus, flore rubro. Boerh. Ind.* Narrow-leav'd Thrift with red Flowers.

4. STATICE *foliis anguſtioribus, flore albo. Boerh. Ind.* Narrow-leav'd Thrift with a white Flower.

5. STATICE *Luſitanica fruticoſa maritima, magno flore. Tourn.* Shrubby Portugal Sea Thrift with a large Flower.

The firſt of theſe Plants grows wild in *Germany*, and ſome other Inland Countries in great Plenty, from whence it hath been brought into *England*; but the ſecond Sort is found wild in great Plenty in the Salt Marſhes near the Sea, in divers Parts of *England*.

The third and fourth Sorts have been brought into *England* from the *Alps*, or ſome other mountainous Parts, and are preſerv'd for the Beauty of their Flowers in ſome old Gardens.

The fifth Sort is leſs common in *England* than either of the former Sorts, and is only to be found in the Gardens of ſuch as are curious in collecting rare Plants.

The firſt four Sorts have been promiſcuouſly planted in Gardens, to make Edgings on the Sides of Borders in the Flower-gardens, for which Purpoſe they were formerly in great Eſteem, but of late they have been very juſtly rejected for that Uſe, becauſe there was a Neceſſity of tranſplanting theſe Edgings every Year, otherwiſe they could not be kept within due Bounds; beſides, where-ever a Plant fail'd, which was no extraordinary thing, there always appear'd a large unſightly Gap. However, though they are not in uſe at preſent for that Purpoſe, yet a few Plants of the firſt, third, fourth, and fifth Sorts ſhould have a Place in ſome Part of the Flower-Garden, for Variety, eſpecially the third and fourth, which are extreme hardy Plants, and will grow in almoſt any Soil or Situation, and their Flowers will continue a long Time in Beauty.

All theſe Sorts may be propagated by parting their Roots, the beſt Time for which is in *Autumn*, that they may take Root before the Froſt, which will cauſe 'em to flower much ſtronger than thoſe tranſplanted in the *Spring*, and the Plants will not be in ſo much Danger of miſcarrying as thoſe are, eſpecially when the *Spring* happens to prove dry. After theſe Plants have taken Root, they will require no farther Care, but to keep them clear from Weeds, and the *May* following they will begin to flower, which will continue in Beauty three Weeks or a Month, provided the Seaſon be not too hot and dry.

The *Portugal* Sort is not ſo hardy as either of the former, tho' it will endure the Cold of our ordinary *Winters* very well in the open Air, provided it is planted in a dry Soil and a warm Situation, but in very ſevere Froſts it is often deſtroy'd. This may alſo be propagated by Cuttings or Slips, which ſhould be planted in a Bed of freſh Earth in the *Spring*, and water'd and ſhaded until they have taken Root; after which they muſt be kept clear from Weeds till *Michaelmas*, when they ſhould be planted either into Pots to be ſhelter'd in *Winter*, or in ſome warm Situation in the full Ground, where they may remain to flower.

This Plant will grow two or three Feet high, and become ſhrubby, provided it be not injur'd by Cold.

STATUES and VASES contribute very much to the Embelliſhment and Magnificence of a Garden, and extremely advance the natural Beauties of it.

They are made of ſeveral Forms and different Materials; the richeſt are thoſe of Caſt Braſs, Lead gilt, and Marble; the ordinary Sort are of common Stone or *Stucco*.

Among Figures are diſtinguiſh'd Groups, which conſiſt at leaſt of two Figures together in the ſame Block; Figures inſulate or detach'd, that is, thoſe that you can go quite round; and Figures that are ſet in Niches, which are furniſh'd on the fore Part only.

There are likewiſe Buſts, Termes, half-length Figures, Figures half as big as the Life, and thoſe bigger than the Life that are call'd *Coloſſal*, either on regular Pedeſtals, or ſuch as are more ſlender, tapering, and hollow'd, not to mention the Figures which ſometimes adorn Caſcades; as do alſo *Baſs Relievos* and Maſh Heads.

Theſe Figures repreſent all the ſeveral Deities, and illuſtrious Perſons of Antiquity, which ſhould be placed properly in Gardens.

The River Gods, as *Naiades*, *Rivers*, and *Tritons*, ſhould be placed in the Middle of Fountains and Baſons.

The Gods of the Woods, as *Sylvans*, *Fauns*, and *Dryades*, in the Groves; *Sacrifices*, *Bacchanals*, and Childrens Sports are likewiſe repreſented in *Baſs Relievo* upon the *Vaſes* and Pedeſtals, which may be adorn'd with Feſtoons, Foliage, Mouldings, and other Ornaments.

Figures and *Vaſes* are uſually ſet along the Paliſades in the Front, and upon the Sides of a Parterre, in the Niches and Sinking of *Hornbeam* or of Lattice-work made for that Purpoſe.

They are placed in Groves in the Centre of a Star or St. *Andrew*'s Croſs, in the Spaces between the Walls of a Gooſefoot in the Middle of Halls and Cabinets, among the Trees and Arches of a green Gallery, and at the Head of a Row of Trees or Paliſades that ſtand free or detach'd.

In Woods and Groves, *Sylvanus*, God, and *Ferona*, Goddeſs of the Woods; *Acteon* the Hunter, who chancing to eſpy *Diana* bathing, ſhe transform'd him into a Hart, and he was devour'd by his own Dogs: Alſo,

Eccho, a Virgin rejected of her Lover, who pined away in the Woods for Grief, where her Voice ſtill remains, anſwering the Outcries of every Complaint: Alſo,

Philomela transform'd into a *Nightingale*, and *Itis* into a *Pheaſant*.

They are alſo placed at the lower Ends of Walks and Viſta's, to ſet them off the better.

Jupiter, *Mars*, and *Bellona* ſhould poſſeſs the largeſt open Centres and Lawns of a grand Deſign, elevated upon Pedeſtals, columnal and other architectonical Works, with their immediate Servants and Vaſſals underneath, *Jupiter* with his *Mercury*, *Mars* with *Fame*, and the reſt of their Attendants.

Alſo *Minerva* and *Pallas*, Goddeſſes of Wiſdom, with the ſeven liberal Sciences; the three Deſtinies, *Clotho*, *Lacheſis*, and *Atropos*; *Tellus* the God of the Earth; *Priapus* the God of Gardens; *Pytho* the Goddeſs of Eloquence, *Veſta* the Goddeſs of Chaſtity.

Neptune in his Chariot ſhould poſſeſs the Centre of the greateſt Body of Water, whether it be Fountain, Baſon, or whatſoever of that Kind, and attended with the *Naiades*, *Tritons*, and his other Sea Attendants.

For Canals, Baſons, and Fiſh-ponds, *Palæmon*, *Paniſcus*, and *Oceanus*, Gods; *Dione*, *Melicerta*, *Thetis*, and *Marica*, Sea-Goddeſſes; *Salacia*, Goddeſs of the Water; *Naiades*, Fairies of the Water; and the Syrens, *Parthenope*, *Lygia*, and *Leuſia*.

Venus ſhould be placed among the *Graces*, *Aglaia*, *Thalia*, and *Euphroſyne*; *Cupid*, &c.

It may alſo be proper to place *Apollo* with the *Muſes*, *Clio*, *Melpomene*, *Thalia*, *Euterpe*, *Terpſichore*, *Erato*, *Calliope*, *Urania*, and *Polyhymnia*, in the Niches; and *Minerva* with the Liberal Sciences, *&c.* and in all the leſſer Centres of a Polygonal Circumſcription.

Flora and *Cloris*, Goddeſſes of Flowers, and alſo *Venus*, *Daphne* and *Rucina* the Goddeſs of Weeding, in the Flower Garden.

The *Dii Minores* ought alſo to poſſeſs the Niches.

Vulcan with the *Cyclops* in a Centre of leſs Note; and all the reſt of the Deities in their particular Places and Order.

Ceres and *Pomona*, and the three *Heſperides*, *Ægle*, *Arethuſa*, and *Heſperethuſa*, who were three Siſters, feigned to have an Orchard of Golden Apples, kept by a Dragon, which *Hercules* ſlew, when he took them away, ſhould be placed in the Orchard: The *Fauns* and *Sylvans* ſhould be placed in the more remote and rural Centres and Parts of the Wood Work.

Bacchus, the God of Wine, and *Silenus*, in Vineyards.

Daphne and *Diana*, *Flora* and *Venus*, ſhould have their Places in the Flower-garden.

Æolus, God of the Winds, and the *Oreades*, Fairies of the Mountains, ſhould be placed on high Mounts, Terras Walks, *&c.*

The Goddeſs *Vallenta* in Vallies.

Harpocrates and *Angerona*, the former the God, and the latter the Goddeſs of Silence, and *Mercury* the God of Eloquence, in private Cabinets in a Wilderneſs or Grove.

Comus, the God of Banquetting, in Places for that Purpoſe.

Ariſtæus, the Patron of Bees, near an Aviary.

Morpheus and *Pan*, Gods of Sheep, *Pales* the Goddeſs of Shepherds, and *Bubona* the Goddeſs of Oxen, in ſmall Paddocks of Sheep in a Wilderneſs.

Robigus, a God who preſerved Corn from being blaſted, *Ceres* the Goddeſs of Bread Corn, and *Tutelina* a Goddeſs, who had the Tuition of Corn in the Fields, in ſmall Encloſures for Corn in a Wilderneſs.

STELLATE Plants, are ſuch as have their Leaves placed at certain Intervals of the Stalks in form of a Star; of this Tribe are *Madder*, *Gooſe-Graſs*, *Ladies Bedſtraw*, &c.

STERILITY ſignifies Barrenneſs.

STOCK-GILLIFLOWER: *vide* Leucojum.

STOECHAS [ſo called of certain Iſles in the *Mediterranean* Sea, by the *French*, where this Plant was firſt found. In the Shops it is called *Stœchas Arabica*, not becauſe it grows there, but becauſe the *Arabian* Phyſicians do highly commend this Herb] Caſſidony, French Lavender, *or* Stickadore.

The *Characters* are;

It hath a labiated Flower, conſiſting of one Leaf, whoſe upper Lip is upright, and cut in two, but the under Lip (or Beard) is cut into three Parts; but both are ſo divided as at firſt to appear like a Flower cut into five Segments; out of whoſe Flower-cup riſes the Pointal, attended by four Embryo's, which afterwards become ſo many roundiſh Seeds incloſed in the Flower-cup. To theſe Marks muſt be added, that the Flowers are ranged in a various Series into ſcaly Heads, out of the Top of which peep ſome ſmall Leaves, which look very beautifully.

The *Species* are;

1. STOECHAS *purpurea.* *C. B. P.* Purple Stœchas *or* Caſſidony, *commonly called* Arabian Stœchas.
2. STOECHAS *folio ſerrato.* *C. B. P.* Caſſidony *or* French Lavender, with a ſerrated Leaf.
3. STOECHAS *cauliculis non foliatis.* *C. B. P.* Caſſidony, *or* French Lavender, with long naked Flower-ſtalks.

The Heads of Flowers of the firſt Kind are uſed in ſome of the capital Medicines directed by the College of Phyſicians, which are commonly brought from the South Parts of *France*, where the Plants are in great Plenty; but theſe are very apt to take a Mouldineſs in their Paſſage, and ſo are not near ſo good for uſe as thoſe which are gathered freſh in *England*, where the Plants may be cultivated to great Advantage.

The ſecond and third Sorts are preſerved in many curious Gardens for Variety, but they are not of any uſe.

All theſe Plants may be cultivated by ſowing their Seeds upon a Bed of light dry Soil in *March*; and when the Plants are come up, they ſhould be carefully cleared from Weeds until they are two Inches high, at which Time they ſhould be removed; therefore there muſt be a Spot of light dry Ground prepared, and laid level, which muſt be trodden out in Beds, into which the Plants ſhould be planted at about five or ſix Inches Diſtance each Way, obſerving to water and ſhade them until they have taken Root, after which they will require no further Care, but to keep them clear from Weeds the following *Summer*; but if the *Winter* ſhould prove very ſevere, it will be proper to cover them with Mats, *Peaſe-haulm*, or ſome other light covering to guard them againſt the Froſt, which otherwiſe would be apt to injure them while they are ſo young! But in *March*, or the Beginning of *April*, the following *Spring*, they muſt be removed into the Places where they are to remain, obſerving, if poſſible, to tranſplant them in a warm moiſt Seaſon, and not to let them remain long above Ground, for if their Roots are dry'd, they ſeldom grow well after. The Soil in which theſe are planted ſhould be a dry warm Sand or Gravel, and the poorer the Soil is in which they are planted, the better they will endure the Cold of the *Winter*, provided the Ground be dry; tho' indeed the Plants will thrive better in *Summer* upon a rich moiſt Ground; but then they will not produce ſo many Flowers, nor will the Plant afford near ſo ſtrong an aromatick Scent; as is the Caſe with moſt Sorts of aromatick Plants.

Theſe Plants may alſo be propagated by planting Slips or Cuttings of any of the Kinds in the *Spring*, obſerving to refreſh them with Water until they have taken Root, after which they may be managed as hath been directed for the ſeedling Plants; but as thoſe Plants raiſed from Seeds are much better than theſe, it is hardly worth while to propagate them this Way, eſpecially ſince their Seeds do ripen ſo well in this Country.

The Heads of the firſt Sorts may be gathered for uſe when the Flowers are in full Perfection, and ſpread to dry in a ſhady Place, after which they may be put up for Uſe.

STONECROP, *vide* Sedum.

STONECROP-TREE, *vide* Vermicularis Frutex.

STOVES are Contrivances for the preſerving ſuch tender exotick Plants, which will not live in theſe Northern Countries without artificial Warmth in *Winter*. Theſe are built in different Methods, according to the Ingenuity of the Artiſt, or the different Purpoſes for which they are intended; but in *England* they are at preſent reducible to two.

The firſt is called a *Dry Stove*, being ſo contrived, that the Flues thro' which the Smoak paſſes are either carry'd under the Pavement of the Floor, or elſe are erected in the Back-part of the Houſe, over each other, like Steps: In theſe *Stoves* the Plants are placed on Shelves of Boards, laid on a Scaffold above each other, for the greater Advantage of their ſtanding in ſight, and enjoying an equal Share of Light and Air. In theſe *Stoves* are commonly placed the tender Sorts of *Aloes*, *Cereus's*, *Euphorbiums*, *Tithymals*, and other ſucculent Plants, which are impatient of Moiſture in *Winter*, and therefore require to be kept in a ſeparate *Stove*, and not placed among Trees or herbaceous Plants, which perſpire freely, and thereby often cauſe a damp Air in the Houſe, which is often imbibed by the ſucculent Plants, to their no ſmall Prejudice. Theſe *Stoves* may be regulated by a *Thermometer*, ſo as not to over-heat them, nor to let the Plants ſuffer by Cold; in order to which, all ſuch Plants as require nearly the ſame Degree of Heat ſhould be placed by themſelves in a ſeparate Houſe; for if in the ſame *Stove* there are Plants placed of many different Countries, which require as many different Heats, by making the Houſe warm enough for ſome Plants, others, by having too much Heat, are drawn and ſpoiled.

The other Sort of *Stoves* are commonly called *Bark Stoves*, to diſtinguiſh them from the *Dry Stoves* already mentioned. Theſe have a large Pit, nearly the Length of the Houſe, three Feet deep, and ſix or ſeven Feet wide, according to the Breadth of the Houſe; which Pit is filled with freſh *Tanners-bark* to make a Hot-bed, and in this Bed the Pots of the moſt tender exotick Trees and herbaceous Plants are plunged; the Heat of this Bed being moderate, the Roots of the Plants are always kept in Action, and the Moiſture detained by the Bark keeps the Fibres of their Roots in a ductile State, which in the *Dry Stove*, where they are placed on Shelves, are ſubject to dry too faſt, to the great Injury of the Plants. In theſe *Stoves* (if they are rightly contrived) may be preſerved the moſt tender exotick Trees and Plants, which, before the Uſe of the Bark was introduced, were thought impoſſible to be kept in *England*: But as there is ſome Skill required in the Structure of both theſe *Stoves*, I ſhall not only deſcribe them as intelligibly as poſſible, but alſo annex a Plan of the *Bark Stove* hereto, by which it is hoped every curious Perſon will be capable of directing his Workmen in their Structure.

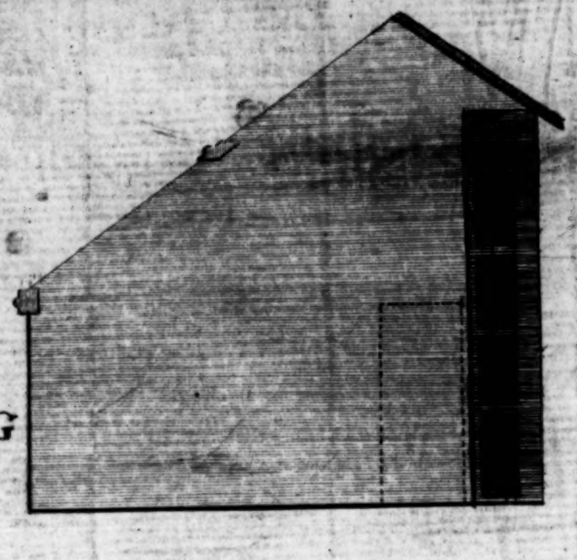
The Dimenſion of this *Stove* ſhould be proportioned to the Number of Plants intended to be preſerved, or the particular Fancy of the Owner; but their Length ſhould not exceed forty Feet, unleſs there are two Fire-places, and in that Caſe it will be proper to make a Partition of Glaſs in the Middle, and to have two Tan-pits, that there may be two different Heats, for Plants from different Countries (for the Reaſons before given in the Account of *Dry Stoves*); and were I to erect a Range of *Stoves*, they ſhould be all built in one, and only divided with Glaſs Partitions, which will be of great Advantage to the Plants becauſe they may have the Air in each Diviſion ſhifted by ſliding the Glaſſes of the Partitions, or by opening the Glaſs Door, which ſhould be made between each Diviſion, for the more eaſy Paſſage from one to the other.

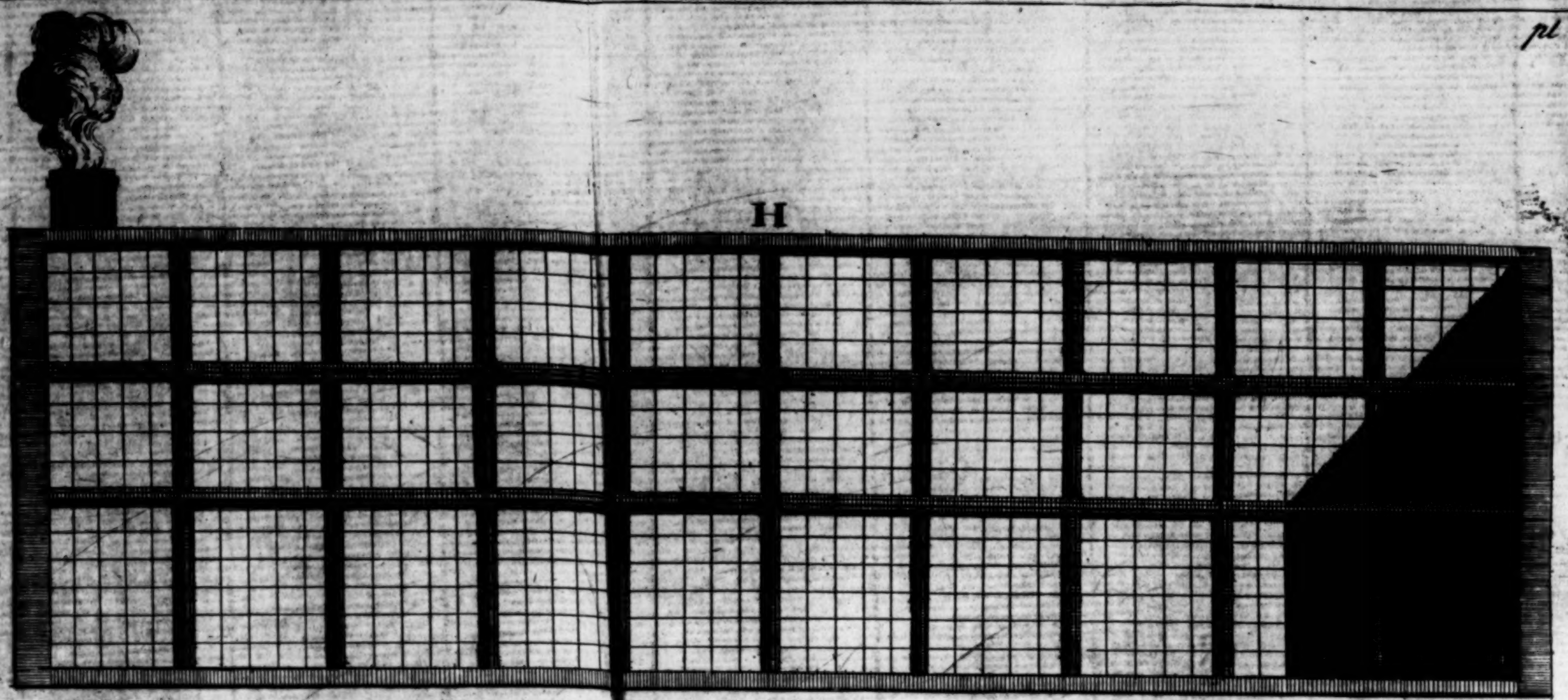
This *Stove* ſhould be raiſed above the Level of the Ground, in Proportion to the Dryneſs of the Place; for if it be built on a moiſt Situation, the Whole ſhould be placed upon the Top of the Ground; ſo that the Brickwork in Front muſt be raiſed three Feet above the Surface, which is the Depth of the Bark-bed, whereby none of the Bark will be in Danger of lying in Water; but if the Soil be dry, the Brick-work in Front need not be more than one Foot above Ground, and the Pit may be ſunk two Feet below the Surface. Upon the Top of this Brick-work, in Front, muſt be laid the Plate of Timber, into which the Wood-work of the Frame is to be faſtened, and the upright Timbers in Front muſt be placed four Feet aſunder, or ſomewhat more, which is the Proportion of the Width of the Glaſs Doors or Saſhes; theſe ſhould be about ſix Feet and a half or ſeven Feet long, and placed upright; but from the Top of theſe ſhould be ſloping Glaſſes, which ſhould reach within three Feet of the Back of the *Stove*, where there ſhould be a ſtrong Crown-piece of Timber placed, in which there ſhould be a Groove made for the Glaſſes to ſlide into. The Wall in the Back-part of the *Stove* ſhould be thirteen Inches thick, and carry'd up about nine Feet above the Surface of the Bark-bed; and from the Top of this Wall there ſhould be a ſloping Roof to the Crown-piece where the Glaſſes ſlide in. This Crown-piece ſhould be about ſixteen Feet high from the Surface of the Bark-bed or Floor, which will give a ſufficient Declivity to the ſloping Glaſſes to carry off the Wet, and be of a reaſonable Height for containing many tall Plants. The Back Roof may be ſlated, covered with Lead, or tiled, according to the Fancy of the Owner: But the Manner of this outſide Building is better expreſſed by the annexed Plan, than is poſſible to be deſcribed in Words.

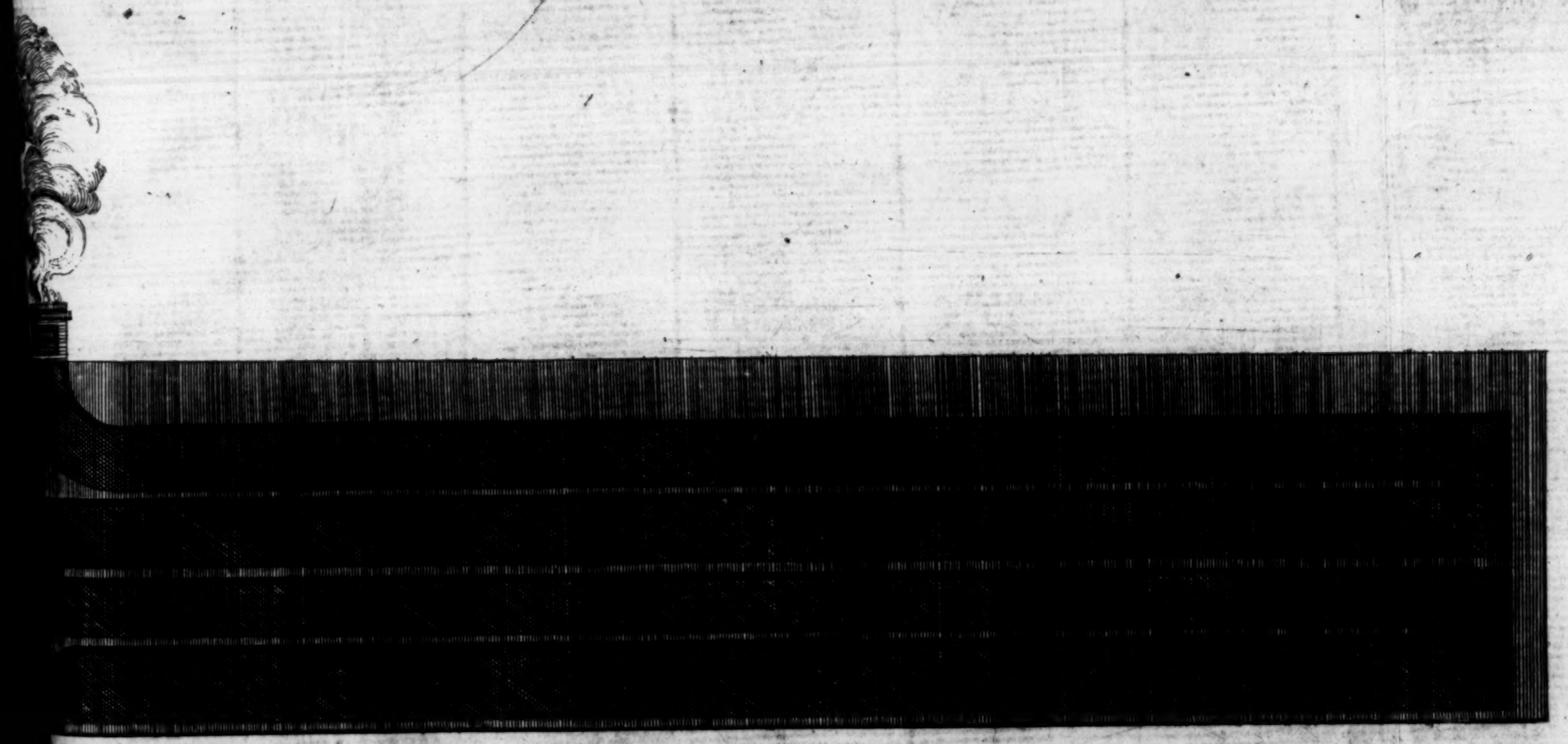
In the Front of the Houſe there ſhould be a Walk about twenty Inches wide, for the Conveniency of walking, next to which the Bark-pit muſt be placed, which ſhould be in Width proportionable to the Breadth of the Houſe: If the Houſe is twelve Feet wide, which is a due Proportion, the Pit may be ſeven Feet wide; and behind the Pit ſhould be a Walk eighteen Inches wide, to paſs in order to water the Plants, &c. then there will be twenty-two Inches left next the Back-wall to erect the Flues, which muſt be all raiſed above the Top of the Bark-bed; theſe Flues ought to be ſixteen Inches wide in the Clear, that they may not be too ſoon ſtopped with the Soot; and the lower Flue, into which the Smoak firſt enters from the Fire, ſhould be two Feet deep in the Clear, and this may be covered either with Caſt Iron Plates or broad Tiles; over this the ſecond Flue muſt be returned back again, which may be eighteen Inches deep, and covered on the Top as before; and ſo in like Manner the Flues may be returned over each other three or four times, that the Heat may be ſpent before the Smoak paſſes off. The Thickneſs of the Wall in Front of theſe Flues need not be more than four Inches, but muſt be well jointed with Mortar, and plaiſtered within-ſide, to prevent the Smoak from getting into the Houſe, and the Outſide ſhould be faced with Mortar, and covered with a coarſe Cloth, to keep the Mortar from cracking, as is practiſed in ſetting up Coppers; if this be carefully done, there will be no Danger of the Smoak entering the Houſe, which cannot be too carefully avoided; for there is nothing more injurious to Plants than Smoak, which will cauſe them to drop their Leaves, and if it continue long in the Houſe, will entirely deſtroy them.

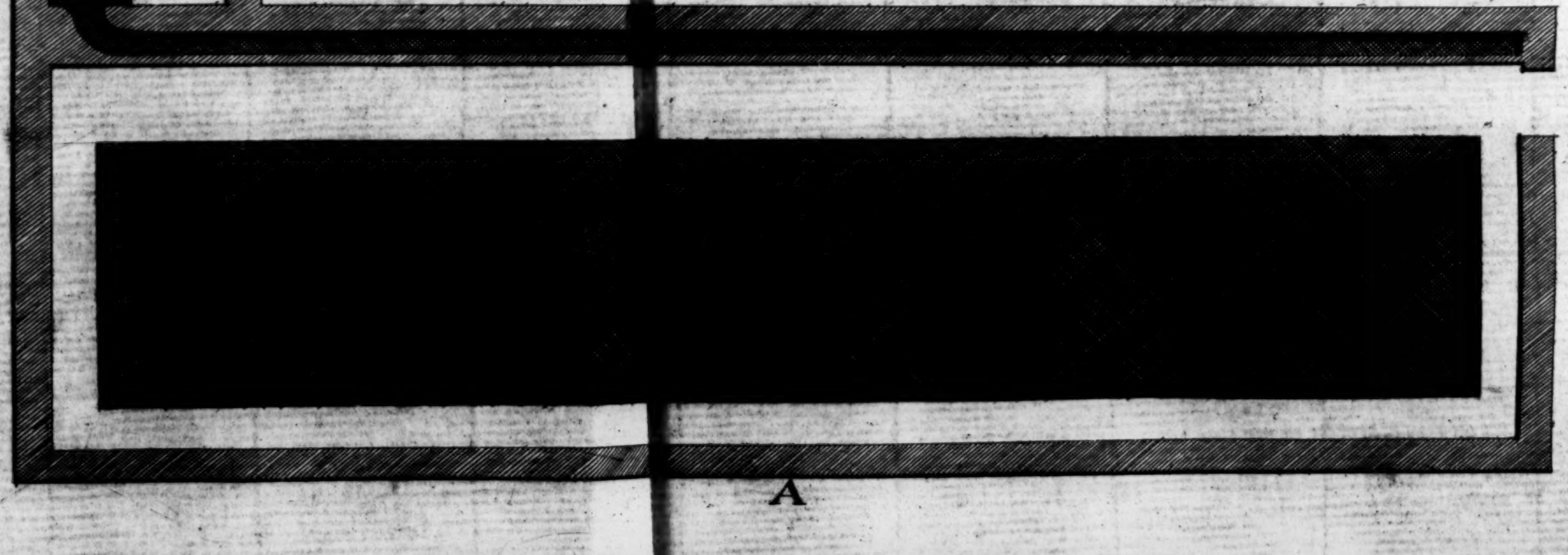
A The ground plat of the Stove B The Bark bed in the Stove C The Shed for the Fire place
D The Oven where the Fire is made E The first Flue thro' which the ſmoak paſses
F F F F The Back Wall representing the four Flues rising over each other
G is the upright of the Stove H is the representation of the upright and Sloping glaſses

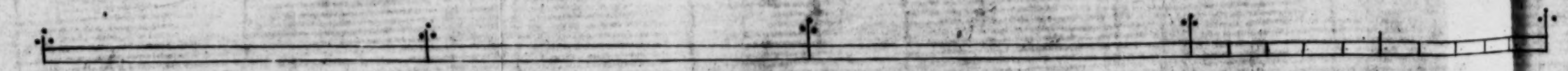
pl 1











Scale of Feet

this before the word Stove

An Explanation of the Draught

N:1 Is the Plan

A. The pit for the Bark

B. Sheds at each end one where yͤ Fire is kept yͤ other for a Tool house in order to make the draught uniform

C. The distance from yͤ Barkpit to the inside Wall

D. The Funnel that comes from

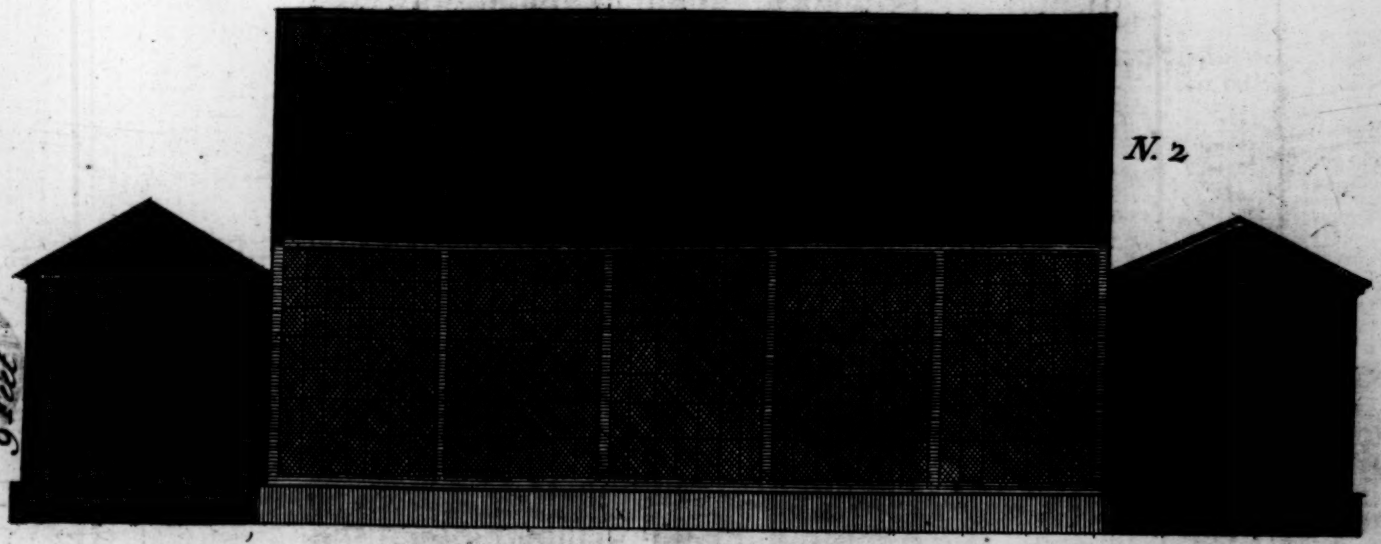
E. where yͤ Fire is kept which passes thro all the Flues in the back Wall

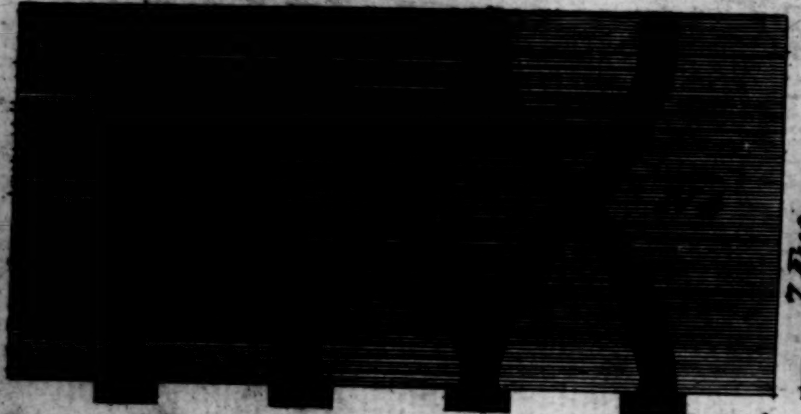
N.2 Is the Elevation of the Front

N.3 Is the Elevation of one end wᶜʰ shews the Slope of yͤ Glass and the Angle which it makes with the Front

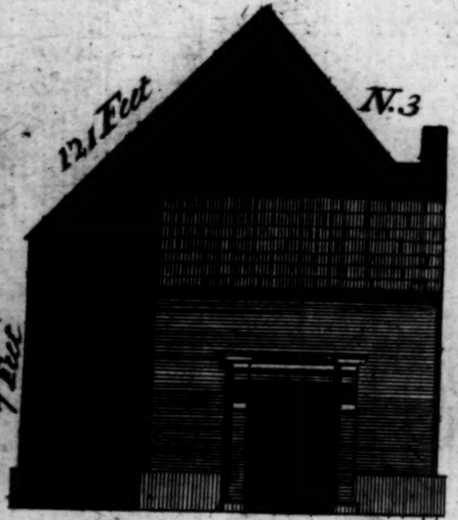
N.4 Is the Section of yͤ back Wall which shews how all the Flues may be laid into each other for the equal distributio of the Heat

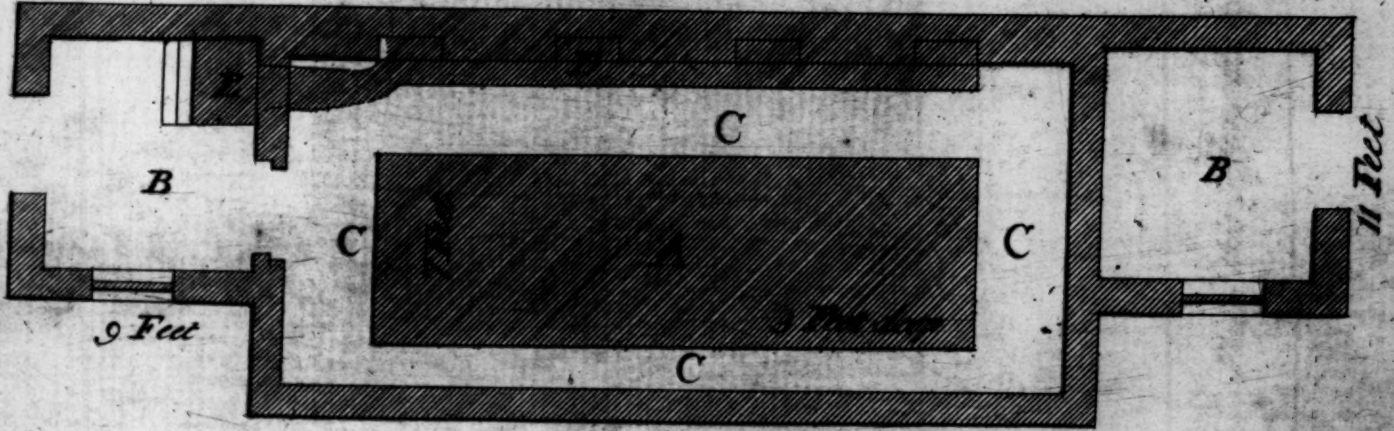
A Plan of the Stovs





N.3

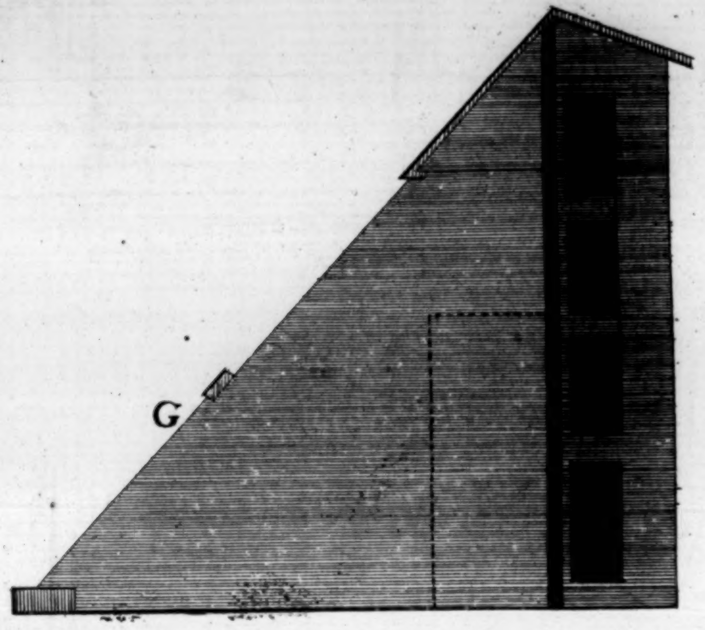


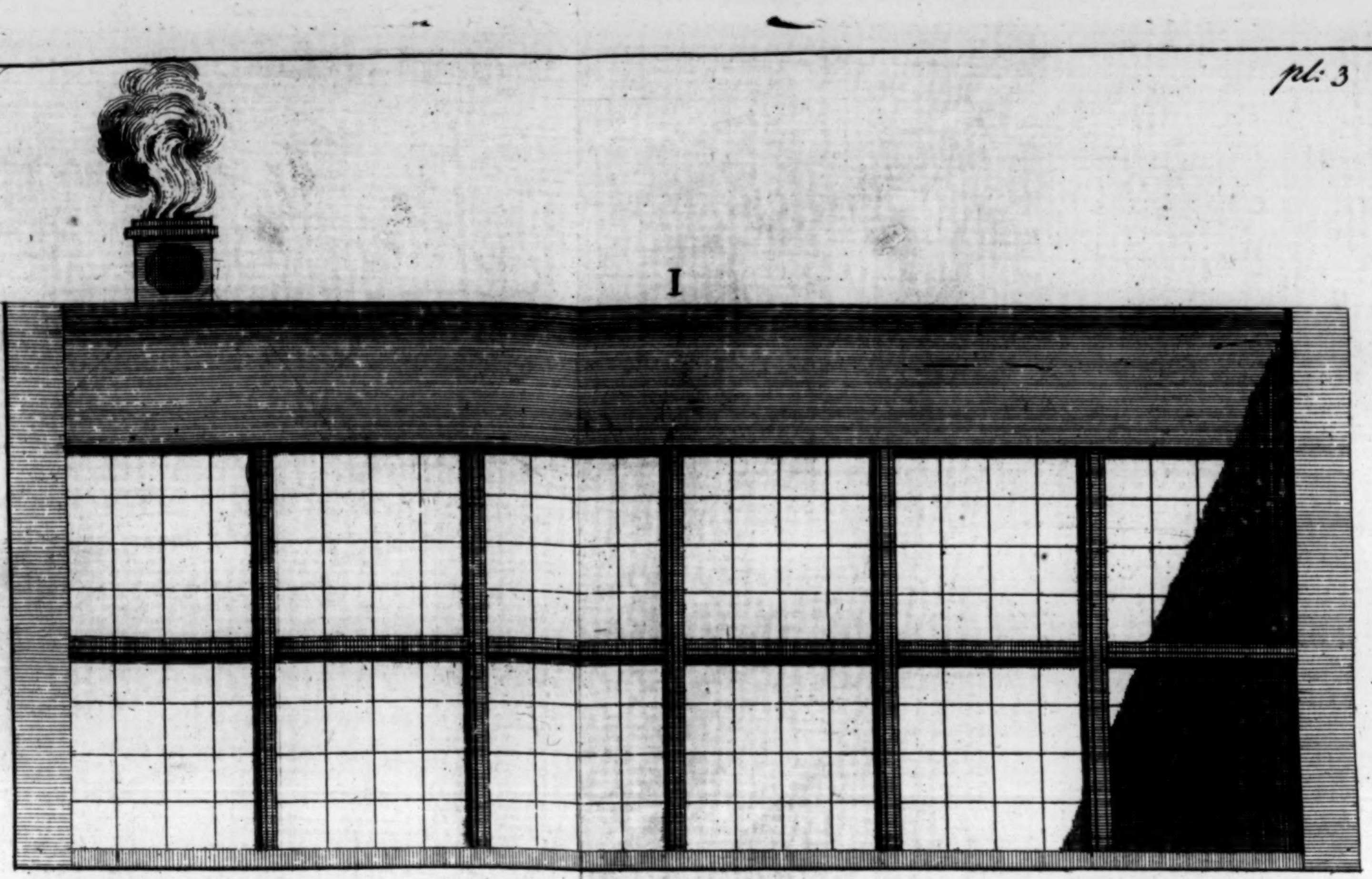


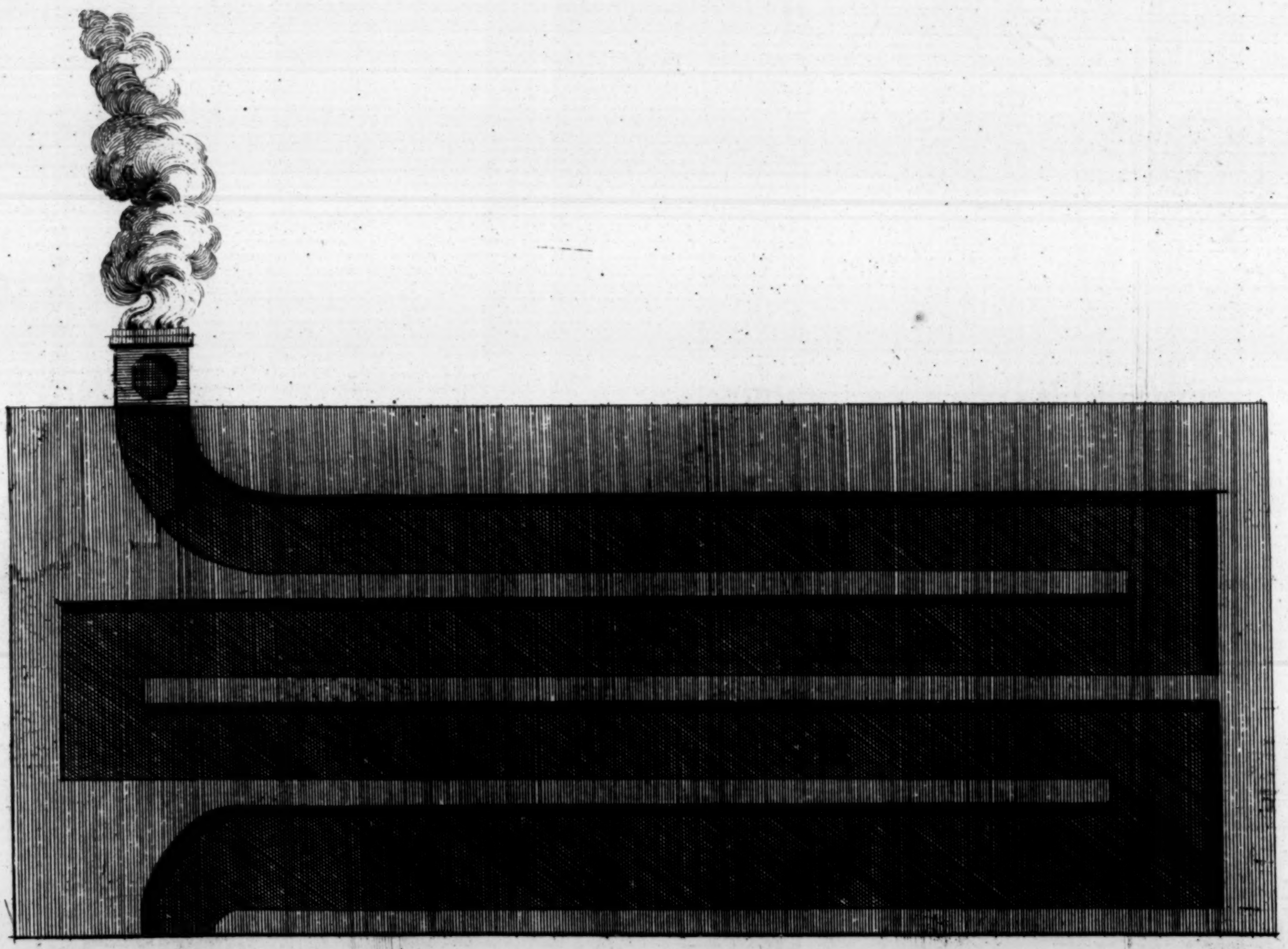
N.1 32 Feet

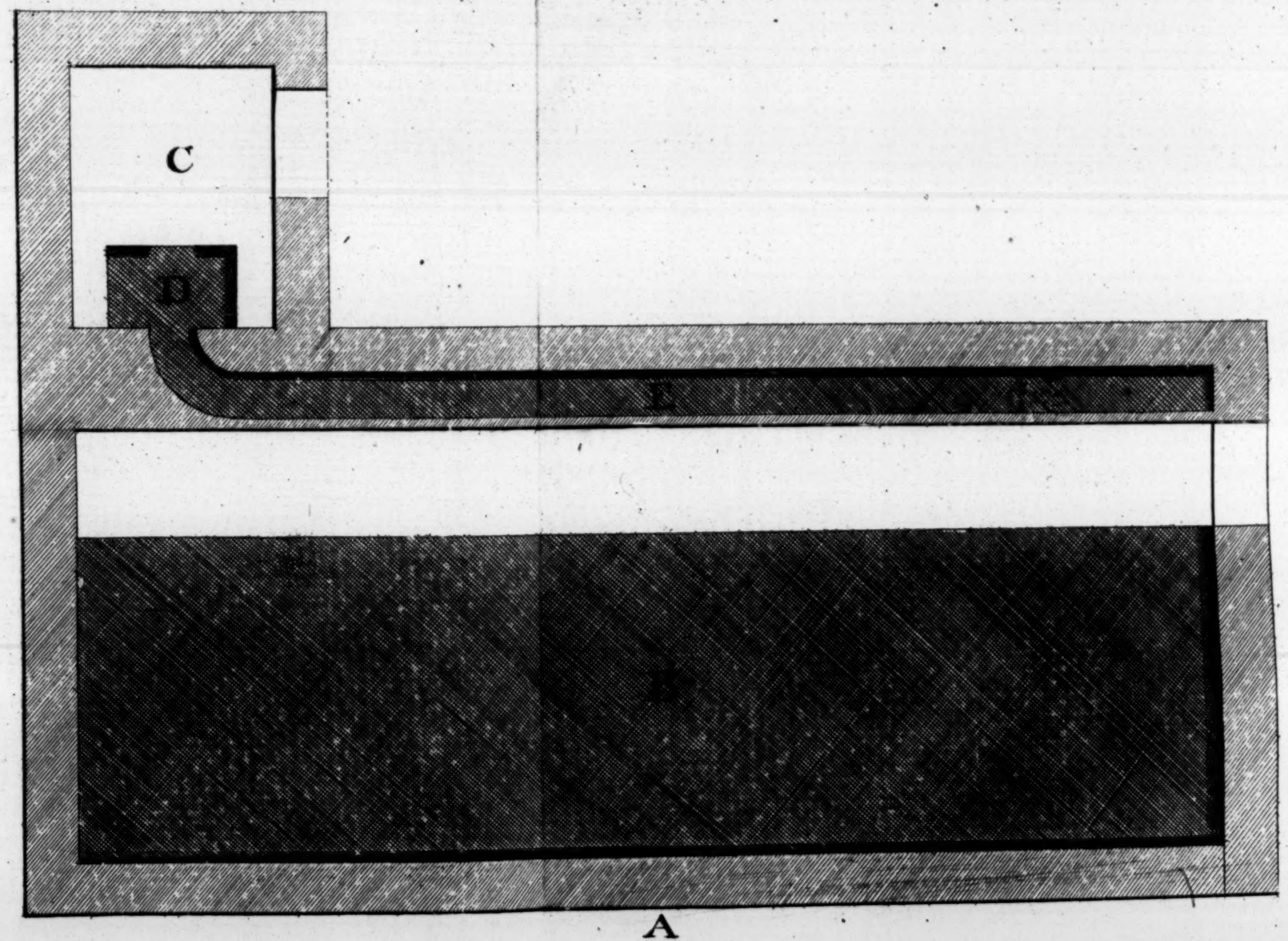
pl: 3

A The ground plat of the Stove B The Bark bed in the Stove C The Shed for the Fire place
D The Oven where the Fire is made E The first Flue thro' which the Smoak paſses
G Is the elevation of the Stove H Is the representation of the Back Wall with the four
Flues rising over each other I represents the Sloping Glaſses in front







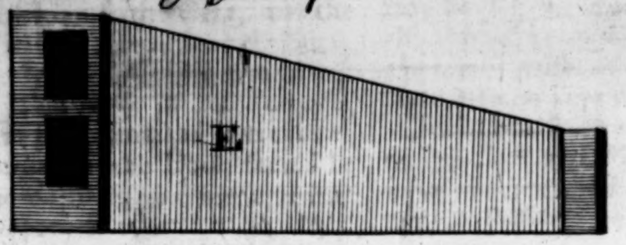


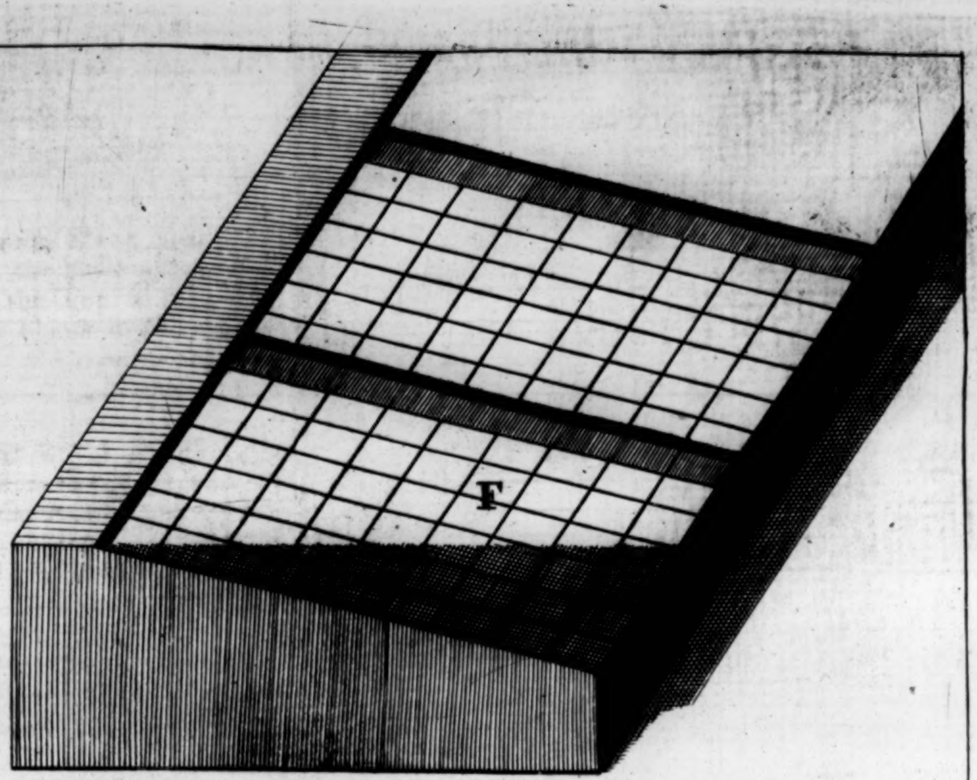
A

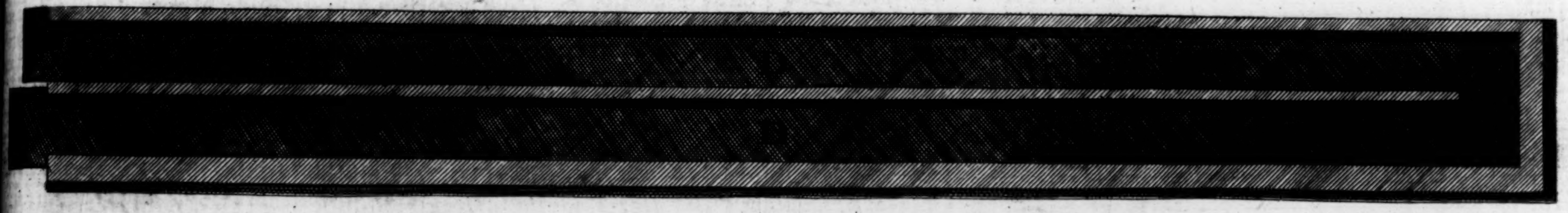
Scale of Feet

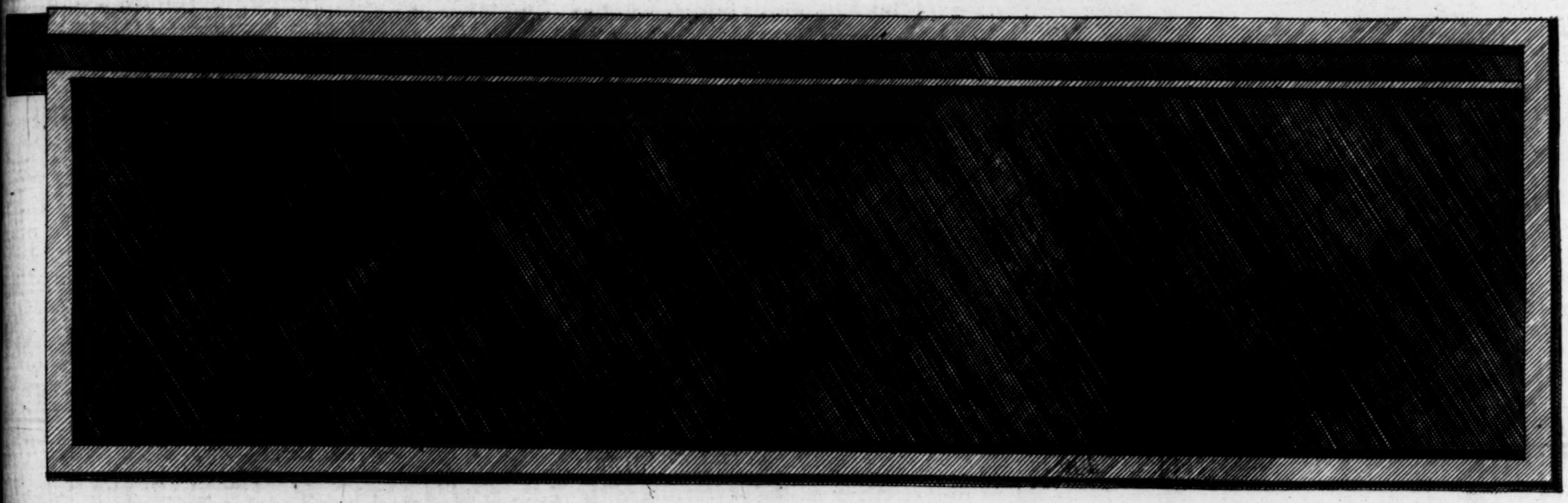
Place this before the word Stove

A *is the Pit to contain the Tanners Bark.*
B *is the Oven for the Fire.*
C *is the Flue firſt riſing from the Fire.*
D *Shews the two flues in the Wall.*
E *is the Section of the Frame.*
F *repreſents the Glaſses of the Frame.*









Scale of Feet

Fire-place may be made either at one End or in the according as there is moſt Conveniency, for where- is placed, it ſhould have a Shed over it, and not be to the open Air; for it will be impoſſible to make e burn equally, where the Wind has full Egreſs to it, ill be troubleſome to attend the Fire in wet Weather, it is expoſed to the Rain.

Contrivance of the Furnace muſt be according to the hich is deſigned to burn; but as Turf is the beſt Fir- *Stoves*, where it can be had, becauſe it burns more ately, and laſts longer than any other Sort of Fuel, and uires leſſer Attendance, I ſhall deſcribe a proper Sort of ce for that Purpoſe.

e whole of this Furnace ſhould be erected within the , which will be a great Addition to the Heat, and the Wall on the Outſide of the Fire-place, next the Shed, d be two Bricks thick, the better to prevent the Heat coming out that Way. The Door of the Furnace, hich the Fuel is put in, muſt be as ſmall as convenient- ay be to admit of the Fuel; and this Door ſhould be ed near the upper Part of the Furnace, and made to ſhut loſe as poſſible, ſo that there may but little of the Heat ff through it. This Furnace ſhould be about twenty hes deep; and ſixteen Inches ſquare at Bottom, but may loped off on every Side, ſo as to be two Feet ſquare at Top; and under this Furnace ſhould be a Place for the s to fall into, which ſhould be about a Foot deep, and ide as the Bottom of the Furnace; this ſhould alſo have Iron Door to ſhut as cloſe as poſſible; but juſt over the -hole, above the Bars which ſupport the Fuel, ſhould be uare Hole about four Inches wide, to let in Air to make Fire burn; this muſt alſo have an Iron Frame, and a r to ſhut cloſe when the Fire is perfectly lighted, which make the Fuel laſt the longer, and the Heat will be e moderate.

The Top of this Furnace ſhould be nearly equal to the p of the Bark-bed, that the loweſt Flue may be above Fire, ſo that there may be a greater Draught for the k, and the Furnace ſhould be covered with a large Iron e, cloſely cemented to the Brick-work, to prevent the k from getting out: And you ſhould be very careful, ever the Fire is placed, that it be not too near the Bark- d; for the Heat of the Fire will, by its long Continu- e, dry the Bark, ſo that it will loſe its Virtue, and be Danger of taking Fire; to prevent which, it will be the Method to continue a Hollow between the Brick-work the Fire and that of the Pit, about eighteen Inches wide, ich will effectually prevent any Damage ariſing from the at of the Fire; and there ſhould be no Wood-work pla- d any where near the Flues or the Fire-place, becauſe the ntinual Heat of the *Stove* may in Time dry it ſo much as cauſe it to take Fire, which ought to be very carefully arded againſt.

The Entrance into this *Stove* ſhould be either from a Green-houſe, the *Dry Stove*, or elſe thro' the Shed where e Fire is made, becauſe in cold Weather the Front Glaſſes uſt not be open'd. The Inſide of the Houſe ſhould be ean white-waſhed, becauſe the whiter the Back-part of the Houſe is, the better it will reflect the Light, which is of eat Conſequence to Plants, eſpecially in *Winter*, when the *ove* is obliged to be ſhut up cloſe.

Over the Top Sliding Glaſſes there ſhould be either Wooden hutters, or Tarpawlins to roll down over them in bad Wea- her, to prevent the Wet from getting through the Glaſſes, d to ſecure them from being broke by Storms of Hail, and eſe outer Coverings will be very ſerviceable to keep out the roſt; and if in very ſevere Cold there is a Tarpawlin hung efore the upright Glaſſes in the Front, it will be of great rvice to the *Stove*, and a much leſs Fire will preſerve a Heat the Houſe.

In the warmeſt of theſe Houſes or Diviſions ſhould be pla- d the moſt tender exotick Trees and Plants, a Liſt of hich is as followeth.

ajou or *Caſhew*,
egator Pear,
ſpice or *Pimento*,
rrow Root,
ananas,
aſtard Cedar of *Barbados*,
aſtard Locuſt of *Barbados*,
ully Tree,
utton Wood of *Barbados*,
abbage Tree,
ocoa Tree,
alibaſh Tree,
aſſada,
Caſſia Fiſtula,
Cedar Tree of *Barbados*,
Cherry Tree of *Barbados*,
Cocoa-nut Tree,
Cortex Winteranus,
Cuſtard Apple,
Date Tree,
Dumb Cane,
Fiddle Wood,
Fig Tree the *Arched Indian*,
Flower-fence of *Barbados*,
Fuſtick Tree,
Ginger.
Guajacum,
Guayava Tree,
Logwood,
Macaw Tree,
Mamee Tree,
Mancinel Tree,
Mimoſa or *Senſitive Plants*,
Nickar Tree or *Bonduc*,
Palm Trees of ſeveral Sorts,
Papaw Tree,
Plantane Tree,
Plum Tree of *Jamaica*,
Sapotilla Tree,
Sope Berry Tree,
Sowre-ſop,
Sugar Apple,
Sweet-ſop,
Tamarind Tree,
Tulip Flower or *Whitewood*.

Theſe with moſt other Sorts of Trees, Shrubs, and herbaceous Plants, ſhould be plunged in the Bark-bed for the Reaſons already aſſigned; and upon the Top of the Flues may be ſet the *Anana* or *Pine-Apple* Plants in *Winter*, as alſo the *Melon-thiſtle*, the tender Sorts of *Cereus's*, and *Euphorbiums*, with other very tender ſucculent Plants, which require to be kept dry in *Winter*.

As in this *Stove* are placed the Plants of the hotteſt Parts of the *Eaſt* and *Weſt Indies*, ſo the Heat ſhould be kept up equal to that marked *Anana* upon Mr. *Fowler's Thermometers*, and ſhould never be ſuffered to be above eight or ten Degrees cooler at moſt, nor ſhould the Spirit be raiſed above ten Degrees higher in the Thermometer; both which Extremes will be equally injurious to the Plants.

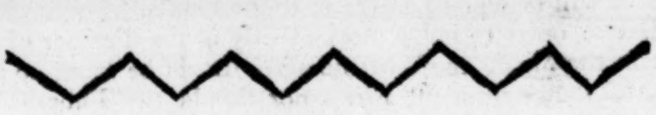
But in order to judge more exactly of the Temper of the Air in the *Stove*, the Thermometer ſhould be hung up at a good Diſtance from the Fire, nor ſhould the Tube be expoſed to the Sun, but on the contrary, the Back hung thereto, becauſe whenever the Sun ſhines upon the Ball of the Thermometer but one ſingle Hour, it will raiſe the Liquor in the Tube conſiderably, when perhaps the Air of the Houſe is not near ſo warm; which many times deceives thoſe who are not aware of this.

In the Management of the Plants placed in the Bark-bed, there muſt be a particular Regard had to the Temper of the Bark, and the Air of the Houſe, that neither be too violent; as alſo to water them frequently, becauſe when they are in a continual Warmth, which will cauſe them to perſpire freely, if they have not a conſtant Supply to anſwer their Diſcharge, their Leaves will decay, and ſoon fall off. As to the farther Directions concerning the Culture of the particular Plants, the Reader is deſired to turn to their ſeveral Articles, where they are diſtinctly treated of.

The other Sort of *Stove*, which is commonly call'd the *Dry Stove* (as was before ſaid) may be either built with upright and ſloping Glaſſes at the Top, in the ſame Manner, and after the ſame Model of the *Bark-ſtove*; or elſe the front Glaſſes, which ſhould run from the Floor to the Ceiling, may be laid ſloping, to an Angle of 45 Degrees, the better to admit the Rays of the Sun in *Spring* and *Autumn*: The latter Method has been chiefly follow'd by moſt Perſons who have built theſe Sort of *Stoves*; but were I to have the Contrivance of a *Stove* of this kind, I would have it built after the Model of the *Bark-ſtove*, with upright Glaſſes in Front, and ſloping Glaſſes over them, becauſe this will more eaſily admit the Sun at all the different Seaſons; for in *Summer*, when the Sun is high, the Top Glaſſes will admit the Rays to ſhine almoſt all over the Houſe; and in *Winter*, when the Sun is low, the Front Glaſſes will admit its Rays; whereas when the Glaſſes are laid to any Declivity in one Direction, the Rays of the Sun will not fall directly thereon above a Fortnight in *Autumn*, and about the ſame Time in *Spring*, and during the other Parts of the Year they will fall obliquely thereon, and in *Summer*, when the Sun is high, the Rays will not reach above five or ſix Feet from the Glaſſes; for the Proof of this ſee the Article *Sun*. Beſides, the Plants plac'd toward the Back-part of the Houſe will not thrive in the *Summer* Seaſon for want of Air, whereas when there are ſloping Glaſſes at the Top, which run within four Feet of the Back of the Houſe, theſe, by being drawn down in hot Weather, will let in perpendicular Air to all the Plants; and of how much Service this is to all Sorts of Plants, every one who has had Opportunity of obſerving the Growth of Plants in a *Stove*, will eaſily judge: For when Plants are plac'd under Cover of a Ceiling, they always turn themſelves toward the Air and Light, and thereby grow crooked; and if in order to preſerve them ſtrait, they are turn'd every Week, they will nevertheleſs grow weak, and look pale and ſickly, like a Perſon ſhut up in a Dungeon; for which Reaſons, I am ſure, whoever has made Trial of both Sorts of *Stoves*, will readily join with me to recommend the Model of the *Bark-ſtove* for every Purpoſe.

As to the farther Contrivance of this *Stove*, it will be neceſſary to obſerve the Temper of the Place, whether the Situation be dry or wet; if it be dry, then the Floor need not be rais'd above two Feet above the Level of the Ground;

but if it be wet, it will be proper to raiſe it three Feet, becauſe as theſe Flues are to be carry'd under the Floor, ſo when they are made under, or cloſe upon the Surface of the Ground, they will raiſe a Damp, nor will the Flues draw ſo well as when they are more elevated. The Furnace of this *Stove* may be either plac'd at one End of the Houſe, or at the Back-part thereof, according to the Conveniency of the Building. This muſt be made according to the Fuel intended to burn, which, if for Coals or Wood, may be made according to the common Method for Coppers, but only much larger, becauſe as the Fire is to be continu'd in the Night chiefly, ſo if there is not Room to contain a great Quantity of Fuel, it will occaſion a great deal of Trouble in tending upon the Fire in the Night, which ſhould be avoided as much as poſſible, becauſe whenever the Trouble is made very great or difficult, and the Perſon who is intruſted with the Care of it has not a very great Affection for the Thing, and is withal not very careful, there will be great Hazard of the Fire being neglected, which in a little time would be of dangerous Conſequence to the Plants: But if the Fuel intended be Turf, then the Contrivance of the Furnace may be the ſame as for the *Bark-ſtove* already mention'd. The Flues of this *Stove* ſhould be turn'd in Angles after the following Manner.



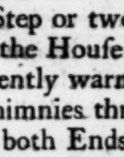
which will cauſe them to draw better than if ſtrait, and by this Method of diſpoſing them, they will reach from the Back to the Front of the Houſe.

The Depth of them ſhould not be leſs than eighteen Inches, and the Width nearly equal, which will prevent their being choak'd up with Soot, as is often the Caſe when the Flues are made too ſmall. The Spaces between the Flues ſhould be fill'd up either with dry Brick Rubbiſh, Lime, or Sand, from which there will little Moiſture ariſe; and the Flues ſhould be cloſely plaiſter'd with Loam both within and without, and the upper Part of them cover'd with a coarſe Cloth under the Floor, to prevent the Smoak from getting into the Houſe.

When the Flue is carry'd from the Furnace on the End of the Houſe, it may be return'd in the Back above the Floor in a ſtrait Line, which may be contriv'd to appear like a Step or two, by which Means the Smoak will be continu'd in the Houſe until all its Heat is ſpent, which will conſequently warm the Air of the Houſe the better; and the Chimnies thro' which the Smoak is to paſs off, may be either at both Ends or in the Middle, carry'd up in the Thickneſs of the Brick-work of the Walls, ſo as not to appear in Sight; the Flues ſhould be firſt cover'd either with Iron Plates or broad Tiles, and then a Bed of Sand over them about two Inches thick, upon which the plain Tiles ſhould be laid to correſpond with the reſt of the Floor. This thickneſs of Cover will be full enough to prevent the too ſudden Riſe of the Heat from the Flues.

But if the Furnace is placed under the Floor, the Thickneſs of Sand between the Iron Plate which cover it and the Floor, ſhould not be leſs than four Inches, ſo that the Bottom of the Furnace ſhould be ſunk the lower; and if from the Fire-place to the End of the Houſe, the Flues are laid a little riſing, it will cauſe them to draw the better; but this Riſe muſt be allowed in the placing them lower under the Floor next the Fire, becauſe the Floor muſt be laid perfectly level, otherwiſe it will appear unſightly.

In this *Stove* there ſhould be a Stand or Scaffold erected for placing Shelves above each other in the Manner annexed, that the Plants may be diſpoſed above each other, ſo as to make a handſome Appearance in the Houſe; but theſe Shelves ſhould be made movable, ſo as to be raiſed or ſunk, according to the various Heights of the Plants, otherwiſe it will be very troubleſome to raiſe or ſink every particular Plant according to their Heights, or every Year as they advance.



In placing the Feet of this Stand, you muſt be careful not to ſet them too near the Fire, nor directly upon the Top of the Flue, (eſpecially at that End next the Fire) leſt by the conſtant Heat of the Tiles the Wood ſhould take Fire, which can't be too much guarded againſt, ſince ſuch an Accident would go near to deſtroy all the Plants, if the Houſe eſcap'd being burnt. This Stand or Scaffold ſhould be plac'd in the Middle of the Houſe, leaving a Paſſage about two Feet and a half in the Front, and another of the ſame Width in the Back, for the more conveniently paſſing round the Plants to water them, and that the Air may freely circulate about them. In diſpoſing the Plants, the talleſt ſhould be plac'd backward, and the ſmalleſt in Front, ſo that there will not be Occaſion for more than five or ſix Shelves in Height at moſt; but the Scaffold ſhould be ſo contriv'd, that there may be two or three Shelves in Breadth laid upon every Riſe whenever there may be Occaſion for it, which will ſave a deal of Trouble in diſpoſing of the Plants.

In the Erection of theſe *Stoves*, it will be of great Service to join them all together, with only Glaſs Partitions between them, (as was before obſerv'd); and where ſeveral of theſe *Stoves* and *Greenhouſes* are requir'd in one Garden, then it will be very proper to have the *Greenhouſe* in the Middle, and the *Stoves* at each End, either in the Manner directed in the Plan of the *Greenhouſe* exhibited in that Article, or carry'd on in one ſtrait Front: And in the Contrivance of theſe it may be ſo order'd, that upon opening an Iron Regulator plac'd at the End of the angular Flue of the *Stove*, and ſtopping another plac'd at the Entrance of the back Flue, the Smoak may be made to paſs thro' the *Greenhouſe* in extreme hard Froſt, which will be ſufficient to prevent its ever freezing in the Houſe: For want of which Contrivance, it is hardly poſſible to keep out the Froſt in very ſevere *Winters*.

By this Contrivance in the Structure of theſe Houſes, a Perſon may paſs from one to the other of them without going into the open Air; which, beſides the Pleaſure to the Owner, is alſo of great Uſe, becauſe there will be no Occaſion of making a Back-way into each of them, which otherwiſe muſt be, becauſe the Front Glaſſes of the *Stoves* ſhould not be open'd in cold Weather, if it can poſſibly be avoided on any Account, becauſe the cold Air ruſhing in, will greatly prejudice the very tender Plants.

But beſides the *Stoves* here deſcrib'd, and the *Greenhouſe*, it will be very neceſſary to have a Glaſs-Caſe or two, whereever there are great Collections of Plants. Theſe may be built exactly in the manner already deſcrib'd for the *Stoves*, with upright Glaſſes in Front, and ſloping Glaſſes over the Top of them, which ſhould run within four Feet of the Back of the Houſe. The Height, Depth, and other Dimenſions ſhould be conformable to that of the *Stoves*, which will make a Regularity in the Building. Theſe may be plac'd at the End of the Range on each Hand beyond the *Stoves*; and if there be a Flue carry'd along under the Floor of each, which may be open'd in ſevere Froſt, (in the manner already directed for that under the Greenhouſe) and the Smoak of the adjoining *Stove* made to paſs off through theſe, it will ſave a great deal of Labour, and prevent the Froſt from ever entering the Houſe, be the *Winter* ever ſo ſevere: But the Upper Glaſſes of theſe Houſes ſhould have either Shutters to cover them, or elſe Tarpawlins to let down over them in froſty Weather; and if there is a Contrivance to cover the upright Glaſſes in Froſt, either with Mats, Shutters, or Tarpawlins, it will be of great Uſe in *Winter*, otherwiſe the Flue muſt be open'd when the Froſt comes on, which ſhould not be done but upon extraordinary Occaſions; becauſe the Deſign of theſe Houſes is, to keep ſuch Plants as require only to be preſerv'd from Froſt, and need no additional Warmth, but at the ſame time, require more Air than can conveniently be given them in a Greenhouſe: In one of theſe Houſes may be plac'd all the Sorts of *Ficoides*, *African Sedums*, *Cotyledons*, *Senecio's*, and other Succulent Plants from the *Cape of Good Hope*. In the other may be plac'd the ſeveral Kinds of *Anemonoſpermos's*, *Jacobæa's*, *Doria's*, *Alaternoides's*, and other woody or herbaceous Plants from the ſame Country, or any other in the ſame Latitude.

Thus by contriving the Greenhouſe in the Middle, and two *Stoves* and a Glaſs-Caſe at each End, there will be Conveniency to keep Plants from all the different Parts of the World, which can be no otherwiſe maintain'd but by placing them in different Degrees of Heat, according to the Places of their native Growth.

Since the above Account of the Stoves was firſt publiſhed, there hath been a great Number of them built in *England*; and theſe have been projected in different Manners, according to the ſeveral Plants which they were deſign'd to contain. So that there has been very great Improvements made in theſe Contrivances, but eſpecially in the Stoves for the *Ananas* or Pine-apple, which Fruit, is now pretty commonly cultivated in the *Engliſh* Gardens, and the Method of cultivating them more generally known, ſo that the Expence of maintaining them is greatly diminiſhed. But notwithſtanding what has been by ſome affirmed, *viz.* that they may be propagated in Hot-beds without any Stoves, yet, from a Number of Trials, I am convinced, that is a more expenſive Method, and attended with a much greater Uncertainty, than when they are kept in Stoves; for in thoſe Hot-beds, when foggy cloudy Weather happens, which is too frequent in the *Winter* Seaſon in this Country, there muſt be an extraordinary Care taken to prevent the Damp (which will at ſuch Times be very great in the Beds) from rotting the Plants; and in very cold Weather, theſe Beds muſt be lined round the Sides with hot Dung, to keep a Warmth in the Bed, and this muſt be repeated three or four Times in a *Winter*, according to the Cold of the Seaſon, without which the Plants will not thrive. So that the Trouble of doing this is very great, and where Dung is ſcarce, is alſo expenſive, and in this Method there is no Certainty of having any Quantity of Fruit: for I have obſerved where the Plants have been thus managed, few of them have produced Fruit, and ſome Years they have intirely miſcarried, whereas thoſe in Stoves do ſeldom fail, when the Plants are of a proper Size for bearing. And after the firſt Expence of building the Stove, the Charge is not very great to maintain the Plants, for a ſmall Quantity of Fuel will be ſufficient to warm a Stove, which is capable of containing fourſcore or a hundred Plants, and a leſs Quantity of Tan will be required for them, than when they are kept in Frames. In a Stove of twenty-four Feet long, and about eight Feet abroad (excluſive of the Flues) may be placed about one hundred Plants to bear Fruit, (provided they are planted in the Tan, which is found to be the beſt Method, and of which I ſhall give a particular Account hereafter). The Stove may be kept warm during the *Winter* Seaſon, with two Chauthern and a half, or at moſt three Chauthern of Coals, or with any other Sort of Fuel in proportion; but where Coal can be had at an eaſy Expence, it is much the beſt Fuel, becauſe the Smoak of this will keep warm much longer than of any other Fuel, ſo will heat the Flues much more, and it will make much leſs Soot, than Turf or any ſuch Fuel, which is an Advantage, becauſe the Flues will not require to be ſo often cleaned.

I ſhall now proceed to give a Deſcription of two Sorts of Stoves, which have of late been invented for the *Ananas*, in both which they are found to ſucceed equally. The firſt of theſe Stoves, has but one Slope of Glaſſes, from the Top to the Plate, which is raiſed about a Foot above the Level of the Ground (provided the Soil is dry, otherwiſe it muſt be advanced higher, ſo as that the Bark-pit may not deſcend ſo low as to be ever troubled with Water, which would cool the Tan and ſpoil the Bed). The other Sort of Stove, has upright Glaſſes in Front, about four Feet high, and from the upper Part of theſe are ſloping Glaſſes, which run up to the Top. The Deſign of theſe upright Glaſſes in Front, is to admit of a ſmall Walk between the Bark-pit and the Glaſſes, for the more convenient paſſing round the Plants to water them, *&c.* which in other Stoves cannot be done, ſo that the Glaſſes muſt be opened to come at the front Row of Plants, whenever they want to have any Thing done to them: tho' as to the watering of the Plants, that may be very well performed, from the Walk on the back of the Tan-bed, with a long ſpouted watering Pot, ſo that there will be no Neceſſity of opening the Glaſſes, but on particular Occaſions. Theſe ſmall Stoves, with one ſlope of Glaſſes, are contrived to ſave Expence, and where Perſons are confined for Room. And as they contain a much leſs Quantity of Air than the other Stoves, ſo a ſmaller Quantity of Fuel will keep them warm; but the other being the more commodious, is by many People preferred to theſe. However, I ſhall give as plain Directions as poſſible, for the building both theſe Kinds of Stoves, which with the annexed Plates, will be ſufficient Inſtructions for any Perſon, who is the leaſt ſkilled in Buildings, to make either of the Stoves.

The firſt Plate contains a Plan of the ſmall Stove, with one Slope of Glaſſes, with a Section of the Flues, a Plan of the Tan-bed, and of the Furnace, with the ſloping Glaſſes. The Length from out-to-out of this Stove, is twenty four Feet; and in the Width eleven Feet. The Walls in Front, and at each End are one Brick and a half in Thickneſs, and the back Wall muſt be two Bricks thick, in order to throw the Heat into the Houſe, becauſe to this Wall the Flues are built. The Pit, which contains the Tan, is the whole Length of the Building, and ſix Feet wide, but the Depth need not be more than two Feet and a half, which will hold a ſufficient Quantity of Tan, to contain a moderate Warmth ſo long as is neceſſary. This Pit ſhould be brick'd at bottom, to prevent the Earth mixing with the Tan; the Wall in Front of the Stove, as alſo thoſe at each End, to encompaſs this Pit three Ways, ſo there muſt be a nine Inch Wall carried up on the Back-ſide, to which the Wall which ſuſtains the Flues, will almoſt join; for in carrying up the back Wall of the Stove, it will be proper to make the Foundation ſo broad, as to include the Width of the Flues (which muſt be two Feet nine Inches) that the Work may ſettle equally. From this Foundation, to the Side of the Bark-pit, there will be two Feet, including the nine Inch Wall of the Pit, ſo that the other fifteen Inches, may be filled up with Rubbiſh, to ſave the Expence of Bricks, ſince it is only to ſupport the Pavement of the Walk. In carrying up the back Wall of the Stove, the Flues ſhould alſo be carried up with it, that the Covering of each Flue may be joined into the ſolid Brick-work of the Wall. The lower Part of the bottom Flue, ſhould be level with the Pavement of the Walk, that the Heat may be intirely above Ground. The Depth of the firſt Flue ſhould be two Feet, becauſe in this the greateſt Quantity of Soot will lodge, and the Width muſt be as much as a Foot-tile may reach to cover; which may be about ten Inches; for if the Tiles have an Inch on each ſide bearing, it will be ſufficient, ſince they are not to ſupport any Weight; but where the Flues are covered with flat Stones, which will admit of their being made wider, it will be proper to allow them fifteen Inches wide, which give better Room to cleanſe them. This Wall in Front of the Flues, withinſide of the Houſe, ſhould not be above four Inches thick, that the Smoak, in paſſing thro' the Flues, may ſend the Heat more eaſily into the Stove. The other three Flues ſhould be eighteen Inches deep, and all of them the ſame Width of the lower one; which will be large enough for a Chimney Sweeper to go thro' them, to cleanſe them of the Soot, whenever they are foul. Theſe Flues turning four times (as in the annexed Plan) will riſe almoſt to the Top of the Stove; for as the Uſe of theſe Stoves is to contain *Ananas*, which are low Plants, ſo if there is but Height enough for a Man to walk upright on the Walk at the Backſide of the Houſe, between the Pit and the Flues, it will be ſufficient; for the lower the Stoves are built, the leſs Quantity of Fuel will keep it warm in Winter; but as it will be neceſſary to build the Back-wall ſix Feet and a half high to contain the Flues, ſo by raiſing it one Foot higher, there will be upward of ſix Feet in Height, notwithſtanding the Slope of the Front. The Flues ſhould be well plaiſtered with Loam and Dung within-ſide, which ſhould be laid as ſmooth as poſſible, that the Smoak may not be the leaſt obſtructed in its paſſing thro' them; and when they are carried quite up, the Whole ſhould be plaiſtered on the Side within the Stove, with Lime and Hair, and covered cloſely with Hop-bags, or other coarſe Cloth, after the Manner as Coppers are uſually done, which will prevent the Smoak from getting thro' into the Stove, and faſten the whole Work together.

In the Front-ſlope, the Glaſſes need not be carried to the Top of the Building, but the upper Part may be boarded, and covered, either with Slates or Lead, about three Feet and a half below the Top, which will cover the Flues and the Walk; ſo that the Glaſſes, which muſt run up juſt under this Covering, will extend over the Bark-bed, and the Plants will enjoy the full Advantage of the Sun and Light.

On the Backſide of the Stove, at one End, muſt be built a ſmall Shed, in which the Furnace muſt be placed, which ſhould be ſunk ſo low, as that the Top of the Oven may be ten Inches, or a Foot below the firſt Flue, which will occaſion a good Draught to the Smoak. This Oven need not be very large for theſe ſmall Stoves, about ſixteen Inches wide, and twenty Inches long within-ſide will be ſufficient. To this Oven there muſt be an Iron Door, ſomewhat like thoſe for Coppers, and under the Oven there muſt be an Aſh-hole, to which there ſhould alſo be another Door, that when the Fire is thoroughly lighted, may be ſhut to prevent the Fuel from burning away too faſt. This Oven ſhould be built with the beſt Materials, otherwiſe it will often want Repairing, which is what ſhould be avoided as much as poſſible, for the Trouble of doing it is pretty great; beſide the often pulling down of the Oven, will impair the other Brick-work into which it is joined.

At the other End of the Stove ſhould be a Door, which ſhould open outward, for the Conveniency of getting into the Stove, which muſt be made of a double Deal, and contrived to ſhut as cloſe as poſſible, to prevent the Air from getting into the Stove to cool it. This Door is alſo of Uſe to open to give Air to the Plants in *Summer*, at ſuch Times, when it may be improper to open any of the Glaſſes. For the better underſtanding of the whole Contrivance, the annexed Plate it is hoped will be ſufficient; ſo I ſhall proceed to deſcribe the other Sort of Stove, with upright Glaſſes in Front.

The Stoves, which are built with upright Glaſſes in Front, are more convenient than the others, as they admit of a ſmall Walk in the Front of the Bark-bed, ſo that the Plants may be eaſier watered, and whenever there is any Thing to be done to the Plants, it may be performed better, as there will be a Paſſage quite round the Tan-bed. The Length of theſe Stoves, may be in Proportion to the Number of Fruit deſired; but they ſhould not exceed forty Feet, unleſs there are two Ovens contrived for Fire to warm them; for one Fire place will not warm a greater Length of Stove, to ſuch a Degree of Heat as is neceſſary to keep the *Ananas* in good Health: therefore, I have choſen to make the annexed Plan of this Length. The Width of this Stove is twelve Feet from out-to-out, the Bark-pit is ſeven Feet over, and the Walk between the Bark-bed and the Front-glaſſes, as alſo at the two Ends, is one Foot broad, which will afford ſufficient Room to paſs round the Bed, to water, or do what is neceſſary to the Plants; the Walk on the Back of the Stove, between the Bark-bed and the Flues, is two Feet broad, which will be commodious enough for any Purpoſes, ſince in theſe ſort of Buildings, their Uſe is chiefly conſulted, for when they are too wide, there requires more Fuel to warm them, and there will be a greater Quantity of Glaſs Work, which is not only an Expence in the firſt Building, but will be an annual Charge to keep in Repair.

The upright Glaſſes in the Front of the Stove are five Feet high, and being raiſed at the Bottom, about ſix Inches above the Walk, will be high enough to admit a Perſon to paſs round to water the Plants; for if theſe Glaſſes are taller, it will render it more difficult to reach the upper Glaſſes to draw them down to admit the Air to the Plants in hot Weather. The ſloping Glaſſes which run up to the Top of the *Stove*, being near twelve Feet in Length, are divided into two Ranges, which will render them more handy to move, and they will be much ſtronger, than if they were only in one Range. From the upper Part of theſe Glaſſes there is a Penthouſe, which ſlopes to the Back of the *Stove*, and projects ſo forward, as to cover the Flues and the back Walk of the Stove; ſo that the Glaſſes will reach as far as the Width of the Tan-bed, to admit Air and Sun to the Plants.

The Oven for this *Stove* ſhould be two Feet ſquare in the Clear, to contain a larger Quantity of Fuel than thoſe of the ſmall Stoves, becauſe the *Stove* being larger, will require a greater Fire to warm it. The Contrivance of the Oven and the Flues is the ſame as in the ſmall *Stove*, ſo need not be repeated here.

Where a Perſon is deſirous to have a large Quantity of Fruit of the *Ananas* every Year, the beſt Way to effect it, will be to have one of each of theſe *Stoves*, the largeſt of them to Fruit the Plants, which if made of the Dimenſion here deſcribed, will contain about two hundred Plants when full grown; and in the ſmall *Stove*, the young Plants may be brought on to ſupply the large *Stove*; which is a much ſurer and leſs troubleſome Method, than to keep the young Plants under Frames without Fire in *Winter*, as is by ſome practiſed.

But thoſe Perſons who may think the Expence too great to build two *Stoves*, may contrive a Frame to raiſe the young Plants in, which if made of Brick-work, may have two Flues carried in the back Wall above the Tan-bed, which may be heated in *Winter* with a ſmall Quantity of Fuel; for as the Frame need not be more three Feet high above the Tan-bed on the Back-ſide, ſo the Quantity of Air contained in ſuch a Frame may be warmed at a ſmall Expence; and as the Glaſſes may be covered with Mats in cold Weather, ſo the Froſt will not cool the Air ſo much as where the Glaſſes have no Covering. If theſe Frames are built on dry Ground, the Bark-pit may be ſunk below the Surface of the Ground, which need not be more than two Feet and a half, and the Wall in Front muſt be about ſixteen Inches above the Ground, but the back Wall muſt be three Feet high, which will make a Declivity ſufficient to carry off the Rain. Upon the Walls muſt be fixed a Plate of Timber, about ſix Inches thick, into which the Gutters on which the Glaſſes are to ſlide muſt be fixed, ſo that the Glaſſes will be raiſed on the Back-ſide, about three Feet and a half above the Surface of the Bark-bed, and about twentytwo Inches in Front, where the ſmalleſt Plants ſhould be plunged, and the largeſt Plants muſt be plunged backward, whereby they will fall in a regular Slope, proportionable to the Glaſſes, ſo that the Plants in every Part of the Bed may be nearly at an equal Diſtance from the Glaſſes.

At one End of this Frame muſt be the Oven for to make the Fire, which ſhould be ſunk entirely below the Surface of the Ground, that there may be a Draught for the Smoak; but this muſt be ſhedded over, to keep out the Rain, and incloſed ſo as to keep out the Wind; for if the Fire is expoſed to the open Air, it cannot be kept regular. Therefore the beſt Method is to carry up the Shed with Brickwork, nearly the Height of the back Wall, which may be covered with Tiles, and have a ſmall Door to it, juſt ſufficient for a Man to enter to put on the Fuel. This Shed need not be above four Feet ſquare, for the Oven ſhould not be more than fourteen Inches ſquare in the Clear, which will contain as much Fuel as is neceſſary to warm this Frame. But this Oven muſt be intirely built in the Shed, and a Cavity carried up from the Bottom, between the Oven and the Bark-bed, otherwiſe the Fire will dry the Tan, and it will be in great Danger of taking Fire, when the Bricks are thoroughly heated.

The Length of the Frame ſhould not be more than twenty-four Feet, and the Width ſix Feet, which will hold a ſufficient Number of young Plants to fill the large Stove, when they are fully grown, and one Fire-place will be ſufficient to warm the Air contained herein. The Flues of this Frame muſt be carried one over the other, in the ſame Manner as in the Stove, the lower Part of the firſt Flue ſhould be raiſed juſt above the Surface of the Bark-bed, to prevent the Heat from drying the Tan. This Flue ſhould be eighteen Inches deep, and ten Inches in Width, and the upper Flue may be fourteen Inches deep, and of the ſame Width. But the better to inform the Reader, I have annexed a Plate of this Frame, by which it will be eaſily comprehended.

Where the Ground is wet, the Bark-pit muſt not be ſunk below Ground, for if the Water ſhould riſe to the Tan in *Winter*, it will cool the Bed, and render it unfit to keep the Plants; therefore in ſuch Situations the whole Pit muſt be raiſed above the Surface of the Ground, which will occaſion the Back-wall to be five Feet and a half high, and the Front-wall three Feet ten Inches high, ſo that it will be more troubleſome to water the Plants, as alſo to ſhift the Tan in theſe Frames, than in thoſe which are low, which is an Advantage always to be taken, whenever the Situation and Soil will admit of it. For the lower the Beds are, the leſs they will be expoſed to Weather, and the more handy will it be to manage the Plants therein.

The Bottom of the Bark-pit in this Frame ſhould be paved with Bricks, or a Foundation of Rubbiſh laid at Bottom, which ſhould be made level and preſſed down hard, to prevent the Earth from mixing with the Tan, which it is very apt to do, where this is not obſerved; beſides, if the Perſons who take out the old Tan, when the Bed requires to be renewed, are not very careful, they will dig into the Ground, and looſen the Earth in the Foundation, ſo that there will always be an Equality therein.

The Stoves and Frame here deſcribed, are chiefly intended for the *Ananas*, or may be uſed for any other tender exotic Plants of low Growth; but whoever is willing to cultivate the larger Sorts of exotic Plants and Trees, muſt build Stoves much higher than either of theſe, otherwiſe the Plants cannot be contained therein; for the *Muſa*, which is now pretty common in *England*, will riſe in the Space of fourteen or fifteen Months, to the Height of twenty Feet or more, provided they are not cramp'd in their Roots; ſo that in order to ſee theſe Plants in Perfection, the Stoves ſhould be at leaſt twenty-five Feet-high, and proportionable in Width.

The moſt magnificent Stoves which have yet been built in *Europe*, are thoſe of the Rt. Hon. Lord *Petre*, at *Thorndon Hall* in *Eſſex*, ſome of which are upward of thirty Feet high, and above twenty Feet broad. The Bark-beds in thoſe Stoves are twelve Feet broad, ſo that there is Room for large Plants to grow in the Borders, which are made in the Middle of theſe Beds; and a ſpacious Walk round the Bed. On the Backſide of the Stove next to the Flues, is a broad Border, in which the ſeveral Sorts of climbing Plants, which are Natives of the warmeſt Countries are planted, and an Eſpalier built to the Top of the Houſe, for theſe to climb againſt, ſo that the Wall is intirely covered with Plants on the Inſide of the Houſe, which make a fine Appearance, becauſe as theſe are not confined in their Roots, ſo they grow as luxuriantly as in their native Soil, and produce their Flowers and Fruit in great Plenty.

In the Building of theſe large Stoves, the ſame Method ſhould be followed, as for the Stove in the ſecond Plate, with no other Alteration but that of inlarging the Dimenſions; which ſhould be in this Proportion, *viz.* for a Stove of twenty-five Feet high, the upright Front Glaſſes ſhould be twelve Feet high, which will allow a good Share of Room for tall Plants near the Front of the Stove, and from the upper Part of theſe Glaſſes, the two Ranges of Sloping Glaſſes are to run to the Top, which will allow a ſufficient Declivity to throw off the Water that may fall on them.

But as theſe Stoves are ſo much longer and broader, than thoſe before deſcribed, ſo there ſhould be two Ovens or Fire-places to each; for as theſe Stoves are deſign'd to contain the tendereſt Plants, ſo the Air muſt be kept above the temperate Heat, as mark'd on the Botanical Thermometers. The Length of theſe Stoves ſhould be fifty Feet, and the Width about eighteen. The two Ovens (or Fire-places) may be built at each End, and ſo the Flues carried to meet in the Middle, but they ſhould have no Communication with each other, for that will prevent their Drawing, ſo that the Smoak will not paſs thro' them freely. The Flues may be carried over each other ſix times, and if the lower Flue is made two Feet and a half deep in the Clear, and the other Flues are each twenty Inches deep, it will raiſe the whole Range about twelve Feet high, including the Covering of each, which will be ſufficient to heat the Air contained in the Houſe; for when the Smoak has paſſed thro' ſix of theſe Flues, there will be no Heat left in it, ſo it will not be of any Service to carry a greater Number of them than can be uſeful; theſe Flues ſhould diſcharge their Smoak at each End, for if the Vents are joined together, it often prevents their drawing well.

As the Culture of the *Anana*, or Pine-apple, hath been of late more generally known, and practiſed in moſt Parts of *England*, ſo there have been many Experiments tried, and ſeveral different Methods uſed to cultivate this Fruit, whereby the Trouble and Expence, which attended this when the Plants were firſt introduced, is greatly diminiſhed. For after the firſt Charge of building the proper Stoves, the Trouble and Expence of cultivating theſe Fruits, is not greater than that for early Melons and Cucumbers; and the Succeſs much more certain; as theſe are not affected by bad Seaſons, or ſpoiled by great Rains, which too frequently deſtroy the Crops of Melons in *England*; ſo that after having been at great Expence and Trouble in raiſing of Melon-plants, and to bring them to Fruit, they are many times totally deſtroyed; or if any of the Fruit remains to ripen, they are rendred ſo watry and ill taſted, as to be unpalatable and unwholſome; whereas the *Ananas*, which do conſtantly remain in the Stove, being protected from bad Weather, are not ſubject to theſe Diſaſters, from the Inclemency of our Climate; and when the Plants are in a good State of Health, the Fruit is generally well flavoured.

One of the moſt conſiderable Improvements, which has been of late made in the Culture of the Pine Apple, is that of planting the Plants (when pretty well grown) into the Tanners-bark out of the Pots. The firſt Perſon who practiſed this, was Mr. *Blackbourn*, a very curious Gentleman in *Lancaſhire*; who has a great Parcel of theſe Plants, and a large Collection of other curious Exoticks, which are in great Perfection. But as I have not been inform'd of his Method of planting the *Ananas*, ſo I ſhall ſet down what I have practiſed, and have found to ſucceed extremely well.

The Suckers or Crowns of the *Ananas*, ſhould be planted in ſmall half-penny Pots, filled with freſh rich Earth, and plunged into the Hot-bed of Tanners-bark, in the ſame Manner as is uſually practiſed, and hath been before directed. During the *Winter* Seaſon they muſt be kept warm, and frequently watered, which will greatly promote their Growth, ſo that a Frame contrived with the Flues in the Back Wall, in the Manner before deſcribed, will be the moſt convenient for raiſing of the young Plants, becauſe they will be kept in the Bark-bed, which is a great Advantage, eſpecially to the young Plants; for as their Pots are ſmall, ſo when they are placed on the Flues of the Stove, or on Shelves, as is commonly practiſed, the Moiſture paſſes away too faſt from their Roots, and the Earth in the Pots ſoon becomes dry, which greatly retards the Growth of the Plants. Whereas when they are plunged in the Tan, the Moiſture which ariſes from the Fermentation, will always ſupply the ſmall Fibres, which are near the Hole in the Bottom of the Pot, with Nouriſhment, and greatly aſſiſt them; and in cold Weather, a ſmall Fire will warm ſo ſmall a Space of Air, as is included in one of theſe Frames.

The Suckers which are planted the latter End of *Summer*, or in *Autumn*, will have filled the ſmall Pots with their Roots, by the middle of *April* following, when the Bark-bed ſhould be renewed, and the Plants ſhaken out of theſe ſmall Pots, and their Roots trimmed, and then planted into penny Pots, filled with light rich Earth as before. Theſe Pots are about ſeven Inches over at the Top, and will be large enough to contain the Plants, until they are planted into the Tan; for when their Roots are confined, the Plants do always make a greater Progreſs, than if they are frequently ſhifted, or planted in large Pots; therefore they ſhould remain unremoved in theſe Pots, till the *Michaelmas* following, obſerving when the Tan declines its Heat, to ſtir it up again, and add ſome freſh Tan to it, which will renew the Heat, and cauſe the Plants to grow vigorouſly; but this ſhould be done in good Weather, that the Plants may not receive any Injury by being expoſed to the open Air. During the *Summer* Seaſon, if the Nights ſhould prove cold, it will be proper to cover the Glaſſes of the Hot-bed with Mats, which will be of great Service to the Plants, by keeping them conſtantly growing; for they cannot grow too freely, ſince the greater Strength they obtain before *Michaelmas*, the larger will be their Fruit. But great Care ſhould be had, not to plunge them too cloſe together at this Seaſon, for that will cauſe them to draw up weak; ſo that their Leaves will be of a great Length, but their Stems will be ſmall, and conſequently their Fruit will be ſo too; ſince it is only ſuch Plants as are large and ſtocky at Bottom, which produce the largeſt Fruit. For which reaſon alſo, the Bark-bed ſhould always be kept up to a proper Height, allowing only Room for the Leaves of the Plants to ſtand under the Glaſſes, without being bruiſed or injured; for when the Bed ſinks, ſo as to leave a large Vacancy between the Plants and the Glaſſes, the Plants will draw up weak, by being too low to receive the Benefit of the free Air, which ſhould be every Day admitted to them in warm Weather, by raiſing of the Glaſſes with Stones, Bricks, *&c.* in proportion to the Warmth of the Seaſon. They muſt be conſtantly watered three or four Times a Week in hot Weather, but the Quantity of Water muſt be proportioned to the Dryneſs of the Earth in the Pots, for ſome Pots will let the Water paſs off much ſooner than others; and ſome of the Plants will imbibe the Moiſture faſter; ſo that when the Earth in any of the Pots appears moiſt, they ſhould not be watered, for which Reaſon, the Plants muſt be carefully obſerved whenever they have Water given to them. In cool or dark Weather, when the Glaſſes of the Hot-bed will not admit of being raiſed to let in freſh Air; the Steam of the Hot-bed, and the Vapours ariſing from the Perſpiration of the Plants, will condenſe to Moiſture againſt the Glaſſes, which will fall in Drops on the Plants, and is often very injurious to them: to prevent which, the Glaſſes ſhould be turned upſide down to dry, or the Moiſture wiped off them in wet Weather, when they cannot be turned. But where a Perſon will be at a ſmall Expence, this Evil may be more effectually remedied, by having Shutters of Bays, or other woollen Cloth placed under the Glaſſes, which will imbibe all the Moiſture which ariſes from the Bed, and ſhould be taken out every Morning, and placed in the open Air to dry, and be put in every Evening, or in cold foggy Days, when there is no Sun-ſhine. Theſe Contrivances I have known uſed with great Succeſs, in raiſing *Cucumbers* and *Melons* very early in the *Spring*; for in thoſe Hot-beds which are made with Horſe-dung, there is always a much greater Steam, than ever ariſes from the Tanners-bark, and this being of a very rancid Nature, is oftentimes deſtructive to theſe tender Plants, eſpecially in moiſt dark Weather, which frequently happens in the *Winter* Months in *England*. But in Stoves or in Frames, where there are Fires, this Vapour being kept rarefied, ſeldom condenſes againſt the Glaſſes in ſuch Quantities as to injure the Plants. Therefore, theſe Shutters (if I may be allowed ſo to call them) are not ſo neceſſary for theſe, eſpecially at ſuch Times when the Fires are continued every Night; but in cold Weather, in the *Spring*, or *Autumn*, when the Fires are diſcontinued, or in ſuch Frames where there is no Conveniency to make Fires; theſe Shutters are of great Uſe, to imbibe the Moiſture ariſing from the Bed.

Theſe Shutters are eaſily made, for there is nothing more required, but to make ſlight Frames (ſomewhat like the ſtretching Frames for Pictures) to fit the Inſide of the Frame, ſo as to lie juſt under the Glaſſes, to theſe Frames ſhould be nailed the Bays, in like manner as is done for Screens, with a Liſt of Tape round the Edges where the Nails are driven, which will ſecure the Bays from being torn by the Nails. The coarſer the Bays which is uſed for this Purpoſe, the more Moiſture it will imbibe, ſo that the Expence will be leſs; but it ſhould not be of a dark or black Colour, becauſe the Rays of Light will be abſorbed by it, to the Prejudice of the Plants. In dark cloudy or foggy Weather, which ſometimes continues for ſeveral Days, in the *Winter* Seaſon, theſe Shutters ſhould be taken out twice every Day, and placed near a Fire to dry; for in the Morning they muſt be taken out to dry the Moiſture from them, which they had imbibed in the Night; and in the Afternoon they muſt be dried again, that they may be put into the Frame dry in the Evening. But as it will be difficult to dry theſe Shutters in damp Weather, ſo it will be proper to have two Sets of them, one for the Night, and the other for the Day; ſo that by ſhifting them alternately, they will have Time enough to be thoroughly dried, and the Bed be conſtantly ſupplied with them, by which Means there will be no Time for the Vapours to condenſe againſt the Glaſſes.

But to return to the Management of the *Ananas* Plants: About the latter End of *September*, or the Beginning of

October, the Plants muſt be planted into the Tan; at which Time there muſt be ſome new Tan provided, in Quantity proportionable to the Size of the Pit; ſo that about half the Tan it will contain ſhould be freſh, which ſhould be well mixed with ſome of the old Tan, and about ten Inches Thickneſs, all of the old Tan, laid on the Top of the Bed, into which the Plants muſt be placed. After the Bed is well mixed, and the Tan levelled on the Surface, which ſhould be raiſed five or ſix Inches above the Level of the Walk, to allow for the ſettling of the Bark; then the Plants ſhould be carefully ſhaken out of the Pots, preſerving a Ball of Earth to their Roots; and after having taken off the decay'd Leaves at the Bottom of the Plants, they ſhould be planted into the Bark-bed, regularly in Rows, about two Feet aſunder, or leſs, according to the Size of the Plants; for if they have Room to ſtand without crowding each other too much, it will be ſufficient, becauſe the Plants will not grow much more in Leaves, but will, ſoon after they have taken Root in the Tan, begin to ſpread open their Hearts, and prepare to ſhew their Fruit; which thoſe that are thus treated ſeldom fail of doing by *Chriſtmas*, or ſoon after; ſo that the Fruit will ripen much earlier in the *Summer* than thoſe which are kept in Pots, becauſe they fruit earlier in *Winter*, and then do not receive any Check in the *Spring*. When theſe Plants are well rooted in the Tan, they will thrive much faſter than thoſe in Pots, and their Roots will extend quite over the Bark-bed, ſo that the Fruit will be well nouriſhed, and the Stems of theſe Fruit being much ſtronger than thoſe in Pots, will ſupport the Fruit much better.

The Plants which are thus planted in the Tan will require leſs Water than thoſe in the Pots, eſpecially in *Winter*, during which Seaſon they need not be watered oftener than twice a Week, and the Quantity given to each Plant ſhould not be more than a Pint; but in the *Summer*, they will require a larger Share of Water, and to be oftener repeated. When the Plants are placed into the Tan, it will be proper to fix down a few Stakes round the Bark-bed, to which a couple of Lines of Packthread may be fixed to ſurround the Bed; the loweſt of which ſhould be about a Foot above the Bark, and the other a Foot above that. The Uſe of theſe Lines is to ſupport the Leaves, ſo as to bear them out of the Walk, that they may not be broken or bruiſed, by Perſons walking near them; which is a much better Method than cutting off the large Leaves, as is moſt commonly practiſed, which is certainly injurious to the Plants, becauſe they not only bleed at the wounded Parts, but do alſo imbibe ſome noxious Damps from the circumambient Air.

As the Plants which are planted in the Tan cannot be removed in the *Spring*, ſo it will be proper to ſtir the Surface of the Bark-bed at that Seaſon; but this muſt be carefully performed with the Hands, ſo as not to break or bruiſe any of the Leaves of the Plants: And if at the ſame Time a little new Tan is added, to raiſe the Surface of the Bed where it may have ſunk too much, it will not be amiſs, provided Care be taken not to raiſe the Tan too high about the Stems of the Plants, which would cauſe the under Leaves of the Plants to decay. During the *Summer* Seaſon they muſt be managed in the ſame Manner as hath been directed for thoſe Plants which are kept in Pots, with this Difference only, *viz.* that they will require leſs Water, and not ſo large a Share of Air; for as the Heat of the Tan will be nearly ſpent before *Summer*, ſo the only Warmth of the Stove will be what is occaſioned by the Heat of the Sun, for I do not approve of making any Fires in the Stoves in *Summer*, unleſs there is an abſolute Neceſſity for it, which can never happen but when the Weather is very bad, and no Sun appears for ſome Days, and then there ſhould be only very ſlight Fires made, and thoſe continued no longer than during the dark Weather; for one Hour's Sun-ſhine, in the *Spring* and *Autumn*, when the Rays are weak, will warm the Air of the Stoves ſufficiently.

There are ſome Perſons who will object to this Method of planting the Plants in Tan, for no other Reaſon, but becauſe they think there ſhould be new Tan added, to renew the Heat of the Bed in the *Spring*, which cannot be practiſed in this Method. But this I am ſatisfied there is no Neceſſity for, from ſeveral Experiments, as well as from the Reaſon of Things; for I have obſerved a much greater Warmth in the Tan, after it has been a whole Year in the Bed, than there ever is in the Earth eighteen Inches below the Surface in the hotteſt Countries where the *Ananas* grow; ſo that if the Air of the Stove is kept ſufficiently warm, there will require no additional Heat to the Roots of the Plants.

As theſe Plants will ripen their Fruit earlier than thoſe in Pots, ſo they will be all of them cut before the Time for bringing the young Plants into the Stove for the ſucceeding Year; therefore the old Stools may be taken out of the Bed, and the Suckers taken off for an Increaſe (if any of them are then remaining on); and if a larger Supply of Plants are wanting, the Stools may be planted into Pots, and preſerved through the *Winter*, which will put out new Suckers the following *Spring*; but where this is not wanted, they may be thrown away.

STRAMONIUM; Thorn-apple.

The *Characters* are:

The Flower conſiſts of one Leaf, ſhaped like a Funnel, and cut into ſeveral Segments; out of the Flower-cup riſes the Pointal, which, when the Flower decays, becomes a roundiſh Fruit, armed for the moſt part with ſharp Thorns, and divided into four Cells formed by a Partition, diſpoſed in the Figure of a Croſs, furniſhed with four Placenta's *or nutritive Membranes, to which ſeveral Kidney-ſhap'd Seeds do adhere.*

The *Species* are;

1. STRAMONIUM *fructu ſpinoſo rotundo, flore albo ſimplici. Tourn.* Thorn-apple, with a round prickly Fruit, and a ſingle white Flower.

2. STRAMONIUM *fructu ſpinoſo oblongo, caule & flore violaceo. Boerh. Ind.* Thorn-apple, with a longiſh prickly Fruit, and Violet-coloured Stalks and Flowers.

3. STRAMONIUM *ferox. Boccon.* Thorn-apple, with very long, ſharp Prickles.

4. STRAMONIUM *Americanum minus, Alkekengi folio. Tourn.* Leſſer American Thorn-apple, with a Winter-cherry Leaf.

5. STRAMONIUM *Malabaricum, fructu glabro, flore ſimplici violaceo. Tourn.* Malabar Thorn-apple, with a ſmooth Fruit, and a ſingle Violet-coloured Flower.

6. STRAMONIUM *fructu ſpinoſo rotundo, flore violaceo duplici vel triplici. Tourn.* Thorn-apple, with a round, prickly Fruit, and Violet-coloured Flowers, which are two or three times double.

There are ſome other *Species* of this Plant which are preſerved in ſome curious Botanick Gardens; but as they have little Beauty or Uſe, ſo I ſhall not enumerate them in this Place. The firſt Sort is uſed to make a cooling Ointment, which is by many Perſons greatly eſteemed. This, tho' not a Native of this Country, yet is now become ſo common upon Dunghills, and other rich Grounds, as not to be eaſily eradicated. The Seeds falling, do continue all the *Winter* in the Ground, and in *Spring* the Plants will come up, and, if ſuffered to ſtand, will ſpread over the whole Spot of Ground, and produce ſuch Quantities of Seeds as to leave a Stock to furniſh the Ground for ſome Years.

The ſecond Sort is not as yet quite ſo common as the former, though it is equally as hardy; and where the Seeds are permitted to fall, the Plants will come up in great Plenty the following *Summer*. This Sort will grow much larger than the former. I have meaſured one of theſe Plants which grew upon a rich Soil upward of ſix Feet high, and divided into many ſtrong Branches, which ſpread almoſt eight Feet Diameter; ſo that 'tis unfit to ſtand in ſmall Pleaſure-gardens, and only to have a Place in ſome outward Part of a Garden or Yard, becauſe it takes up too much Room.

The third Sort is ſomewhat like the former in the Appearance of the Plant, but the Fruit is ſmaller, and beſet with very long, ſharp Thorns; for which Variety it is preſerved in the Gardens of thoſe who are curious in *Botany*.

This *Species* is by ſome ſuppoſed to be the *Dutro* of the *Perſians*, with the Seeds of which they uſe to intoxicate Perſons on whom they have any Deſigns.

This Sort is not quite ſo hardy as the two former, ſo muſt be ſown on a moderate Hot-bed in the *Spring*; and when the Plants are come up, they ſhould be tranſplanted on a new Hot-bed to bring the Plants forward, but you muſt be careful not to draw them too much by keeping the Glaſſes cloſe, which will render them very weak and unfit to ſtand abroad: Therefore after they have taken Root, they ſhould have Plenty of freſh Air when the Weather is warm, and in *May* they ſhould be inured to the open Air by Degrees, into which they may be tranſplanted in *June*, obſerving to raiſe the Plants with a large Ball of Earth, and plant them in a rich Soil, giving them Water until they have taken Root. In *July* theſe Plants will flower, and their Seeds will ripen in *Auguſt*.

The fourth Sort will grow larger than the laſt mentioned. This is preſerved more for the ſake of its long, tubulous, white Flowers, than any other Beauty in the Plant. It is ſomewhat tender, and ſhould be ſowed on a Hot-bed in the *Spring*, and managed as the former; otherwiſe, if the Seaſon proves cold, the Seeds will not ripen; tho' I have ſometimes had Plants of this Kind which came up from Seeds that ſcattered in *Autumn*, and ripened their Seeds very well; ſo that I believe, in a few Years, it may be inured to this Climate, ſo as to thrive with little Care.

The fifth and ſixth Sorts do produce very beautiful Flowers, which afford an agreeable Scent at ſome Diſtance, but if ſmelt to very cloſe, is offenſive to the Head. The Flowers of theſe Kinds are Violet-coloured on the Outſide, but are white on the Inſide; and thoſe of the ſixth Sort have two or three Flowers within each other, in the Manner of the *Primroſe*, which is called *Hoſe in Hoſe*. Theſe two Sorts are much more tender than either of the former, and muſt be ſown early in the *Spring* on a Hot-bed; and when the Plants are come up, they muſt be tranſplanted into a freſh Hot-bed to bring them forward; and as the Heat of this Bed declines, there ſhould be a freſh one prepared, in which ſhould be plunged Pots filled with light, rich Earth, into which the Plants ſhould be placed, obſerving to water and ſhade them until they have taken Root; after which they ſhould have Air given to them, in Proportion to the Heat of the Seaſon, and muſt be often watered, being very thirſty Plants.

Thus they muſt be puſhed on by Heat, in the Manner directed for *Amaranths*; to which the Reader is deſired to turn for their farther Culture. In *July*, if the Seaſon be warm, they may be removed into the open Air, placing them in a warm Situation, where they will produce their Flowers plentifully; and if the *Autumn* be warm, their Seeds will ripen very well; but it will be a ſure Method to preſerve one Plant of each Kind under Glaſſes, leſt thoſe in the open Air ſhould not perfect their Seeds.

STRAWBERRY, *vide* Frigaria.

STRAWBERRY-TREE, *vide* Arbutus.

STYLE: The *Style* of a Flower is a Body accompanying the *Ovary*, either ariſing from the Top of it, or ſtanding as an Axis in the Middle, with Embryons of the Seeds round it.

STYRAX; [takes its Name of *Stiria*, Lat. an *Iſicle*, becauſe a reſinous Matter iſſues, like Drops, out of the Tree. We have many Gums from this Tree: The firſt is the Red *Styrax*; or, as it is called by ſome, the *Jews Frankincenſe*, becauſe they believe it to be that Reſin that the *Wiſe Men* brought and offered to our *Saviour*. This Maſs is rediſh, or yellowiſh, and is extracted out of the Tree by an Inciſion. Another Kind is the *Styrax Calamita*, becauſe in old Times it was tranſported in Pipes of Reeds to preſerve its Odour. This *Styrax* is on the Outſide of a red Colour, and white within, of a ſweet aromatick Scent, very grateful. The third is Liquid *Styrax*, which is an oily, viſcous Subſtance, of the Conſiſtence of an Ointment, of a greyiſh Colour and an aromatick Scent; but this is the product of a different Tree] the Storax Tree.

The *Characters* are;

The Flower conſiſts of one Leaf, ſhaped like a Funnel, and cut into ſeveral Segments; out of whoſe Flower-cup riſes the Pointal, which is fixed like a Nail in the forepart of the Flower; this afterwards becomes a roundiſh, fleſhy Fruit, including one or two Seeds in hard Shells.

We have but one *Species* of this Plant, *viz.*

STYRAX *folio mali cotonei. C. B. P.* Storax-tree, with a Quince-tree Leaf.

This Plant grows plentifully in ſeveral Parts of *Aſia*, from whence it hath been brought into many curious Gardens in *Europe*, tho' at preſent it is very rare in *England*.

It may be propagated by ſowing the Seeds in Pots filled with freſh, light Earth, and plunged into a moderate Hot-bed: This ſhould be done as ſoon as poſſible, when the Seeds are procured; for if they are ſown the latter End of *Summer*, and the Pots kept in a moderate Hot-bed of Tanners-bark all the *Winter*, the Plants will come up the ſucceeding *Spring*; whereas thoſe ſown in the *Spring* do often remain in the Ground a whole Year before the Plants come up.

When the Plants are up, they ſhould be each tranſplanted into a ſeparate ſmall Pot, filled with light, freſh Earth, and plunged into a very moderate Hot-bed, obſerving to water and ſhade them until they have taken Root; after which they ſhould be inur'd to the open Air by Degrees, into which they muſt be removed in *June*, placing them in a warm Situation; in which Place they may remain till the Beginning of *October*; at which Time they ſhould be removed into the Green-houſe, placing them where they may enjoy the Benefit of freſh Air when the Weather is mild; for theſe Plants are tolerably hardy, and do only require to be ſheltered from ſevere Froſt, for in *Italy* they grow extremely well in the open Air, and produce Fruit in great Plenty; from whence I have received a Parcel of the Seeds: But as theſe Plants do grow very ſlowly with us, ſo it would be a good Way to procure ſome from *Italy*, which might be brought over in the *Spring*, packed up in Caſes with Moſs, as is practiſed in bringing over *Orange-trees*, *Jaſmines*, &c. and theſe Plants being well grown before they are brought over, will be more hardy than thoſe raiſed from Seeds here, and will be more likely to produce Fruit.

The *Reſin* of this Tree is brought over for Medicinal Uſe.

I ſhall beg Leave to add another Tree in this Place, which although very different in its Characters from the foregoing, yet as it hath not been ſettled to any particular Genus by the *Botaniſts*, and having long paſſed under the Name of *Storax*, I ſhall continue it by that Name in this Place, having the Authority of Mr. *Ray* for ſo doing.

STYRAX *arbor Virginiana, aceris folio. Raii Hiſt.* The Virginian Storax-tree, with a Maple Leaf, *commonly called* Liquid-amber.

This Tree grows very plentifully in *America*, from whence the Seeds have been brought into *England*, where there has been a great Number of Plants raiſed therefrom, which are found to be hardy enough to endure the Cold of our ordinary *Winters* in the open Air: And it is very probable, as the Trees grow larger, and more woody, ſo they will the better reſiſt the Cold; but while they are young, the tender Branches are very ſubject to periſh with ſevere Froſt.

This Plant may be propagated by ſowing the Seeds in the *Spring* in Pots filled with freſh, light Earth, which ſhould be plunged into a moderate Hot-bed, and duly water'd; when the Plants are come up, (which ſometimes happens in ſix Weeks after ſowing, though often they remain in the Ground until the ſecond Year; in which Caſe, the Earth of the Pots ſhould not be diſturbed until you ſee whether the Plants will come up or not) they ſhould be carefully kept clear from Weeds, and watered frequently; and in *June* they ſhould be removed into the open Air, placing them in a warm Situation, where they may remain until *October*; at which Time they ſhould be placed in a common Hot-bed Frame, where they will be protected from ſevere Froſt: But the Glaſſes being kept off in mild Weather, they may enjoy the free Air.

Towards the latter End of *March*, or the Beginning of *April*, theſe Plants may be taken out of the Pots, and planted into the full Ground: In order to which, a Bed or two of light, freſh Earth ſhould be prepared in a warm Situation, into which the Plants may be planted about a Foot aſunder each Way, which will be full Room enough for them to grow two Years; and being placed ſo cloſe, they may be much eaſier covered, if the *Winter* ſhould prove very ſevere.

When they are planted, the Surface of the Ground muſt be covered with Mulch, to prevent the Wind and Sun from drying the Ground too faſt; and if the Seaſon proves dry, it will be proper to water them now and then until they have taken Root, after which they will require no farther Care but to keep them conſtantly clear from Weeds until *November* following; when it will be proper to lay a little freſh Mulch upon the Surface of the Ground to keep out the Froſt; and if the *Winter* ſhould be very ſevere, the Plants muſt have a little *Peas-haulm*, or ſome Mats thrown over them to protect them from the Froſt.

In theſe Beds the Plants may remain two Years; after which they ſhould be removed in the *Spring* to the Places where they are to remain, or elſe into a Nurſery, where they muſt be planted at a greater Diſtance, ſo as to have Room to grow two or three Years longer. Theſe Trees will grow very vigorouſly after they have ſtood two or three Years; ſo that when their Roots have acquired Strength, they will make great Progreſs in their Growth: With us they will grow to be upward of twenty Feet high, ſo ſhould be placed amongſt Trees of the ſame Growth, and in a warm Situation.

The Leaves of this Tree do ſweat out a liquid Reſin in hot Weather, which when rubbed between the Fingers, emits a fragrant Scent; but I have not ſeen any Flowers produced in *England* as yet.

SUBER; The Cork-tree.

The *Characters* are;

It is in all reſpects like the Ilex, *excepting the Bark of the Tree, which in this is thick, ſpungy and ſoft.*

The *Species* are;

1. SUBER *latifolium perpetuo virens. C.B.P.* The Broad-leafed ever-green Cork-tree.

2. SUBER *anguſtifolium non ſerratum. C. B P.* The narrow-leafed Cork-tree, with ſmooth Edges.

There are ſeveral other Species of this Tree mentioned in ſome of the *Italian* Catalogues of Plants; but the two Sorts here mentioned are all I have obſerved in the *Engliſh* Gardens.

Theſe Trees may be propagated by ſowing their Acorns in the *Spring*, in the Manner directed for the *Ilex*, to which theſe exactly agree in Culture; therefore, to avoid Repetition, the Reader is deſired to turn to that Article for farther Inſtruction.

SUBTERRANEOUS, is that which is under or within the Surface, Bowels, or Caverns of the Earth, or the hollow Places of the Earth that are under Ground.

SUCCORY, *vide* Cichorium.

SUCCULENT PLANTS, are ſuch whoſe Leaves are thick, and abound with Juice.

SULPHUREOUS, is full of Brimſtone.

SUMACH, *vide* Rhus.

SUMMITS, or *Apices* are thoſe Bodies which contain the prolifick Powder, analogous to the Male Sperm in Animals; Theſe generally hang upon the *Stamina* or Threads, which ſurround the *Ovary* in Flowers.

SUN, has uſually been reckoned among the Number of Planets, but he ought rather to be numbered among the fixed Stars.

According to the *Copernican* Hypotheſis, which is now generally received, and which has even Demonſtration on its Side, the *Sun* is the Centre of the planetary and cometary Syſtem; round which all the Planets and Comets, and our Earth, among the reſt, revolve in different Periods, according to their different Diſtances from the *Sun*.

But the *Sun*, tho' eaſed of that prodigious Motion, whereby the Antients imagined him to revolve daily round our Earth; yet is he not a perfectly quieſcent Body.

From the *Phænomena* of his *Maculæ* or Spots, it evidently appears, that he has a Rotation round his Axis, like that of the Earth, whereby the natural Day is meaſured, only ſlower.

Some of theſe Spots have made their firſt Appearance near the Edge or Margin of the *Sun*, and have been ſeen ſome time after on the oppoſite Edge; whence, after a Stay of about fourteen Days, they have re-appeared in their firſt Place, and taken the ſame Courſe over again, finiſhing their intire Circuit in twenty-ſeven Days time; which is hence deduced to be the Period of the *Sun*'s Rotation round his Axis.

This Motion of the Spots is from Eaſt to Weſt; whence it is concluded, that of the *Sun* to which the other is owing, is from Eaſt to Weſt.

Dr. *Hook* thinks it reaſonable to conclude, That the Superficies of the *Sun* is covered with Air, or Atmoſphere, or ſome other fluid Body; and that this Atmoſphere, though poſſibly eighty times thicker than that about our Earth, yet in Compariſon of the vaſt Diameter of the *Sun*'s Body, becomes wholly inviſible to us, though aſſiſted by the beſt Teleſcopes.

He ſuppoſes it alſo to look as bright as the Body of the *Sun* itſelf, and that it is really the Shell of this Atmoſphere, and not the very Body of the *Sun* that ſhines: And from hence he ſays, That all the *Phænomena* of the *Maculæ* and *Fœculæ* of the *Sun* will be ſolved, and that they are only Clouds or Smoaks in this Atmoſphere.

He concludes, That the *Sun* itſelf within this Atmoſphere is a ſolid and opacous Body, from theſe Reaſons:

1. The Conſtancy of its Rotation.
2. The Fixedneſs of its Axis.
3. The Power of its Gravitation or Attraction toward its Centre.

He concludes, That theſe prove its Solidity and Opacity, from the diſappearing of the ſolar Spots in the Limb, and their not returning backwards, as they would ſeem to do if the Body were tranſparent as the Atmoſphere is, or the Flame of a Candle, or the Radiation or hazy Light about the *Nucleus* of a Comet, through which, as well as through its Beard, the ſmall fixed Stars may be ſeen.

He thinks the ſuperficial Parts of the *Sun* to conſiſt of Bodies, ſimilar to our Nitre and Sulphur; and that theſe are ſet on Fire, and conſequently, that the Phyſical Cauſe of its Light is the actual Burning or Fire of its ſuperficial Parts.

Nor can there be any Objection of Moment brought againſt this Hypotheſis, from the Danger of the *Sun*'s Fire being burnt quite out in ſo many thouſand Years as it hath been in Being; for (ſays he) ſuppoſing it to have grown ſome Minutes leſs, ſince it began to give Light, none can contradict it by any Obſervations we have upon Record.

For ſuppoſing we had Aſtronomical Obſervations of 4000 Years ſtanding, as we have none above 2000 of that kind; and allowing that the *Sun*'s Diameter hath been obſerv'd to be as many Minutes as it is now; yet it could not thence be concluded, that the *Sun* did not loſe a Mile in Diameter every Year, and conſequently be now 4000 Miles leſs in Diameter than it then was.

For ſince his Diameter is near 87 times greater than that of the Earth, which latter he ſuppoſes 8000 Miles, then the *Sun*'s muſt be 696000 Miles. Now 4000 is but the 174th Part of the Diameter, and conſequently would have diminiſh'd it but $\frac{1}{8}$ of a Minute, which is a much leſs Quantity than the Ancients pretended to obſerve to.

But ſuppoſing they could have obſerv'd even to Seconds, yet that could not have contradicted it, becauſe it is poſſible the *Sun* may have approached as much nearer us as that Diminution amounts to, and for which, he ſaith, he could ſhew a Reaſon.

Sir *Iſaac Newton* alſo in his *Opticks*, gives good Reaſon to ſuppoſe the *Sun* and fix'd Stars to be great Earths, vehemently hot; whoſe Heat is conſerv'd by the Greatneſs of their Bodies; and the mutual Action and Re-action between them and the Light which they emit, and whoſe Parts are kept from fuming away, not only by their Fixity, but alſo by the vaſt Weight and Denſity of the Atmoſpheres incumbent on them, and every way ſtrongly compreſſing them, and condenſing the Vapours and Exhalations which ariſe from them.

The Light ſeems to be emitted from the *Sun* and fix'd Stars (which probably are *Suns* to other Syſtems) much after the manner as Iron, when heated to ſuch a Degree, as to be juſt going into Fuſion by the vibrating Motion of its Parts, emits with Force and Violence copious Streams of liquid Fire all around: Great Bodies muſt preſerve their Heat *longeſt*, and that, perhaps, in the Proportion of their Diameters.

Sir *Iſaac Newton* hath made it probable, that the great Comet in the Year 1680, in its *Perihelion*, went ſo near the *Sun*, as that it acquired a Heat, which would not intirely go off in 50,000 Years: Whence we may gueſs, that if the *Su* and fix'd Stars be only Collections of denſe and ſolid Matter, like the Planets, but heated to a very intenſe Degree they may be many Millions of Years without loſing any conſiderable Part of their Heat.

According to *Caſſini*, the *Sun*'s Diſtance from the Earth is 172,800,000 *Engliſh* Miles.

As *for the annual Motion of the* Sun *round the Earth*; it i eaſily ſhewn by Aſtronomers, that the annual Motion of th Earth will occaſion ſuch an Appearance. A Spectator in th *Sun* would ſee the Earth move from *Weſt* to *Eaſt*, for th ſame Reaſon that we ſee the *Sun* move from *Eaſt* to *Weſt* and all the *Phænomena* reſulting from this annual Motion, i which ſoever of the Bodies it be, will appear the ſame fro either.

As to the Nature, Properties and Figure of the *Su* &c.

1. As the ſolar Spots are found ſometimes to ſtay thre Days longer behind the *Sun* than they ſpend in paſſing ov the Hemiſphere viſible to us; we eaſily deduce, that the don't adhere to the Surface of the *Sun*, but are at ſome Diſtance therefrom.

2. As the Spots frequently riſe, and vaniſh, even in th Midſt of the *Sun*'s Diſk, and undergo ſeveral Changes, bo with regard to Bulk, Figure and Denſity, it follows, th they frequently riſe, *de novo*, about the *Sun*, and are aga diſſipated.

3. Hence it ſhould follow, that they are form'd out the Exhalations of the *Sun*, and are no other than ſol Clouds.

4. Since then Exhalations proceeding from the *Sun*, riſe bove him, and ſtop at a certain Altitude; it is evident, th is ſome Fluid encompaſſing the *Sun*, to urge the Exhalatio

to riſe; and this Fluid muſt be denſer at Bottom, and rarer at Top, like our Atmoſphere.

5. Since Spots frequently diſſolve and diſappear in the Middle of the *Sun*'s Diſk; the Matter of the Spots, that is, the Solar Exhalations, fall back again to the *Sun*: Whence it follows, that there muſt ariſe various Alterations in the *Sun*'s Atmoſphere, and the *Sun* himſelf.

6. Since the Revolution of the Spots round the *Sun* is found very regular, and likewiſe very near the *Sun*; it follows, that they do not revolve round the *Sun*, but that the *Sun*, together with his Atmoſphere, wherein the *Maculæ* are, move round their common Axis, in an Interval of about twenty-ſeven Days; and hence it is, that the Spots near the Limb, being view'd obliquely, appear narrow and long.

7. Since the *Sun* in every Situation appears like a circular Diſk, its Figure, as to Senſe, muſt be ſpherical, though it is really ſpheroidical.

8. That the Subſtance of the *Sun* is Fire, is thus prov'd: The *Sun* ſhines, and his Rays collected by concave Mirrors or convex Lens's, burn, conſume, and melt the moſt ſolid Bodies, or elſe convert them into Aſhes or Glaſs.

Wherefore, as the ſolar Rays are diminiſh'd by their Divergency in a Duplicate *Ratio* of the Diſtances reciprocally taken, 'tis evident their Force and Effect is the ſame when collected by a burning Lens or Mirrour, as if we were at ſuch Diſtance from the *Sun* where they were equally denſe. The *Sun*'s Rays therefore, in the Neighbourhood of the *Sun*, produce the ſame Effects as might be expected from the moſt vehement Fire; conſequently the *Sun* is of a fiery Subſtance.

Hence it follows, that its Surface is every where fluid; that being the Condition of Flame.

Indeed it is not abſolutely determined, whether the whole Body of the *Sun* be fluid, as ſome think, or ſolid, as others; but as there are no other Marks, whereby to diſtinguiſh Fire from other Bodies, but Light, Heat, a Power of Burning, Conſuming, Melting, Calcining, and Vitrifying, we don't ſee what ſhould hinder, but that the *Sun* may be a Globe of Fire like ours, inveſted with Flame.

9. Since the *Maculæ* are form'd out of the Solar Exhalations, it appears, that the *Sun* is not pure Fire; but that there are heterogeneous Particles mixed along with it.

As for the Diſtance of the *Sun*, Aſtronomers are not agreed; the Reaſon is, that the Determination thereof depends on that of the Parallax, and the Parallax of the *Sun* not being to be found without a long and operoſe Calculation.

Some make the mean Diſtance of the *Sun* from the Earth, 7490 Diameters of the Earth, others 10,000, others 12,000.

The learned *Herman Boerhaave*, treating concerning Fire, ſays we have two vulgarly reputed Sources or Funds of it, *viz.* in the *Sun*, and the *Centre* of the Earth.

For the firſt we have the concurrent Opinions of the Philoſophers of all Ages, except one, who held the *Sun* to be cold.

As to the Central Fire, though our Obſervations do not go ſo far, yet this is manifeſt, that there is an ample Proportion of Fire under-ground; and even that Fire appears much more abundant there than on the Surface; ſo that at leaſt a ſubterraneous Fire muſt be granted.

Thus they who dig Mines, Wells, &c. conſtantly obſerve, that while they are yet but little below the Surface, they find it a little cool; as they proceed lower it grows much colder, as being then beyond the Reach of the *Sun*'s Heat, inſomuch that Water will freeze almoſt inſtantaneouſly; and hence the Uſe of Ice-houſes, &c. But a little lower, about forty or fifty Feet, it begins to grow a little warmer, ſo that no Ice can bear it; and then the deeper they go, ſtill the greater Heat, 'till at length it endangers the Stoppage of Reſpiration, and puts out their Candles.

Morinus, a *French* Author, who had the Curioſity to deſcend himſelf into the Mines of *Hungary*, ſome of which are three or four hundred Fathoms deep, relates, That after he had deſcended about an hundred Fathoms, he came into a very warm Region of the Earth, which laſted to the Bottom of the Mine; being ſo hot both in *Winter* and *Summer*, that the Labourers uſually work without their Cloaths: He adds, That he himſelf was ſcarce able to bear the Heat. He was further told by the Overſeers, that it was univerſal; the lower they deſcend beyond an hundred Fathoms, the hotter it ſtill growing.

Dr. *Boerhaave* adds, That if they venture farther with a lighted Candle, than the Place where it put their Candles out, the Place ſhall be found immediately full of Flame; as once happened in the Coal-Pits in *Scotland*, where a hardy Digger, deſcending to an unuſual Depth, with a Light in his Hand; the Fumes, which are there found very copious, caught Fire thereby (they being no other than Oil or Sulphur greatly rarefied and volatiliz'd by Heat) and burnt the whole Mountain down.

It ſeems as if Nature had lodg'd another *Sun* in the Centre, to contribute on its Part to the giving of Motion to Bodies, and to the promoting of Generation, Nutrition, Vegetation, Germination, &c. of Animals, Vegetables, and Foſſils; and that all Productions, under-ground in particular, as of Metals, Salts, &c. are wholly owing thereto.

How this ſubterraneous *Sun* aroſe may admit of ſome Doubt; whether it were form'd there from the Beginning, like the *Sun* in the Firmament, or gradually produc'd by a ſecondary Collection of vague Fire into this Place.

What pleads in Favour of the former Opinion, are Volcanoes, or burning Mountains, which appear to have exiſted from the firſt Ages: For *Ætna*'s Flames are ſpoke of among the ancient Poets, as even then of great Antiquity; and ſuch Mountains are found in the coldeſt Regions, *viz. Nova Zembla* and *Ice-land*; as well as the hotteſt, as *Borneo*, &c.

As to this, Mr. *Boyle* obſerves, that it cannot be reaſonably pretended, that the ſubterraneal Heat proceeds from the Rays of the *Sun*, ſince they heat not the Earth above ſix or ſeven Feet deep, even in the Southern Countries. And if the lower Part of the Earth were of its own Nature cold, and receiv'd the Heat it affords only from the *Sun*, the deeper Men deſcend therein, the leſs Degree of Heat and Steams they would meet with.

Dr. *Boerhaave* adds, that as to the other Opinion, it is urg'd, that ſuch Source of Fire might have aroſe there in Time, on the Principle of *Gravity*.

For though Fire be by Nature equally diſſeminated every where, yet as we ſhew it to be a Body, and inveſted with the other Properties of Body, it muſt have Weight, and in conſequence thereof muſt have a Tendency towards the Centre.

Hence it muſt be accumulated deep under Ground; and the more ſo, the nearer the Centre, which may be eſteem'd the common Seat or Receptacle it all tends to.

This may receive ſome Confirmation from hence, That the central Space is allow'd to be poſſeſſed by the heavieſt and moſt ſolid Bodies; but we know of nothing to enter the Pores of theſe Bodies, and make them more ſolid than others, except Fire.

Upon the whole, in the firſt View, there ſhould be two great Fires, an upper or *ſolar*, and a lower or *central* one, in all reſpects alike, and the ſame with each other, according to the *Dogma* of *Triſmegiſtus*.

On the ſecond View, the central and ſubterraneous Fire is not original and elementary, but determined and collected Fire; ſuch as we have it on various Occaſions about the Surface.

It may be added, that the denying Vent or Paſſage to this ſubterraneous Fire, appears to be the Cauſe of Earthquakes; thoſe uſually ariſing upon a Vulcano's appearing to be ſtopt up, or ceaſing its Eructations, and going off again upon its opening, or burning afreſh.

Fire may be collected in two manners: Firſt, by a Luminary determining its Rays into a Paralleliſm; ſecondly, by Attrition.

Firſt, Fire is collected when by any Means a Quantity thereof is driven into a leſſer Compaſs; it being Part of the Character of Fire, that it ſpreads itſelf equally; ſo that if left to itſelf, it would be found no more here than there, are conſequently would be inſenſible every where; but if by any Cauſe it be directed toward any certain Part, than it diſcovers itſelf: And ſuch a *Cauſe* is the *Sun*, which revolving with prodigious Velocity around his Axis, directs the impervious Corpuſcles of Fire, every Way in parallel Right Lines, and determines them toward certain Places.

The *Sun* therefore does not produce or emit Fire, but only puts it in Motion in Right Lines, and thus collects it. And hence it is that we perceive Fire ſo long as the *Sun* is above the Horizon; and upon his ſetting, loſe it again; by reaſon, as his Action ceaſes, the Fire again ſpreads itſelf all around.

The *Sun*, according to that excellent Chymiſt, the young *Lemery*, ſeems to be no other than a huge Maſs, or Collection of the Matter of Fire or Light, though placed at ſuch a Diſtance as to diſable it to act on Bodies here on Earth, otherwiſe than by one of theſe two Ways: Firſt, by Emanations or Emiſſions of his own Subſtance tranſmitted hither; but this Hypotheſis being ſubject to great Difficulties, and not ſufficiently anſwering to certain *Phænomena*, Recourſe is had to another, which ſuppoſes Trains of Fire or Light, diſpos'd in all the Interſtices of the grand Expanſe of Air and Æther between the *Sun* and us, and that theſe Trains are made to act on terreſtrial Bodies, by their being vigorouſly driven or impell'd toward ſuch Bodies, by the immediate Action of the *Sun* thereon.

Theſe Trains, in effect, may be eſteem'd as a Sort of little *Suns* prolonged, but always depending on the great *Sun*, as the Source of their Motion and Action on Bodies; 'tis thoſe that form the Rays of Light; they do not, in point of Matter, differ from the Subſtance of the *Sun* himſelf; but only in this, that the ſame thing is more copious in one Caſe than the other.

In the *Sun* we may ſuppoſe the Matter of Light more abundant than the Focus of our largeſt Burning-glaſſes. Thus from the vehement Action of the Rays of the *Sun*, collected in ſuch Glaſs, we learn what Uſe the Air interpoſed between the Rays of Light is of, in tempering their Action, and rendering it more ſupportable; ſince without ſuch Medium, inſtead of warming and illuminating, it would blind and burn us.

So that the Air may be conſider'd as having ſomewhat of the ſame Effect, with reſpect to the Rays of Light falling upon us, that the Water in a *Balneum Mariæ* has. *Mem. de l'Acad. Ann.* 1713.

Omitting to enter into a particular Diſcuſſion about the Matter of the *Sun*, and whether it be Fire, to us it appears very extraordinary, that the *Sun* after a continual Emiſſion of the Corpuſcles of Fire upwards of 5000 Years, ſhould not be yet exhauſted.

The Sun and Stars, according to Sir *Iſaac Newton*'s Conjecture, are no other than great Earths vehemently heated: For large Bodies, he obſerves, preſerve their Heat the longeſt, their Parts heating one another; and why may not great, denſe, and fixed Bodies, when heated beyond a certain Degree, emit Light ſo copiouſly, as by the Emiſſion and Reaction thereof, and the Reflection and Refraction of the Rays within the Pores, to grow ſtill hotter, 'till they arrive at ſuch a Period of Heat as is that of the *Sun?*

Their Parts may be further preſerved from fuming away, not only by their Fixity, but by the vaſt Weight and Denſity of their Atmoſpheres incumbent on them, and ſtrongly compreſſing them, and condenſing the Vapours and Exhalations ariſing from them.

Thus we ſee, that warm Water in an exhauſted Receiver, ſhall boil as vehemently as the hotteſt Water, open to the Air; the Weight of the incumbent Atmoſphere, in this latter Caſe, keeping down the Vapours, and hindering the Ebullition, 'till it has conceiv'd its utmoſt Degree of Heat.

So alſo, a Mixture of Tin and Lead, put on a red-hot Iron, *in vacuo*, emits a Fume and Flame; but the ſame Mixture in the open Air, by reaſon of the incumbent Atmoſphere, does not emit the leaſt ſenſible Flame. *Ibid. Optic.*

But to return to Dr. *Boerhaave*. It is, ſays he, much ſafer to ſay, that the *Sun* has the Power of determining Fire, than that it furniſhes it. The Caſe may be the ſame, as in M. *Villette*'s *Mirror*, which, when expos'd to the naked *Sun*, produces ſuch amazing Effects, and yet has no Effect at all, if the *Sun* be covered from it, by the Interpoſition of a Cloud, or the like: The Mirror may appear the Cauſe of Burning, but it is only an Inſtrument neceſſary thereto; and the *Sun* may be no more.

If now the *Sun* impel the Matter of the Fire in Right Lines, we call it Light, which Light is not any fiery Corpuſcles in the *Sun* itſelf, but the vague Fire above-mentioned, put in a new Determination by the *Sun*, and collected into ſome one Place.

Hence ariſes Heat. For all Heat depends on Fire; nor is it felt, uſeleſs increaſed in proportion to our Senſes, *i. e.* ſo as to be capable of affecting our Organs.

While the *Sun* is above the Horizon he impels all the Rays, before vague and fluctuating toward a Focus; and ſuch Impulſion or Determination is always in Right Lines; ſo that all our Light, Heat, and Colour is the Effect of a rectilinear Motion.

Suppoſe, for Inſtance, a Fire in a dark Place, and a Thermometer placed at a certain Diſtance therefrom, with an Iron Plate between them; in this Caſe the Thermometer will not be affected by the Fire, by reaſon that the rectilinear Paſſage of the Heat is ſtopped. Nor need it be added, that under the like Circumſtances, no Light, Colour, &c. is perceivable; ſo that none of theſe act but in Right Lines.

If there were no *Sun*, nor any Body to ſupply its Place, there would be no Heat, *i. e.* the Fire would not be determined in Right Lines: So that the *Sun* is the Father of all Heat; or ſome other Body that acts in the ſame Manner as the *Sun*: For the *Sun* does not make Heat, but only the Difference between the Heat of the Day and the Night.

The Exceſs of Heat which we feel by Day, is not owing to the Matter of the Fire, but to the *Sun*. For as to the Quantity of Fire, it has been obſerv'd, 'tis the ſame by Night as by Day, and that is the Determination in parallel Lines, that makes the Difference in point of Heat.

Thus no body would imagine, in ſtretching forth his Hand, that it ſhould be preſs'd, as with a huge Weight, both upward and downward, as if pinch'd in a Preſs, and yet there is no Diſpute as to the Fact; and the only Reaſon why he is not ſenſible of it, is, that the Preſſure is equal every Way.

So it is with Fire, which, when equally moved every Way, does not give any ſenſible Heat; but when the *Sun* ſhines, he moves or directs it in Right Lines, and thus renders its Heat perceivable.

As to this, another Author adds; 'Tis not very difficult to conceive how Fire ſhould become ſenſible, either to the Feeling or the Sight, by being thus determined in Right Lines.

By ſuch Determination the vague, fluctuating Corpuſcles are form'd into Rays, and a Train of them driven upon the Organ in a conſtant Succeſſion.

Hence each ſubſequent one ſeconding the Effort of the preceding one, the Impreſſion by ſuch a Series of Augmentations at length is felt. Thus the Air, with which we are every Way ſurrounded, if left at Liberty is not perceived; but if its Parricles be driven or directed in a Stream, whether by a Pair of Bellows, or any other Cauſe that excites a Wind, the Impreſſion it makes will be ſenſible.

Dr. *Boerhaave* adds; It may be doubted therefore, whether the *Sun*, for all his Spots, be a hot Body; ſince, if he were really ſo, he muſt tranſmit us more Fire in *Winter* than in *Summer*.

As to this, *Bacon de forma calida* ſays, It has often been wondered at, why in *Nova Zembla* the *Sun* ſhould never have Power to melt Ice; notwithſtanding that, for the Space of ſome Weeks, his Brightneſs is not leſs conſpicuous than with us.

So the *Dutch*, who wintered in that unhappy Region, expected no leſs, and that in the Month of *July* the Sea ſhould be thaw'd, and they left at Liberty to purſue their Voyage; but were miſtaken. This gave my Lord *Bacon* Occaſion to obſerve, that the *Sun*'s direct Rays have no ſenſible Effect, not even on a level Country; nor yet the reflected Rays, unleſs the Line of Reflection be near that of Incidence, *i. e.* unleſs the Angle intercepted between them be very ſmall; ſo that they may, as it were, ſtrengthen and increaſe the Effect of each other. Now, the more perpendicularly the Rays fall, the ſmaller is the Angle: Hence, in *Nova Zembla*, where they fall extremely obliquely, the Rays by Reflection are ſever'd, and that Effect thus render'd inſenſible.

Dr. *Boerhaave* alſo adds: After the ſame Manner ariſe *Colours*, which are nothing elſe but the Matter of Fire drawn in parallel Lines, without which Motion there would no ſuch thing ever be ſeen.

If now the Particles of Fire, before moveing in a parallel Direction, become determin'd anew in Lines that converge, the Effect of the Fire muſt of Neceſſity be heightened by reaſon a larger Quantity of Fire is, by ſuch Means, collected into one Place.

And were it not that by ſuch Increaſe of Quantity its Particles have a greater Attrition, the Forces of Fire would be proportionable to the Spaces it poſſeſs'd.

But in bringing the Particles ſo near, 'tis impoſſible but they muſt ſtrike on each other; and hence, the nearer they approach, the greater and quicker the Attrition; and a briſk Attrition does collect Fire of itſelf.

If then the Quantity of Fire in any Place be increaſed, *e. g.* ſix-fold, the Attrition will of conſequence be augmented proportionably thereunto.

Some maintain, that Fire acts with more Force as the Reſiſtance of the *Medium* is leſs; but the contrary is true; for Fire would be incapable of warming, unleſs either reflected or collected.

The Heat would be never the greater for the *Sun*'s acting on the Fire, unleſs in its Progreſs it were either refracted or reflected, and by that Means determined to one Place more than to another.

And hence it is, that the Cold *cæteris paribus*, is always greateſt in ſtill Weather; and that in the Severity of *Winter*, and particularly froſty Weather, the Heavens are clear.

Thus alſo the Tops of the talleſt Mountains, where the Reflection and Refraction are leſs conſiderable, by reaſon of the want of Clouds, are eternally cover'd with Snow; as in *Peru*, *Mexico*, the *Alps*, &c. And to the ſame Cauſe it is owing, that the Nights in *Armenia* are ſhivering cold.

In the mountainous Places in theſe Countries, we are told, there is no ſuch thing as pure Water, but all Ice.

Plants make a Shift to grow about the Feet of the Mountains, but higher up no Vegetable can live; not for want of Food, but through the Intenſeneſs of the Cold; Men, ſtaying there but a little Time, catch violent Agues, which, with a longer Stay, grow incurable.

Heat then depends not upon the Fire's being ſent or determined toward us, but only by its being reflected, either by Mountains or Clouds.

If Fire be propagated through an uniform *Medium*, it will never produce any conſiderable Heats.

And hence it is that the Degree of Heat is not ſo very intenſe in the Torrid Zone, as one would otherwiſe expect; but that in the Iſland of *Ormus* 'tis perfectly ſcorching, and not endurable by any Mortal, unleſs they were to ſcreen themſelves under Water.

The Heat here is ſaid to be ſo vehement, that People, like Fiſhes, are forced to ſleep in Ciſterns of Water, with only the Head out, which is kept ſuſpended by a Contrivance for that Purpoſe: The Caſe is, that the ſaid Iſland is full of Salt Rocks, which act like ſo many *Specula*, and reflect the Light in great abundance; ſo that the Iſland at a Diſtance appears like one continued Fire.

Another Cauſe which ſome alledge for this exceſſive Heat is, that the Iſland was anciently full of white Mountains, which having in Time been all laid level, the whole Surface of the Iſland is white, and thus diſpoſed to reflect abundance of Light.

Heat therefore does not immediately depend on the *Sun*, but on Bodies that reflect. Hence in high Places, and where the Atmoſphere is very rare, the Heat is extremely feeble, and *vice verſa*.

But it remains here to be obſerved, that according as the Direction of the *Sun*'s Rays is greater or leſs, greater or leſs Heat is produced. For,

1. A Body ſtriking perpendicularly on another, acts on it with all its Force.

2. A Body ſtriking obliquely againſt another, acts with the leſs Force, the more it deviates from the Perpendicular.

Now Fire directed by the *Sun* into Right Lines, muſt obſerve the ſame mechanical Law as other Bodies, and conſequently its Action muſt be meaſured by the Sine of the Angle of Incidence.

And hence Fire ſtriking on any Obſtacle in a Direction parallel thereto, has no ſenſible Effect, by reaſon the Proportion is almoſt infinite, *i. e.* nothing.

Accordingly Dr. *Halley* obſerves, that the *Sun* radiating on the Earth in the Morning has but little Effect, but that when raiſed to the Meridian he acts with all his Force.

Now this is owing to the Atmoſphere, which being replete with an infinite Number of Corpuſcles, reflects more of the *Sun*'s Rays to the Earth, when they fall perpendicularly, than would otherwiſe arrive there. For whereas falling obliquely, they would be reflected, and thus be thrown off, and diſperſed into other Parts; now that their Incidence is perpendicular, they will paſs directly through.

And hence ariſes what is frequently obſerved by Sailors, viz. That when the *Sun* radiates obliquely upon the Sea, as in the Evening, there is no enduring his Rays; by reaſon they are all reflected from the Water, and ſcarce any loſt therein: So that the Rectitude or Obliquity of the Rays contribute very conſiderably to the collecting of Fire.

And this obliquity, &c. is to be conſidered in a two-fold reſpect, both with reſpect to the Matter in the Atmoſphere, nd to the Surface of the Earth.

Now Heat may be varied two Ways.

1. By means of the Atmoſphere; for this does not always emain the ſame. Thus, *e. g.* Water is naturally tranſpa-ent, and if you warm it, it ſtill retains its Tranſparency; ut if you make it boil, the Vapour iſſuing from it, though erhaps a Million of times rarer than the primitive Water, ill not be tranſparent, but opaque, by reaſon its Parts now e in a different Arrangement.

And hence thoſe Legions of Corpuſcles every where float-g in the vaſt Receptacle of the Atmoſphere, whenever ey acquire a different Diſpoſition, which they frequently , alter the Collection of the Rays on the Earth. Add, at thoſe white Clouds which appear in *Summer-time*, are, it were, ſo many Mirrors, and occaſion exceſſive Heat.

Theſe cloudy Mirrors are ſometimes round, ſometimes ncave, polygonous, &c. When the Face of the Heaven covered with ſuch white Clouds, the *Sun* ſhining among em muſt of Neceſſity create a vehement Heat, ſince many his Rays, which would otherwiſe perhaps never touch our rth, are hereby reflected to us; thus if the *Sun* be on one e, and the Clouds on the oppoſite one, they will be perfect Burning-glaſſes. And hence the Phænomena of Thunder, &c.

I have, ſays Dr. *Boerhaave*, obſerv'd a kind of hollow Clouds full of Hail and Snow; during the Continuance of which the Heat was extreme; ſince by ſuch Condenſation they were enabled to reflect much more ſtrongly: After this came a ſharp Cold, and then the Clouds diſcharged their Hail in great Quantity; to which ſucceeded a moderate Warmth. Frozen, concave Clouds therefore, by their great Reflections, produce a vigorous Heat; and the ſame when reſolv'd, exceſſive Cold.

Hence it is probable, that Thunder is only produc'd when ſuch concave Clouds, before convolved into ſpherical Figures, are driven with oppoſite Motions againſt each other; and the Rays tranſmitted through thoſe Spheres from burning *Foci*.

All Clouds, 'tis probable, contain Snow and Ice, but theſe in their Fall through the warmer Regions of the Atmoſphere nearer the Earth, liquify and diſtil in Drops.

The Meteors in the Atmoſphere have likewiſe their Share in reflecting of Fire. Theſe, in effect, are a Sort of wandering Fire, viſible by Night, and which determine the Fire over and upon the Earth.

2. It is varied by means of the Earth: For as the Surface of the Earth varies, ſo muſt the Heat. Thus ſandy Places, reflecting more Rays than others, muſt excite a greater Degree of Heat.

On the higheſt Mountains we always find the moſt Cold, Snow, and Hail.

In the ſultry Region of *Peru*, the Mountains are all *Summer* long cover'd with Snow, by reaſon they only receive direct, and but little refracted Fire; and the Effect of Fire ariſing merely from being determin'd by the *Sun* into a Paralleliſm, is found, by Computation to be very inconſiderable. For this Effect, as already obſerv'd, is greater in *Winter* than in *Summer*.

Though the *Sun* be in his Apogee in the *Summer*, and in his Perigee in *Winter*, yet will a Night's Ice bear its ſhining upon it five or ſix Hours ere it be thaw'd.

And if as the *Sun* riſes nearer toward the Zenith, the Ice and Snow at length begin to run, this is not owing to the greater Force of the *Sun*, but to the greater Reflection and Collection of his Rays from the Circumſtances and Poſition of the Atmoſphere and Earth.

But the higheſt Tops of Hills are always free from Snow; the Reaſon whereof is, that Water, *i. e.* the Vapours and Exhalations emitted therefrom, never riſe by the *Sun*'s Action above a Mile high. But there are Mountains a Mile and a half high; to the Tops of theſe therefore, Vapour, and conſequently Clouds, can never mount.

And hence it is, that in very high Mountains, as the *Pico de Theide* in *Bohemia*, tho' the middle Part be eternally inveſted with Ice and Snow, and the Bottom ſcorch'd with intolerable Heat, yet on the Top you find yourſelf in a pure, thin, ſerene Air, and view the Clouds hovering at a conſiderable Diſtance below you. Hence alſo it is, that all Thunder is confined within leſs than a Mile's Height.

Add that in Caverns, and the hollow Parts under-ground, the Heat is very great; ſo that the Air is coldeſt in the higheſt Places, and hotteſt in the loweſt; but in the intermediate Atmoſphere very unequal.

Heat therefore depends on Clouds, Mountains, &c. which reflect the Light variouſly, and on the Direction of the *Sun*'s Rays, or the Poſition of his Body with reſpect to us.

Hence again we gather, that Fire is the univerſal Cauſe of all the Motions about our Earth; for all Fluidity depends on Fire; and accordingly in the large Burning-glaſſes the firmeſt Bodies become fluid, and evaporate in Fume: And the more fluid any Body is, the more Fire it contains; whence it is, that Water depriv'd of all its Fire, fixes into Ice, and when expos'd afreſh to the Fire, reſolves into Water; and all Fluids whatever, if deſtitute of Fire, would do the ſame.

Thus far the Learned *Boerhaave*.

The *Sun* (ſays a certain Author) may be accounted the *Parens Naturæ*, or the *Primum Mobile* of all vegetative Motion.

The *Sun*'s attractive Virtue is very conſpicuous, in the Exhalation of thoſe crude and unwholeſome Vapours, with which the Earth is often infeſted; which, if they were ſuffer'd to continue long upon the Face of the Earth, would render it a miſerable Deſert.

The *Sun*, by ſubliming thoſe crude and hurtful Vapours, and their being rarefied before their Deſcenſion and Diſtribution, forms them into Rain, which is of great Conſequence in Vegetation.

To this he adds, the Attraction of Plants themſelves, which creates a kind of Emulation in them, which ſhall grow the talleſt.

But that which the Antients did uſe to attribute to Attraction, may now be very well ſolved by Pulſion. To apply which to the Matter in Hand: When the Surface of the Sea, *&c.* is divided by the Heat of the *Sun*, and the Power of the Air, their Aſcenſion through the Atmoſphere, either by the Rarefaction of the Air by the *Sun*, or otherwiſe by the Reſpiration of the Terraqueous Globe, which in this Caſe may be ſuppoſ'd to act like the Body Natural; or elſe that the Air being rarefied by the *Sun* Beams, does, by the Gravitation of his own Body in general, force thoſe humid Vapours by Pulſion upwards, through thoſe Beams or Rays of Light, which are, as it were, ſo many Pipes or Tubes for their ready Paſſage, Aſcenſion, and Conveyance.

Or if thoſe Vapours are convey'd by the Undulation of the Air in a perpendicular Manner, rather than a radient one, through the Rays and Beams of Light, which ſoever of theſe Ways it is, the *Sun* is the principal Agent in this Buſineſs; and the whole Proceſs is either Attraction, Pulſion, or Reſpiration, forwarded by the virtual Power of it.

That the Rarefaction of the Air by Heat is a great Help to Attraction or Pulſion, may be diſcovered by the Fire-Engine made by Mr. *Savory*; we cannot ſay that the Water is either forced or attracted by the Heat, but that the Air that is in the Pipe is lighten'd by its rarefying Quality to ſuch a Degree, that the *Æquilibrium* is loſt, and the Impulſe and Preſſure of the Air, which is without, forces the Water to that great Height that is ſeen in the Operation.

And ſo, if a little Scrip of Paper burning and fuming be put into a common Drinking-glaſs, and it be turned up immediately, and put upon a Plate of Water, it ſeems as tho' it would ſuck it up into the Glaſs; when indeed, the Truth of the Experiment is, that it is only the outward Preſſure and the inward Weakneſs of the Air to reſiſt, being purified by Heat: For if the ſame Glaſs ſhould be plung'd into a Baſon of Water up to the Foot of it, yet the Water that is in the Baſon would not enter into the Glaſs till the Air, either having loſt its own Strength, or rather inſinuated or incorporated itſelf in the Water, loſes its own Strength; ſuch is the Force of Air.

But this may ſuffice concerning what the Antients call *Attraction*, which in many Caſes is ſolv'd by *Pulſion*, or the Preſſure and elaſtick Power of the *Air*, rather than by the attractive Power of the *Sun*.

It is ſufficiently prov'd by ocular Demonſtration, that the Vapours of the Sea, Rivers, Lakes, and all the Humidities of the Ground, are drawn up after this manner.

And that Heat is an Agent in this Operation, has been clearly prov'd by the Experiments of that learn'd Naturaliſt Dr. *Halley*; by taking a Veſſel of Water four Inches deep, and ſeven, and nine Tenths in Diameter; which being warm'd to ſuch a Degree, as it might be ſuppos'd the Air may do it, in ſome of the hotteſt Months; and letting it ſtand about two Hours time, and weighing it, found it had evaporated near half an Ounce; altho' there did not appear any Reek or Smoak, nor did the Water ſeem warm, by putting his Finger into it; from which it may be concluded, that out of that ſmall Superficies of the Water, ſix Ounces would be evaporated in the Space of twenty-four Hours.

Upon this Suppoſition, every ten ſquare Inches of the Surface of Water, yield in Vapour *per* Day a Cube Inch of Water; and each ſquare Foot half a Wine Pint; and every Space of four Feet ſquare, a Gallon; a Mile ſquare 6914 Tun; a ſquare Degree ſuppoſe of 69 *Engliſh* Miles will evaporate 33 Millions of Tuns.

This will account for the *Caſpian* Sea being always at a Stand, and neither waſting nor overflowing; and alſo for the Current ſaid to ſet always in at the *Streights* of *Gibraltar*, notwithſtanding that thoſe *Mediterranean* Seas receive ſo many, and ſo conſiderable Rivers.

This Experiment has been carry'd yet farther by the *Oxford* Society; who, ſuppoſing a cubical Foot of Water to weigh 76 Pounds, and this Foot containing 1728 cubick Inches, and divided in the 76 Pounds, gives half an Ounce and $13\frac{1}{3}$ Grains, which is the Weight of a cubical Inch of Water; therefore the Weight of the 233 Grains is $\frac{233}{253\frac{1}{3}}$, or 35 Parts of a cubick Inch divided by 38.

Then the Area of a Circle, the Diameter of which is 7 Inches and upwards, is more than 49 ſquare Inches; which if it be divided by $\frac{35}{38}$ Parts of an Inch, the Quantity of Water carry'd off in Vapours, the Product will be $\frac{35}{1862}$ or $\frac{1}{53}$ Parts of an Inch, waſted in that Experiment. This is a plain Proof of what a great Quantity of Water may be thus carry'd off, in great Dimenſions of Water, even enough to ſupply all Rains, Dews, *&c.*

But the *Sun* beſides this has a diffuſive Power, (not to dwell on the Light it conveys to theſe ſublunary Regions) without which the whole Race of Mankind muſt wander and grovel in the Dark; for by its genial and chearful Rays, it exhilarates the vegetable Part of the Creation, and makes Nature herſelf to ſmile.

It has an Influence upon deep Grounds, by warming and chearing the Pores of the Earth, when dilated and ſodden by too much Wet, and puts the emulgent Fibres of Plants upon ſeeking their Food.

It helps the Surface of the Ground by attracting or diſpelling the Vapours, which would otherwiſe make it noxious: But more particularly it warms and heats the Ground, and by its powerful Influence, contributes to diſſolve the latent Salt, and prepares them for being ſucked in by the Fibres of the Palnts, which by the ſame genial Force are put in Action to ſeek out for their Food.

The *Sun* alſo exhales all ſuperfluous Moiſture, and by its vital Heat comforts the dilated Pores.

The *Sun* diffuſes the early Dews, which, if they lay too long on Plants, would rot rather than refreſh them: It alſo preſſes them into the Nerves, and other analogous Parts. This influential Power operates on the Boughs, Branches, Leaves and Fruit.

The *Sun* alſo qualifies the Air; which otherwiſe by its Frigidity would ſtop the very Courſe of Nature. And indeed it would be difficult to inſtance any thing in the whole Circle of *Botanology* that does not participate of a Share of this virtual and diffuſive Good.

From what has been ſaid, we may eaſily account for the Difference of Heat in *Summer* and *Winter*, *viz.* from the Obliquity of the *Sun*'s Rays: This therefore ſhould be well conſider'd in the Contrivance of *Stoves*, to preſerve the moſt tender Exotick Plants, which ought to have their Glaſſes ſo ſituated as to receive the *Sun*'s Rays in direct Lines as great a Part of the Year as poſſible: For which Reaſon the Stoves which have upright Glaſſes in Front, and ſloping Glaſſes over them, are juſtly preferred to any at preſent contriv'd. And from hence we ſee the Advantage of making the back Part and Ceiling of all Greenhouſes and Stoves as white as poſſible, ſince it is evident that the Rays of Light are hereby reflected with much greater Force, and ſo conquently the Heat is greatly increas'd, which ſhould always be obſerved in Buildings of this Kind.

From hence alſo we may learn, that Countries in the ſame Latitude may be very different in their Heat, according to their Situation in reſpect to the *Sun*'s Rays, or according to the Nature of the Soil in reflecting the Rays with a greater or leſs Force: So that in preſerving Exotick Plants, the Heat which they require can't be exactly determin'd from the Latitude of the Places of their Growth: But the Situation of the Places muſt alſo be conſider'd, as whether they grew on Hills, Mountains or Vallies; and if on the Side of Hills, which Side in reſpect to the *Sun*; with ſeveral other Obſervations which ought to be made by ſuch as collect Plants in foreign Countries.

I ſhall here add a Table of the Shadow of the *Sun* at the ſeveral Seaſons of the Year, which was communicated to me by Mr. *Timothy Sheldrach* of *Norwich*; by which a Perſon may more readily ſee what Effect Walls, Buildings, *&c.* have in ſhading the Ground to ſeveral Diſtances, according as the *Sun* is more or leſs elevated above the Horizon; as alſo how great the Shade will be in Green-houſes as the Piers are in Breadth, or the Wall in Front is in Height below the Saſhes.

☉ in ♋				☉ in ♎ ♈				☉ in ♑				Latitude 51° 30′			
Degr. of Latit.	°	′	″	Degr. of Latit.	°	′	″	Degr. of Latit.	°	′	″	The Length of the Shadow of a Column of five Feet high at the Time the *Sun* enters every Sign.			
30	—	8	—	10	—	10	—	0	—	17	30	☉ in	Feet	Feet	Inch.
40	—	17	30	20	—	22	30	10	—	37	30	♋	5	2	9
50	—	32	30	30	—	35	—	20	—	57	30	♌ ♊	5	3	1
60	—	47	30	40	—	47	30	30	1	17	—	♍ ♉	5	3	11½
70	1	7	30	50	1	10	—	40	2	2	30	♎ ♈	5	6	6
80	1	40	—	60	1	50	—	50	3	40	—	♏ ♓	5	9	7
90	2	37	30	70	2	40	—	—	—	—	—	♐ ♒	5	15	5
				80	10	—	—	—	—	—	—	♑	5	20	—

The firſt three Tables ſhew the Length of Shadows in the *Summer* and *Winter Solſtice*, and in the *Vernal* and *Autumnal Equinoxes*. Suppoſe a Mountain, Column, or other Body, whoſe perpendicular Height is one Degree; the Length of the Shadow from any Thing of that Altitude is here ſhewn in every Degree of Latitude, at the above-mentioned times, in Degrees and Minutes: And where a ſhorter Meaſure than a Mile is required, it is ſhewn in Seconds. The fourth Table is calculated for the Latitude of 51° 30′, which is pretty near that of *London*. This fourth Table ſhews the Length of the Shadow made by any perpendicular Body of five Feet Altitude on a Plane, at the Time the *Sun* enters every Sign of the *Zodiack*, which at a South *Sun* will be found very exact on a true Level.

SUPERFICIES of the Ground, &c. is the outward Part or Surface of it.

SURFACE, is the bare Outſide of a Body or Superficies.

SURIANA.

The *Characters* are;

It hath a Roſe-ſhaped Flower, conſiſting of ſeveral Petals, which are placed in a circular Order, from whoſe Empalement ariſes the Pointal, which afterwards becomes the Fruit, which generally conſiſts of four Capſules, in which are included four roundiſh Seeds.

We know but one *Species* of this Plant, *viz.*

SURIANA *foliis portulacæ anguſtis. Plum. Nov. Gen.* Suriana, with narrow Purſlain Leaves.

This Plant was ſo named by Father *Plumier*, who diſcovered it in the *French* Settlements in *America*, in Honour to Dr. *Joſeph Surian* of *Marſeilles*, who was a very curious Botaniſt.

The Seeds of this Plant were brought from the *Havanna*, by the late Dr. *William Houſtoun*, who found the Plants growing there in great Plenty on the Shore, in moiſt Places where the Salt Water uſually flows. It alſo grows plentifully in ſome Parts of the Iſland of *Jamaica*.

It is propagated by Seeds, which muſt be ſown on a Hot-bed early in the *Spring*, and when the Plants are come up, they muſt be carefully cleaned from Weeds, and frequently refreſhed with Water. In warm Weather the Glaſſes of the Hot-bed ſhould be raiſed every Day, to admit freſh Air to the Plants, to prevent their drawing up too weak. When the Plants are fit to tranſplant, they ſhould be taken up carefully, and each planted in a ſeparate ſmall Pot, filled with freſh light Earth, and plunged into a Hot-bed of Tanners-bark, obſerving to ſhade them until they have taken new Root; after which Time they muſt be duly watered every Evening in hot Weather, and they muſt have freſh Air admitted to them every Day in Proportion to the Warmth of the Seaſon. In this Hot-bed the Plants may remain till the Autumn, when the Nights begin to be cold, at which Time they ſhould be removed into the Stove, and plunged into the Bark-bed. During the *Winter* Seaſon theſe Plants muſt be kept warm, eſpecially while they are young, otherwiſe they will not live through the *Winter* in this Country; they muſt alſo be frequently refreſhed with Water, but it muſt not be given to them in large Quantities in cold Weather, for too much Moiſture in *Winter* will ſoon deſtroy them. Theſe Plants do make but ſlow Progreſs the firſt Year, but afterwards they will grow pretty freely, if they are not ſtunted in *Winter*. They muſt be conſtantly kept in the Stove in this Country, and if they are plunged into the Bark-bed, they will make the greater Progreſs. In *Summer* they muſt have a large Share of Air, by opening the Glaſſes of the Stoves, and if their Leaves are covered with Filth (which the Plants in Stoves do often contract) they ſhould be carefully waſhed with a Sponge, otherwiſe the Plants will not only appear unſightly, but it will retard their Growth.

Theſe Plants do uſually grow about ſeven or eight Feet high, and as they retain their Leaves throughout the Year, ſo they afford an agreeable Variety amongſt other Plants in the Stove.

SYCAMORE, *vide* Acer Majus.

SYMPHYTUM: [Some derive it from σὺν, *with*, and φύω, to *grow to*, becauſe this Plant is conſolidating and vulnerary, and of great Uſe in cauſing Fleſh to grow again: Others derive it of συμφυεῖ, to *conglutinate*, becauſe if the Leaves or Roots of this Plant are boiled with Fleſh, the Fleſh returns again into one Maſs; hence it is called *conſolida major officinarum*] Comfrey.

The *Characters* are;

The Flower conſiſts of one Leaf, ſhaped like a Funnel, having an oblong Tube, but ſhaped at the Top like a Pitcher; out of the Flower-cup (which is deeply cut into five long, narrow Segments) riſes the Pointal, attended with four Embryo's, which afterwards become ſo many Seeds, in Form ſomewhat like the Head of a Viper, and do ripen in the Flower-cup.

The *Species* are;

1. SYMPHYTUM *conſolida major fœmina, flore albo vel pallide luteo. C. B. P.* The greater Female Comfrey, with a white or pale-yellow Flower.
2. SYMPHYTUM *conſolida major mas, flore purpureo. C. B. P.* The greater Male Comfrey, with a purple Flower.
3. SYMPHYTUM *majus, tuberoſa radice. C. B. P.* Greater Comfrey, with a tuberoſe Root.
4. SYMPHYTUM *minus tuberoſâ radice. C. B. P.* Smaller Comfrey, with a Tuberoſe Root.
5. SYMPHYTUM *Echii folio ampliore, radice rubra, flore luteo. Inſt. R. H.* Comfrey, with a broad Vipers-bugloſs Leaf, a red Root, and a yellow Flower.
6. SYMPHYTUM *Echii folio ampliore, radice rubra, flore exalbido. Inſt. R. H.* Comfrey, with a broad Vipers-bugloſs Leaf, a red Root, and a whitiſh Flower.
7. SYMPHYTUM *Echii folio anguſtiore, radice rubra, flore luteo. Inſt. R. H.* Comfrey, with a narrow Vipers-bugloſs Leaf, a red Root, and a yellow Flower.
8. SYMPHYTUM *Creticum, echii folio anguſtiore, longiſſimis villis horrido, flore croceo. Tourn. Cor.* Candy Comfrey, with a narrow Vipers-bugloſs Leaf, covered with very long Hairs, and a Saffron-coloured Flower.
9. SYMPHYTUM *Orientale, echii folio ampliore, longiſſimis villis horrido, flore croceo. Tourn. Cor.* Eaſtern Comfrey, with a broad Vipers-bugloſs Leaf, covered with long Hairs, and a Saffron-coloured Flower.
10. SYMPHYTUM *Orientale, echii folio, flore albo, tenuiſſimo. Tourn. Cor.* Eaſtern Comfrey, with a Vipers-bugloſs Leaf, and a very narrow white Flower.
11. SYMPHYTUM *Orientale, echii folio minore, flore nunc albo nunc flaveſcente. Tourn. Cor.* Eaſtern Comfrey, with a ſmaller Vipers-bugloſs Leaf, and a Flower ſometimes white, and at other times of a yellowiſh Colour.

12. **Symphytum** *Orientale oleæ folio, argenteo, flore flaveſcente. Tourn. Cor.* Eaſtern Comfrey, with a ſilvery-olive Leaf, and a yellowiſh Flower.

13. **Symphytum** *Orientale, anguſtifolium, flore cæruleo. Tourn. Cor.* Eaſtern Comfrey, with a narrow Leaf and a blue Flower.

14. **Symphytum** *Conſtantinopolitanum, borraginis folio & facie, flore albo. Tourn. Cor.* Conſtantinople Comfrey, with the Leaf and Face of Borage, and a white Flower.

15. **Symphytum** *Orientale, folio ſubrotundo aſpero, flore cæruleo. Tourn. Cor.* Eaſtern Comfrey, with a rough, roundiſh Leaf and a blue Flower.

16. **Symphytum** *Orientale, folio ſubrotundo aſpero, flore cæruleo odoratiſſimo. Tourn. Cor.* Eaſtern Comfrey, with a rough roundiſh Leaf, and a very ſweet blue Flower.

The firſt Sort grows wild upon the Sides of Banks and Rivers in divers Parts of *England*, where it is commonly gathered to ſupply the Markets for Medicinal Uſe. The ſecond Sort is ſometimes found wild in *England*, but is leſs common than the former; in *Holland* it is the only Sort I obſerved wild, where it grows in great Plenty on the Sides of the Canals almoſt every where.

The third Sort I never yet obſerved growing wild, but it is preſerved in many Gardens for Variety.

All theſe Plants may be cultivated, either by ſowing their Seeds in the *Spring*, or by parting of their Roots; the latter Way, being the moſt expeditious, is chiefly practiſed where they are planted for Uſe. The beſt Seaſon for parting their Roots is in *Autumn*, at which Time almoſt every Piece of a Root will grow: They ſhould be planted about eighteen Inches aſunder, that they may have Room to ſpread, and will require no farther Care but to keep them clear from Weeds, for they are extreme hardy, and will grow upon almoſt any Soil, or in any Situation.

The fourth Sort is pretty common in ſeveral *Engliſh* Gardens, where it is preſerved for the Sake of Variety: This increaſes pretty faſt by its Roots, ſo is ſeldom propagated by Seeds. The fifth, ſixth and ſeventh Sorts grow wild in *Spain* and *Portugal*, from whence their Seeds may be obtained; theſe have red Roots, ſomewhat reſembling thoſe of the *Alkanet*, and are by ſome Botaniſts ranged amongſt the *Alkanets*.

The other Sorts were diſcovered by Dr. *Tournefort*, in the *Levant*, from whence he ſent their Seeds to the Royal Garden at *Paris*. Theſe are all of them pretty hardy Plants, ſo may be propagated by ſowing their Seeds on a Bed of freſh, undunged Earth, in the *Spring* of the Year, and when the Plants are come up, they ſhould be carefully cleared from Weeds, and where they are too cloſe, they muſt be thinned, ſo as to allow them four or five Inches Diſtance from each other; and the following *Michaelmas* they may be tranſplanted where they are deſigned to remain, which ſhould be in freſh undunged Earth, at about two Feet Diſtance from each other, where they may remain to flower and ſeed.

SYRINGA; [ſo called of σύριγξ, a *Pipe*, becauſe the Branches of this Shrub, the Pith being taken out, may ſerve for making Pipes for Syringes] The Mock-orange, *vulgo*.

The *Characters* are;

The Flower, for the moſt part, conſiſts of five Leaves, which are placed circularly, and expand in form of a Roſe; from whoſe Flower-cup riſes the Pointal, which afterwards becomes a roundiſh Fruit, adhering to the Flower-cup, divided into four Cells, which are full of ſmall Seeds.

The *Species* are;

1. **Syringa** *alba, ſive Philadelphus Athenæi. C. B. P.* The common white Syringa or Mock-orange.
2. **Syringa** *flore albo pleno. C. B. P.* The double white Syringa.
3. **Syringa** *flore albo ſimplici, foliis ex luteo variegatis.* The ſtrip'd-leafed Syringa.
4. **Syringa** *nana nunquam florens.* The Dwarf Syringa.

The firſt Sort is very common in moſt *Engliſh* Gardens, but the ſecond is not quite ſo plenty, though, indeed, it is a Variety ſcarce worth obſerving, ſince the Flowers are always ſingle where they are produced in Bunches; and where they are produced ſingly, they are double: But this ſo rare, that many times upon a large Shrub there cannot be found ſix double Flowers.

The variegated Sort is preſerved in the Gardens of ſuch as are curious in ſtrip'd Plants, tho' there is no great Beauty in it, becauſe when the Plants are vigorous, the Stripes in the Leaves do ſcarcely appear.

The Dwarf Sort is not worth a Place in a Garden, unleſs for the Sake of Variety, ſince it never produces any Flowers.

All theſe Plants may be eaſily propagated, by taking off their Suckers in *Autumn*, (which they produce very plentifully) and planting them out in a Nurſery at three Feet Diſtance Row from Row, and a Foot aſunder in the Rows, obſerving to keep the Ground between them conſtantly clear from Weeds, as alſo to dig it up every *Spring* to looſen it, that the Roots of the Plants may more readily extend themſelves. In this Nurſery they may remain two Years, by which Time they will be fit to tranſplant out where they are to remain; which may be into ſmall Wilderneſs Quarters, or amongſt flowering Shrubs in Clumps, obſerving to place them with other Sorts of Shrubs of the ſame Growth, for theſe ſeldom do grow above ſix or ſeven Feet high in *England*, and the Dwarf Sort not more than three or four.

They are extreme hardy, ſo may be planted in almoſt any Soil or Situation, and will require no farther Culture but to take off the Suckers every Year, and cut out the dead Wood, as alſo to keep them clear from Weeds in *Summer*, and dig the Ground about their Roots every *Winter*, which will make them thrive and flower very plentifully. The Seaſon of their flowering is in *May*, and in cool Seaſons they do continue in Beauty the firſt Part of *June*: Their Flowers have a Scent ſomewhat like thoſe of the *Orange-tree*, from whence it had the Name of *Mock-orange*: But if theſe are placed in a cloſe Room, or are ſmelt to too cloſely, they have a ſtrong, diſagreeable Scent, and too powerful for the Ladies; but when they are in the open Air, the Scent is not ſo affecting.

T A

TABERNÆMONTANA.

The *Characters* are;

It hath a tubulous Flower, conſiſting of one Leaf, which is ſpread open toward the Top, and divided into ſeveral Parts; from the Bottom of the Flower ariſes the Pointal, which afterwards becomes the Fruit, compoſed of two Capſules which open lengthways, and are filled with oblong Seeds, ſurrounded with a thin Pulp.

The *Species* are;

1. **Tabernæmontana** *lacteſcens, citrii foliis undulatis. Plum. Nov. Gen.* Milky Tabernæmontana, with a waved Citron Leaf.
2. **Tabernæmontana** *lacteſcens, Lauri folio, flore albo, ſiliquis rotundioribus. Houſt.* Milky Tabernæmontana, with a Bay Leaf, and a white Flower, and rounder Pods.

The firſt of theſe Sorts is common in the Iſland of *Jamaica*, and in ſeveral other Places in the warm Parts of *America*; where it riſes to the Height of fifteen or ſixteen Feet, having a ſmooth ſtrait Trunk, covered with a whitiſh Bark; at the Top of the Trunk come out the Branches, which are irregular, and beſet with ſhining green Leaves; from the Foot-ſtalks of theſe Leaves are produced the Flowers, which are yellow, and extremely ſweet-ſcented: Theſe Flowers are ſucceeded by two forked Pods, in which the Seeds are contained. This Genus of Plants is very near of kin to the *Nerium* or *Oleander*, and has been by ſome Botanical Writers ranged under that Head; but the Seeds of this Genus have no Down adhering to them, as have thoſe of the *Oleander*: and being included in a ſoft pulpy Subſtance, Father *Plumier* has conſtituted this Genus in Honour to Dr. *James Theodore*, who was called *Tabernæmontanus*, from a little Village in *Germany*, where he was born. He was one of the moſt knowing Botaniſts of his Age, and publiſhed at *Francfort* a Folio, in a long Form, in the Year 1590, in which are the Figures of two thouſand two hundred and fifty Plants.

The ſecond Sort was diſcovered at *La Vera Cruz*, by the late Dr. *William Houſtoun*, who ſent the Seeds into *England*, from whence ſeveral of the Plants have been raiſed.

Both theſe Plants are very impatient of Cold, ſo will not live in this Country, unleſs they are placed in a warm Stove: they may be propagated by Seeds, which ſhould be ſown early in the *Spring*, on a Hot-bed; and when the Plants are come up, they muſt be carefully tranſplanted into ſmall Pots, filled with light, rich Earth, and then plunged into a Hot-bed of Tanners-bark, being careful to ſhade them in the Heat of the Day, until they have taken new Root; after which Time they muſt have free Air admitted to them every Day when the Weather is warm, but if the Nights ſhould prove cold, the Glaſſes of the Hot-bed ſhould be covered with Mats every Evening, ſoon after the Sun goes off from the Bed. Theſe Plants muſt be often refreſhed with Water, but it muſt not be given to them in large Quantities, eſpecially while they are young; for as they are full of a milky Juice, ſo they are very ſubject to rot with much Moiſture.

The Plants may remain during the *Summer* Seaſon in the Hot-bed, provided the Tan is ſtirred up to renew the Heat when it wants, and a little new Tan added; but at *Michaelmas*, when the Nights begin to be cold, the Plants ſhould be removed and plunged into the Bark-bed in the Stove, where, during the *Winter* Seaſon, they muſt be kept in a moderate Degree of Warmth; and in cold Weather they ſhould have but a little Water given to them, leſt it ſhould rot them. As theſe Plants are too tender to live in the open Air in this Country, ſo they ſhould conſtantly remain in the Stove, where, in warm Weather, they may have free Air admitted to them, by opening the Glaſſes of the Stove, but in cold Weather they muſt be kept warm; with this Management the Plants will thrive and produce their Flowers, and as they are always green, ſo they will make a pleaſant Diverſity amongſt other tender exotick Plants in the Stove.

Theſe Plants may alſo be propagated by Cuttings, during the *Summer* Seaſon; which ſhould be cut off from the old Plants, and laid to dry in the Stove five or ſix Days before they are planted, that the wounded Parts may heal, otherwiſe they will rot. Theſe Cuttings ſhould be planted in Pots filled with freſh light Earth, and plunged into the Hot-bed of Tanners-bark, obſerving to ſhade them from the Sun in the Middle of the Day in hot Weather, as alſo to refreſh them now and then with a little Water. When the Cuttings have taken Root, they may be tranſplanted into ſeparate Pots, and treated in the ſame Manner as thoſe which are raiſed from Seeds.

TAGETES; African *or* French Marygold.

The *Characters* are;

The Flower is radiated, conſiſting of divers Florets, which are plain, and cut into ſeveral Segments; but the Diſk of the Flower conſiſts of half Florets, which ſtand upon the Embryo's; the Flower-cup conſiſts of one Leaf, is tubulous, and incloſes the Embryo's which afterwards become angular Seeds, with a a Leaf upon the Head of each.

The *Species* are;

1. TAGETES *maximus rectus, flore ſimplici ex luteo pallido. J. B.* Greateſt upright African Marygold, with a ſingle, pale, yellow Flower.

2. TAGETES *maximus rectus, flore maximo multiplicato. J. B.* Greateſt upright African Marygold, with a large double Flower.

3. TAGETES *maximus rectus, flore maximo multiplicato aurantii coloris.* Greateſt upright African Marygold, with a very large double Orange-colour'd Flower.

4. TAGETES *maximus rectus, flore maximo multiplicato ſulphurei coloris.* Greateſt upright African Marygold, with a very large double Brimſtone-colour'd Flower.

5. TAGETES *maximus rectus, flore maximo multiplicato, pallide luteo odorato.* Greateſt upright African Marygold, with a very large double Flower, of a pale, yellow Colour, and a ſweet Scent.

6. TAGETES *maximus rectus, flore maximo multiplicato, pallide luteo & fiſtuloſo.* Greateſt upright African Marygold, with a large, double, pale, yellow, and piped Flower, *commonly call'd* The Quilled African.

7. TAGETES *Indicus medius, flore ſimplici luteo pallido. J. B.* Indian middle French Marygold, with a ſingle, pale, yellow Flower.

8. TAGETES *Indicus medius, flore luteo multiplicato. H. L.* The Middle French Marygold, with a double yellow Flower.

9. TAGETES *Indicus minor, ſimplici flore, ſive Caryophillus Indicus, ſive flos Africanus. J. B.* Leſſer *or* Common French Marygold, with a ſingle Flower, *call'd* Indian Clove Gilliflower.

10. TAGETES *Indicus minor, multiplicato flore. J. B.* Double French Marygold, *vulgo.*

11. TAGETES *Indicus, flore ſimplici fiſtuloſo. H. L.* Single French Marygold, with a piped Flower.

12. TAGETES *Indicus, flore fiſtuloſo duplicato. H. L.* Double French Marygold, with a piped Flower.

13. TAGETES *Indicus minimus, flore ſericea hirſutie obſito. H. L.* The leaſt French Marygold, with a ſoft hairy Flower.

All theſe Plants are annual, ſo muſt be propagated from Seeds every *Spring*, which may be ſown upon a moderate Hot-bed in *March*; and when the Plants are come up, they ſhould have Plenty of freſh Air, for if they are drawn too much, they will not afterward become handſome, notwithſtanding they have all poſſible Care taken of them. When they are about three Inches high, they ſhould be tranſplanted on a freſh Hot-bed, which may be arched over with Hoops, and covered with Mats, (for theſe Plants are hardy enough to be brought up without Glaſſes:) In this Bed they ſhould be planted about ſix Inches aſunder each Way, obſerving to water and ſhade them until they have taken Root; but as the Plants do acquire Strength, ſo they ſhould be inur'd to bear the open Air by Degrees; and about the Beginning of *May*, they ſhould be taken up, with a Ball of Earth to the Root of each Plant, and plac'd in a Nurſery in a warm Situation, about eighteen Inches aſunder, obſerving to water and ſhade them until they have taken Root, and in very dry Weather the Waterings ſhould be repeated: In this Nurſery they may remain until their Flowers appear, ſo as to diſtinguiſh thoſe with double Flowers: which may be taken up with a Ball of Earth to each Plant, and planted into the Borders of the Parterre Garden, or into Pots, for furniſhing the Courts, *&c.* where the ſeveral Varieties being intermix'd with other annual Plants, do afford an agreeable Variety.

Thoſe with ſingle Flowers ſhould be pull'd up, and thrown away as good for little, becauſe the Seeds produc'd from them will rarely produce double Flowers; therefore great Care ſhould be taken to ſave only the Seeds of thoſe whoſe Flowers are very double of every kind, from which there will always be a good Quantity of double ones produc'd, tho' from the very beſt Seeds there will always be many ſingle Flowers; but the ſmall Sorts do always produce a greater Number of double Flowers than the large, which are more apt to degenerate.

Theſe Plants have a ſtrong, diſagreeable Scent, eſpecially when handled; for which Reaſon they are not ſo greatly eſteem'd for planting near Habitations: but the Flowers of the ſweet-ſcented Sort being more agreeable, are moſtly coveted to plant in ſmall Gardens. All theſe Sorts do begin to flower in *May*, and continue all the latter Part of the Year, until the Froſt prevents their Flowering: for which, together with the little Trouble requir'd in their Culture, they have greatly obtain'd in moſt *Engliſh* Gardens.

TAMARINDUS; [ſo call'd of *Tamur*, a *Date*, becauſe its Fruit does ſomewhat reſemble a *Date*] The Tamarind-Tree.

The *Characters* are;

The Flower conſiſts of ſeveral Leaves, which are ſo plac'd as to reſemble a papilionaceous one in ſome meaſure; but theſe expand circularly: From whoſe many-leav'd Flower-cup riſes the Pointal, which afterwards becomes a flat Pod, containing many flat angular Seeds, ſurrounded with an acid, blackiſh Pulp.

We have but one *Species* of this Tree; *viz.*

TAMARINDUS. *Raii Hiſt.* The *Tamarind*-Tree.

There are ſome who imagine the *Tamarind*-Tree of the *Eaſt-Indies*, and that of the *Weſt-Indies* to be different, but I don't remember to have ſeen them diſtinguiſh'd by any Botanick Author; though, indeed, from the different Appearance of the Pods, they ſeem very different; for the Pods which I have ſeen of the *Eaſt-Indian* Sort were very long, and contain'd ſix or ſeven Seeds in each; whereas thoſe of the *Weſt-Indies* do rarely contain more than three or four: but from the Plants which I have rais'd from both Sorts of Seeds, I can't diſtinguiſh them aſunder as yet.

Theſe Trees do grow to a great Magnitude in their native Countries; but in *Europe* they are preſerv'd as Curioſities by thoſe who are Lovers of rare Plants.

They are eaſily propagated by ſowing their Seeds on a Hot-bed in the *Spring*; and when the Plants are come up, they ſhould be planted each into a ſeparate ſmall Pot fill'd with light rich Earth, and plung'd into a Hot-bed of Tanners-Bark, ners-Bark, to bring 'em forward, obſerving to water and ſhade them until they have taken Root; and as the Earth in the Pots appears dry, ſo they muſt be water'd from time to time, and ſhould have Air given to them in Proportion to the Warmth of the Seaſon, and the Bed in which they are plac'd: When the Pots in which they are planted are fill'd with their Roots, the Plants ſhould be ſhifted into Pots of a larger Size, which muſt be fill'd up with rich light Earth, and again plung'd into the Hot-bed, giving them Air, as before, according to the Warmth of the Seaſon: But in very hot Weather the Glaſſes ſhould be ſhaded with Mats in the Heat of the Day, otherwiſe the Sun will be too violent for them through the Glaſſes: Nor will the Plants thrive if they are expos'd to the open Air, even in the warmeſt Seaſon, ſo that they muſt be conſtantly kept in the Bark-ſtove both *Winter* and *Summer*, treating them, as hath been directed, for the *Ananas*, with whoſe Culture they will thrive exceedingly.

Theſe Plants, if rightly manag'd, will grow very faſt, for I have had 'em upwards of three Feet high in one *Summer* from Seed, and had one Plant which produc'd Flowers the ſame Seaſon it was ſown; but this was accidental, for I have never ſince had any of them flower, altho' I have ſeveral Plants of different Ages, one of which is five Years old, and about ſeven Feet high, with a large ſpreading Head.

TAMARISCUS, The Tamariſk-Tree.

The *Characters* are;

The Flowers are roſaceous, conſiſting of ſeveral Leaves, which are placed orbicularly; from whoſe Flower-cup riſes the Pointal, which afterwards becomes a Pod, (ſomewhat like thoſe of the Sallow) *which opens into two Parts, and contains ſeveral downy Seeds.*

The *Species* are;

1. Tamariscus *Narbonenſis. Lob. Icon.* The French *or* narrow-leav'd Tamariſk-Tree.
2. Tamariscus *Germanica. Lob. Icon.* The German Tamariſk.

Theſe Trees are preſerv'd in the Gardens of thoſe who are curious in collecting the various Kinds of Trees and Shrubs; but they have not much Beauty to recommend them; for their Branches are produced in ſo ſtraggling a manner, as not by any Art to be train'd up regularly, and their Leaves are commonly thin upon the Branches, and do fall away in *Winter*; ſo that there is nothing to recommend them but their Oddneſs.

They may be eaſily propagated, by laying down their tender Shoots in the *Spring*, or by planting Cuttings in an Eaſt Border at that Seaſon, which, if ſupplied with Water in dry Weather, will take Root in a ſhort time; but they ſhould not be removed until the following *Spring*; at which Time they may be either placed in a Nurſery, to be train'd up two or three Years, or elſe into the Quarters where they are deſign'd to remain, obſerving to mulch their Root, and water them according as the Seaſon may require, until they have taken Root; after which, the only Culture they will require, is, to prune off the ſtraggling Shoots, and keep the Ground clean about them.

Theſe Plants delight in a ſandy Soil, not over-rich, and ſhould be placed amongſt Shrubs of a middling Growth; for they rarely grow above 15 or 16 Feet high in *England*, but are very hardy in reſpect to Cold.

TAMNUS, The Black Briony.

The *Characters* are;

It is Male and Female in different Plants; the Flowers of the Male Plant conſiſt of one Leaf, and are Bell-ſhaped, but theſe are barren; the Embryo's are produced on the Female Plants, which afterwards become an oval Berry, including roundiſh Seeds: to theſe Notes ſhould be added, that theſe Plants have no Claſpers, as the White Briony hath.

The *Species* are;

1. Tamnus *racemoſa, flore minore luteo palleſcente. Tourn.* The common Black Briony.
2. Tamnus *Cretica, trifido folio. Tourn. Cor.* Black-briony of Crete, with a trifid Leaf.
3. Tamnus *Americana, tubifera, radice fungi-formi. Plum.* American Black-briony, with a Root reſembling a Muſhroom.
4. Tamnus *Americana, racemoſa, minor. Plum.* Smaller branching American Black-briony.
5. Tamnus *Americana, racemoſa, major. Plum.* Greater branching American Black-briony.
6. Tamnus *Americana, amplis foliis, ſubtus purpureis. Plum.* American Black-briony, with large Leaves, which are purple on their Underſide.
7. Tamnus *Americana, anguriæ folio. Plum.* American Black-briony, with a Water-melon leaf.

The firſt Sort is rarely cultivated in Gardens, but grows wild under the Sides of Hedges in divers Parts of *England*, and is there gather'd for Medicinal Uſe. It may be eaſily propagated by ſowing the Seeds ſoon after they are ripe, under the Shelter of Buſhes, where, in the *Spring*, the Plants will come up, and ſpread their Branches over the Buſhes, and ſupport themſelves, requiring no farther Care; and their Roots will abide many Years in the Ground, without decaying.

The ſecond Sort was diſcovered by Dr. *Tournefort* in the *Levant*, from whence he ſent the Seeds to the Royal Garden at *Paris*. This is a very hardy Plant, ſo will thrive in the open Air in this Country. It may be propagated by Seeds, which ſhould be ſown in the *Autumn* (ſoon after they are ripe) on a Bed of freſh Earth, and when the Plants are come up, they muſt be kept clear from Weeds, and thinned where they are too cloſe together, which is all the Management they will require, till the *Autumn* following, when the Roots ſhould be taken up as ſoon as the Leaves decay, and tranſplanted where they are deſigned to remain, which ſhould be near a Hedge, on which they may climb, otherwiſe the Branches will trail on the Ground, and in wet Seaſons will rot.

The other five Sorts were diſcovered by Father *Plumier* in *America*; theſe are very common in *Jamaica*, and ſeveral other Places in the *Weſt-Indies*, where the Woods have not been cleared; but theſe are too tender to live in the open Air in *England*, ſo muſt be preſerved in Stoves, and kept in a moderate Temperature of Warmth in the *Winter* Seaſon. They are propagated by Seeds, which ſhould be ſown on a moderate Hot-bed early in the *Spring*; and when the Plants are come up, they ſhould be each planted into a ſeparate ſmall Pot, filled with freſh, light Earth, and plunged into a Hot-bed of Tanners-bark, where they ſhould remain during the *Summer* Seaſon, obſerving to water them plentifully in hot Weather, as alſo to admit a large Share of Air to them, by raiſing the Glaſſes of the Hot-bed with Stones every Day. In the *Autumn* the Branches of theſe Plants will decay to the Root, at which Time the Pots ſhould be removed and placed in the Stove, where, during the *Winter* Seaſon, the Roots will remain in an unactive State, ſo ſhould not have too much Moiſture leſt it rot them; in the *Spring* they will ſhoot out again, when the Pots ſhould be placed near ſome Support to which their Shoots may faſten, otherwiſe they will twine round whatever Plants do grow near them; for in the Countries of their natural Growth, they climb up the talleſt Trees to a very great Height. Theſe are Male and Female in different Plants, as is the common Sort.

TANACETUM, Tanſy.

The *Characters* are;

It hath a floſculous Flower, conſiſting of many Florets, divided into ſeveral Segments, ſitting on the Embryo, and contained in a ſquamous and hemiſpherical Empalement; the Embryo afterwards becomes a Seed, not at all downy: To theſe Notes muſt be added, thick Flowers gathered into a Kind of Head.

The *Species* are;

1. Tanacetum *vulgare luteum. C. B. P.* Common Tanſy.
2. Tanacetum *foliis criſpis. C. B. P.* Curled *or* Double Tanſy.
3. Tanacetum *vulgare, foliis variegatis.* Common Tanſy, with ſtriped Leaves.
4. Tanacetum *vulgare luteum maximum. Boerh. Ind.* The largeſt common Tanſy.
5. Tanacetum *Africanum arboreſcens, foliis lavendulæ, multifido folio. H. Am.* African ſhrubby Tanſy, with Leaves like the multifid Lavender.
6. Tanacetum *Orientale, minus. Tourn. Cor.* Smaller Eaſtern Tanſey.
7. Tanacetum *Davuricum, humilius, foliis tenuiter diſſectis. Amman.* Tanſy of Davuria, with fine cut Leaves.
8. Tanacetum *Africanum, fruticans, multiflorum, foliis tanaceti vulgaris decuplo minoribus. Boerh. Ind.* Shrubby African Tanſey, with many Flowers, and Leaves like the common Sort, but ten times leſs.

The firſt and ſecond Sorts are very common in *England*, being promiſcuouſly cultivated in Gardens, for the Uſe of the Kitchen; but the firſt ſhould be propagated for medicinal Uſe. The third Sort is a Variety of the firſt, which is by ſome preſerved for the ſake of its variegated Leaves. The fourth Sort is very like the common in Appearance, but is much larger, and has leſs Scent.

All theſe Sorts are eaſily propagated by their creeping Roots, which, if permitted to remain undiſturbed, will in a ſhort Time overſpread the Ground where they are planted; ſo that the Slips ſhould be placed at leaſt a Foot aſunder, and in particular Beds, where the Paths round them may be often dug, to keep their Roots within Bounds. They may be tranſplanted either in *Spring* or *Autumn*, and will thrive in almoſt any Soil or Situation.

The common *Tanſy* is greatly uſed in the Kitchen early in the *Spring*, at which Seaſon that which is in the open Ground, or eſpecially in a cold Situation, is hardly forward enough to cut; ſo that where this is much wanted at that Seaſon, it is the beſt Way to make a gentle Hot-bed in *December*, and plant the old Roots thereon, without parting them, and arch the Bed over with Hoops, to cover it with Mats in cold Weather, by which Method the *Tanſy* will come up in *January*, and be fit to cut in a ſhort Time after.

The fifth Sort was brought from the *Cape of Good Hope*, and is preſerved in the Gardens of thoſe who are curious in collecting exotick Plants. This may be propagated by planting Cuttings or Slips during any of the *Summer* Months, upon a Bed of light, rich Earth, obſerving to water and ſhade them, until they have taken Root, after which they may be taken up, and planted in Pots filled with light, freſh Earth, placing them in a ſhady Situation until they have taken new Root, and then they may be expoſed in an open Place, amongſt other exotick Plants, until the Beginning of *October*, when they muſt be removed into the Greenhouſe, obſerving to place them in the cooleſt Part thereof, and as near the Windows as poſſible, that they may enjoy the free Air in mild Weather, otherwiſe they will draw up weak, and be liable to grow mouldy, and decay.

They muſt alſo be frequently watered; but in very cold Weather they muſt not have too much Water given them at each Time; tho' in *Summer* they ſhould have it in Plenty. With this Management (together with obſerving to ſhift them into larger Pots, as they ſhall require it) the Plants will grow large, and produce a great Quantity of Flowers, which commonly appear early in the *Spring*, and thereby greatly add to the Variety of the Green-houſe.

The ſixth Sort was diſcovered by Dr. *Tournefort* in the *Levant*, from whence he ſent the Seeds to the Royal Garden at *Paris*. The ſeventh Sort was ſent to me from *Peterſburgh*, by Dr. *Amman*, who is Profeſſor of Botany in that Univerſity. Theſe are both very hardy Plants, ſo may be propagated by Seeds, or parting of their Roots, in the ſame Manner as is practiſed for the common Sort, but the Roots of theſe Kinds do not creep ſo much as thoſe of the common Sort.

The eighth Sort was brought from the *Cape of Good Hope* to ſome curious Gardens in *Holland*, where it has been propagated and been diſperſed to ſeveral Parts of *Europe*. This Kind will riſe to the Height of three or four Feet, and become ſhrubby, producing a great Number of Flowers at the Extremity of every Branch, early in the *Spring*, but ſeldom perfects its Seeds in this Country. It may be propagated with great Eaſe, for every Cutting which is planted in *Summer* will take Root, provided they are ſhaded from the Sun, and duly watered in dry Weather: When theſe Cuttings are rooted, they ſhould be tranſplanted into Pots filled with freſh Earth, and placed in a ſhady Situation, until they have taken new Root, after which Time they may be placed amongſt other hardy exotick Plants, in a ſheltered Situation, where they may remain until *October*, when they muſt be removed into the Green-houſe, and placed where they may enjoy as large a Share of free Air as poſſible in mild Weather, otherwiſe the Shoots will draw weak and be unſightly. In *February* theſe Plants will begin to flower, and they will continuing flowering ſeveral Months, ſo do afford an agreeable Variety amongſt other Plants in the Green-houſe; and being hardy, in reſpect to Cold, and eaſy to propagate, renders them worthy of a Place in every good Collection of Plants.

TAN or TANNERS-BARK, is the *Bark* of the Oak Tree, chopped and ground into coarſe Powder, to be uſed in Tanning or Dreſſing of Skins; after which it is of great Uſe in Gardening: Firſt, by its Fermentation, (when laid in a Body) which is always moderate, and of a long Duration, which renders it of great ſervice to Hot-beds: and, ſecondly, after it is well rotted, it becomes excellent Manure for all Sorts of cold, ſtiff Land, upon which one Load of *Tan* is better than two of the beſt rotten Dung, and will continue longer in the Ground.

The Uſe of *Tan* for Hot-beds has not been very many Years known in *England*, and was brought over firſt from *Holland*, where it had been long uſed for thoſe Purpoſes: I have been informed, that it was firſt uſed in *England* for raiſing Orange Trees, which is about the Beginning of King *William*'s Reign; but it was diſuſed long after that, and it is within fifteen or ſixteen Years paſt that it was again brought into Uſe, for raiſing the Pine-apple; ſince which Time it has yearly grown more in Uſe for Hot-beds; and I doubt not but in a few Years it will be generally uſed for thoſe Purpoſes wherever it can be procured eaſily.

There are commonly two or three Sorts of *Tan*, which are ground into Powder of different Sizes, ſome being in very groſs Pieces, and others are ground very fine; theſe are different in their Effects, when laid to ferment; for the ſmall Sort will heat more violently, but will loſe its Heat in a ſhort Time; but the large Sort being moderate in Fermentation, does continue its Heat a long Time: So that whoever makes a Hot-bed of *Tan*, muſt proportion a Mixture of each Sort according as they would have their Beds work; for if they intend to have a moderate Heat, and can ſtay a Fortnight or three Weeks, for its beginning to ferment, they ſhould uſe but very little ſmall *Bark*: But where the Heat is wanted ſooner, there ſhould be a larger Proportion of the ſmall *Bark*.

This *Tan* ſhould be taken in a Fortnight's Time after it comes out of the Pit, and laid up in a round Heap for a Week, to drain; (eſpecially if it be in *Winter* or *Spring*, while the Seaſon is moiſt) after which it may be put into the Trench where the Hot-bed is deſigned, which ſhould be bricked on the Sides quite round, to prevent the Earth from mixing with the *Bark*. Theſe Trenches ſhould be proportioned to the Size of the Frames which are to cover them, and the Depth in the Ground, according to the Moiſture of the Place where they are ſituated; for if the Ground is very wet, the Bed ſhould be raiſed above the Surface of the Ground, becauſe if ever the Water riſes into the *Bark*, it will cool it ſo much as not to be retrieved again to its former Heat, without taking it out of the Trench again, and freſh mixing it up.

The Thickneſs which the Bark ſhould be laid in the Trench, muſt not be leſs than three Feet, and the Width four Feet; for where it is laid in a leſs body, it ſeldom heats, and if it is forced by laying hot Dung under it (as is ſometimes practiſed, the Heat will ſoon decay. In laying the *Bark* into the Trench, you ſhould be very careful to ſtir up every Part of it, that it may not ſettle in Lumps, as alſo to preſs it down gently; but by no Means tread or beat it down too cloſe, which will prevent its heating. Then the Glaſſes ſhould be placed over the Bed immediately after it is finiſhed, which ſhould be kept cloſe down, in order to draw a Heat in the *Bark*, and to prevent Wet from falling thereon; in a Fortnight's Time after the *Bark* will begin to heat, and when it is found of a due Temper, the Plant may be removed into it.

A Hot-bed well prepared with this *Tan*, will continue a moderate Heat upwards of ſix Months, and there being very little Steam ariſing from it, in compariſon to Horſe-dung, renders it much better for the Growth of all Sorts of Plants; and when the Heat begins to decay, if the *Tan* be freſh ſtirred up, and a little new added to it, it will heat again, and continue ſome Months longer. The farther particular Directions for the Management of theſe Hot-beds, being already exhibited under the Article of *Hot-beds*, the Reader is deſired to turn back to that for farther Inſtructions.

In the above Account I have mentioned only two or three Sorts of *Bark*; but upon being more acquainted with it, I find there are ſeveral Degrees of Fineneſs to which the Tanners do grind their *Bark*; and in ſome Countries they only chop their *Bark* into large Pieces before they uſe it, ſo that the latter Sort is not proper for Hot-beds, for the Pieces being very large, do lie ſo hollow, as to admit the Air amongſt it, and unleſs there is a good Quantity of ſmall *Bark* mixed with it, it ſeldom ferments well, therefore where the ground *Bark* can be procured, it ſhould always be preferr'd to that which is chopp'd. But where no other Sort can be procured, there ſhould be a Quantity of Bran, Saw-duſt or Chaff mixed with the *Tan*, which when well mixed, will cauſe it to ferment, and whenever the Heat abates, if the *Tan* is ſtirred up from the Bottom of the Bed, and ſome freſh Bran or Saw-duſt added, it will renew the Heat of the *Bark*; for as the Pieces are large, ſo it will be much longer before it is conſumed than the ſmall *Bark*, for ſo long as any Subſtance remains in it, there will be a Heat continued, which may be increaſed by freſh ſtirring of it, and adding a little new *Bark*, Bran or Saw-duſt.

The beſt Sort of *Tan* for Hot-beds, is that which is ground of a middling Size, neither too ſmall nor too large; this will ferment moderately, and continue its Heat a long Time. Before the *Tan* is put into the Pit where the Hot-bed is deſigned, it will be proper to lay it in a round Heap, until it begins to ferment, eſpecially if it is in the *Spring* or *Autumn*; but in the *Summer* Seaſon there is no need of this Precaution, becauſe at that Seaſon, the Sun thro' the Glaſſes of the Hot-bed, will ſoon cauſe it to ferment; and where there is ſome warm *Tan* left in the Pit, to mix with the new, that will alſo cauſe it to heat ſoon, provided the new *Tan* is not too wet.

The Thickneſs which I directed the *Bark* to be laid in the Hot-bed, was three Feet, and the Width at leaſt four Feet, but it will be much better to have the Bed ſix or ſeven Feet wide, or more, where there is proper Conveniency for it; becauſe when the Bed is narrow, the two outſide Rows of Pots will receive little Benefit from the Heat; and where the Width is ſo great, two Feet and a half in Thickneſs will be ſufficient. For the ſame Reaſon alſo the Length of the Bed ſhould be in Proportion; therefore I ſhould always prefer a Bed of twenty Feet long, to thoſe which are ſhorter. There are ſome Perſons who make their Tan-beds much wider than what is here mentioned; but I think they ſhould not be more than eight Feet wide, becauſe it will be very difficult to come at thoſe Plants which are plunged in the Middle of the Bed, without injuring thoſe near the Sides, but this is only for Bark-pits in Stoves; for where the Hot-bed is made in Frames, it ſhould not exceed ſix Feet and a half, which is full as wide as can be well reached, to water and weed the Pots which are plunged therein.

There are ſome Perſons who imagine their Beds ſhould always be very warm, ſo are frequently ſtirring them, and adding new *Tan* to them, and very often lay warm Horſe-dung under the *Tan*, or round the Sides of it to increaſe the Heat; which is not neceſſary, becauſe, unleſs it be to raiſe very difficult exotick Seeds, or to forward the rooting of Plants in *Spring* or *Autumn*, there doth not require an extraordinary Heat to the Roots of Plants, which many times is very prejudicial to them; for, from ſome Experiments which were made by a Friend of mine at *Jamaica*, by placing Thermometers in the Earth at different Depths, he found the Heat nearly equal through the Year (excepting juſt at the rainy Seaſons) at three Feet below the Surface; and this Heat was not greater than that of *Tan* when in a very ſlow Fermentation. So that when the *Tan* is too hot, it is not ſo proper for the Growth of Plants, as when the Warmth is moderate, which is a Proof of the Abſurdity which ſome People are guilty of, in ſuppoſing they can produce as good Fruit of the *Ananas* with *Bark* alone, as thoſe who have Stoves to warm the Air of the Stove, in which the Plants are placed; for although there is no Neceſſity of a very great Heat to their Roots, yet the circumambient Air ſhould be ſufficiently warmed in *Winter*, otherwiſe the Plants will make no Progreſs; ſo that inſtead of ſhewing their Fruit in *January* and *February*, which is their proper Seaſon, they do often fruit in *May* and *June*, and ſometimes later, and conſequently do not ripen till the following *Winter*, when the Sun having little Power of heating the Air, the Fruit are good for little. It is very common to ſee the Plants, which are placed in Stoves, dropping their Leaves in *Winter*, and puſhing out new ones ſoon after, which ſeldom remain long on the Plants before they fall; this is frequently occaſioned by the Bed being very warm in which they are placed, when at the ſame Time the Air of the Stove is never ſufficiently warmed, which is certainly a great Error; for by the Experiments which my Friend made with ſeveral Thermometers in *Jamaica*, he found that even in the cooleſt Seaſons, the Spirit ſeldom fell ſo low as forty Degrees above the freezing Point, in the Night, and in the Day-time at the ſame Seaſons, the Spirit uſually roſe to ſixty Degrees above the freezing Point. But in the hotter Seaſons, the Spirit roſe ſo high, as to break the Glaſſes of the common Thermometers when placed entirely in the Shade.

The Hot-beds in the Stoves which are made of good *Tan*, will rarely want renewing oftener than twice a Year, that is in the Beginning of *March*, and toward the End of *September*; but at neither of theſe Times ſhould the *Bark* be entirely taken out of the Pits; for if that which is moſt conſumed is thrown out (which is generally the upper Part) and the reſt mixed with the new *Tan*, it will ferment again ſlowly, and prevent the Bed from being too hot, which is frequently the Caſe when the Bed is entirely made of new *Tan*. But this only to be underſtood of ſuch Hot-beds which are deſigned to maintain tender exotick Plants; for where they are made for raiſing of *Cucumbers* and *Melons*, the Beds ſhould be entirely made of new *Tan* (excepting juſt about the Holes where the Plants are placed, which ſhould have ſome old *Tan*, for the Plants to root in, after their Roots have extended thro' the Earth laid in the Holes) which ſhould be laid in a Heap to ferment, at leaſt a Fortnight or three Weeks, before the Bed is made, and then it will be proper to wait a Week, that the Bed may be in a proper Temperature of Heat, before the Plants are placed into it. Thoſe Perſons who have *Tan* in plenty, and are willing to uſe it for Hot-beds, to raiſe *Cucumbers* and *Melons*, ſhould have their Plants in Baskets, ſo that they may at any Time remove them into the Hot-bed, without injuring them: And if after they are placed in the Hot-bed, the Heat ſhould be too violent, they may be raiſed up for a few Days until the Heat is abated, which will prevent the Heat from ſcorching the Roots of the Plants. The Hot-beds which are made of *Tan*, if they are properly managed, are much preferable to thoſe made of Horſe-dung, for theſe Purpoſes; for as the Heat will not be ſo violent as is that of the Horſe-dung, ſo the Plants will not be in ſo much Danger of being ſcorched; and the Heat continuing longer in theſe Hot-beds, the Fruit will be brought forward much ſooner; and the Plants will extend their Roots quite thro' the *Tan*, which will occaſion their growing ſtronger, ſo that the Fruit will be large and well nouriſhed.

When the *Tan* which is conſumed in the Hot-beds is thrown out, it is a very proper Manure for ſtiff, cold Land, but if it is laid on hot, dry Ground, it ſhould be ſpread very thin, otherwiſe inſtead of mending the Land, it will increaſe its Heat, and render it too light. There are ſome Perſons who prepare their Flower-beds with rotten Tan, which from many Experiments I have found has proved very pernicious to them, eſpecially to *Ranunculus's* and *Anemonies*; for in Beds thus prepared, I have loſt more than half the Roots, and thoſe which have lived, produced very weak Flowers; and upon taking up their Roots the following *Summer*, I have found them ſmaller than when they were planted: Whereas in ſome adjoining Beds, which were prepared with rotten Neats-dung, the Roots have very few of them died, and have flowered very ſtrong, and made a large Increaſe; though they were planted at the ſame Seaſon, in the ſame Situation, and had equal Managemet. I have alſo found that rotten Tan is very prejudicial to Orange Trees, therefore it ſhould never be mixed with the Earth, which is deſigned for them, nor for any other Plants which require a cool loamy Soil; for nothing is more prejudicial to them than this Manure.

But altho' this rotten Tan is improper for Flowers, Orange Trees, and many other Plants in Gardens, yet it is an excellent Manure for ſtrong cold Corn-land; and I have often been ſurpriſed to ſee in ſome Countries great Heaps of Tan lie neglected in Tanners-yards, when the neighbouring Farmers have fetched much worſe Manure ten or fifteen Miles for their Land; whereas if they were once to try this, they would prefer it to moſt other Manures yet known.

TAPIA, The Garlick Pear-Tree.

The *Characters* are;

It hath an Anomalous Flower, conſiſting of four Petals or Leaves, which ſtand erect; the lower Part being occupied by a Number of Chives; the Pointal, which is fixed on a long Footſtalk, riſes from the Center of the Empalement, and afterwards becomes a globular fleſhy Fruit, in the Center of which are included many Seeds, which are ſhap'd almoſt like Kidney's.

We have but one *Species* of this Plant, *viz.*

TAPIA *arborea triphylla. Plum. Nov. Gen.* The Garlick Pear-Tree, vulgo.

The Name *Tapia* is what the *Armenians* call this Tree; ſo Father *Plumier* has conſtituted it as a new Genus by the ſame Name. The *Engliſh* Inhabitants of *America* call it Garlick-Pear, from the Fruit having a very ſtrong Scent of Garlick.

This Tree is pretty common in *Jamaica*, and ſeveral other Places in the warmer Parts of *America*, where it uſually riſes to the Height of thirty or forty Feet, and ſpreads into many Branches. During the dry Seaſons, theſe Trees are uſually deſtitute of Leaves, but when the Rains begin, they thruſt out their Flowers at the Extremity of their

Branches, and ſoon after the Leaves come out, which are of a dark green Colour, and are always three together on the ſame Footſtalk. When the Flowers fall off, the Pointal becomes a round Fruit, about the Size of a Tennis-ball; which when ripe, has a rough browniſh Rind, and a mealy ſweetiſh Pulp, ſomewhat like ſome of the *European* Pears, but has a ſtrong Scent of Garlick. This Fruit is often eaten by the Inhabitants of *America*, by way of Deſert, tho' they are not very tempting. The Swine, which are ſometimes fattened with this Fruit, have the ſtrong Scent of Garlick communicated to their Fleſh. Theſe Trees generally grow on low moiſt Land in ſeveral Parts of *America*.

In *Europe* this Tree is preſerved by ſome curious Perſons who cultivate tender exotick Plants. It is propagated by Seeds, which ſhould be ſown on a Hot-bed early in the *Spring*; and when the Plants are come up, they ſhould be each tranſplanted into a ſeparate ſmall Pot, filled with rich Earth, and then plunged into a moderate Hot-bed of Tanners-bark; obſerving to ſhade them from the Sun every Day until they have taken new Root; after which time, they muſt be treated in the ſame Manner as hath been directed for the *Guanabanus*; with which Management, this Plant will thrive and make a Variety in the Stove, amongſt other tender exotic Plants.

TARRAGON: *vide* Draco Herba.

TAXUS, [ſo call'd of τόξα, *Poiſons*, becauſe this Tree in old time was uſed in compounding Poiſons, in warm Climates] The Yew-tree.

The *Characters* are;

It hath amentaceous Flowers, which conſiſt of many Apices, for the moſt part ſhaped like a Muſhroom, and are barren; but the Embryo's (which are produced at remote Diſtances on the ſame Tree) do afterwards become hollow, Bell-ſhaped Berries, which are full of Juice, and include Seeds ſomewhat like Acorns, having, as it were, a little Cup to each.

The *Species* are;

1. Taxus. *J. B.* The common Yew-tree.
2. Taxus *folio latiori, magiſque ſplendente. Boerh. Ind.* Yew-tree, with a broader and more ſhining Leaf.
3. Taxus *foliis variegatis. H. R. Par.* The Yew-tree, with ſtriped Leaves.

The two firſt Sorts are often promiſcuouſly cultivated in Gardens, without Diſtinction; but the third is preſerved by ſome for the ſake of its variegated Leaves: tho' there is very little Beauty in them; for during the *Summer* Seaſon, when the Plants are in Vigour, the Stripes in the Leaves are hardly to be perceived; but in *Winter* they are more obvious; however, the Stripe being rather a Blemiſh than any real Beauty, it is hardly worth preſerving.

There is hardly any Sort of ever-green Tree which has been ſo generally cultivated in the *Engliſh* Gardens, upon the account of its being ſo tonſile, as to be with Eaſe reduced into any Shape the Owner pleaſed; and it may be too often ſeen, eſpecially in old Gardens, what a wretched Taſte of Gardening did generally prevail, from the Monſtrous Figures of Beaſts, &c. we find theſe Trees reduced into; but of late this Taſte has been juſtly exploded by many Perſons of ſuperior Judgment: for what could be more abſurd than the former Methods of planting Gardens? where, in the Part next the Habitation, were crowded a large Quantity of theſe and other Sorts of ever-green Trees, all of which were ſheer'd into ſome trite Figure or other; which, beſides the obſtructing the Proſpect from the Houſe, occaſion'd an annual Expence, to render the Trees diſagreeable. For there never was a Perſon, who had conſider'd the Beauty of a Tree in its natural Growth, with all its Branches diffuſed on every Side, but muſt acknowledge ſuch a Tree infinitely more beautiful than any of thoſe ſhorn Figures, ſo much ſtudied by Perſons of a groveling Imagination.

The only Uſe I would recommend this Tree for in Gardens, is to form Hedges for the Defence of Exotick Plants, for which Purpoſe it is the moſt proper of any Tree in Being: the Leaves being ſmall, the Branches are produced very cloſely together, and if carefully ſhorn, they may be render'd ſo cloſe, as to break the Winds better than any other ſort of Fence whatever, becauſe they will not be reverberated, as againſt Walls, Pales, and other cloſe Fences, and ſo conſequently are much to be preferr'd for ſuch Purpoſes.

Theſe Trees may be eaſily propagated by ſowing their Berries in *Autumn*, as ſoon as they are ripe, (without clearing them from the Pulp which ſurrounds them, as hath been frequently directed) upon a Bed of freſh undung'd Soil, covering them over about half an Inch thick with the ſame Earth.

In the *Spring* the Bed muſt be carefully clear'd from Weeds, and if the Seaſon prove dry, it will be proper to refreſh the Bed with Water now and then, which will promote the Growth of the Seeds, many of which will come up the ſame *Spring*, but others will remain in the Ground until the *Autumn* or *Spring* following; but where the Seeds are preſerved above Ground till *Spring* before they are ſown, the Plants do never come up till the Year after; ſo that by ſowing the Seeds as ſoon as they are ripe, there is many times a whole Year ſaved.

Theſe Plants, when they come up, ſhould be conſtantly clear'd from Weeds, which, if permitted to grow amongſt them, would cauſe their Bottoms to be naked, and many times deſtroy the Plants, when they continue long undiſturb'd.

In this Bed the Plants may remain two Years; after which, in the *Spring* of the Year, there ſhould be a Spot of freſh undung'd Soil prepared, into which the Plants ſhould be removed the Beginning of *April*, placing them in Beds about four or five Feet wide, planting them in Rows about a Foot aſunder, and ſix Inches Diſtance from each other in the Rows; obſerving to lay a little Mulch upon the Surface of the Ground about their Roots, as alſo to water them in dry Weather until they have taken Root, after which they will require no farther Care, but to keep them clear from Weeds in *Summer*, and to trim them according to the Purpoſe for which they are deſign'd.

In theſe Beds they may remain two or three Years, according as they have grown, when they ſhould be again removed into a Nurſery, placing them in Rows at three Feet Diſtance, and the Plants eighteen Inches aſunder in the Rows, obſerving to do it in the *Spring*, as was before directed, and continue to trim them in the *Summer* Seaſon, according to the Deſign for which they were intended; and after they have continued three or four Years in this Nurſery, they may be tranſplanted where they are to remain; always obſerving to remove them in the *Spring*.

Theſe Trees are very ſlow in growing; but yet there are many very large Trees upon ſome barren cold Soils, in divers Parts of *England*: the timber of theſe Trees is greatly eſteem'd for many Uſes.

TELEPHIOIDES, Baſtard Orpine.

The *Characters* are;

It hath a Roſe-ſhap'd Flower, conſiſting of ſeveral Petals, which are conſtantly placed in a circular Order; from whoſe Empalement riſes the Pointal, which afterward becomes a roundiſh Fruit, divided into ſix Cells, each containing a ſingle Seed of the ſame Form with the Cell.

The *Species* are;

1. Telephioides *Græcum, humifuſum, flore albo. Tourn. Cor.* Low trailing Greek Baſtard Orpine, with a white Flower.
2. Telephioides *Americanum, erectum, folio ovali ſubtus glauco, flore herbaceo.* Upright American Baſtard Orpine, with an oval Leaf, which is of a Sea-green underneath, and an herbaceous Flower.
3. Telephioides *Americanum, arboreſcens, fructu parvo, foliis acuminatis. Houſt.* Tree-like American Baſtard Orpine, with a ſmall Fruit and pointed Leaves.
4. Telephioides *Americanum, arboreſcens foliis latis, ſubrotundis, & ſubtus incanis, fructu maximo. Houſt.* Tree-like American Baſtard Orpine, with broad roundiſh Leaves, which are hoary underneath, and the largeſt Fruit.
5. Telephioides *Americanum, arboreſcens, foliis latioribus ſubrotundis, fructu majore, ex longo pediculo pendulo. Houſt.* American Tree-like Baſtard Orpine, with broader roundiſh Leaves, and a larger Fruit hanging on long Footſtalks.

The firſt Sort was diſcovered by Dr. *Tournefort* in *Greece*; who conſtituted this Genus, giving it this Name from the Similitude there is between this Plant and the true Orpine of *Imperatus*. There is a low trailing Plant, which ſeldom continues more than two Years; it is propagated by Seeds, which ſhould be ſown in the *Spring* on a Bed of freſh Earth, where they are deſigned to remain; and when the Plants are come up, they ſhould be thinned where they are too cloſe, leaving them about ſix Inches aſunder; after this, they muſt conſtantly be kept clear from Weeds; in *July* the Plants will begin to flower, which are always produced behind the Leaves; and toward the latter End of *Auguſt* the Seeds will begin to ripen, and if they are not gathered as ſoon as ripe, the Pods will open and ſcatter them on the Ground, ſo that if they are not look'd after two or three times a Week, moſt of the Seeds will be drop'd; but the Plants will come up from theſe ſelf-ſown Seeds, and if they are kept clear from Weeds they will require no other Culture.

The ſecond Sort grows plentifully in *Barbadoes*, *Jamaica*, and ſeveral other Places in the *Weſt Indies*, where the Seeds ſcatter themſelves in ſuch Plenty, that in the Earth which is brought from thence, the Plants frequently come up, eſpecially if it be put on a Hot-bed, by which Method this Plant was firſt brought into *Europe*. This Sort grows erect, about two Feet high, and the Stem appears woody, but it ſeldom continues thro' the *Winter*, eſpecially if it has produced Seeds; ſo that I believe it to be annual; for the Plants which ariſe in the *Spring*, flower about *Midſummer*, and the Seeds ſoon after ripen; ſo that if they are not frequently look'd after, they are ſoon ſcattered; but the Seeds which fall into the Pots which are near the Plants, will come up the following *Spring*; ſo that when once the Plant is obtained, and permitted to ſhed its Seeds, there will be little Danger of loſing it, provided it is allowed a Place in the Hot-bed or the Stove, for it is too tender to thrive in the open Air in this Country.

The third Sort was diſcovered by the late Dr. *Houſtoun*, at *La Vera Cruz*, from whence he ſent the Seeds to *England*. This Sort riſes to the Height of eight or ten Feet, having a woody Stem; the Leaves are branched into many Wings, and the Flowers which are ſmall and of a whitiſh green Colour, grow on the Under-ſide of the Leaves, and are ſucceeded by ſmall Fruit, which hath not as yet ripened in *England*. The Leaves of this Plant fall off in *Winter*, and new ones come out the following *Spring*, ſo that for near four Months, the Plants are intirely deſtitute of Leaves.

The fourth and fifth Sorts were diſcovered by the late Dr. *Houſtoun* at *Campechy*; where they grow to the Height of twelve or fourteen Feet. The Leaves of theſe Kinds are broad, and come out alternately on the Branches. The Fruit of the fifth Sort is about the Size of a ſmall Nut, and is produced on the under-ſide of the Leaves, hanging on very long Foot-ſtalks. The Fruit of the fourth Sort is as large as Wallnuts, and hath hard woody Coverings or Shells. There are but few of theſe Seeds which come to Maturity in the Countries of their Growth; for I have examined many of the Fruit of both Kinds, and have not found one in forty of them which had perfect Seeds in them; ſo that whoever collects their Seeds abroad, ſhould throw them into Water, and take ſuch of them only, as ſink to the Bottom, for thoſe which ſwim on the Surface of the Water, ſeldom have any Kernels in them.

Theſe three Sorts are propagated by Seeds, (which muſt be procured from the Countries of their natural Growth, for they do not produce any Seeds in *England*) which ſhould be ſown on a Hot-bed early in the *Spring*, and when the Plants are come up, they ſhould be each tranſplanted in ſeparate ſmall Pots, filled with light freſh Earth, and then plunged into a moderate Hot-bed of Tanners-bark; being careful to ſhade them from the Sun every Day, until they have taken new Root; after which time they ſhould have freſh Air admitted to them every Day, by raiſing the Glaſſes of the Hot-bed in proportion to the Warmth of the Seaſon; and they muſt be frequently watered in hot Weather. In this Bed the Plants may remain till *Michaelmas*, when the Nights begin to be cold, at which time they ſhould be removed into the Stove, and plunged into the Bark-bed; where, during the *Winter* Seaſon, they muſt be kept very warm, otherwiſe they will not live in this Country. When the third Sort drops its Leaves, it ſhould be watered ſparingly, for if it hath too much Moiſture during the time it is deſtitute of Leaves, it very often periſhes. The fourth and fifth Kinds keep their Leaves throughout the Year; ſo theſe will require to be frequently refreſhed with Water, eſpecially if the Air of the Stove is kept warm. As theſe Plants are too tender to thrive in the open Air in this Country, even in the warmeſt Seaſon of the Year, ſo they ſhould be conſtantly kept in the Stove, and if they are continued in the Bark-bed, it will greatly promote their Growth. But in *Summer*, when the Weather is warm, they ſhould have a large Share of freſh Air admitted to them, by opening the Glaſſes of the Stove; and if their Leaves ſhould contract any Filth, they muſt be waſhed, otherwiſe it will retard the Growth of the Plants. When the Plants have filled the ſmall Pots with their Roots, they ſhould be ſhifted into Pots a little larger, which ſhould be filled with freſh light Earth; obſerving whenever the Plants are ſhifted to trim their Roots; and if their Leaves ſhould flag after being removed, it will be proper to ſhade them from the Sun for a few Days, until they have taken new Root. With this Management the Plants will thrive very faſt, and in three Years will produce their Flowers, when they will afford an agreeable Variety, being mixed with other tender exotic Plants.

TELEPHIUM, Orpine, or Live-long.

The *Characters* are;

It hath a Roſe-ſhap'd Flower conſiſting of ſeveral Leaves placed orbicularly; out of whoſe many-leav'd Empalement, riſes the Pointal, which afterward becomes a three-cornered Fruit, conſiſting of one Cell, which is filled with roundiſh Seeds. To theſe Notes ſhould be added, that the Leaves are placed alternately on the Branches.

The *Species* are;

1. TELEPHIUM *Dioſcoridis Imper.* The true Orpine of Dioſcorides, according to Imperatus.
2. TELEPHIUM *Americanum, portulacæ folio. Inſt. R. H.* American Orpine, with a Purſlain-leaf.
3. TELEPHIUM *maritimum, ſedi folio, flore rubello. Inſt. R. H.* Maritime Orpine, with a Houſeleek-leaf, and a red Flower.
4. TELEPHIUM *maritimum, ſedi folio, flore albo. Inſt. R. H.* Maritime Orpine, with a Houſeleek-leaf, and a white Flower.

The firſt Sort is a Native of *Italy*, *Spain*, and the ſouthern Parts of *France*, from whence the Seeds have been procured by ſome Perſons who are curious in Botany; who preſerve it in their Gardens for the Sake of Variety. It is a low Plant, whoſe Branches trail on the Ground; the Leaves are ſmall and roundiſh, of a glaucous Colour, and of a pretty thick Conſiſtence. The Flowers are ſmall, and of a whitiſh green Colour; ſo that the whole Plant makes but an ordinary Appearance.

This Sort may be propagated by Seeds, which ſhould be ſown early in the *Spring*, on a Bed of freſh light Earth, in an open Situation; and when the Plants are come up, they ſhould be thinned, ſo as to leave them ſix or eight Inches aſunder, and they muſt be conſtantly kept clear from Weeds; for if theſe are permitted to grow, they will ſoon overbear the Plants, and deſtroy them. In *June* they will begin to flower, and their Seeds will ripen in *Auguſt*; when they muſt be carefully watched to gather the Seeds, otherwiſe they will ſoon be ſcattered abroad; and if the Ground is not diſturbed, the Plants will come up in Plenty, and require no other Care, than to keep them clear from Weeds.

The ſecond Sort is a Native of *America*, from whence the Seeds have been brought to ſeveral curious Gardens in *Europe*. This a tender Plant, ſo the Seeds ſhould be ſown on a Hot-bed early in the *Spring*; and when the Plants are come up, they ſhould be each tranſplanted into a ſeparate ſmall Pot, filled with light freſh undunged Earth, and then plunged into a moderate Hot-bed of Tanners-bark; obſerving to ſhade them from the Sun in the middle of the Day for a little time, if the Weather ſhould prove hot, until they have taken new Root; after which time they ſhould have free Air admitted to them every Day, in Proportion to the Warmth of the Seaſon; and in hot Weather they muſt be frequently refreſhed with Water; but as the Leaves and Branches are ſucculent, ſo they ſhould not have too much Moiſture, leſt it rot them. In *July* the Plants will begin to flower, and in *September* the Seeds will ripen, and the Plants will periſh ſoon after, for they are annual; ſo that if the Plants are not brought forward early enough in the *Spring*, they will not produce good Seeds in this Country.

The third Sort was brought from the *Cape of Good Hope*, where it grows in great Plenty near the Sea Side. The fourth Sort is a Variety of the third, only differing in the Colour of its Flower. Theſe Sorts may be propagated by Seeds, which ſhould be ſown on a moderate Hot-bed in the *Spring*; and when the Plants are come up, they may be tranſplanted on another moderate Hot-bed, to forward their Growth; and when they are pretty ſtrong, they ſhould be each planted into a ſeparate Pot filled with freſh Earth, and placed on a gentle Hot-bed, to forward their making new Roots; and in *June* they ſhould be inured to bear the open Air by Degrees, into which they may be removed and placed in a warm Situation, amongſt *Ficoides*'s and other ſucculent Plants, which are Natives of the ſame Country; where they may remain till *October*, when they ſhould be removed into an airy Glaſs-caſe, where they may be treated in the ſame Manner as hath been directed for the *Ficoides*'s; with which Management theſe Plants will thrive very well. Theſe Plants may alſo be propagated by Cuttings, which may be taken from the old Plants during any of the *Summer* Months, and ſhould be laid to dry for a few Days before they are planted, in the ſame Manner as is practiſed for other ſucculent Plants; then they may be planted in a Bed of light Earth, where they will ſoon take Root, and may be planted afterwards in Pots, and treated as the ſeedling Plants.

TEREBINTHUS, The Turpentine-Tree.

The *Characters* are;

It is Male and Female in different Plants; the Flowers of the Male have no Petals, but conſiſt of a Number of Stamina *with Chives; the Embryo's which are produced on the Female Trees do afterwards become an Oval Fruit with a hard Shell, incloſing one or two oblong Kernels: to theſe Notes muſt be added, the Leaves are pennated, or wing'd, which are produced by Pairs, oppoſite, and end in a ſingle Lobe.*

The *Species* are;

1. TEREBINTHUS *vulgaris. C. B. P.* The common Turpentine-tree.
2. TEREBINTHUS *Indica Theophraſti, Piſtachia Dioſcoridis. Lob. Adv.* The Piſtachia-tree: *vulgo.*
3. TEREBINTHUS *peregrina, fructu majore, piſtachiis ſimile, eduli. C. B. P.* Foreign Turpentine-tree, with a larger eatable Fruit, like the Piſtachia-nut.
4. TEREBINTHUS *peregrina, fructu minore & cœruleo, eduli. C. B. P.* Foreign Turpentine-tree, with a ſmaller blue eatable Fruit.
5. TEREBINTHUS, *ſeu piſtachia trifolia. Inſt. R. H.* The three leav'd Turpentine or Piſtachia-tree.
6. TEREBINTHUS *Cappadocica. H. R. Par.* The Turpentine-tree of *Cappadocia.*
7. TEREBINTHUS *Americana, piſtachiæ fructu non eduli. Plum.* American Turpentine-tree, with a Fruit like the Piſtachia-nut, which is not eatable.
8. TEREBINTHUS *major, betulæ cortice, fructu triangulari. Sloan. Cat.* The greater Turpentine-tree, with a Bark like the Birch-tree, and a triangular Fruit, commonly called in the *Weſt-Indies* the Birch-tree.

The firſt and ſecond Sorts of theſe Trees are very common in ſeveral Iſlands of the *Archipelago*, from whence there are annually great Quantities of the *Piſtachia* Nuts brought into *England*, which do eaſily riſe if ſown on a Hot-bed in the *Spring*; ſo that the Trees of this Kind are much more common in *England* than are thoſe of the firſt Sort, whoſe Fruit are rarely brought over freſh: beſides, the Shells of theſe Nuts are much harder than thoſe of the *Piſtachia*, ſo that many times the Plants do not come up until the ſecond Year, which may alſo have contributed to the preſent Scarcity of the Plants in *England*.

The Seeds (or Nuts) of both theſe Trees ſhould be ſown in Pots fill'd with freſh light Earth, and plung'd into a moderate Hot-bed, obſerving to refreſh the Earth with Water frequently, as it may have Occaſion; and when the Plants are come up, (which thoſe of the *Piſtachia* will do in ſix Weeks after ſowing) they ſhould be inured to bear the open Air by degrees, into which they muſt be removed the Beginning of *June*, placing them where they may be ſcreen'd from the Violence of the Winds; in which Situation they may remain until *October*, when they ſhould be removed either into a common Hot-bed Frame, or elſe into a Green-houſe, where they may be defended from hard Froſt, but ſhould have as much free Air as poſſible in mild Weather, and muſt be frequently refreſh'd with Water.

In *March* following theſe Plants ſhould be removed, and each planted in a ſeparate Pot, fill'd with freſh light Earth, and as the *Spring* advances, ſo they ſhould be again removed into the open Air, and placed among other Exotick Plants, obſerving to water them frequently in dry Weather; and when their Roots are confined by the Smallneſs of the Pots, they muſt be ſhifted, being careful not to break the Earth off from their Roots, which will greatly injure them, unleſs it be done before the Plants begin to ſhoot in the *Spring*; for at that Seaſon they may be tranſplanted with as much Safety as any other deciduous Trees.

In this Manner theſe Plants ſhould be treated for three or four Years, while young; after which Time the *Piſtachia's* may be planted into the full Ground, obſerving to place them in a warm Situation, and dry Soil, where they will endure the Cold of our ordinary *Winters* very well, as may be ſeen by a very large Tree of this Kind, now growing in the Gardens of the Earl of *Peterborough*, at *Parſons-Green* near *Fulham*, which produces abundance of Fruit, without any manner of Care. Nor do I believe, but that the common *Turpentine-tree* would endure the Cold of our Climate, if after the Plants have acquired Strength, they are planted againſt a good Wall upon a dry Soil; for much Wet about the Roots of theſe Trees in *Winter*, is very often the Occaſion of their rotting, whereby the Trees are deſtroy'd.

The third, fourth and fifth Sorts grow in the eaſtern Countries, where their Fruit is eaten, but they are at preſent very rare in *Europe*. The ſixth Sort was originally brought from *Cappadocia*; the Fruit of this Sort is not eatable. Theſe Trees may be propagated as the two firſt and ſhould be treated in the ſame Manner as thoſe afterwards, for they are equally hardy, ſo will thrive in the open Air, if they are planted in a warm Situation. I ſaw young Plants of all theſe Kinds, in the Garden of the late Dr. *Boerhaave* near *Leyden*, which were growing in the full Ground, and had reſiſted the *Winters* Cold very well.

The ſeventh and eighth Sorts grow plentifully in the Iſland of *Jamaica*, and in ſeveral other Places in the *Weſt-Indies*; where the fifth Sort is called the *Hog-Doctor* or *Boar-tree*, and the eighth Sort is called the *Birch-tree*. Theſe Trees grow to the Height of thirty or forty Feet in the Places of their natural Growth, and have very large Trunks. The ſeventh Sort produces ſmall purple Flowers, at the Extremity of the Branches, which generally appear before the Leaves come out; for the Trees are deſtitute of their Leaves a conſiderable Time. From the Trunk and Branches of this Tree, there iſſues out a Balſam of the Conſiſtence and Smell of Turpentine, which is greatly uſed by the Inhabitants to heal green Wounds.

The eighth Sort produces ſmall purple Flowers at the Extremity of the Branches, which do generally precede the Leaves, like the other Sort; for the Leaves of this Tree fall off in *November*; and in *February* they put out new ones. The Trunk and Branches of this Tree being wounded, there flows out a liquid Balſam, which the Inhabitants call *Hoggum*, and make uſe of it to vomit or purge in chronical Diſeaſes; the uſual Doſe is a Quarter of an Ounce for a ſtrong Man, which is given in a Glaſs of Water, and will certainly vomit in a Quarter of an Hour after taking, without making the Perſon ſick, or cauſing any Uneaſineſs. The Inhabitants of *Jamaica* confidently affirm, that when the wild Hogs are wounded, they will repair to theſe Trees, and rub againſt the Trunks till the Balſam flows out; when they rub their wounded Part on the Balſam, which cures them; which occaſioned their calling it the *Hog-Doctor-tree*.

Theſe Trees may be propagated either by Seeds, or Cuttings; but the Seeds will not retain their growing Quality long, therefore they ſhould be put into a Box of Earth ſoon after they are ripe, and when the Plants are come up, and have obtained Strength, they may be brought to *England*; but there ſhould be great Care taken of them in their Paſſage, that they are not injured by ſalt Water; nor ſhould they have much freſh Water given to them, eſpecially as they come into a cooler Climate; for too much Moiſture will ſoon deſtroy them. In like manner alſo ſhould the Cuttings of theſe Trees be managed; for they ſhould be planted in Tubs of Earth, and kept in the Country until they are well rooted; for if they are ſent over before they have taken good Root, they ſeldom come good to *England*. When theſe arrive, they ſhould be each tranſplanted into ſeparate Pots, filled with freſh light Earth, and plunged into a moderate Hot bed of Tanners-bark; obſerving if the Seaſon is very warm, to ſhade them from the Sun in the Heat of the Day, and refreſh them every other Day with Water, but do not give it to them in great Quantities, leſt it rot their tender Roots. When the Plants have taken good Root, and recovered the Injuries they received in their Paſſage, they may be treated in the ſame Manner as is practiſed for other tender exotic Plants, keeping them conſtantly in the Bark-ſtove; for they are too tender to live in the open Air in this Country. During the *Winter* Seaſon, when they are deſtitute of Leaves, they ſhould have but little Water; but in the *Summer*, when the Weather is warm, they may have frequent Refreſhings, and a good Share of Air ſhould be admitted to them at that Seaſon. With this Management the Plants will thrive, and afford an agreeable Variety in the Stove, amongſt other Plants of the ſame Country.

TERGIFOETUS PLANTS, are ſuch as bear their Seeds on the Back-ſides of their Leaves.

TERRASSES: A *Terraſs* is a ſmall Bank of Earth, raiſed and trimm'd according to Line and Level, for the proper Elevation of any Perſon that walks round a Garden, that he may have a better Proſpect of all that lies round him; and theſe Elevations are ſo neceſſary, that thoſe Gardens that have them not, are deficient.

When *Terraſſes* are rightly ſituated, they are great Ornaments to ſuch Gardens as have them, for their Regularity and Opening, eſpecially when they are well built, and beautified with handſome Stairs, and fine Aſcents.

Sometimes under them are made Vaults, Grotto's, and Caſcades of Water, with an Order of Architecture, and a great many Statues in Niches; and on the Coping above are ſet Vaſes and Flower-pots, orderly ranged and diſpoſed.

There are ſeveral Kinds of *Terraſs* Walks:

1. The Great *Terraſs*, which lies next to the Houſe.
2. The Side or Middle *Terraſs*, which is commonly cut above the Level of the *Parterre*, *Lawn*, &c.
3. Thoſe *Terraſſes* which encompaſs a Garden.
4. Thoſe *Terraſſes* which lie under one another, being cut out of a large Hill; and theſe are different one from another, in ſome reſpect or other.

As to the Breadth of Side *Terraſſes*, this is uſually decided by its Correſpondence with ſome Pavilion or ſome little Jettee of Building; but moſt of all by the Quantity of Stuff that is to ſpare for thoſe Purpoſes.

The Side *Terraſs* of a Garden ought not to be leſs than twenty Feet, and but very ſeldom wider than forty.

As for the Height of a *Terraſs*, ſome allow it to be but five Feet high, but others more or leſs according to their Fancies; but the moſt exact Perſons never allow above three Feet and a half; and in a ſmall Garden, and a narrow *Terraſs* Walk, three Feet, and ſometimes two Feet and a half high, are ſufficient for a *Terraſs* eighteen Feet wide; and two Feet nine Inches is ſufficient for a *Terraſs* of twenty Feet wide; but when the Garden is proportionably large, and the *Terraſs* is thirty or forty Feet wide, then it muſt be at leaſt three Feet, or three Feet and a half high.

The nobleſt *Terraſs* is very deficient without Shade; for which Elm Trees are very proper: For no Seat can be ſaid to be complete, where there is not an immediate Shade almoſt as ſoon as out of the Houſe; and therefore theſe ſhady Trees ſhould be detached from the Body and Wings of the Edifice.

Terraſſes ſhould be planted rather with Elm or good Oak, than with Yew or Holly, that muſt be always clipping.

The Diſtance of the Elms acroſs, will be about twenty Feet, and they may be planted thirty Feet aſunder in Lines.

TERNATEA.

The *Characters* are;

It hath a papilionaceous (or Pea-bloom) Flower, whoſe Standard almoſt hides the Keel and the Wings; the Pointal afterwards becomes a Pod, which opens two Ways, and is filled with Kidney-ſhaped Seeds. To theſe Notes ſhould be added, that the Leaves are winged, and are terminated by an odd Lobe.

The *Species* are;

1. TERNATEA *flore ſimplici, cæruleo. Acad. Reg. Scien.* Ternatea, with a ſingle blue Flower.
2. TERNATEA *flore pleno, cæruleo. Acad. Reg. Scien.* Ternatea, with a double blue Flower.
3. TERNATEA *flore ſimplici albido. Acad. Reg. Scien.* Ternatea, with a ſingle white Flower.
4. TERNATEA *Americana, perennis, flore cæruleo. Houſt.* American perennial Ternatea, with a blue Flower.

The Name which Dr. *Tournefort* has given to this Genus of Plants is, from the Place whence theſe Plants were firſt brought, which is one of the *Molucca Iſlands*, called *Ternate*.

The three firſt-mentioned Sorts are annual Plants, which periſh ſoon after they have perfected their Seeds. But the fourth Sort will abide ſeveral Years, provided the Plants are placed in a warm Stove. They are all of them tender Plants; ſo their Seeds ſhould be ſown on a Hot-bed early in the *Spring*; and when the Plants are come up, they ſhould be each tranſplanted into a ſeparate ſmall Pot, filled with freſh light Earth, and then plunged into a moderate Hot-bed of Tanners-bark; obſerving to ſhade them from the Sun, until they have taken new Root, and often refreſh them with Water. As theſe Plants have very ſlender Branches, ſo they twiſt round whatever Plants grow near them; therefore they ſhould have Sticks thruſt into the Pots, for them to twine round, that they may be ſupported from trailing on the Ground. In warm Weather theſe Plants ſhould have a large Share of free Air admitted to them, otherwiſe they will draw up too weak; and when they are grown ſo tall, as to reach the Glaſſes of the Hot-bed, they ſhould be taken out, and (after having ſhifted them into larger Pots) they ſhould be plunged into the Bark-bed in the Stove, where they ſhould remain, to flower and perfect their Seeds.

The Flowers of the firſt and ſecond Sorts are of a very deep blue Colour, and if put in Water and macerated, will dye the Water almoſt as blue as *Indigo*. The ſecond Sort, having very double Flowers, makes a fine Appearance when it is in flower; ſo is worthy of a Place in every good Garden, where there is Conveniency for bringing them to Perfection. For as they are very tender, ſo if they are not brought forward early in the *Spring*, and carefully treated afterward, they will not perfect their Seeds in this Country.

The third Sort differs from the firſt only in the Colour of the Flower, ſo may be admitted for the ſake of Variety, tho' the Flowers are not near ſo beautiful.

The fourth Sort was diſcovered by the late Dr. *William Houſtoun* in *Jamaica*, from whence he ſent the Seeds to *England*. This is an abiding Plant, which rarely produces any Flowers in this Country; for from ſeveral of theſe Plants, which have been raiſed in the Phyſic-garden, there has but one of them produced any Flowers as yet, and that not more than three Flowers, tho' it has remained ſeveral Years.

TERRENE, Earthy, or compoſed of Earth.

TERRESTRIAL, Earthy, or that belongs to Earth.

TETRAGONOCARPOS.

The *Characters* are;

It hath an apetalous Flower, whoſe Empalement is divided into four Parts; in the Middle of the Flower riſes the Pointal, which afterwards becomes a Fruit, having four Wings, or Corners, and four Cells; in each of which is contained one Seed.

The *Species* are;

1. TETRAGONOCARPOS *Africana, fruticans, foliis longis & anguſtis. H. Amſt.* African ſhrubby Tetragonocarpos, with long, narrow Leaves.
2. TETRAGONOCARPOS *Africana, folio portulacæ longo, flore herbaceo. Boerh. Ind. Alt.* African Tetragonocarpos, with a long Purſlain Leaf, and an herbaceous Flower.

The firſt of theſe Plants is pretty common in the *Engliſh* Gardens, where there are Collections of rare Plants. This may be propagated by Cuttings, which ſhould be cut off from the Plant a few Days before they are planted, that the Part where they are cut may be healed, otherwiſe they will rot; for the Leaves and Stalks of this Plant are very full of Moiſture. The beſt Time to plant theſe Cuttings is in *July*, that they may have Time to make good Roots before *Winter*. Theſe Cuttings may be planted on a Bed of freſh Earth; and if the Cuttings are ſhaded from the Sun in the Heat of the Day, it will be of Service to them. They ſhould be frequently refreſhed with Water; but they muſt not have it in too great Plenty, for that will rot them. In about ſix Weeks after Planting, the Cuttings will be ſufficiently rooted to tranſplant; therefore they ſhould be taken up, and planted into Pots, filled with light, freſh, undunged Earth, and placed in a ſhady Situation, until they have taken new Root; after which Time they may be placed with other hardy exotick Plants, in a ſhelter'd Situation, where they may remain till the Middle or latter End of *October*; at which Time they ſhould be removed into the Greenhouſe, and placed where they may enjoy as much free Air as poſſible in mild Weather; for they only require to be protected from the Froſt, being pretty hardy with reſpect to Cold; but they ſhould not have too much Moiſture in *Winter*. If theſe Plants are planted in the full Ground in the *Summer* Seaſon, they will grow prodigiouſly rank and large, as they alſo will if they are permitted to root into the Ground, through the Holes at the Bottom of the Pots; therefore the Pots ſhould be frequently removed to prevent it; for when they grow too freely, their Leaves will be very full of Moiſture; which, together with the Weight of the Fruit, which are always produced at the Extremity of the Branches, will weigh the Branches upon the Ground, and render the Plants very unſightly. The Plants of this Kind commonly grow very ſtraggling; therefore the more their Roots are confined in the Pots, the more cloſe and ſtunted will be the Heads of the Plants, which is what they ſhould always be kept to, in order to render them ſightly. The Flowers of this Plant have no great Beauty, but as the whole Face of this Plant is peculiar, ſo it may be allowed a Place in every Collection of Plants, for the ſake of Variety, ſince it requires no great Trouble to cultivate it.

This Plant may alſo be propagated by Seeds, which ſhould be ſown on a warm Border of light freſh Earth, where ſometimes they will remain a whole Year before the Plants come up; therefore, when they do not come up the firſt Seaſon, the Borders ſhould not be diſturbed, but kept conſtantly clear from Weeds; and when the Plants are come up about four Inches high, they ſhould be taken up and planted in Pots, (and treated in the ſame Manner as hath been directed for the Cuttings) for if they are ſuffered to grow in the Border till they are large, they will not tranſplant ſo well, nor will they make ſo handſome Plants.

The ſecond Sort is leſs common in the *Engliſh* Gardens than the former; but in ſome of the Gardens in *Holland* it is in great Plenty. This may be treated in the ſame Manner as the firſt Sort, and is equally hardy.

TETRAPETALOUS FLOWER, is one which is compoſed of only four ſingle Flower-leaves, called *Petala*.

TEUCRIUM, [takes its Name of King *Teucer*, who was the firſt amongſt the Antients, who brought this Plant into Uſe] Tree Germander.

The *Characters* are;

The Flower-cup is divided into five Parts at the Top, but is of the Bell-ſhaped Kind; the Flower has no Galea *or* Creſt, *but inſtead thereof, the* Stamina *occupy the upper Part; the Beard, or lower Lip, is cut into five Parts, the middle Segment being larger, is hollowed like a Spoon; in the Centre of the Flower riſes the Pointal, attended by four Embryo's, which afterwards become ſo many Seeds, ſhut up in a Husk, which was before the Flower-cup: To theſe Notes ſhould be added, the Flowers are produced from the Wings of the Leaves.*

The *Species* are;

1. Teucrium *multis. J. B.* Common Tree Germander.
2. Teucrium *Bæticum. Cluſ. Hiſt.* Spaniſh Tree Germander.
3. Teucrium *Bæticum, calice campanulato, folio eleganter variegato. Boerh. Ind.* Spaniſh Tree Germander, with a ſtriped Leaf.
4. Teucrium *Hiſpanicum, latiore folio. Inſt. R. H.* Spaniſh Tree Germander, with a broader Leaf.
5. Teucrium *ſupinum, perenne, foliis laciniatis. Inſt. R. H.* Low perennial Germander, with jagged Leaves.
6. Teucrium *ſupinum, annuum, Luſitanicum, foliis laciniatis. Inſt. R. H.* Low annual Portugal Germander, with jagged Leaves.
7. Teucrium *fruteſcens, ſtæchadis Arabicæ folio & facie. Tourn. Cor.* Shrubby Germander, with the Leaf and Face of Arabian Stæchas.
8. Teucrium *Orientale, latifolium, laciniatum flore parvo. Tourn. Cor.* Broad jagged-leafed Eaſtern Germander, with a ſmall Flower.
9. Teucrium *Orientale, anguſtifolium, laciniatum, flore magno, ſuave-rubente. Tourn. Cor.* Narrow jagged-leafed Eaſtern Germander, with a large ſoft-red Flower.
10. Teucrium *Orientale, anguſtifolium, laciniatum, flore magno, ſubcœruleo. Tourn. Cor.* Narrow jagged-leafed Eaſtern Germander, with a large blue Flower.
11. Teucrium *Hiſpanicum, ſupinum, humilius, verbenæ tenuifoliæ foliis. Jeſſieu.* Low trailing Spaniſh Germander, with Leaves like the narrow-leafed Vervain.
12. Teucrium *Creticum, odoratum, flore purpureo. H. R. Par.* Sweet Germander of Crete, with a purple Flower.
13. Teucrium *Americanum, halicacabos & alopecuroides. Plum. Cat.* American Tree Germander, like the Winter-Cherry and Fox-tail.
14. Teucrium *Americanum, chamædryos folio, flore albo. Houſt.* American Tree Germander, with a common Germander Leaf, and a white Flower.

The firſt Sort here mentioned was formerly preſerved in Green-houſes with great Care; but of late Years it hath been planted out into the open Air, and is found hardy enough to endure the Cold of our ſevereſt *Winters* without Shelter, provided it be planted on a dry Soil.

This may be propagated by planting Cuttings in the *Spring*, on a Bed of freſh light Earth, obſerving to ſhade and water them until they have taken Root, after which they will require no farther Care, but to keep them clear from Weeds until the following *Spring*, when they may be tranſplanted out into the Places where they are to remain, being careful in moving them not to ſhake off all the Earth from their Roots, as alſo to water them until they have taken freſh Root; after which the only Care they require, is to keep the Ground clean about them, and to prune off ſuch Shoots as are ill ſituated, whereby their Heads will appear more regular.

The *Spaniſh* Sort is tenderer than the former, though that will endure the Cold of our ordinary *Winters*, if planted on a dry Soil, and in a warm Situation; but in a ſevere hard Froſt it is often deſtroyed; for which Reaſon the Plants are generally preſerved in Pots, and removed into the Green-houſe in *Winter*. This is propagated in the ſame Manner as the former.

The Sort with ſtriped Leaves is leſs common than the plain, and is valued by thoſe that delight in variegated Plants. This is ſomewhat tenderer than the plain Sort, but may be propagated and preſerved in the ſame Manner, only obſerving to place it in a warmer Part of the Green-houſe in *Winter*.

There is no very great Beauty in theſe Plants; but they are preſerved, for the ſake of Variety, by thoſe who are curious in collecting the various Kinds of exotick Plants.

The fourth Sort is very like to the *Bætick* Tree-germander, from which it differs in the Leaves being broader, the Shoots ſtronger, and the young Shoots being whiter. This Sort may be propagated by Cuttings, which may be planted during any of the *Summer* Months, in a Bed of freſh Earth; obſerving to ſhade them from the Sun until they have taken Root, as alſo to refreſh them frequently with Water. When the Cuttings are well rooted, they ſhould be carefully tranſplanted, ſome of them into Pots, that they may be ſhelter'd in *Winter*, and others on a warm dry Border, where they will endure the Cold of our ordinary *Winters* very well, without any Covering. Theſe Plants, which are deſigned to live in the open Air, muſt be planted on a dry rubbiſhy Soil, in which they will grow more ſtunted, ſo will reſiſt the Froſt much better, than when they grow in a rich Soil, which cauſes them to be more luxuriant. Thoſe Plants which are planted in Pots ſhould be ſheltered under a Hot-bed Frame in *Winter*; where they may have a greater ſhare of Air than in a Green-houſe; for the Glaſſes ſhould not be put over them in mild Weather, theſe Plants only requiring to be protected from ſevere Froſt.

The ſeventh and twelfth Sorts are alſo ſhrubby Plants, which may be propagated, and treated in the ſame Manner as hath been directed for the firſt; with which Management theſe will thrive very well, and may be allowed to have a Place in the Garden, for the Sake of Variety.

The fifth Sort is a low trailing Plant, which puts out Roots from the Joints of the Stalks, whereby it may eaſily be propagated, as alſo from the Seeds, which require no farther Care, than to ſow them on a Bed of freſh Earth, in an open Situation; and when the Plants are come up, they muſt be kept clear from Weeds; and where they are too cloſe, ſome of them ſhould be drawn out to give Room for the others to grow. This Sort will ripen Seeds very well in this Country; and, if planted in a warm Situation, will endure the Cold of our ordinary *Winters* very well.

The ſixth, eighth, ninth, tenth and eleventh Sorts are annual Plants, of humble Growth. Theſe are propagated by Seeds, which ſhould be ſown on a Bed of freſh Earth in *March*, and when the Plants are come up, they muſt be thinned where they are too cloſe, and kept clear from Weeds, which is all the Culture they require; for as they are Plants which make no great Figure in a Garden, ſo they are not cultivated in great Plenty; a few Plants of each Sort, for the Sake of Variety, is as many as any curious Perſon commonly keeps. Theſe Plants will drop their Seeds, and the Plants will come up from the ſelf-ſown Seeds, full as well, if not better, than when they are ſown by Hand, ſo may be eaſily maintained.

The thirteenth Sort was diſcovered by Father *Plumier*, in the *French* Settlements in *America*; and the fourteenth was diſcovered by the late Dr. *Houſtoun*, at the *Havannah*; from whence he brought the Seeds to *England*. Theſe are both very tender Plants, ſo muſt be preſerved in a Stove, otherwiſe they will not live thro' the *Winter* in this Country. They may be propagated by Seeds, which ſhould be ſown on a moderate Hot-bed in the *Spring*; and when the Plants are come up, they ſhould be each tranſplanted into a ſeparate ſmall Pot, filled with freſh light Earth, and then plunged into a moderate Hot-bed of Tanners-bark, and ſhaded from the Sun in the Heat of the Day, until they have taken new Root; after which Time they ſhould have a large Share of free Air admitted to them in warm Weather, and muſt be plentifully watered. When theſe Plants are brought forward early in the *Spring*, ſome of them will produce their Flowers the ſame Seaſon, but they rarely produce ripe Seeds the firſt Year; ſo the Plants ſhould be removed into the Stove at *Michaelmas*, and during the *Winter* Seaſon, ſhould have a moderate Share of Heat, and will require to be frequently refreſhed with Water; but it muſt not be given to them in large Quantities when the Weather is cold, for that will often occaſion their Leaves falling off. Theſe Plants, which are preſerved thro' the *Winter*, will flower early the following *Spring*, and produce good Seeds; and the old Plants may be preſerved three or four Years, if they are conſtantly kept in a Stove.

THALICTRUM, [this Name is ancient, and written in a two-fold Manner; in the Manuſcripts ϑαλίγθρον and ϑαλίχτρον, but now it has obtain'd the Name of *Thalictrum* among all the Moderns, of ϑάλλω, to *grow green*: It was anciently uſed at Weddings: or becauſe of its green Leaves adorning Gardens, it is alſo call'd πήγανον, *i. e.* becauſe ſome Botaniſts have claſs'd this Plant with *Rues*] Meadow Rue.

The *Characters* are;

The Flower conſiſts of ſeveral Leaves placed orbicularly, which expand in form of a Roſe, in the Middle of which ariſe numerous Cluſters of Chives, encompaſſing the Pointal, which afterwards becomes a Fruit, in which are collected, as in a little Head, the Capſules, which are ſometimes wing'd, and ſometimes without Wings, each containing one Seed, for the moſt part oblong.

The *Species* are;

1. Thalictrum *Alpinum, aquilegiæ foliis, florum ſtaminibus purpuraſcentibus. Tourn.* Alpine Meadow Rue, with Columbine Leaves, and the Chives of the Flower of a purpliſh Colour, *commonly call'd* the Feather'd Columbine.

2. Thalictrum *Alpinum majus, aquilegiæ foliis, florum ſtaminibus albis, caule viridi. Tourn.* Greater Alpine Meadow Rue, with Columbine Leaves, white Chives to the Flowers, and a green Stalk.

3. Thalictrum *Canadenſe, caule purpuraſcente, aquilegiæ foliis, florum ſtaminibus albis. Tourn.* Canada Meadow Rue, with a purpliſh Stalk, Columbine Leaves, and white Chives to the Flower.

4. Thalictrum *Americanum minus. Park. Theat.* Leſſer American Meadow Rue.

5. Thalictrum *majus, ſiliquâ anguloſâ aut ſtriatâ. C. B. P.* Greater Meadow-rue, with an angular furrowed Pod.

6. Thalictrum *pratenſe, majus, Monſpelienſium, foliis rugoſis. H. R. Par.* Greater Montpelier Meadow-rue, with rough Leaves.

7. Thalictrum *majus, nonſtriatum. C. B. P.* Greater ſmooth Meadow-rue.

8. Thalictrum *majus, flavum, ſtaminibus luteis, vel glauco folio. C. B. P.* Greater yellow Meadow-rue, with yellow Chives, and a Sea green Leaf.

9. Thalictrum *magnum, flore luteo odorato. Vir. Luſit.* Great Meadow-rue, with a yellow ſweet Flower.

10. Thalictrum *minus, aſphodeli radice, parvo flore. Inſt. R. H.* Smaller Meadow-rue, with an Aſphodel-root, and a ſmall Flower.

11. Thalictrum *minus, aſphodeli radice, magno flore. Inſt. R. H.* Smaller Meadow-rue, with an Aſphodel-root, and a large Flower.

12. Thalictrum *minus. C. B. P.* Smaller Meadow-rue.

13. Thalictrum *pratenſe, anguſtifolium. C. B. P.* Narrow-leav'd Meadow-rue.

14. Thalictrum *pratenſe, anguſtiſſimo folio. C. B. P.* The narroweſt leav'd Meadow-rue.

15. Thalictrum *minus, alterum, Pariſienſium, foliis craſſioribus & lucidis. H. R. Par.* Another ſmall Meadow-rue of Paris, with thicker ſhining Leaves.

16. Thalictrum *minimum, fœtidiſſimum. C. B. P.* The leaſt and moſt ſtinking Meadow-rue.

17. Thalictrum *montanum, minus, foliis latioribus. Raij Syn.* Small Mountain Meadow-rue, with broader Leaves.

18. Thalictrum *minimum, montanum, atro-rubens, foliis ſplendentibus. Raij Syn.* Smalleſt Mountain Meadow-rue, with blackiſh-red ſhining Leaves.

The four firſt are all the Sorts which I have obſerved to be cultivated in the Flower-Gardens for their Beauty. They are commonly known by the Name of *Feather'd* or *Spaniſh Columbine* among the Gardeners, which Names, I ſuppoſe, they received from the Similitude that the Leaves of this Plant bear to thoſe of Columbine, tho' their Flowers are very different therefrom.

Theſe Plants are propagated by parting their Roots; the beſt Time for this Work is in *September*, when their Leaves begin to decay, that they may take freſh Root before the Froſt comes on to prevent them. They ſhould alſo be planted in a freſh light Soil, and have a ſhady Situation, in which they will thrive exceedingly; tho' they may be planted in almoſt any Soil or Situation, provided it be not too hot and dry. Theſe Roots ſhould not be parted or removed oftner than every other Year; but if they are permitted to ſtand three Years, they will flower much ſtronger for it.

They may alſo be propagated by ſowing their Seeds on an Eaſt Border, ſoon after they are ripe, obſerving to keep the Ground clear from Weeds; and the following *Spring* the Plants will come up, when they ſhould be frequently refreſh'd with Water, and conſtantly kept clean from Weeds: the *Autumn* following they may be planted out into Nurſery-beds, about five or ſix Inches aſunder, where they may remain until they have Strength enough to flower, when they ſhould be removed into the Borders of the Flower-Garden, placing them in the middle Line among Plants of large Growth, allowing them Room, otherwiſe they will ſpread over whatever Plants are near them.

Theſe Plants flower from the Beginning of *May* to the Beginning of *June*, and if the Seaſon be moderate, they will continue in Beauty a long time: this, together with their being hardy Plants, which require little Culture, renders them worthy of a Place in every good Flower-Garden; and their Flowers are very proper to intermix with others, for Baſons to adorn Halls, Chimnies, &c. in the *Summer* time.

The fifth Sort grows plentifully in moiſt Meadows, in diverſe Parts of *England*: The ſixth Sort is found growing wild about *Newmarket*, and on chalky Grounds in ſeveral Parts of *England*. The ſeventeenth and eighteenth Sorts, grow wild on the rocky Mountains of *Wales*, from whence they have been tranſplanted into ſome curious Gardens, where they are preſerved for the ſake of Variety.

The other Sorts are not Natives of *England*, yet they are equally hardy with the former, ſo will thrive in the open Air very well. Moſt of theſe Plants have creeping Roots, by which they ſpread very far, and may be eaſily propagated; but they ſhould not be planted amongſt other better Plants, becauſe theſe will overbear and deſtroy them. Theſe Plants ſhould be planted in a moiſt Soil, otherwiſe they will not flower very ſtrong. The beſt time to tranſplant them, is about *Michaelmas*, that they may be well rooted before the dry Weather comes on in the *Spring*.

The fifth, ſixth, ſeventh, eighth, ninth, thirteenth and fourteenth Sorts, are tall Plants, ſo may be planted amongſt other Plants of the ſame Growth, which delight in a moiſt Soil, in ſome obſcure Part of the Garden, where better things will not thrive; in which Places theſe will thrive and flower, and maintain themſelves without any other Care, but to keep them clear from very large Weeds, which would overbear and deſtroy them.

The other Sorts are of humble Growth, ſome of them ſeldom riſing above ſix Inches high, and the others not more than a Foot; ſo theſe may be planted in ſhady Borders with other hardy Plants, where they will thrive very well, provided they are watered in dry Weather, and will abide ſeveral Years. All theſe Sorts do flower in *May* and *June*, and their Seeds are ripe toward the end of *Auguſt*. But as theſe do propagate ſo faſt by their Roots, ſo they are rarely raiſed from Seeds, which is a more tedious Method, for it is commonly three Years before the ſeedling Plants produce their Flowers ſo ſtrong as the old ones.

THAPSIA, [ſo call'd of the Iſland *Thapſus*, where it grew in Plenty] Scorching Fennel, *or* Deadly Carrot.

The *Characters* are;

It hath an umbellated Roſe-ſhap'd Flower, conſiſting of five Petals, which are placed in a circular Order, and reſt on the Empalement, which afterwards become a Fruit, compoſed of two long furrowed Seeds, which have a large leafy Border.

The *Species* are;

1. Thapsia *maxima, latiſſimo folio. C. B. P.* The greateſt Scorching-fennel, with a very broad Leaf.

2. Thapsia *latifolia, villoſa. C. B. P.* Broad-leav'd hairy Scorching-fennel.

3. Thapsia *foliis Libanotidis, fœtidiſſima. C. B. P.* The moſt ſtinking Scorching-fennel, with Herb-Frankincenſe-leaves.

4. Thapsia *apii folio, Luſitanica, fœtidiſſima, flore albo. Inſt. R. H.* The moſt ſtinking Portugal Scorching-fennel, with a Smallage-leaf, and a white Flower.

5. Thapsia *tenuiore folio, Apula. Inſt. R. H.* Apulian Scorching-fennel, with a narrow Leaf.

6. **Thapsia**, *ſive Turbith Garganicum, ſemine latiſſimo. J. B.* Scorching-fennel, with very broad Seeds, whoſe Roots were ſuppoſed to be the Turbith.

7. **Thapsia** *Alpina, lucida, Thalictri aut Carotæ folio, flore albo. Bocc. Muſ.* Shining Scorching-fennel of the Alps, with a Meadow-rue or Carrot-leaf, and a white Flower.

8. **Thapsia** *Thalictri folio, Luſitanica, villoſa. Inſt. R. H.* Hairy Portugal Scorching-fennel, with a Meadow-rue-leaf.

9. **Thapsia** *Orientalis, Anethi folio, ſemine eleganter crenato. Tourn. Cor.* Eaſtern Scorching-fennel, with a Dill-leaf, and Seed beautifully notched.

10. **Thapsia** *Orientalis, aquatica, Angelicæ folio. Tourn. Cor.* Eaſtern Water Scorching-fennel, with an Angelica-leaf.

11. **Thapsia** *Cretica, Thalictri folio, villoſa, ſeminum alis purpuro-violaceis. Tourn. Cor.* Hairy Scorching-fennel of Crete, with a Meadow-rue-leaf, and Seeds with purple Violet Borders.

12. **Thapsia** *Carotæ folio. C. B. P.* Scorching-fennel, with a Carrot-leaf.

The firſt Sort grows plentifully in ſeveral Parts of *Spain*, and on the *Pyrenees*, where the Inhabitants ſometimes uſe the Roots in Medicine; but it purges upwards and downwards, with ſo much Violence, that it frequently puts thoſe who take it in great Hazard of their Lives.

The ſixth Sort, whoſe Roots have by ſome Botaniſts been ſuppoſed to be the *Turbith* of the Shops, grows on the Coaſt of *Africa*; from whence the Seeds have been brought into ſeveral curious Gardens in *Europe*, where the Plant is preſerved by thoſe who delight in Botany.

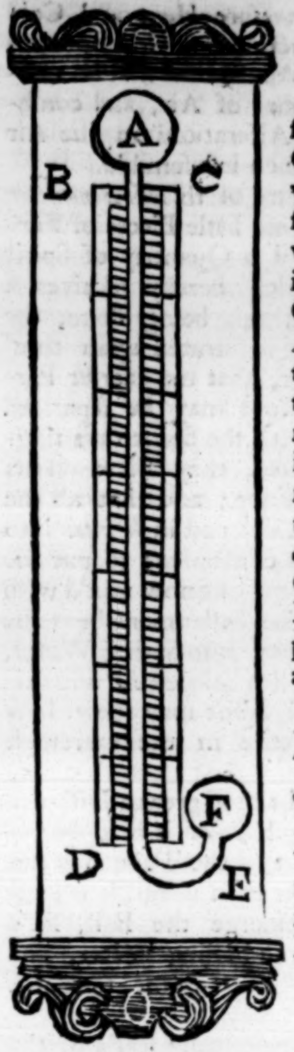
The twelfth Sort is mentioned in the Catalogue of Plants inſerted in the College Diſpenſatory, but is rarely uſed in Medicine; for it is of ſuch an acrid burning Quality, that it is very dangerous to take inwardly; but outwardly applied, it takes off Blemiſhes and Scabs from the Skin.

All theſe Plants are very hardy with reſpect to Cold, ſo that they will thrive in the open Air in this Country; but they ſhould have a loamy Soil, and in dry Weather ſhould be watered, otherwiſe their Flowers will fall off, without producing good Seeds. Theſe Plants are only propagated by Seed, which ſhould be ſown in *Autumn*; for if they are kept out of the Ground till *Spring*, they often miſcarry; or if they do grow, they commonly lie in the Earth a whole Year before the Plants come up; whereas thoſe Seeds which are ſown in *Autumn*, generally grow the following *Spring*. Theſe ſhould be ſown in Drills, in the Place where they are deſigned to remain; the Drills ſhould be at leaſt two Feet aſunder, becauſe the Plants ſpread their Leaves very wide. When the Plants come up in the *Spring*, they muſt be carefully clear'd from Weeds; and where they are too cloſe together, ſome of them ſhould be drawn out, to give Room for the others to grow; but at this time they need not be left more than two or three Inches apart. For the firſt Year the Plants ariſe from Seeds, they make but ſlow Progreſs; ſo the *Autumn* following, the remaining Part of the Plants may be taken up, leaving thoſe which are deſigned to remain, about eighteen Inches aſunder; and thoſe Plants which are taken up, may be tranſplanted into another Bed, if they are wanted. After the firſt Year theſe Plants will require no farther Care, but to keep them clear from Weeds; and every *Spring*, juſt before the Plants begin to puſh out new Leaves, the Ground ſhould be carefully dug between the Plants to looſen it; but the Roots muſt not be injured, leſt it ſhould cauſe them to decay. The Plants being thus managed, will continue ſeveral Years, and produce Flowers and Seeds annually, from which new Plants may be raiſed.

THERMOMETER, [Θερμόμετερ, of θερμὴ, *Heat*, and μετρέω to *meaſure*] An Inſtrument ſhewing, or rather meaſuring, the Increaſe and Decreaſe of the Heat and Cold of the Air.

Of which there are various Kinds; the Conſtructions, Defects, Theories, *&c.* whereof are as follow.

The Conſtruction of a Thermometer *depending on the Rarefaction of the Air.*

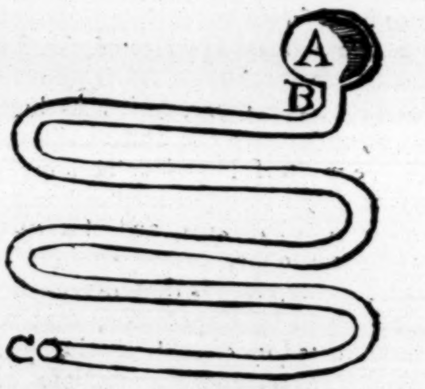


In the Tube A F, to which is faſten'd a Glaſs Ball A C, is put a Quantity of common Water, mix'd with *Aqua Regia*, to prevent its freezing; and the Mixture ting'd with a Solution of Vitriol, to give it a Greenneſs. In filling the Tube, Care is taken that there be ſo much Air left in the Ball and Tube, as that when at its greateſt Condenſation, in the Middle of *Winter*, it may juſt fill the Ball; and yet in its greateſt Rarefaction in *Summer*, may not drive all the Liquor out of the Tube. To the other Extreme of the Tube is faſten'd another Glaſs Ball, EF, open to the Air at F. On each Side the Tube is applied the Scale B D, divided into any Number of equal Parts.

Now, as the ambient Air becomes warmer, the Air in the Ball and the Top of the Tube expanding, will drive the Liquor into the lower Ball, and conſequently its Surface will deſcend; on the contrary, as the ambient Air grows colder, that in the Ball becoming condenſed, the Liquor will aſcend.

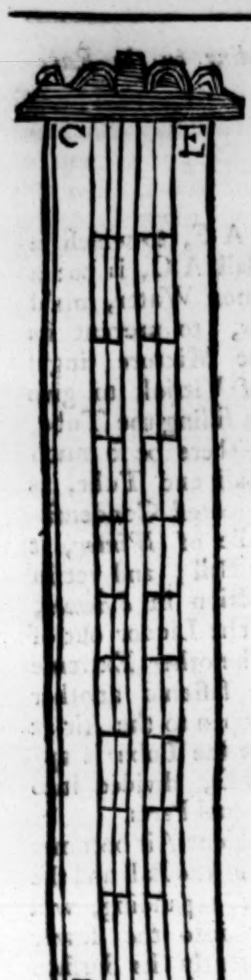
The Conſtruction of the Mercurial Thermometer.

In the ſame Manner, and with the ſame Caution as before, put a little Quantity of Mercury, not exceeding the Bigneſs of a Pea, into a Tube BC, thus bent with Wreaths, that taking up the leſs Height, it may be the more manageable, and leſs liable to Harm; divide this Tube into any Number of equal Parts, to ſerve for a Scale.



Here the Approaches of the Mercury towards the Ball A will ſhew the Increaſes of the Degree of Heat. The Reaſon is the ſame as in the former.

But both theſe Inſtruments are defective in this, that they are liable to be acted on by a double Cauſe: for not only a Decreaſe of Heat, but alſo an Increaſe of Weight of the Atmoſphere, will make the Liquor riſe in the one, and the Mercury in the other; and on the contrary, either an Increaſe of Heat, or Decreaſe of Weight of the Atmoſphere, will make it deſcend.



There being ſome Inconveniences attending the *Thermometers* juſt deſcribed, another has been attempted, that ſhould meaſure Heat and Cold by the Rarefaction and Condenſation of Spirits of Wine, tho' that be vaſtly leſs than that of Air, and conſequently the Alterations in the Air likely to be much leſs ſenſible.

The Structure of this *Thermometer* is this: On ſome little Pieces of *Turmerick* is pour'd a Quantity of Spirit of Wine, which hereby receives a red Tincture; this being done, the Spirit of Wine is filtrated again thro' a brown Paper, that the coarſer Particles of the Root may be ſeparated therefrom: with the Spirit thus tinged and prepared, they fill a Glaſs Ball with a Tube; and that all the Spirit may not deſcend in *Winter* into the Ball, it is convenient to put the Ball into a Lump of Snow mix'd with Salt; or, if the Inſtrument be to be made in *Summer*, into Spring Water, impregnated with Saltpetre; and that the condenſed Spirit may ſhew how far it will retire in the extremeſt Cold.

If it be ſtill at too great a Diſtance from the Ball, Part of it is to be taken out; and that the Tube may not be much longer than needs, it is convenient to immerge the Ball, fill'd with its Spirit, in boiling Water, and to mark the fartheſt Point to which the Spirit then riſes.

At this Point the Tube is to be hermetically ſeal'd by the Flame of a Lamp, and at the Sides is to be added a Scale, as in the former *Thermometers*.

Now the Spirit of Wine rarefying and condenſing very conſiderably, as the Heat of the ambient Air increaſes, the Spirit will dilate, and conſequently will aſcend in the Tube; and as the Heat decreaſes, the Spirit will deſcend, and the Degree or Quantity of Aſcent and Deſcent will be ſeen in the Scale.

Yet as the *Ratio* of Yeſterday's Heat to To-day's is not hereby diſcover'd, this Inſtrument is not ſtrictly a *Thermometer* any more than the former.

Here it is to be obſerv'd;

1. That as the natural Gravity of the Liquor makes it tend downwards, ſo it reſiſts its Aſcent out of the Ball into the Tube, and that the more, as it riſes higher; for which Reaſon it were beſt to have the Tube horizontal.

2. Since there muſt of Neceſſity be ſome Air left in the void Part of the Tube over the Liquor, that Air, by its Elaſticity, will tend downwards, and of conſequence will reſiſt the Riſe of the Liquor, and be compreſs'd by it as it does riſe; its Elaſticity therefore is thus increaſed.

3. Since it is found by Experience, that a leſs Degree of Heat is communicated more eaſily to the Spirit of Wine in the Ball than a greater, the Rarefactions of the Spirit of Wine are not proportionable to their producing Cauſes; eſpecially a greater Degree of Heat finds more Liquor in the Tube than a leſs does, to which, notwithſtanding, the Heat may be more eaſily communicated than to that ſtagnating in the Ball.

On theſe Accounts, this laſt *Thermometer*, call'd the *Florentine Thermometer*, (becauſe contrived by the *Academiſts del Cimento*) tho' it is that which is in common Uſe, is far from being an accurate Meaſure of Heat, *&c.* To which may be added, what Dr. *Halley* obſerves in the *Philoſophical Tranſactions*, That he has learn'd from thoſe that have kept Spirit of Wine long, that it loſes Part of its expanſive Force in Courſe of Time.

Various Authors have propoſed various Methods for finding a fix'd Point or Degree of Heat and Cold, from which to account for the other Degrees, and adjuſt the Scale; ſo that Obſervations made at the ſame or different Times, in different Places, may be compared together.

Some note the Place the Liquor is at in *Winter*, when Water begins to freeze; and again that in *Summer*, when Butter placed near the Ball of the *Thermometer* melts: the intermediate Space they divide into two equal Parts; the middle Point whereof anſwers in their Graduation to temperate Heat; and each Moiety they ſubdivide into ten Degrees, adding four other equal Degrees on each of the two Extremes.

But this Method ſuppoſes the ſame Degree of Heat and Cold to anſwer to the freezing of all Water, and the melting of all Butter, as alſo that all *Thermometers* receive the ſame Impreſſions from the ſame Degree of Heat: all which are contrary to Experience.

Others adviſe, That the Ball of the *Thermometer* be put into a Quantity of *Snow* and *Salt*, and the Point the Liquor is at to be noted; and that thence the *Thermometer* be removed into a deep Cave or Cellar, whither no external Air reaches, ſo that the Liquor receiving the Action of the temperate Air, may ſhew the Degree of temperate Heat. And laſtly, they divide the intermediate Space into fifteen or more equal Parts, which they continue beyond each Extreme: but this Method is liable to the like Inconvenience with the former.

Dr. *Halley* aſſumes *that* for a fix'd Degree of Heat, where Spirits of Wine begin to boil; but there is Reaſon to ſuſpect this too, of being precarious: tho' after him, M. *Amontons* retains the Degree of Heat, anſwering to boiling Water, for the graduating his Mercurial *Thermometer*. But as the different ſpecifick Gravities of Water argue a different Maſs and Texture, it is highly probable, that Heat of all boiling Waters is not the ſame; ſo that the Point is yet undetermin'd.

THERMOSCOPE, [of Θερμη, *Heat, and* σκοπεω, *I view*] An Inſtrument deſign'd to ſhew the Changes happening in the Air, with reſpect to *Heat* and *Cold*.

The Name of *Thermoſcope* is indifferently uſed with that of *Thermometer*: however, there is ſome Difference in the literal Import of the Words; the firſt ſignifying an Inſtrument that ſhews or exhibits the Changes of Heat, *&c.* to the Eye; and the latter, an Inſtrument that meaſures thoſe Changes: on which Foundation the *Thermometer* ſhould be a more accurate *Thermoſcope*.

This Difference the excellent *Wolfius* taking hold of, deſcribes all the *Thermometers* in Uſe as *Thermoſcopes*; ſhewing, that none of them do properly meaſure the Changes of Heat, *&c.* and that none of them do more than indicate the ſame.

Tho' their different Heights, Yeſterday and To-day, ſhew a Difference of Heat; yet ſince they don't diſcover the *Ratio* of Yeſterday's Heat to To-day's, they are not ſtrictly *Thermometers*.

The *Acta Erud. Lipſ.* propoſes a Method of graduating the common *Thermometers* ſo, as that the unequal Diviſions thereof ſhall correſpond to equal Degrees of Heat; whereby the *Ratio* of To-day's Heat to Yeſterday's will be meaſured, and conſequently the *Thermoſcope* improv'd into a *Thermometer*.

The Method is thus:

Take a ſlender Tube about four Palms long, with a Ball faſten'd to the ſame; pour into it Spirit of Wine, enough juſt to fill the Ball, when ſurrounded with Ice, and not a Drop over: in this State ſeal the Orifice of the Tube hermetically, and provide ſix Veſſels, each capable of containing a Pound of Water, and ſomewhat over; and into the firſt pour eleven Ounces of warm Water, into the ſecond ten Ounces, into the third nine, *&c.*

This done, immerge the *Thermometer* into the firſt Veſſel, and pour into it one Ounce of hot Water, obſerving how high the Spirit riſes in the Tube, and noting the Point with an Unit; then remove the *Thermometer* into the ſecond Veſſel, into which are pour'd two Ounces of hot Water, and note the Place the Spirit riſes to with two: by thus proceeding, till the whole Pound of Water is ſpent, the Inſtrument will be found to be divided into twelve Parts, denoting ſo many Terms or Degrees of Heat; ſo that at two, the Heat is double to that of one; at three, triple, *&c.*

But *Wolfius* ſhews, that tho' this Method is plauſible, yet it is deceitful, and built on falſe Suppoſitions; for it takes for granted, we have one Degree of Heat, by adding one Ounce of hot to eleven of cold Water, two Degrees by adding two Ounces to ten, *&c.* It ſuppoſes that a ſingle Degree of Heat acts on the Spirit in the Ball of a ſingle Force, a double with a double Force, *&c.*

Laſtly, it ſuppoſes, that if the Effect be produced in the *Thermometer* by the Heat of the ambient Air, which is here produced by the hot Water, the Air has the ſame Degree of Heat with the Water.

But none of theſe Suppoſitions are true: For, as to the firſt; allowing the Heat of the hot Water equally diſtributed thro' the Cold, one Degree of Heat will be diſtributed thro' eleven Parts, two thro' ten, three thro' nine, *&c.*

taking therefore equal Bulks of Water, *ex. gr.* a twelfth Part of each, the Heat will not be double in the one, triple in another, *&c.*

The firſt Suppoſition is therefore erroneous, and ſo is the ſecond; for neither is the Heat of the hot Water equally diffuſed thro' the Cold; nor does the Heat of the hot Water act uniformly on the Spirit of Wine, *i. e.* not with the ſame Force all the Time of its Action.

For the third Suppoſition: The Heat of the ambient Air acts not only on the Spirit of Wine in the Ball, but alſo on that in the Tube, and therefore This as well as That will be changed.

Dr. *Hook*, in order to adjuſt the Gradations of a *Thermometer* with the greater Accuracy, hath contrived and deſcribed an Inſtrument for that Purpoſe, in his *Micrographia*, *p.* 38.

The Way of filling *Thermoſcopes*, or ſuch other ſmall Glaſs Tubes with Spirit of Wine or Water.

Take the Ball of the Glaſs, and then warm it gently between your Hands; then heat it very well (tho' gently) before a good Fire, turning it round, that it may be equally warm; for without this Caution there will be Danger of its breaking: then applying the Ball to the Flame of a Lamp or Candle, turning it about in it, heat it as hot as you can, without melting the Glaſs; and then ſpeedily immerſing the open End of the Pipe into the Veſſel of that Liquor you intend to fill it withal, the Liquor will riſe into it, and fill it near full.

The Reaſon of which Aſcent of the Liquor is, that the Air within the Ball and the Tube being expell'd in great meaſure by the Heat, or at leaſt rarefy'd there to a very great Degree, the immerſed open End of the Tube keeps off the Preſſure of the circumambient Atmoſphere on that Part of the Liquor that the End of the Tube covers: but the Atmoſphere preſſes on all other Parts of the Liquor in the open Veſſel; and conſequently, (there being none, or a very ſmall Quantity of Air within the Tube to hinder it) forces it by its Weight up into the Tube, till it gain an Equilibrium with the Preſſure or Weight of the Air without.

If the Tube cannot be fill'd full enough by this Method, the reſt may be ſupplied by a ſmall Glaſs Funnel, the Shank of which muſt be drawn out exceeding ſlender, and inſerted into the Orifice of the Tube; and then by blowing, you may force by your Breath the Spirit of Wine into the Tube, ſo as to fill it quite, or to what Degree you pleaſe.

Dr. *Hook*, in his *Micrographia*, hath an Engine for graduating his *Thermometers*, to make them true Standards of Heat and Cold.

The *Thermometers* or *Thermoſcopes* are Inſtruments of very great Uſe to Gardeners in the Management of Hot-beds or Stoves. They ſhew, by Inſpection, the preſent Condition of the Air, and whether it be *hot* or *cold*; which Day in *Summer* is the *hotteſt*, and in the *Winter* which is the *coldeſt*, or any Part of the Day: and from thence many uſeful Experiments have, and may be made; *viz.* how much one *Spring* exceeds another in Coldneſs; which *Baths* are the hotteſt or coldeſt: and if being held in the Hand of a Perſon in a Fever, or otherwiſe applied, will nicely ſhew the Abatement or Increaſe of a Fever.

Mr. *Telende* makes uſe of a *Thermometer* that has a long Tube of about two Feet in Length, and is about the eighth Part of an Inch diameter; and in this he has remarked, that the Air is cold for his Plants when the Spirit riſes to fifteen Inches; that it is temperate at ſixteen Inches and a half; that the Air is warm when it riſes to eighteen Inches: And this is the Standard for his *Pine-apple* Heat. It is marked for *hot Air* at twenty Inches, and *ſultry hot* at twenty-one and a half; but in the common *Engliſh Thermometers*, theſe Degrees are differently marked; his *temperate Air* is about our *warm*; his *warm Air* our *hot*; and our *hot* Air is about the ſame as his *ſultry*.

He has directed ſome *Thermometers*, *&c.* to be made for both Hot-beds and Stoves, by which a Perſon may be at once apprized of the Degree of Heat under the Line, and of the ſeveral Degrees diſtinctly marked for the natural Growth of Plants of every Climate, from the Equinoctial Line to the fifty-ſecond Degree of Latitude.

Theſe *Thermometers* are marked with the Names, and alſo the principal Places, with their Degrees of Latitude and *Summer* Heat, whether they lie North or South of the Equinoctial Line; and alſo the different Times of the *Spring* in ſeveral Countries.

By this Means every Gardener may know when it is proper to apply his Heat in its full Force, and what Degree of Heat ought to be uſed for the Welfare of any Plant from any Part of the World.

Mr. *Patrick* has fixed his *Thermometer* to a Scale of ninety Degrees, which are numbered from the Top downward, and alſo a moveable Index fitted to it.

The Deſign of this is to ſhew how the Heat or Cold is changed, from the Time it was laſt looked upon, according to the different Degrees of Heat and Cold in all Latitudes; as by the Trial of two *Thermometers* that have been regulated abroad, the one by Dr. *Halley* in his late Southern Voyage, and the other by Captain *Johnſon* in his Voyage to *Greenland*. The firſt has a Degree of Heat under the Equinoctial Line, and the other a Degree of Cold in 88 Degrees North Latitude.

Theſe Inſtruments, the *Barometer*, *Hygrometer* and *Thermometer* or *Thermoſcope*, diſcover the Alterations of the *Air* as to *Wet* or *Dry*, eſpecially if it be accompanied with an *Hygrometer*; and the *Thermometer* ſhews the Condition of the *Air* as to *Heat* or *Cold*.

The Method preſcribed to be uſed in keeping the Accounts or Obſervations made on the Alterations of theſe Inſtruments, is that which was uſed by the honourable *Samuel Molyneux*, Eſq;

1. There muſt be a Book for the Remarks in all the twelve Months of the Year, which are to be made ſix times every Day. At theſe Times you muſt obſerve:

1. How the Quickſilver riſes or falls in the *Barometer*.
2. What is the Alteration of the *Hygrometer*.
3. How the Spirits in the *Thermometer* riſe or fall.
4. From what Point of the Compaſs the Wind blows; and alſo with what Strength, according to the neareſt Gueſs that can be made.
5. Whether it rains, ſnows, hails, *&c.* and in what Quantity.

Every Leaf of the Book is to be divided into ſeveral Columns; the firſt for the Day of the Month and the Week, the ſecond for the Number of Inches and Parts of an Inch in the Tube of the *Barometer* where the Quickſilver ſtands at the Time when the Obſervation is made.

The *ſecond* is to be for marking the Degrees which the Index of the *Hygrometer* points to at the ſame Time.

The *third* is for ſhewing the Number of Inches and Parts of an Inch where the Spirits ſtand in the *Thermometer* at the Time when the Obſervation is made.

The *fourth* is for marking from what Point the Winds blow, and their Strength.

The *fifth* is for noting the Quantity of Rain, *&c.* that falls, and what Diſpoſition the Clouds and Air have.

Take, for Example, the following Account of the 2d of *June*, 1721, which Table the Reader will find inſerted in the following Page.

According to this Method, a Weather-book may be kept of the Country a Perſon reſides in, by comparing the Motions of the Quickſilver and Spirit with the Weather, at ſuch Times as the Obſervations are made, a little Practice will enable a Perſon to give a good Judgment before-hand what Weather will happen.

For the greater Accuracy, many have the Names of the principal *Exoticks* written upon their *Thermometers*, over-againſt the ſeveral Degrees which are found by Experience to be propereſt for them; and the moſt curious Gardeners about *London* have agreed to make uſe of *Thermometers* of this Sort: Which are made by Mr. *John Fowler* in *Sweetin's-alley*, near the *Royal Exchange*; which have the Names of the following Plants oppoſite to their reſpective moſt kindly Degrees of Heat.

The TABLE.

Friday, June 2. 1721.	Barometer. Inch.	Barometer. Par.	*Hygrometer, with its Diviſion and Parts.*	*Thermometer*	*Wind.*	*Weather.*
Morning at 9.	29	98	240	30	Eaſt, briſk Gale.	Cloudy.
Noon.	29	98	260 20	28	Eaſt, briſk Gale, or *ditto.*	
Afternoon at 3.	29	98	280 20	28	*Ditto.*	*Ditto.*
Afternoon at 6.	29	98	300 20	27	*Ditto.*	*Ditto.*
Evening at 9.	29	98	315 15	28	*Ditto.*	*Ditto.*
Midnight.	29	98	320 5	28	*Ditto.*	*Ditto.*

Which, ſays the Reverend Mr. *Hales* in his excellent Treatiſe of *Vegetable Staticks*, in my *Thermometers* anſwer nearly to the following Degrees of Heat above the freezing Point, *viz. Melon-thiſtle* 31. *Ananas* 29. *Piamento* 26. *Euphorbium* 24. *Cereus* 21 ½. *Aloe* 19. *Indian Fig* 16 ½. *Ficoides* 14. *Oranges* 12. *Myrtles* 9.

Mr. *Boyle*, by placing a *Thermometer* in a Cave, which was cut ſtrait into the Bottom of a Cliff, fronting the Sea, to the Depth of 130 Feet, found the Spirit ſtood both in *Winter* and *Summer* at a ſmall Diviſion above Temperate; the Cave had 80 Feet Depth of Earth above it.

I, ſays Mr. *Hales*, marked my ſix *Thermometers* numerically, 1, 2, 3, 4, 5, 6. The *Thermometer* Number 1, which was the ſhorteſt, I placed with a South Aſpect in the open Air; the Ball of Number 2 I ſet two Inches under Ground; that of Number 3 four Inches, Number 4 eight Inches, Number 5 ſixteen Inches, and Number 6 twenty-four Inches: And that the Heat of the Earth at thoſe ſeveral Depths may the more accurately be known, it is proper to place near each *Thermometer* a Glaſs Tube, ſealed at both Ends, of the ſame Length with the Stems of the ſeveral *Thermometers*, and with tinged Spirit of Wine in them to the ſame Height as in each correſponding *Thermometer*; the Scale of Degrees of each *Thermometer* being marked on a ſliding Ruler, with an Index at the Back of it, pointing to the correſponding Tube.

When at any Time an Obſervation is to be made, by moving the Index to point to the Top of the Spirit in that Tube, an accurate Allowance is hereby made for very different Degrees of Heat and Cold in the Stems of the *Thermometers* at all Depths; by which Means the Scale of Degrees will ſhew truly the Degrees of Heat in the Balls of the *Thermometers*, and conſequently the reſpective Heats of the Earth, at the ſeveral Depths where they are placed.

The Stems of theſe *Thermometers* which were above the Ground, were fenced from Weather and Injuries, by ſquare Wooden Tubes. The Ground they were placed in, was a Brick Earth in the Middle of my Garden.

July the 30th, he began to keep a Regiſter of their Riſe and Fall: During the following Month of *Auguſt* he obſerved, that when the Spirit in the *Thermometer*, Number 1, (which was expoſed to the Sun) was about Noon riſen to 48 Degrees; then the ſecond *Thermometer* was 45, the fifth 33, and the ſixth 31; the third and fourth at intermediate Degrees: The fifth and ſixth *Thermometer* kept nearly the ſame Degree of Heat, both Night and Day, till towards the latter End of the Month; when, as the Days grew ſhorter and cooler, and the Nights longer and cooler, they then fell to 25 and 27 Degrees.

Now ſo conſiderable a Heat of the Sun at two Feet Depth under the Earth's Surface, muſt needs have a ſtrong Influence in raiſing the Moiſture at that and greater Depths, whereby a very great and continual Reek muſt always be aſcending during the warm *Summer* Seaſon, by Night as well as by Day; for the Heat at two Feet deep is nearly the ſame Night and Day; the Impulſe of the Sun-beams giving the Moiſture of the Earth a briſk undulating Motion, which watery Particles, when ſeparated and rarefied by Heat, do aſcend in the Form of a Vapour; and the Vigour of the warm and confined Vapour (ſuch as is that which is one, two, or three Feet deep in the Earth) muſt be very conſiderable, ſo as to penetrate the Roots with ſome Vigour; as we may reaſonably ſuppoſe from the vaſt Force of confined Vapour in *Æolipiles*, in the Digeſter of Bones, and the Engine to raiſe Water by Fire.

If Plants were not in this Manner ſupplied with Moiſture, it were impoſſible for them to ſubſiſt under the ſcorching Heats within the Tropicks, where they have no Rain for many Months together: For though the Dews are much greater there than in theſe more Northern Climates; yet doubtleſs, where the Heat ſo much exceeds ours, the whole Quantity evaporated in a Day there, does as far exceed the Quantity that falls by Night in Dew, as the Quantity evaporated here in a *Summer*'s Day is found to exceed the Quantity of Dew which falls in the Night.

But the Dew which falls in a hot *Summer* Seaſon cannot poſſibly be of any Benefit to the Roots of Trees, becauſe it is remanded back from the Earth by the following Day's Heat, before ſo ſmall a Quantity of Moiſture can have ſoaked to any conſiderable Depth.

The great Benefit therefore of Dew in hot Weather, muſt be by being plentifully imbibed into Vegetables, thereby not only refreſhing them for the preſent, but alſo furniſhing them with a freſh Supply of Moiſture, towards the great Expences of the ſucceeding Day.

It is therefore probable, that the Roots of Trees and Plants are thus, by Means of the Sun's Warmth, conſtantly irrigated with freſh Supplies of Moiſture; which, by the ſame Means, inſinuates itſelf with ſome Vigour into the Roots: For if the Moiſture of the Earth were not thus actuated, the Roots muſt then receive all their Nouriſhment meerly by imbibing the next adjoining Moiſture from the Earth; and conſequently the Shell of the Earth, next the Surface of the Roots, would always be conſiderably drier, the nearer it is to the Root, which I have not obſerved to be ſo.

And by Experiment eighteen and nineteen, the Roots would be very hard put to it to imbibe ſufficient Moiſture in dry *Summer* Weather, if it were not thus conveyed to them by the penetrating Warmth of the Sun: Whence, by the ſame genial Heat, in Conjunction with the Attraction of the Capillary Sap-veſſels, it is carried up through the Bodies and Branches of Vegetables, and thence paſſing into the Leaves, it is there moſt vigorouſly acted upon in thoſe thin Plates, and put into an undulating Motion by the Sun's Warmth, whereby it is moſt plentifully thrown off and perſpired thro' their Surface; whence, as ſoon as it is diſentangled, it mounts with great Rapidity in the free Air.

But when, towards the latter End of *October*, the Vigour of the Sun's Influence is ſo much abated, that the firſt *Thermometer* was fallen to three Degrees above the freezing Point, the ſecond to ten Degrees, the fifth to fourteen Degrees, and the ſixth to ſixteen Degrees; then the briſk Undulations of the Moiſture of the Earth, and alſo of the aſcending Sap much abating, the Leaves faded and fell off.

The greateſt Degree of Cold, in the following *Winter*, was in the firſt twelve Days of *November*; during which Time the Spirit in the firſt *Thermometer* was fallen four Degrees below the freezing Point, the deepeſt *Thermometer* ten Degrees: The Ice on Ponds was an Inch thick: The Sun's greateſt Warmth, at the *Winter Solſtice*, in a very ſerene, calm, froſty Day, was againſt a South Aſpect of a Wall nineteen Degrees, and in a free open Air, but eleven Degrees above the freezing Point.

From the 10th of *January* to the 29th of *March* was a very dry Seaſon; when the green Wheat was generally the fineſt that was ever remembered: But from the 29th of *March*,

March, 1725, to the 29th of *September* following, it rained more or leſs almoſt every Day, except ten or twelve Days about the Beginning of *July*; and that whole Seaſon continued ſo very cool, that the Spirit in the firſt *Thermometer* roſe but to twenty four Degrees, except now and then a ſhort Interval of Sun-ſhine; the ſecond only to twenty Degrees, the fifth and ſixth to twenty-four and twenty-three Degrees, with very little Variation: So that during this whole *Summer*, thoſe Parts of Roots which were two Feet under Ground, had three or four Degrees more Warmth than thoſe which were but two Inches under Ground: And at a Medium, the general Degree of Heat thro this whole *Summer*, both above and under Ground, was not greater than the Heat of the Middle of the preceding *September*.

THLASPI, [Θλάσπί, ſo called of ϑλάω, to *compreſs* or *ſqueeze together*, becauſe the Huſk of it is very much compreſſed] Mithridate-muſtard.

The *Characters* are;

The Flower conſiſts of four Leaves, which are placed in form of a Croſs; out of whoſe Cup riſes the Pointal, which afterward becomes a ſmooth roundiſh Fruit, having commonly a leafy Border, and ſlit on the upper Side, divided into two Cells by an intermediate Partition placed obliquely with reſpect to the Valves, and furniſhed with ſmooth roundiſh Seeds: To theſe Marks muſt be added, the undivided Leaves which diſtinguiſh it from Creſſes.

The *Species* are;

1. Thlaspi *arvenſe ſiliquis latis. C. B. P.* Field Mithridate-muſtard, with broad Pods.
2. Thlaspi *montanum, ſempervirens. C. B. P.* Mountain ever-green Mithridate-muſtard.
3. Thlaspi *Creticum quibuſdam, flore rubente & albo. J. B.* Candy Mithridate-muſtard, with a reddiſh and white Flower, *commonly called* Candy Tuft.
4. Thlaspi *umbellatum arvenſe amarum. J. B.* The bitter Field umbellated Mithridate-muſtard.
5. Thlaspi *Roſa de Hierico dictum. Mor. Hiſt.* Mithridate-muſtard, *called* the Roſe of Jericho.
6. Thlaspi *arvenſe, vaccariæ incano folio. C. B. P.* Common Mithridate-muſtard.
7. Thlaspi *vaccariæ incano folio, minus. C. B. P.* Small hoary-leafed Mithridate-muſtard.
8. Thlaspi *capſulis hirſutis. J. B.* Mithridate-muſtard, with hairy Pods.
9. Thlaspi *capſula cordata, peregrinum. J. B.* Foreign Mithridate-muſtard, with a heart-ſhaped Pod.
10. Thlaspi *allium redolens. Mor. Hiſt.* Mithridate-muſtard, ſmelling like Garlick.
11. Thlaspi *arvenſe perfoliatum majus. C. B. P.* Greater Field Mithridate-muſtard, with thorough-wax Leaves.
12. Thlaspi *perfoliatum minus. C. B. P.* Smaller thorough-wax-leafed Mithridate-muſtard.
13. Thlaspi *parvum ſaxatile, flore rubente. C. B. P.* Small Rock Mithridate-muſtard, with a reddiſh Flower.
14. Thlaspi *Alpinum, folio rotundiore carnoſo, flore purpuraſcente. Inſt. R. H.* Mithridate-muſtard of the Alps, with a rounder fleſhy Leaf, and a purpliſh Flower.
15. Thlaspi *minimum Luſitanicum, cochleariæ folio. Inſt. R. H.* The leaſt Portugal Mithridate-muſtard, with a Scurvy-graſs Leaf.
16. Thlaspi *Alpinum minimum, foliis craſſis & anguſtis. Inſt. R. H.* The leaſt Mithridate-muſtard of the Alps, with narrow fleſhy Leaves.
17. Thlaspi *Luſitanicum umbellatum, gramineo folio, flore purpuraſcente & albo. Inſt. R. H.* Portugal Mithridate-muſtard, with a Graſs Leaf, and purpliſh or white Flowers, growing in an Umbel.
18. Thlaspi *Orientale ſaxatile, flore rubente, foliis polygalæ, petalis florum æqualibus. Tourn. Cor.* Eaſtern Rock Mithridate-muſtard, with Milkwort Leaves, and reddiſh Flowers, whoſe Petals are equal.
19. Thlaspi *Orientale tenuifolium canneſcens, flore albo. Tourn. Cor.* Eaſtern Mithridate-muſtard, with narrow Leaves which are hoary, and a white Flower.
20. Thlaspi *Orientale glabrum, ſamoli foliis. Tourn. Cor.* Smooth Eaſtern Mithridate-muſtard, with ſamolus Leaves.
21. Thlaspi *Orientale, folio cynocrambes flore minimo. Tourn. Cor.* Eaſtern Mithridate-muſtard, with a Dogs-mercury Leaf, and a very ſmall Flower.
22. Thlaspi *Virginianum, foliis Iberidis amplioribus & ſerratis. Inſt. R. H.* Virginia Mithridate-muſtard, with Leaves like the Sciatica-creſs, which are broader, and ſaw'd on their Edges.
23. Thlaspi *montanum ſempervirens. C. B. P.* Ever-green Mountain Mithridate-muſtard.
24. Thlaspi *Orientale fruticoſum, ſcammonii Monſpelienſis folio. Tourn. Cor.* Shrubby Eaſtern Mithridate-muſtard, with the Leaf of Montpelier Scammony.
25. Thlaspi *foliis globulariæ. J. B.* Treacle-muſtard, with Leaves like Globulariæ.

The firſt Sort is ſometimes found wild in *England*, but not near *London*. This is the Sort of which the College of Phyſicians have ordered the Seeds to be uſed in ſome of the grand Medicines of the Shops; tho' the Seeds of ſeveral other Plants are commonly ſubſtituted inſtead of it, becauſe the Seeds of this Sort are not very common in *London*; but the Plants might be eaſily cultivated in ſuch Plenty, as to furniſh the Town with the right Sort, the Plant being extreme hardy, and requires no other Culture but to ſow the Seeds in *February*, upon an open Spot of Ground; and when the Plants are come up, they muſt be conſtantly cleared from Weeds: In *June* they will flower, and the Seeds will ripen ſoon after; when the Plants do always periſh being annual.

The ſecond, third, fourth and fifth Sorts are commonly cultivated in Flower-gardens, where formerly they were ſown for *Summer* Edgings to Borders; but as they are apt to grow too rank for that Purpoſe, ſo the better Way is to ſow the Seeds in ſmall Patches in the Middle of the Borders between the taller Flowers; and when the Plants are come up, they ſhould be thinned, and kept clear from Weeds, which will cauſe them to flower much ſtronger than if they are drawn up weak.

Theſe Plants do flower in *June* and *July*, and their Seeds do ripen ſoon after; but in order to have a Succeſſion of theſe and other ſmall annual Flowers, many Perſons do ſow them at two or three different Seaſons, *viz.* in *March*, *April* and *May*; by which Means they continue them until the Froſt comes in *Autumn*; but thoſe Seeds which are ſown late in the *Spring* ſhould be carefully watered in dry Weather, otherwiſe they ſeldom grow.

The red and white Candy Tufts do vary ſo as not to be kept ſeparate; the Seeds of the red producing ſome white Flowers, and thoſe of the white ſome with red ones; but of late, the *bitter umbellated Sort* has been cultivated in Gardens, and the Seeds ſold in the Shops, by the Name of *White Candy Tuft*, tho' in Reality it is a different Plant: However, as this Sort produces beautiful white Flowers, it ſhould have a Place in the Borders of the Flower-garden, for the ſake of Variety.

The *Roſe of Jericho* is a Plant of no great Beauty or Uſe, ſo is ſeldom cultivated, except in Botanick Gardens. This requires the ſame Culture as the former Sorts, and is alſo an annual Plant.

The ſixth Sort grows plentifully wild amongſt the Corn, and by the Sides of Hedges, in moſt Parts of *England*. The Seeds of this Sort are generally ſold by the Druggiſts in *London* for the true *Mithridate-muſtard*; but the firſt Sort is what the College of Phyſicians have directed to be uſed in the *Theriaca*.

The ſeventh, eighth, ninth and twentyfifth Sorts do alſo grow wild in ſome Parts of *Great Britain*, but are not ſo common as the former Sort, eſpecially the twentyfifth; which is found in the mountainous Paſtures in *Yorkſhire*, and ſome other Places in the North; but is not to be met with in the South, unleſs in ſome curious Botanick Gardens, where it is preſerved for the ſake of Variety.

The ſixth, and ſixteen following Sorts, are annual Plants, which if permitted to ſhed their Seeds on the Ground, will ſucceed much better than when ſown by Hand, eſpecially if they are not ſown in *Autumn*; for when the Seeds are ſown in the *Spring*, if the Seaſon ſhould prove dry, they ſeldom grow; and if they do come up, the Plants will be very ſmall, and produce little Seed; whereas thoſe Plants which come up in *Autumn* will abide the *Winter*'s Cold very well, and the following *Spring* will get Strength before the hot Weather comes in; ſo will flower, and produce Plenty of Seeds.

Some of theſe Sorts do produce pretty Flowers growing in Cluſters, which renders them worthy of a Place in large Gardens, where there is Room for Variety, eſpecially as they require very little Trouble to cultivate them. For none of theſe Sorts ſhould be tranſplanted, but ſown where they are deſigned to remain; and if they are kept clear from Weeds, it is all the Culture they require. Many of theſe Plants will grow on the Top of old Walls, or other Buildings; where they will ſhed their Seeds, and maintain themſelves without Care; and growing very low and ſtunted will produce a great Number of Flowers; ſo will make a pretty Appearance in the *Spring*, when they are in flower.

The twentythird Sort is an abiding Plant, which continues always green, and flowers a long time. The Flowers of this Kind grow in Umbels at the Extremity of the Shoots, which reſemble thoſe of the *Candy-tuſt* Tree, but are ſmaller. The Leaves of this Sort are narrow and pointed; and the whole Plant ſeldom riſes above ſix Inches high. This Sort ſeldom produces good Seeds in *England*, but may be propagated by Cuttings, which ſhould be planted in a ſhady Border, during any of the *Summer* Months; and in dry Weather they muſt be frequently watered. When theſe are well rooted, they may be tranſplanted where they are deſigned to remain, which ſhould be on a dry rubbiſhy Border, where they will thrive and flower much better than in a rich Soil. This Plant is hardy enough to endure the Cold of our ordinary Winters very well in the open Air; but in very ſevere Froſts they are ſometimes deſtroyed; for which Reaſon it will be proper to have a few Plants in Pots, which may be ſheltered in *Winter*, in order to preſerve the Kind.

The twentyfourth Sort was diſcovered by Dr. *Tournefort* in the *Levant*; this Plant grows to the Height of two Feet or more, and becomes ſhrubby. The Flowers of this Kind are ſmall, ſo do not make a very good Appearance; but the Plant is preſerved by ſome curious Perſons for the ſake of Variety. This Sort may be propagated by Cuttings during any of the *Summer* Months, in like manner as the laſt mentioned, but is ſomewhat tenderer; ſo theſe, when they are rooted, ſhould be planted in Pots, and ſheltered in *Winter*, in the ſame Manner as hath been directed for the *Candy-tuſt* Tree.

THLASPIDIUM, [is ſo called of *Thlaſpi*, becauſe it ſomething reſembles this Plant.] Baſtard Mithridate-muſtard.

The *Characters* are;

The Flower conſiſts of four Leaves, which are placed in form of a Croſs, out of whoſe Cup riſes the Pointal, which afterwards becomes a double ſmooth Fruit, compoſed of two Parts, that are ſeparated by an intermediate Partition; each of which ſwells with a red Seed, which is generally flat and oblong.

The *Species* are;

1. Thlaspidium *fruticoſum, leucoii folio, ſemper-florens. Tourn.* Shrubby Thlaſpidium, with a Wall-flower Leaf, and always flowering, *commonly call'd* The Candy Tufttree.
2. Thlaspidium *fruticoſum, leucoii folio variegato, ſemper-florens. Tourn.* The ſtriped Candy Tuft-tree, *vulgo.*
3. Thlaspidium *Monſpelienſe, hieracii folio hirſuto. Inſt. R. H.* Montpelier Thlaſpidium, with a hairy hawk-week Leaf.
4. Thlaspidium *hirſutum, calyce floris auriculato. Inſt. R. H.* Hairy Thlaſpidium, with an eared Flower-cup.
5. Thlaspidium *annuum, flore pallidè luteo. Inſt. R. H.* Annual Thlaſpidium, with a pale yellow Flower.
6. Thlaspidium *raphani folio. Inſt. R. H.* Radiſh-leav'd Thlaſpidium.
7. Thlaspidium *anchuſæ folio. Inſt. H. R.* Alkanet-leav'd Thlaſpidium.
8. Thlaspidium *Apulum ſpicatum. Inſt. R. H.* Spiked Thlaſpidium of Apulia.
9. Thlaspidium *montanum anguſtifolium glabrum. Inſt. R. H.* Smooth narrow-leav'd mountain Thlaſpidium.
10. Thlaspidium *Alpinum pumilum aſperum. Inſt. R.H.* Low rough Thlaſpidium of the Alps.
11. Thlaspidium *Apulum incanum, floribus ex albo purpuraſcentibus. Inſt. R. H.* Hoary Thlaſpidium of Apulia, with white purpliſh Flowers.
12. Thlaspidium *Hiſpanicum, ampliore flore, folio craſſo dentato. Hort. Elth.* Spaniſh Thlaſpidium, with a large Flower, and a thick indented Leaf.

The firſt of theſe Plants here mentioned is pretty common in the Gardens near *London*, where it is preſerved in Greenhouſes with other exotick Plants, for the Beauty of its Flowers, which are commonly continued throughout the whole Year, making a very beautiful Figure in the Greenhouſe, at ſuch Seaſons when few other Plants are in Flower.

This Plant may be propagated by planting either Cuttings or Slips during any of the *Summer* Months, in Pots filled with freſh light Earth, and placed under a Frame, obſerving to water and ſhade them until they have taken Root, after which they may be expoſed to the open Air, and when they have gotten ſtrong Roots, they may be each tranſplanted into a ſeparate Pot, filled with light freſh Earth, and may be placed amongſt other hardy exotick Plants in the open Air in *Summer*; but in *Winter* they muſt be ſcreened from ſevere Froſt, tho' in mild Weather they ſhould have as much free Air as poſſible.

But altho' theſe Plants are generally preſerved in Pots, and placed in a Green-houſe in *Winter*, yet after they have acquired Strength, they may be planted in warm dry Borders; where, if the Soil be freſh, and not too rich, they will endure the Cold of our ordinary *Winters* very well without any Covering: And the Plants thus treated will flower much better than thoſe kept in Pots.

The ſtriped Sort is propagated as the plain, and muſt be treated in the ſame Manner; but being ſomewhat tenderer, muſt be conſtantly ſheltered in *Winter*, otherwiſe it will be deſtroyed in a ſmall Froſt.

The third Sort here mentioned, is an abiding Plant of humble Growth, ſeldom riſing above ſix Inches high. This is very common in the South of *France*, *Italy*, *Sicily*, and *Spain*, where it uſually flowers in *May* and *June*; and the Seeds are ripe in *July*. In *England* this Plant is preſerved by ſome curious Perſons, for the ſake of Variety; tho' there is no great Beauty in its Flowers. They are hardy enough to endure the Cold of our *Winters* in the open Air, provided they are ſown on a dry rubbiſhy Soil; for if they are ſown on a rich moiſt Soil, they grow ſo rank in *Summer*, that the firſt Froſt in *Autumn* uſually deſtroys them. Theſe Plants do not bear tranſplanting very well; ſo they ſhould be ſown where they are deſigned to remain, and thin them where they come up too cloſe, leaving the Plants about ſix or eight Inches aſunder; and then, if they are kept clear from Weeds, it is the only Culture they require. Some of theſe Plants will flower the ſame Seaſon they are ſown; but unleſs the *Autumn* proves dry and warm, they ſeldom produce good Seeds; therefore the ſureſt Method is to ſow the Seeds in *Autumn*, when the Plants will come up, and abide the *Winter*; ſo will flower early the following *Summer*, and the Seeds will come to Perfection.

The fourth Sort will ſometimes live two Years, if it grows on a lean dry Soil; but if this is ſown in *Autumn*, as the former Sort, it will flower, and produce good Seeds.

The fifth, ſixth, ſeventh, eighth, ninth, tenth, and eleventh Sorts, are all of them annual Plants; theſe ſhould be alſo ſown about the Middle of *Auguſt*, on a dry poor Soil in a warm Situation, where the Plants will abide the Cold of our *Winters* very well, and will flower early the following *Spring*, ſo that good Seeds may be obtain'd from them. Theſe Seeds, if they are permitted to ſcatter, will come up and thrive without any farther Care, but to keep them from being over-run with Weeds; therefore may be allowed a Place on dry rubbiſhy Borders, or on old Walls or Ruins, where they will flower, and make an agreeable Variety.

The twelfth Sort produces large fair Flowers, which continue a long time in Beauty; ſo is worthy of a Place in every good Garden. This Sort is at preſent very rare in the *Engliſh* Gardens; but as it may be eaſily propagated by Cuttings, ſo it may be treated in the ſame manner as the *Candy-tuſt-tree*; with which Management theſe Plants will thrive and flower extremely well.

THISTLE: *vide* Carduus.

THORN-APPLE: *vide* Stramonium.

THORN, the Glaſtenbury: *vide* Meſpilus.

THUNDER, is defined by ſome to be a Noiſe in the loweſt Region of the Air, excited by a ſudden kindling of ſulphureous Exhalations.

Some alſo account for it, by ſuppoſing two Clouds impending over one another; the upper and rarer whereof becoming condenſed by a freſh Acceſſion of the Air, raiſed thither by Warmth from the lower Parts of the Atmoſphere, or driven upon it by the Wind, immediately falls forcibly down upon the lower and denſer Cloud; by which Fall the Air interpoſed between the two being compreſs'd, that next the Extremities of the two Clouds is ſqueez'd out, and leaves Room for the Extremity of the upper Cloud to cloſe tight upon the under: thus a great Quantity of Air is incloſed, which eſcaping thro' ſome winding irregular Vent or Paſſage, it occaſions the Noiſe we call *Thunder*.

But this only reaches to the *Phænomena* of *Thunder* heard without *Lightning*; and, in Effect, we have now a better Solution: that *Thunder* is not occaſion'd by the falling of the Clouds, but by the kindling of ſulphureous Exhalations in the ſame manner as the Noiſe of *Aurum Fulminans*.

Sir *Iſaac Newton* ſays, there are ſulphureous Exhalations always aſcending into the Air, when the Earth is dry; there they ferment with the nitrous Acids, and ſometimes taking Fire, generate into *Thunder*, *Lightnings*, &c.

That beſides the Vapours raiſed from Water, *&c.* there are alſo Exhalations carried off from *Sulphur*, *Bitumen*, *volatile*

latile Salts, &c. is paſt all Doubt: the vaſt Quantity of ſulphureous and bituminous Matter all over the Surface of the Earth, and the volatile Salts of Plants and Animals afford ſuch an ample Stock thereof, that it is no Wonder the Air ſhould be fill'd with ſuch Particles, raiſed higher or lower, according to their greater or leſs Degree of Subtilty and Activity, and more copiouſly ſpread in this or that Quarter, according to the Direction of the Winds, &c.

The Atmoſphere about the Earth abounds with nitrous Particles of a ſpirituous Nature, which are every-where carried along with it; beſides which ſort of Particles, there are others raiſed up into the Air, which may be ſomewhat of the Nature of ſulphureous, nitrous, and other combuſtible Bodies: as we ſee Spirit of Wine, Spirit of Turpentine, Camphire, and almoſt all other combuſtible Bodies will by Heat be rarefied into the Form of Air or Smoke, and be raiſed up into the Air.

All which, if they have a ſufficient Degree of Heat will catch Fire, or be turn'd into Flame by the nitrous Parts of the Air, as thouſands of Experiments might be brought to prove.

There are alſo other Sorts of theſe ſulphureous Steams which ariſe from the ſubterraneous and mineral Bodies, which only by their coming to mix with the Nitre of the Air, tho' they have no ſenſible Heat in them, will ſo ferment and act one upon another as to produce an actual Flame, which is a thing that has often been found in Mines, and more eſpecially if any Part of them be kindled; then the whole Train, which is mingled with the contiguous Air, will immediately take Fire like a Train of Gunpowder, and then run from one End of thoſe Vapours to the other, be they ever ſo long; as I could prove by a multitude of Relaons from Coal Mines, and ſeveral other Mines.

The Aſcenſion of which Vapours is ſo ſudden, and with ſuch Violence and Swiftneſs runs from one End to the other, as often to kill the Miners, blow up their Props, Turns, Stays, Houſes, &c. and produces as prodigious Effects, as if a vaſt Quantity of Gun-powder had been fired in the Mine.

Now *Lightning* in the Air ſeems to be much of the ſame Nature; for the Air is continually furniſh'd with ſpirituous, nitrous Parts, and the *Summer* Heat, whenever extraordinary, raiſes up out of the Earth (and to this the ſubterranean Heat alſo is continually concurring) a great Quantity of ſulphureous Vapours, which are of ſuch a Nature, as that meeting with the Nitre of the Air, they work upon each other, and thereby begin a farther Degree of Heat, which gradually increaſes, till at laſt it arrives at a certain Pitch, and then they fall upon, and work upon one another, producing an actual Fire and Flame, which with wonderful Swiftneſs fires the whole Train, and ſo produces a Flaſh and Noiſe. Thus Dr. *Hook*.

Dr. *Wallis*, in *Philoſ. Tranſact.* N°. 231. ſays, that *Thunder* and *Lightning* are ſo very like the Effects of fired Gunpowder, that we may reaſonably judge they proceed from the like Cauſes.

Now the principal Ingredients in Gunpowder are Nitre and Sulphur, (the Admiſſion of Charcoal being chiefly to keep their Parts ſeparate, for the better kindling of it) ſo that if we ſuppoſe in the Air a convenient Mixture of nitrous and ſulphureous Vapours, and thoſe by Accident to take Fire, ſuch Exploſion may well follow with Noiſe and Light, as in the firing of Gunpowder; and being once kindled, it will run from Place to Place, as the Vapour leads it, like as in a Train of Gunpowder, with the like Effects.

This Exploſion, if high in the Air, and far from us, will do no Miſchief, or not conſiderable, like a Parcel of Gunpowder fired in the open Air, where nothing is near enough to be hurt by it: but if the Exploſion be near to us, or amongſt us, it may kill Men or Cattle, tear Trees, fire Gunpowder, break Houſes, or the like, which Gunpowder would do in like Circumſtances.

This *Nearneſs* and *Farneſs* may be eſtimated by the Diſtance of the Time between ſeeing the Flaſh of *Lightning*, and hearing the Clap of *Thunder*; for tho' in their Generation they be *ſimultaneous*, yet Light moving faſter than Sound, they come to us ſucceſſively.

I have obſerv'd, that commonly the Noiſe is about ſeven or eight Seconds after the Flaſh; but ſometimes it is much ſooner in a Second or two, or leſs than that, juſt after the Flaſh; and then the Exploſion muſt needs be very near us, and even amongſt us: and, in ſuch Caſes, I have more than once preſaged the Expectation of Miſchief, and it hath proved accordingly.

Now that there is in *Lightning* a ſulphureous Vapour, is manifeſt from the ſulphureous Smell that attends it, and the ſultry Heat in the Air, which is commonly a Fore-runner of *Lightning*.

And that there is a nitrous Vapour in it, we may reaſonably judge, becauſe we do not know of any Body ſo liable to a ſudden and violent Exploſion.

As to the kindling of thoſe Materials, in order to ſuch an Exploſion, I am told, that a Mixture of Sulphur and Filings of Steel, with the Admiſſion of a little Water, will not only produce a great Efferveſcence, but will of itſelf break forth into an actual Fire: I ſay, a *little Water*, becauſe too much will hinder the Operation, or quench the Fire.

And this I take to be the Cauſe of the *Bath-waters*, and other hot Springs, where Steel and Sulphur cauſe a great Efferveſcence, but no Flame; ſo that there wants only ſome *Chalybeate* or *vitriolick Vapour* (or ſomewhat equivalent) to produce the whole Effect, (there being no Want of aqueous Matter in the Clouds) and there is no doubt, but that amongſt the various *Effluvia* from the Earth, there may be copious Supplies of Matter for ſuch Mixtures.

The ſame Account may be alſo given of *Ætna*, and other burning Mountains, where the Mixture of Iron and Sulphur may give a Flame, which is often attended with prodigious Exploſions and Earthquakes, from great Quantities of Nitre, as in ſpringing a Mine.

M. *Le Clerc* defines *Thunder to be a rumbling Noiſe in the higheſt Region of the Air, occaſioned by the ſudden Inflammation of Exhalations.*

This he explains and accounts for to the Purpoſes following:

Beſides thoſe Vapours that are raiſed by the Heat of the Sun, out of the Water and moiſt Places, there are alſo a world of Particles, which are carried off from Sulphur, Bitumen, volatile Salts, and other Bodies of the like Nature; theſe Particles fly about in the Air, either higher or lower, according to the various Degrees of their Levity and Gravity; and theſe are thoſe which are by Naturaliſts commonly call'd Exhalations.

Since it is evident, that there is a vaſt Quantity of ſulphureous and bituminous Matter all over the Surface of the Earth, and alſo that both Plants and Animals abound with volatile Salts, there is no Cauſe that we ſhould wonder why the Air is fill'd with ſuch Particles by the Heat of the Sun.

Nor is it poſſible but that they ſhould be driven about all over the Air; but it is not to be doubted, but that they ariſe in greateſt plenty from dry ſun-burnt Places, and hang thereabout; and hence it is eaſy to account for all thoſe Meteors, which are inflamed in the Air.

In all aerial Fires there are three Things obſervable:

1. That they are lighted without any human Means, and by ſome inviſible Way.
2. That they run about the Air in various Figures.
3. That ſome of them continue longer than others do; but yet they all vaniſh in a ſhort time.

In order to make a Flame or Spark appear, there is nothing more neceſſary, than that there ſhould be ſome Particles ſo whirl'd about in the Air, as to caſt aſide all the groſſer Matter, and play about in the moſt ſubtil Part of the Air.

Now there are ſome Matters which are apter to be put in Motion than others; ſuch as the Parts of Sulphur, Bitumen, Nitre, &c.

Therefore, when a ſufficient Quantity of Matter of theſe Kinds are gotten together, it is no difficult matter for one or two of thoſe Particles to be whirl'd about by the Heat of the Air; and when they are once inflamed, to ſet Fire to all the reſt that are about them; as a Conſequence of which it is obſervable, that theſe aerial Fires are common in *Summer*, but more rare in *Winter*; and by how much the *Summer* is hotter, the more common ſuch Fires are: And this ſufficienly ſhews, that the Matter of ſuch Fires is raiſed and inflamed by the heat of the Air, and the impetuoſity of its Motion.

This may be demonſtrated by an Experiment made by the Preparation which Chymiſts call *Aurum fulminans*. Gold being diſſolved in *Aqua Regia*, and precipitated with Oil of *Tartar*, the Duſt which ſinks to the Bottom, after it has been dried gradually, and without Fire, will afterwards be fired by a moderate Heat, and will go off with a Noiſe like that of a Muſquet diſcharged.

This Experiment may alſo be made at a leſs Expence, and alſo as effectually, by mixing three Drams of Salt-petre with one Dram of Brimſtone, and a Dram and a half of Tartar, and beating them to a very fine Powder; this being done, the Powder will take Fire as readily as the *Aurum fulminans*, but will not give quite ſo great a Crack.

Now if it be conſidered, that the Particles of Nitre, Sulphur, and Tartar, which fly in Air, are much finer than thoſe of the Compoſition before-mention'd; it is eaſy to imagine,

gine, that they may be fired by a moderate Heat aloft in the Air, if they be mix'd according to the aforeſaid Proportion.

This ſort of Matter muſt be carried about the Air in various Figures, according as the Winds blow, and as it is greater or leſſer in Quantity, and according as it takes Fire.

If the Fire begins at one End, and burns gradually, it is call'd a *Lamp*; but if a long Exhalation takes Fire at once, it is call'd a *Dart:* Sometimes theſe Exhalations are hurried one way or other by the Stream of the Air, while they are in Flame; ſometimes they continue in the ſame Place, and then they are call'd *Beams*; at other times the Clouds part, and the Sky ſeems to retire, which may be cauſed by the Wind, and a Flame will flaſh out at this Opening; when this happens it is call'd a *Chaſm*.

When burning Exhalations have leſs Sulphur in them (which yields a paler Flame) than Nitre, Bitumen, or Tartar, they appear as red as Blood.

Tho' this Sort of Inflammation may appear either by Night or Day, yet they will be more plain to be ſeen in the Night, in the Abſence of the Sun, the prevalent Light of which obſcures the Sight.

Thoſe which are commonly call'd *Shooting Stars*, are but ſmall Exhalations in our Air, and therefore are not properly *Stars*.

Ignes fatui, [*Jack-in-a-Lanthorn*, *Will-in-a-Wiſp*, &c.] ſeem to conſiſt of a more greaſy Exhalation. It is evident, that oily Subſtances, tho' they are eaſily lighted, yet they are not ſpent ſo ſoon as thoſe of Sulphur and Nitre.

Hence it may be learn'd, that all ſuch inflamed Exhalations muſt neceſſarily diſappear ſoon, becauſe the ſubtil Matter of which they conſiſt is ſoon ſpent. But as the Matter of them is not all alike, ſo their Continuance is not exactly the ſame: We may obſerve that a Flame, which is raiſed out of various Materials, will either laſt longer, or be extinguiſh'd ſooner, according as they are compoſed.

Oil mix'd with Bitumen or Sulphur will flame longer than if mix'd with Nitre.

From what has been ſaid, it will be no difficult Matter to conceive how *Thunder* is produced: for the Experiment ſhews, that Flame which throws off the Air with great Violence, ſometimes occaſions a great Crack. And it being an eaſy matter for heterogeneous Particles to mix in great Quantities in the upper Region of the Air, and to be ſet on Fire by a moderate Heat; there is no need to have Recourſe to any thing elſe to explain the Cauſe of *Thunder*.

As for the Noiſe of *Thunder*, we may be ſatisfied by all Experiments, that it cannot be any otherwiſe produced, than by a ſwift and vehement Exploſion of the Air, which is forced every Way; and the Motion of it being continued to our Ears, ſtrikes the *Tympana* [*Drums*] of them, and this cauſes the Senſation we call Sound.

As to the *Noiſe of Thunder*, it is obſervable, that it ſounds as if it paſs'd thro' Arches and was broken variouſly. The Reaſon of it is, becauſe the Flame is kindled among the Clouds, that hang over one another, and the agitated Air flies between them. Thus it may be obſerved, that when a Gun is diſcharged at a good Diſtance, the Inequalities of the Ground do cauſe it to ſound to us with ſeveral repeated broken Reports.

It is alſo plain, that the Flame is the Cauſe of *Thunder*, becauſe moſt commonly the Flaſh is ſeen before the Crack is heard. There is not ſuch a Diſtance indeed between the Firing of the Exhalation and the Concuſſion of the Air, as there is between the ſeeing of the *Flaſh* and the hearing of the *Thunder*. But the Reaſon of it is, that we ſee any thing, as it were, in an Inſtant: but Sounds are convey'd to our Ears by a ſucceſſive Motion of the Air, and therefore more Time is required to hear than to ſee.

By what has been ſaid before it appears, that *Lightning* is an *inflamed Exhalation, compoſed of Sulphur and Nitre, or ſome ſuch Matter, or a Mixture of ſeveral Sorts together*. The Inflammation is ſometimes with a Noiſe, as in cloudy Weather, and ſometimes without, as in clear; which cauſes ſome Variety in it.

Sometimes it lightens without Noiſe, which is when the Exhalation conſiſts of Matter ſofter than ordinary, which is not ſo ſoon kindled. If it conſiſts only of ſulphureous Particles, which are a ſofter Sort, they are not ſo apt to fire all at once, nor give the Air ſuch a Concuſſion, as ſhall cauſe us to hear the Noiſe of it: but if there be many Particles of Nitre and Tartar mingled with the Sulphur, the former being harder, cauſe the whole Exhalation to burſt at once with ſuch Impetuoſity as to rend the Air, and to make a vaſt Noiſe.

The Noiſe of *Thunder* is more diverſify'd in cloudy Weather, becauſe the Air is variouſly reverberated from the Clouds to us; but if there are no Clouds, the Air flows thro' the open Spaces to our Ears, more freely and evenly; and it frequently *lightens* in ſuch Weather without *Thunder*, becauſe the Inflammation conſiſts only of ſulphureous Particles; and, on the contrary, it often *thunders* in cloudy Weather without any *Lightning* appearing viſibly, becauſe it is intercepted by the Clouds.

Rain generally attends *Thunder* and *Lightning*, either at the ſame Time or ſoon after; and it frequently rains faſter after a Clap of *Thunder:* So that Rain ſeems to be the Effect of *Thunder*.

As for *Thunderbolts:* When it *thunders* and *lightens*, there ſometimes falls a *Thunderbolt*. This *Thunderbolt* is a moſt rapid Flame, that darts out of the Clouds to the Ground, and ſtrikes thro' every thing that is in its Way: and it is obſerved to have the following peculiar *Phænomena*.

1. That it oftner ſtrikes upon high Places than low; as upon Mountains, Towers, Steeples, Trees, *&c.*

2. That it ſometimes burns Peoples Clothes, without hurting their Bodies.

3. That it ſometimes breaks their Bones, and at the ſame time does not hurt their Fleſh, or their Garments.

4. That it has melted or broken a Sword in a Scabbard, without hurting the Scabbard; and, on the contrary, has ſometimes burnt the Scabbard all over, and at the ſame time done no Harm to the Sword.

From theſe Conſiderations we may conclude, that a *Thunderbolt* is an Exhalation, which is kindled of a ſudden, and is copious enough to be hurried down to us by Winds.

Thunderbolts are moſt commonly darted aſlope, thro' the Air; and this may be occaſion'd by the Winds, which ſeldom or never blow downright. And it is probable, that the Flame is beaten down by the Wind, and reaches the Ground before the Matter of it is quite ſpent.

And this may be the Reaſon, that for the moſt part they ſtrike upon high Places; for as they fall obliquely thro' the Air, they often in their Way meet with Mountains, Towers, *&c.* and the Reaſon that the Force of their Flame is very different, is probably from the Difference of the Exhalations which form the *Thunderbolt*, the Bodies from which they are collected being ſulphureous, bituminous, or ſaline; and from thence it may be, that it ſometimes burns Garments at the ſame time that it paſſes over the Bodies without doing them any Harm.

Sometimes it penetrates the ſoft Fleſh harmleſsly, as to that, and yet breaks the hard Bones; as Gold and other Metals are diſſolv'd by *Aqua Regia* and *Aqua Fortis*, and in the mean time the Paper ſhall not be hurt by them. And for the ſame Reaſon it is, that a Sword may be melted in a Scabbard, and yet the Scabbard remain intire; and ſo it would be if they were both laid together in *Aqua Fortis:* becauſe the acute Parts of the *Aqua Fortis* do not operate upon ſoft Matter, the Particles of which are branched, as they do upon harder Bodies, into the Pores of which they inſinuate themſelves, and diſſolve the Contexture.

Again; *Thunderbolts* are more common in *Summer* and *Autumn* than they are in *Winter* and the *Spring*; for which, three Reaſons may be given:

1. That the Cold is ſo great in the upper Region of the Air in *Winter* and *Spring*, that it will not permit the Exhalations to take Fire.

2. That the Exhalations are fewer in thoſe Seaſons, becauſe they are kept from aſcending by the Cold; for they cannot riſe in any Quantity without a conſiderable Heat.

3. The Air is ſo fill'd with Vapours and Clouds in the *Winter* and *Spring*, that all Exhalations are dilated, and therefore are not capable of being inflamed.

Alſo ſome Places are more obnoxious to *Thunderbolts* than others, and they are ſuch as ſend forth plenty of Exhalations for that Purpoſe, and where they are not eaſily diſperſed by the Winds; and thence in hotter Countries, where the Sun exhales out of the Earth all that can be exhaled, *Thunderbolts* are more frequent than they are in Climates that are colder: So that in thoſe Places that are encompaſs'd with high Mountains, where the Wind has not Acceſs to blow ſo freely, the Exhalations are kept together, and *Thunderbolts* are more common; but in ſpacious Plains, which are, as it were, ſwept by the Winds, theſe Exhalations are ſhatter'd and blown about.

THURIFEROUS, ſignifies bearing or producing Frankincenſe.

THUYA, [ſo call'd of θύω, to *perfume with Smoke*; becauſe this Plant hath a penetrating Smell] The Arbor Vitæ, *vulgo*.

The *Characters* are;

The Leaves are ever-green, ſquamous, and compreſs'd, having ſmall oblong ſquamous Cones growing upon the Backſides, in which the Seeds are contained.

The *Species* are;

1. Thuya *Theophraſti. C. B. P.* The Arbor Vitæ, *or* Tree of Life.
2. Thuya *Theophraſti, folio variegato.* The ſtriped Arbor Vitæ, *or* Tree of Life.

The firſt Sort was formerly in greater Eſteem than at preſent in the *Engliſh* Gardens; it is commonly raiſed in the Nurſeries near *London*, where their Heads are ſheer'd into a conical Figure; but ſince that low Taſte of Gardening, in crowding vaſt Quantities of clipp'd Plants into Gardens, is juſtly exploded, theſe Trees do not meet with ſo good Reception as formerly: But notwithſtanding this, there may be ſome of them planted in Gardens to great Advantage, if they are placed in Wilderneſſes, or Clumps of ever-green Trees, where theſe ſhould be planted with other Sorts which are nearly of the ſame Growth; and in ſuch Plantations the dull, heavy green Colour of theſe Leaves, will be very uſeful in adding to the Luſtre of thoſe which are of a more lively green, and make a fine Variety.

The ſtrip'd Sort is preſerv'd by ſome who are curious in collecting ſuch Varieties; but there is little Beauty in it.

Theſe Trees may by propagated by laying down their tender Branches in the *Spring* of the Year, obſerving to ſlit them at a Joint (as is commonly practiſed for Carnations) as alſo to water them in dry Weather, and keep them conſtantly clear from Weeds: If theſe Things be duly obſerved, the Layers will be rooted by the *Spring* following, by which time they may be taken off, and tranſplanted into a Nurſery in Rows three Feet aſunder, and the Plants eighteen Inches Diſtance in the Rows; obſerving to lay a little Mulch upon the Surface of the Ground about their Roots, to prevent the Wind from drying it, and in dry Weather they ſhould be often refreſh'd with Water, until they have taken Root, after which they muſt be conſtantly kept clear from Weeds, and the Ground dug every *Spring* between the Rows, that their Roots may extend themſelves on every Side. In this Nurſery they may remain five or ſix Years, and may then be tranſplanted where they are to remain for good. The beſt Seaſon to remove theſe Trees is about the Beginning of *April*, juſt before they ſhoot.

Theſe Trees may alſo be propagated by Slips, which ſhould be planted on a moiſt Soil in *April*, and if ſhaded in very hot dry Weather, moſt of them will take Root, after which they muſt be treated as hath been directed for the Layers.

The Leaves of this Tree being bruiſed between the Fingers, emit a ſtrong Scent, ſomewhat like Ointment; and I have been inform'd, that ſome Perſons do make an Ointment thereof, which is eſteem'd excellent for freſh Wounds. The Wood of this Tree is greatly eſteem'd by the Turners, for making Bowls, Boxes, *&c.* But as the Tree is ſlow of Growth, and ſeldom arrives to any great Magnitude in this Country, (rarely growing above twenty Feet high) ſo it is not worth cultivating for its Timber.

THYMBRA.

The *Characters* are;

It hath a labiated Flower, like thoſe of Savory, Thyme, *and* Calaminth, *from which this Plant differs, in having its Flowers growing in Whorles.*

The *Species* are;

1. Thymbra *legitima. Cluſ. Hiſt.* The true Thymbra of Cluſius.
2. Thymbra *Hiſpanica, coridis folio. Inſt. R. H.* Spaniſh Thymbra, with a fair Heathpine-leaf.
3. Thymbra *Sancti Juliani, ſive Satureja vera. Lob. Icon.* Thymbra of Mount Saint Julian, or the true Savory of Lobel.

The firſt Sort riſes about two Feet high, and hath a woody Stem, and divides into many Branches, ſo as to form a ſmall Buſh; the Leaves of this Plant are ſomewhat like thoſe of *Savory*, and have a ſtrong aromatic Scent when bruiſed. This Sort grows plentifully in ſeveral Iſlands of the *Archipelago*, from whence the Seeds were ſent to ſeveral curious Perſons, who cultivate it for the ſake of Variety. This Kind may be propagated by Cuttings, which ſhould be planted in the Beginning of *April*, on a Border, where they may have only the Morning Sun; and in dry Weather they muſt be conſtantly watered, until they have taken good Root; after which time, they will require no farther Care, but to keep them clear from Weeds, till *Michaelmas*, at which time the Plants ſhould be carefully taken up and tranſplanted, ſome of them into Pots, that they may be ſhelter'd in *Winter*, and the others on a dry lean Soil in a warm Situation, where they will endure the Cold of our ordinary *Winters* very well; but in ſevere *Winters* they are frequently deſtroyed; therefore it is proper to preſerve two or three Plants in Pots under Shelter, leſt thoſe in the open Air ſhould be killed.

The ſecond Sort was diſcovered by Dr. *Tournefort* in *Caſtile*, where it grew plentifully on ſtony Ground. This a a low ever-green buſhy Plant, ſomewhat like *Thyme*; but the Leaves are broader, and the whole Plant has a more dull and ſomewhat fœtid Smell. This may be propagated by Seeds, or by Cuttings as the former Sort, and ſhould be treated in the ſame manner.

The third Sort grows in ſeveral Places in *Italy* and *Sicily*, commonly on ſtony Land, or on old Walls. This is a low Plant, ſeldom riſing above ſix Inches high, ſending forth many upright Branches from the Root, which have Spikes of ſmall Flowers, growing in Whorles on their Tops. This Sort is propagated by Seeds, which ſhould be ſown on a light lean Soil; and when the Plants are ſtrong enough to tranſplant, ſome of them ſhould be planted in Pots to be ſhelter'd in *Winter*, and the others may remain where they were ſown, obſerving to keep them clear from Weeds, which is all the Culture they require. This Sort ſeldom continues longer than two or three Years, ſo that Seeds ſhould be ſown every other Seaſon to raiſe a Supply of young Plants.

Theſe Plants are ſuppoſed to have the ſame Virtues as *Savory*, to which they are nearly allied.

Moſt of the aromatic verticillate Plants will endure the Cold of the moſt ſevere *Winters* in *England*, provided they grow on rocky ſtony dry Ground, where they will be ſhort and ſtunted; and are alſo much ſtronger ſcented, than when they are ſown or planted on a richer Soil; nay, moſt of them will grow on old Walls and Buildings, where they will root into the Joints between the Stones or Bricks; and tho' they are expoſed to the ſevereſt Winds, yet will they reſiſt the Cold, when the Plants of the ſame Kinds, which are in the warmeſt Situations of the Garden, have been intirely deſtroyed. Of this there have been ſeveral Inſtances within the Memory of ſeveral Perſons now living, when all the *Roſemary*, and many other of the like aromatic Herbs, have been deſtroyed in the Gardens; when ſome few Plants, which were growing on old Walls, have eſcaped; whereby their Species have been preſerved in *England*.

THYMELÆA, [this Plant is ſo call'd of θύμȣ, *Thyme*, and ἐλαία, an *Olive-tree*; becauſe its Leaves are narrow as the *Thyme*, and thick as thoſe of the *Olive-tree*] Spurge Laurel, *or* Meſereon.

The *Characters* are;

The Flower conſiſts of one Leaf, is for the moſt part Funnel-ſhaped, and cut into four Segments, from whoſe Center riſes the Pointal, which afterwards becomes an oval Fruit, which is in ſome full of Juice, but in others is dry, in each of which is contained one oblong Seed.

The *Species* are;

1. Thymelæa *laurifolia ſemper-virens, ſeu laureola mas. Tourn.* The Spurge, *or* Dwarf Laurel.
2. Thymelæa *laurifolia ſemper-virens, foliis variegatis.* The ſtriped Spurge Laurel.
3. Thymelæa *lauri folio deciduo, ſive Laureola fœmina. Tourn.* The common Meſereon.
4. Thymelæa *lauri folio deciduo, flore albido, fructu flaveſcente. Tourn.* The Meſereon with white Flowers and yellowiſh Fruit.
5. Thymelæa *lauri folio deciduo, flore rubro.* The Meſereon with red Flowers.
6. Thymelæa *lauri folio deciduo, foliis ex luteo variegatis.* The common Meſereon with ſtrip'd Leaves.
7. Thymelæa *foliis lini. C. B. P.* Spurge-olive, or Laurel with Flax-leaves.
8. Thymelæa *Alpina linifolia humilior, flore purpureo odoratiſſimo. Inſt. R. H.* Dwarf Spurge-laurel of the Alps, with a Flax-leaf, and a very ſweet purple Flower.
9. Thymelæa *Alpina linifolia humilior, flore albo odoratiſſimo. Inſt. R. H.* Dwarf Spurge-laurel of the Alps, with a Flax-leaf, and a very ſweet white Flower.

10. THYMELÆA *villoſa minor Luſitanica, polygoni folio. Inſt. R. H.* Smaller hairy Portugal Spurge-laurel, with a Knot-graſs-leaf.

11. THYMELÆA *linariæ folio, vulgaris. Inſt. R. H.* Common Spurge-laurel, with a Toad-flax-leaf.

12. THYMELÆA *linariæ folio, Hiſpanica. Inſt. R. H.* Spaniſh Spurge-laurel, with a Toad-flax-leaf.

13. THYMELÆA *latifolia Hiſpanica, oleæ foliis. Inſt. R. H.* Broad-leav'd Spaniſh Spurge-laurel, with Olive-leaves.

14. THYMELÆA *argentea Italica, oleæ foliis. Inſt. R. H.* Silvery Italian Spurge-laurel, with Olive-leaves.

15. THYMELÆA *ſaxatilis, oleæ folio. Inſt. R. H.* Rocky Spurge-laurel, with an Olive-leaf.

16. THYMELÆA *Alpina, folio utrinque incano, flore albo. Inſt. R. H.* Alpine Spurge-laurel, with a Leaf hoary on both Sides, and a white Flower.

17. THYMELÆA *foliis polygalæ glabris. C. B. P.* Spurge-laurel, with ſmooth Milkwort-leaves.

18. THYMELÆA *foliis polygalæ villoſis. Inſt. R. H.* Spurge-laurel, with hairy Milkwort-leaves.

19. THYMELÆA *foliis chamelææ minoribus ſubhirſutis. C. B. P.* Spurge-laurel, with ſmaller-Widow-wail-leaves, which are ſomewhat hairy.

20. THYMELÆA *Hiſpanica, foliis myrti incanis. Inſt. R. H.* Spaniſh Spurge-laurel, with hoary Myrtle-leaves.

21. THYMELÆA *Pyrenaica juniperifolia, ramulis ſurrectis. Inſt. R. H.* Pyrenean Spurge-laurel, with a Juniper-leaf, and upright Branches.

22. THYMELÆA *foliis candicantibus, ſerici inſtar mollibus. C. B. P.* Spurge-laurel, with whitiſh ſoft Leaves reſembling Silk.

23. THYMELÆA *Cretica, oleæ folio, ſubtus villoſo. Tourn. Cor.* Spurge-laurel of Crete, with an Olive-leaf, hairy underneath.

24. THYMELÆA *Cretica, oleæ folio utrinque glabro. Tourn. Cor.* Spurge-laurel of Crete, with an Olive-leaf, ſmooth on both Sides.

25. THYMELÆA *Pontica, citrei foliis. Tourn. Cor.* Pontic Spurge-laurel, with Citron-leaves.

26. THYMELÆA *orientalis minima, laureolæ folio, floribus glomeratis albis. Tourn. Cor.* The leaſt eaſtern Spurge-olive, with the common Spurge-laurel-leaves, and white Flowers growing in Cluſters.

27. THYMELÆA *orientalis, buxi folio ſubtus villoſo, flore albo. Tourn. Cor.* Eaſtern Spurge-laurel, with a Box-leaf, hairy on the Underſide, and a white Flower.

28. THYMELÆA *orientalis, ſalicis folio, flore albo odoratiſſimo. Tourn Cor.* Eaſtern Spurge-laurel, with a Willow-leaf, and a white ſweet-ſcented Flower.

29. THYMELÆA *linifoliæ ſimilis, Africana, floribus pallidis odoratiſſimis. Prod. Par. Bat.* African Spurge-laurel like the firſt Sort, with pale ſweet-ſcented Flowers.

30. THYMELÆA *linifoliæ ſimilis, Africana, foliis lucidis, latioribus & obtuſis. Par. Bat.* African Spurge-laurel like the firſt Sort, with broader ſhining and obtuſe Leaves.

31. THYMELÆA *Africana, foliis lini, floribus in capitulum congeſtis. Oldenl.* African Spurge-laurel, with Flax-leaves, and Flowers collected in Heads.

32. THYMELÆA *Africana, roriſmarini folio anguſtiſſimo breviori. Oldenl.* African Spurge-laurel, with a very narrow and ſhorter Roſemary-leaf.

33. THYMELÆA *Africana, roriſmarini folio anguſtiſſimo longiori. Oldenl.* African Spurge-laurel, with a very narrow and longer Roſemary-leaf.

34. THYMELÆA *Africana, roriſmarini folio, floribus longioribus. Oldenl.* African Spurge-laurel, with a Roſemary-leaf, and longer Flowers.

35. THYMELÆA *Africana, ſanamundæ facie, ericæ foliis anguſtiſſimis. Prod. Par. Bat.* African Spurge-laurel, with the Face of Sanamunda, and very narrow Heath-leaves.

36. THYMELÆA *Africana Tarton-zaire ſimilis, floribus in capitulum congeſtis. Oldenl.* African Spurge-laurel, like the Tarton-zaire, with Flowers collected in a Head.

37. THYMELÆA *Africana, foliis ruſci. Oldenl.* African Spurge-laurel, with Butchers-broom-leaves.

38. THYMELÆA *Africana fruteſcens, jaſmini flore, foliis polygalæ. Oldenl.* African ſhrubby Spurge-laurel, with a Jaſmine-flower, and Leaves of Milkwort.

39. THYMELÆA *Capenſis, nepæ Theophraſti foliis aculeatis, flore parvo purpureo. Pluk. Phyt.* Spurge-laurel of the Cape of Good Hope, with prickly Furz-leaves, and a ſmall purple Flower.

40. THYMELÆA *Americana fruteſcens, roriſmarini folio, flore albo. Plum.* Shrubby American Spurge-laurel, with a Roſemary-leaf, and a white Flower.

The firſt of theſe Plants is found wild in Woods and other ſhady Places in divers Parts of *England*, but is often cultivated in Gardens for Variety; where, if it is planted in Wilderneſſes, or ſhady Walks, it will thrive very well; and being an Ever-green, and producing its Flowers in *Winter*, when few other Plants do flower, makes it the more acceptable. The ſecond Sort is a Variety of the firſt, which is preſerved for the Beauty of its ſtrip'd Leaves.

Both theſe Plants may be propagated by Suckers taken from the old Plants, or by Layers, which ſhould be taken off in *Autumn*, and planted in a ſtrong Soil and ſhady Situation, where, after they have taken Root, they will require little farther Care.

The ſeveral Sorts of *Meſereon* are propagated by ſowing their Seeds, the beſt Seaſon for which is in *Auguſt*, ſoon after they are ripe, when they begin to fall from the Trees: Theſe ſhould be ſown upon an Eaſt Border, where they may have only the Morning Sun, and covered about half an Inch with freſh Earth; in the *Spring* the Plants will appear, when they muſt be carefully clear'd from Weeds, and in dry Weather ſhould be often watered, which will greatly promote their Growth. In this Border they may remain two Years, by which Time they will be ſtrong enough to tranſplant; when there ſhould be a Spot of ſtrong freſh Earth prepared for them, into which they ſhould be planted in *Autumn*, in Rows three Feet diſtance, and the Plants eighteen Inches aſunder in the Rows, treating 'em afterwards in uſual Manner with other Kinds of Shrubs, while in this Nurſery; and when they are large enough to plant out for good, they may be taken up in *Autumn*, with a Ball of Earth to the Root of each Plant, and placed where they are to remain, which ſhould be in a ſtrong, moiſt Soil, and a ſhady Situation, where they will thrive and flower extreamly well.

Theſe Plants are great Ornaments to a Garden early in the *Spring*, before other Things are in flower, for if the Seaſon is mild they often flower in *January*, but in *February* they are always in Perfection. They ſeldom grow to be more than five or ſix Feet high in *England*, ſo ſhould be planted among other Shrubs of the ſame Growth.

The Sort with ſtrip'd Leaves may be propagated by budding or inarching it upon the plain Sort, becauſe the Seeds will not produce ſtrip'd Plants.

The ſeventh and fifteen following Sorts, grow wild in *Germany*, *Auſtria*, *Bohemia*, on the *Alps*, in *Spain*, *Portugal*, or the South of *France*, as they are particulariz'd in their Names: theſe Plants will live in the open Air in *England*, provided they are planted in a warm Situation.

The twenty-third, twenty-fourth, twenty-fifth, twenty-ſixth, twenty-ſeventh and twenty-eighth Sorts, were diſcovered by Dr. *Tournefort* in the *Levant*; from whence ſome of theſe Plants have been obtained, and are preſerved in curious Botanic Gardens for Variety. Theſe Sorts are alſo pretty hardy, ſo will endure the Cold of our ordinary *Winters* very well in the open Air, provided they are placed in a ſhelter'd Situation. All theſe Plants are propagated by Seeds, which ſhould be ſown in the *Autumn* as ſoon as they ar ripe; for if they are kept out of the Ground till *Spring*, the ſeldom ſucceed; and if any of them do grow, they will re main in the Ground a whole Year, before the Plants com up. Theſe Seeds ſhould be ſown on a ſhady Border, wher they may only enjoy two or three Hours of the Mornin Sun, and the Soil ſhould be cool and loamy; in dry Wea ther they muſt be duly water'd, and when the Plants ar come up, they ſhould be conſtantly kept clean from Weeds In this Border the Plants ſhould remain till *Michaelmas*, a which Time a freſh Border of loamy Earth ſhould be pre pared to receive the Plants, which ſhould alſo be in a ſhad Situation; then the Plants ſhould be carefully taken up ou of the Seed-bed, and planted in Rows about ſix or ſeve Inches aſunder, and about four Inches diſtance from eac other in the Rows. When theſe Plants have taken ne Root, they will require no farther Care, but to keep the clear from Weeds, and in dry Weather to refreſh them no and then with Water, which will promote their Growt If theſe Plants thrive well, they will be large enough t tranſplant by the following *Michaelmas*, into the Plac where they are deſign'd to remain; which ſhould always b on a pretty ſtrong loamy Soil, rather moiſt than dry; and it be under Cover of Trees, provided they are not t much over-hung, they will thrive better than in an open S tuation, where they are expoſed to the Sun.

Theſe Plants continue green throughout the Year, whic renders them worthy of a Place in good Gardens; where, they are rightly diſpoſed, they will afford an agreeable V riety. Moſt of theſe are low Shrubs, which ſeldom riſe a

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bove two or three Feet high, ſo are very proper to plant under Trees to fill up the Vacancies, where they will have a good Effect. The Seeds of the ſeventh Sort are uſed in Medicine, ſo that the Plants of this Kind are preſerved in Phyſick-gardens, but they make the meanneſt Appearance of all the Sorts.

The twelve Sorts which are laſt mentioned, are much tenderer than the former. All of theſe (except the laſt) grow near the *Cape of Good Hope*; from whence ſeveral of them have been brought into the *European* Gardens. Theſe Plants may alſo be propagated by Seeds, but as they very rarely produce their Seeds in *England*, ſo they are commonly propagated by laying down of their Branches; which, if rightly managed, will take Root in one Year. The beſt Time to lay down the Branches is in the Beginning of *April*; the Branches which are choſen to make Layers, ſhould be of the former Year, or at moſt but two Years old; theſe ſhould be a little twiſted at the Part which is laid in the Ground, which will cauſe them to root the ſooner: In dry Weather they muſt be duly watered, otherwiſe the Shoots will harden, which will prevent their putting out Roots. By the *April* following they will be rooted, when they may be cut off from the old Plants, and each planted into a ſmall Pot, filled with freſh Earth; and if they are plunged into a very moderate Hot-bed, it will forward their taking new Root. Theſe muſt be ſcreened from the Sun every Day till they are rooted; after which Time they muſt be inured to bear the open Air by Degrees; and in the Middle of *May* they ſhould be placed abroad in a ſheltered Situation, where they will make an agreeable Variety amongſt other exotick Plants.

Theſe Plants muſt be removed into the Green-houſe in *Autumn*, and placed where they may enjoy as much free Air as poſſible in mild Weather, but they muſt be protected from Froſt. During the *Winter* Seaſon they muſt be frequently refreſhed with Water, for they are pretty thirſty Plants; but in very cold Weather it muſt be given to them ſparingly. In *Summer* they muſt be placed abroad with the *Geraniums*, *Alaternoides's*, and other Plants of the ſame Country, and treated in the ſame Manner as hath been directed for thoſe; with which Management they will thrive very well. The Flowers of theſe Plants, being very ſmall, do not afford any great Pleaſure, but for the ſingular Oddneſs of the Leaves and Branches. Theſe Plants deſerve a Place in good Green-houſes, for the ſake of Variety.

The laſt Sort is more tender than any of the reſt, this being a Native of the warmer Parts of *America*. This was diſcovered by Father *Plumier*, in ſome of the *French* Settlements in *America*; and hath been obſerved growing in great Plenty at the *Havannah*, by the late Dr. *William Houſtoun*, who ſent the Seeds to *England*: It was alſo found by Mr. *Robert Millar* at *Campechy*, who alſo ſent the Seeds to *England*; from which many Plants have been raiſed.

The Seeds of this Plant ſhould be ſown in Pots of freſh Earth, and then plunged into a moderate Hot-bed of Tanners-bark; obſerving frequently to water the Pots, to keep the Earth moiſt, which will bring up the Plants in about ſix Weeks time. When theſe Plants are about two Inches high, they ſhould be ſhaken out of the Seed-pots, and each planted in a ſmall Pot filled with freſh loamy Earth; and then plunged into a moderate Hot-bed of Tanners-bark, where they muſt be ſhaded from the Heat of the Sun, until they have taken new Root; after which Time they muſt be treated after the ſame Manner as hath been directed for other exotick Plants, which are the Produce of the hotteſt Countries.

In this Hot-bed the Plants may remain till about *Michaelmas*, when the Nights will begin to be too cold for theſe Plants; therefore they ſhould be removed into the Stove, and plunged into the Bark-bed. During the *Winter* Seaſon, theſe Plants muſt be kept very warm, eſpecially while they are young, becauſe they make but little Progreſs the firſt Year; and if they are ſtunted the firſt *Winter*, they do not recover it in a long time after. Theſe Plants ſhould conſtantly remain in the Stove, and ſhould be treated in the ſame Manner as hath been directed for the *Suriana*.

THYMUS, [ſo called of ϑύος, *Odour*, becauſe it is a Plant very *odorous*; or of ϑυμὸ, *animal Spirit*, becauſe it is good in reviving the animal Spirits.] Thyme.

The *Characters* are;

It hath a labiated Flower, conſiſting of one Leaf, whoſe upper Lip is erect, and generally ſplit in two, and the under Lip is divided into three Parts; out of the Flower-cup ariſes the Pointal, accompanied by four Embryo's, which afterwards become ſo many Seeds, incloſed in a Husk, which was before the Flower-cup: To theſe Marks muſt be added, hard ligneous Stalks, and the Flowers gathered into Heads.

The *Species* are;

1. THYMUS *vulgaris, folio latiore. C. B. P.* Common broad-leafed Thyme.
2. THYMUS *vulgaris, folio tenuiore. C. B. P.* Common narrow-leafed Thyme.
3. THYMUS *vulgaris, folio latiore variegato.* Broad-leafed ſtriped Thyme.
4. THYMUS *capitatus, qui Dioſcoridis. C. B. P.* The true Thyme of the Antients.

There are ſeveral other Species of *Thyme*, which are preſerved in Botanick Gardens for Variety; but as they are ſeldom cultivated for Uſe, ſo I ſhall not enumerate them in this Place. The Sort with broad Leaves is the moſt common in *England*; this is cultivated in the Kitchen-gardens as a Soup Herb, and alſo for medicinal Uſe. The next two Sorts are preſerved in many Gardens for Variety, being equally as good as the firſt for Uſe: But the fourth Sort is leſs common in *England* than either of the former.

Theſe Plants may be propagated either by Seeds or parting their Roots; the Seaſon for either is in *March*. If it is done by ſowing the Seeds, it ſhould be done upon a Bed of light Earth, obſerving not to bury the Seeds too deep, which will cauſe them to rot: When the Plants are come up, they ſhould be carefully cleared from Weeds, and if the *Spring* ſhould prove dry, if they are watered twice a Week it will greatly promote their Growth; and in *June* the Plants ſhould be thinned, leaving them about ſix Inches aſunder each Way, that they may have Room to ſpread, and thoſe Plants which are drawn out may be tranſplanted into freſh Beds at the ſame Diſtance, obſerving to water them until they have taken Root, after which they will require no farther Care, but to keep them clear from Weeds, and in the *Winter* following they may be drawn up for Uſe.

But if theſe Plants are propagated by parting their Roots, the old Plants ſhould be taken up about the latter End of *March*, and ſlipt into as many Parts as can be taken off with Root; theſe ſhould be tranſplanted into Beds of freſh light Earth, at ſix or eight Inches Diſtance, obſerving if the Seaſon is dry to water them until they have taken Root, after which they muſt be duly weeded, and they will thrive, and ſoon be fit for Uſe.

In order to ſave Seeds of theſe Plants, ſome of the old Roots ſhould remain unremov'd in the Place where they were ſown the preceding Year; theſe will flower in *June*, and in *July* the Seed will ripen, which muſt be taken as ſoon as it is ripe, and beat out, otherwiſe the firſt Rain will waſh it all out of the Huſks.

Theſe Plants do root greatly in the Ground, and thereby draw out the Goodneſs of a Soil ſooner than moſt other Plants; ſo that whatever is ſown or planted upon a Spot of Ground whereon *Thyme* grew the preceding Year, will ſeldom thrive, unleſs the Ground be trenched deeper than the *Thyme* rooted.

THYME THE LEMON; *vide* Serpillum.

THYME THE MARUM; *vide* Marum.

THYME THE MASTICK; *vide* Maſtichina.

TILIA, [of *Telum*, a *Dart*, becauſe its Wood is uſed in making *Darts*.] The Lime *or* Linden Tree.

The *Characters* are;

The Flower conſiſts of ſeveral Leaves, which are placed orbicularly, and do expand in form of a Roſe, having a long, narrow Leaf, growing to the Foot-ſtalk of each Cluſter of Flowers, from whoſe Cup riſes the Pointal, which afterwards becomes a teſticulated Fruit, conſiſting of one Capſule, containing an oblong Seed in each.

The *Species* are;

1. TILIA *fœmina folio majore. C. B. P.* The common or broad-leafed Lime-tree.
2. TILIA *fœmina, folio minore. C. B. P.* The ſmall-leafed Lime-tree.
3. TILIA *foliis molliter hirſutis, viminibus rubris, fructu tetragono. Raii Syn.* The red-twig'd Lime-tree.
4. TILIA *Caroliniana, folio longius mucronato.* The Carolina Lime-tree.
5. TILIA *fœmina, folio majore variegato.* The ſtriped-leafed Lime-tree.

The three firſt mentioned Trees are very common in *England*, being cultivated in moſt Nurſeries, but the *Carolina* Sort is not at preſent very common; this was ſent from *Carolina*

rolina by Mr. *Mark Cateſby*, in the Year 1726, but as yet there does not appear any conſiderable Difference from the common Sort. That with ſtriped Leaves is preſerved by ſome for the ſake of Variety, but there is no great Beauty in it.

All theſe Trees are eaſily propagated by Layers, which in one Year will take good Root, and may then be taken off and planted in a Nurſery, at four Feet Diſtance Row from Row, and two Feet aſunder in the Rows; the beſt Time to lay them down and to remove them is at *Michaelmas*, when their Leaves begin to fall, that they may take Root before the Froſt comes on, though they may be tranſplanted any time from *September* to *March* in open Weather; but if the Soil is dry, it is much the better Way to remove them in *Autumn*, becauſe it will ſave a great Expence in watering them, eſpecially if the *Spring* ſhould prove dry. In this Nurſery they may remain four or five Years, during which Time the Ground ſhould be dug every *Spring*, and conſtantly kept clear from Weeds, and the large Side-ſhoots pruned off, to cauſe them to advance in Height; but the ſmall Twigs muſt not be pruned off from the Stems, becauſe theſe are abſolutely neceſſary to retain the Sap, for the Augmentation of their Trunks, which are apt to ſhoot up too ſlender, when they are entirely diveſted of all their lateral Twigs. If the Soil in which they are planted be a fat Loam, they will make a prodigious Progreſs in the Growth, ſo that in five Years time they will be fit to tranſplant out where they are to remain.

Theſe Trees were a few Years ſince greatly eſteemed for planting of Walks and Avenues near Habitations, becauſe in a few Years they would afford a pleaſant Shade, and might be removed, when grown to a large Stature, without Hazard, ſo that a Perſon might enjoy the Pleaſure of them in a ſhort Time: But of late they are much leſs valued, on account of their Leaves decaying early in *Autumn*, (eſpecially if the Soil be dry in which they are planted) ſo that they many times are almoſt deſtitute of Leaves by the Beginning of *September*, whereas the *Elm* continues in Beauty a full Month longer, and the Wood of the latter being much preferable to that of the former, has introduced theſe Trees inſtead of *Limes* in moſt of the modern Plantations.

The Timber of the *Lime-tree* is uſed by the *Carvers*, it being a ſoft, light Wood; as alſo by Architects for framing the Models of their Buildings; the *Turners* do alſo uſe it for making light Bowls, Diſhes, &c. but it is too ſoft for any ſtrong Purpoſes.

Theſe Trees will continue ſound a great Number of Years, and if planted in a good loamy Soil will grow to a conſiderable Bulk: I have meaſured one of theſe Trees which was near ten Yards in Girt two Feet above the Ground, and was then in a very thriving Condition; and Sir *Thomas Brown* mentions one of theſe Trees which grew in *Norfolk*, that was ſixteen Yards in Circuit, a Foot and half above Ground, in Height thirty Yards, and in the leaſt Part of the Trunk it was eight Yards and a half.

TINUS: Laurus Tinus, *vulgo*.

The *Characters* are;

The Flowers grow in Cluſters, and conſiſt of one Leaf, which is divided into five Parts toward the Top-part; theſe are ſucceeded by ſmall Fruit, ſhaped ſomewhat like an Olive, but are umbilicated, each containing one Pear-ſhaped Seed.

The *Species* are;

1. TINUS *prior. Cluſ. Hiſt.* The Baſtard ſhining-leafed Laurus Tinus, *vulgo*.
2. TINUS II. *Cluſ. Hiſt.* The rough-leafed Laurus Tinus, *vulgo*.
3. TINUS III. *Cluſ. Hiſt.* The ſmall-leafed Laurus Tinus, *vulgo*.
4. TINUS *prior Cluſii, folio atroviridi ſplendente.* The ſhining-leafed Laurus Tinus, *vulgo*.
5. TINUS *prior Cluſii foliis ex albo variegatis.* The ſtriped ſhining-leafed Laurus Tinus.
6. TINUS II. *Cluſii, foliis ex luteo variegatis.* The ſtriped rough-leafed Laurus Tinus.

Theſe Plants are greatly propagated in the Gardens near *London* for their Beauty, the Leaves always remaining green, and their Flowers are produced in great Plenty in the *Winter* Seaſon, when few other Shrubs do flower.

Theſe Plants were a few Years ſince preſerved in Pots and Tubs, and placed in the Green-houſe in *Winter*, with Oranges, Myrtles, and other exotick Trees; but of late Years they have been planted in the open Ground, where they reſiſt the Cold of our ordinary *Winters* very well, and are rarely injured, except in very ſevere Froſts, and then they are ſeldom deſtroyed, tho' their Heads may be killed, (as was the Caſe with many of theſe Trees in the Year 1728) yet thoſe which were left undiſturbed ſhot out freſh again the following *Summer*, and have ſince made good Plants; which ſhould caution People from rooting out Plants too ſoon, when they may ſeem to be killed by Froſt.

Theſe Plants may be propagated by laying down their tender Shoots in the *Spring*, which, if kept clear from Weeds and duly watered in dry Weather, will take Root by the ſucceeding *Spring*, when they ſhould be taken off and tranſplanted into a mellow loamy Soil, (but not too wet) at three Feet diſtance Row from Row, and eighteen Inches aſunder in the Rows, obſerving to lay ſome Mulch upon the Surface of the Ground about their Roots, and in dry Weather to refreſh them with Water until they have taken Root.

There ſhould alſo be ſome ſtrait Stakes fix'd down by the Side of each Plant, to which they ſhould be faſten'd, in order to render their Stems ſtrait, otherwiſe they will be crooked and unſightly. But it is not proper to have theſe Plants more than two Feet high in clear Stems, becauſe when their Heads are advanced above Sight, the Beauty of the Plants are loſt, and they are in greater Danger of being deſtroy'd in bad Weather: Therefore, when their Stems are two Feet high, their upright Shoots ſhould be ſtopp'd, in order to force out lateral Branches, which may be ſo prun'd in the growing Seaſon, as to form 'em into regular Heads; but this ſhould not be done with Sheers (as is the common Practice, whereby their Leaves are cut, and render'd very unſightly), but rather ſkilfully pruned with a Knife, allowing their Branches a proportionable Diſtance to the Breadth of their Leaves, which will be cloſe enough to render them beautiful, and at the ſame time will encourage their Flowering: For when they are continually clipp'd, their Branches are very weak, and do often decay in the Middle, and their Flowers are never ſo large, nor produc'd in ſo great Plenty as when they have a greater Diſtance allow'd to their Shoots.

In this Nurſey the Plants may remain four or five Years, during which time they ſhould be carefully clear'd from Weeds, and the Ground dug every *Spring*; in doing of which their Roots ſhould be carefully cut round, to cauſe 'em to produce more Fibres, whereby they may be removed with greater Safety, becauſe the Earth will be the better ſupported by their Roots. The beſt Time to tranſplant them is about the Beginning of *April*, as hath been directed for moſt Sorts of Evergreens, that being the Seaſon they begin to ſhoot.

Theſe Shrubs are very ornamental, when planted in the lower Part of Clumps, and other Plantations of Evergreens, if they are mix'd with other Plants of the ſame Growth; and in theſe Plantations they will not be ſo liable to ſuffer by Froſt, becauſe their Stems will be defended by the neighbouring Plants.

There are ſome who make Hedges of theſe Plants, but they are by no means proper for that Purpoſe, becauſe their Leaves are large, which occaſions their Branches to be produced at a farther Diſtance, and theſe when cut do appear very unſightly; beſides, by the frequent cutting of them, it prevents their flowering, ſo that the greateſt Beauty of the Plants is loſt; for they ſhould never be pruned after the Beginning of *May*, unleſs ſome very luxuriant ſhoots are produced, which grow greatly out of Order; theſe may be ſhorten'd, or entirely diſplaced, according as the Plants may require; and this one Pruning every *Spring* will be ſufficient to keep 'em conſtantly in Order, without injuring their flowering, which ſhould always be avoided.

TITHYMALOIDES, [of τιθύμαλος and εἶδος, *Shape.*] Baſtard Spurge.

The *Characters* are;

The Flower conſiſts of one Leaf, and is in Shape ſomewhat like a Slipper; whoſe Pointal afterwards becomes a tricapſular Fruit, like that of Spurge.

The *Species* are;

1. TITHYMALOIDES *fruteſcens, folio Myrti ampliſſimo. Tourn.* The American, ſhrubby, laurel-leav'd Spurge, *vulgo*.
2. TITHYMALOIDES *fruteſcens, foliis nerii. Plum.* Shrubby Baſtard Spurge with an Oleander Leaf.

Theſe Plants are very common in the warm Parts of *America*, where the firſt is known by the Name of *Poiſon-weed*, under which Appellation I received it from *Barbados*;

this Sort is now pretty common in the Gardens of thoſe who are curious in preſerving tender exotick Plants; but the ſecond Sort is yet very rare in the *Engliſh* Gardens.

They are both propagated by Cuttings, which may be taken from the Plants during any of the *Summer* Months, and after having lain in a dry Place for a Fornight or three Weeks, until the wounded Part be healed over, they ſhould be planted into ſmall Pots, fill'd with light, ſandy Earth, mix'd with Lime-rubbiſh, and then plunged into a Hot-bed of Tanners-bark, obſerving now and then to refreſh them gently with Moiſture; but they ſhould never receive much Wet, which will rot them.

After they have taken Root they may have a greater ſhare of Air, by raiſing the Glaſſes, but they muſt never be expos'd to the open Air: In this Bed they may remain until the Beginning of *October*, when they muſt be removed into the Stove, and placed, with the *Melon* and *Torch Thiſtle*, in a warm, dry Situation, and during the *Winter* Seaſon they ſhould have very little Water, which if given in Plenty, ſeldom fails to rot 'em. In the *Spring* theſe Plants ſhould be again placed into a Bark-bed, which will greatly promote their Growth, and will cauſe 'em to produce Flowers, which they ſeldom do when kept dry upon Shelves in the Stove, nor will they make any conſiderable Progreſs in ſuch a Situation.

Theſe Plants are preſerved for their odd Appearance amongſt other ſucculent Plants, their Leaves being very large, thick, and full of a milky acrid Juice.

TITHYMALUS, [τιθύμαλος, ſo called of τιθὴ a *Pap*, or *Teat*, and μαλακὸς, *ſoft*, q. d. *ſoft Pap*, becauſe this Plant produces Milk. One Sort is call'd *Characias*, *i*, *e*. belonging to a Valley, of χαρακόω, to *make a Trench*, on Account of its growing in a Valley. Another Sort is called *Peplos*, which was an Ornament that Women made uſe of, which being ſpread out, ſerved for a Veil. A third Sort is call'd *Cataputia*, a *Medicament* that is ſwallow'd at one Gulp.] Spurge.

The *Characters* are;

The Flower conſiſts of one Leaf, which is of the globous, Bell-ſhape, cut into ſeveral Moon-ſhap'd Segments, and encompaſſed by two little Leaves, which ſeem to perform the Office of a Flower-cup; the Pointal, which is for the moſt part triangular, riſes from the Bottom of the Flower, and afterwards becomes a Fruit of the ſame Shape, divided into three ſeminal Cells, in each of which is contained one oblong Seed. To theſe Notes ſhould be added, It has a milky, acrid Juice abounding in every Part of the Plant.

The *Species* are;

1. TITHYMALUS *latifolius, cataputia dictus. H. L.* Broad leav'd Spurge, *called* Cataputia.
2. TITHYMALUS *characias amygdaloides. C. B. P.* Wood Spurge with Almond-like Leaves.
3. TITHYMALUS *characias amygdaloides, foliis eleganter variegatis. Flor. Bat.* Wood Spurge, with beautiful ſtrip'd Leaves.
4. TITHYMALUS *maritimus. C. B. P.* Sea Spurge.
5. TITHYMALUS *myrſinites latifolius. C. B. P.* Broad Myrtle-leav'd Spurge.
6. TITHYMALUS *paluſtris fruticoſus. C. B. P.* Shrubby Marſh Spurge, *commonly called* the Greater Eſula of the Shops.
7. TITHYMALUS *foliis pini, forte Dioſcoridis pityuſa. C. B. P.* Pine-leav'd Spurge, *called* the Leſſer Eſula of the Shops.
8. TITHYMALUS *Indicus fruteſcens. Raii Hiſt.* Indian ſhrubby Spurge.
9. TITHYMALUS *Indicus vimineus penitus aphyllos. Boerh. Ind.* Indian Spurge with ſlender ſtraggling Branches without Leaves.
10. TITHYMALUS *arboreus. Alpin.* Tree Spurge with Myrtle Leaves.
11. TITHYMALUS *Creticus characias anguſtifolius, villoſus & incanus. T. Cor.* Woody Spurge of Candia, with narrow, hairy, and hoary Leaves.
12. TITHYMALUS *helioſcopius. C. B. P.* Sun-ſpurge, or Wartwort.
13. TITHYMALUS *rotundis foliis, non crenatis. H. L.* Petty-ſpurge.
14. TITHYMALUS *maritimus ſupinus annuus, peplis dictus. Raii Syn. Ed.* 3. Small purple Sea ſpurge.
15. TITHYMALUS *ſive eſula exigua. C. B. P.* Small dwarf annual Spurge.
16. TITHYMALUS *maritimus minor Portlandicus. Raii Syn. Ed.* 3. Small Sea or Portland Spurge.
17. TITHYMALUS *platyphyllos Fuchſii. J. B.* Broad-leav'd Spurge.
18. TITHYMALUS *ſegetum longifolius. Cat. Cant. App.* Long-leav'd Corn-ſpurge.
19. TITHYMALUS *verrucoſus. J. B.* Rough fruited Spurge.
20. TITHYMALUS *Hybernicus. Merr. Pin.* Knotty rooted Spurge, *commonly called* Mackinboy by the *Iriſh*.
21. TITHYMALUS *characias rubens peregrinus. C. B. P.* Foreign red Wood-ſpurge.
22. TITHYMALUS *ſylvaticus, lunato flore. C. B. P.* Wood-ſpurge, with Flowers ſhap'd like a Creſcent.
23. TITHYMALUS *characias, radice repente. H. R. Monſp.* Wood-ſpurge, with a creeping Root.
24. TITHYMALUS *characias anguſtifolius. C. B. P.* Narrow-leav'd Wood-ſpurge.
25. TITHYMALUS *characias, folio ſerrato. C. B. P.* Wood-ſpurge, with Leaves ſawed on their Edges.
26. TITHYMALUS *characias, radice pyriformi. Mor. H. R. Blæſ.* Wood-ſpurge, with a pear-ſhap'd Root.
27. TITHYMALUS *characias, ſalicis minoris folio. Mor. R. H. Blæſ.* Wood-ſpurge, with a ſmaller Willow-leaf.
28. TITHYMALUS *tuberoſa pyriformi radice. C. B. P.* Spurge, with a tuberoſe Root, ſhap'd like a Pear.
29. TITHYMALUS *linariæ folio, lunato flore. Mor. Hort. Blæſ.* Spurge, with a toad-flax Leaf, and a moon-ſhap'd Flower.
30. TITHYMALUS *arboreus linifolius. H. R. Par.* Tree-ſpurge, with Flax-leaves.
31. TITHYMALUS *amygdaloides anguſtifolius. Tabern. Icon.* Narrow-leav'd Spurge.
32. TITHYMALUS *orientalis, latiſſimo folio, villoſus, flore lunato. Tourn. Cor.* Eaſtern hairy broad-leav'd Spurge, with a moon-ſhap'd Flower.
33. TITHYMALUS *orientalis, ſalicis folio, caule purpureo, flore magno. Tourn. Cor.* Eaſtern Spurge, with a Willow-leaf, a purple Stalk, and a large Flower.
34. TITHYMALUS *orientalis, cypariſſias patulus, foliis ſuperioribus haſtatis, flore minimo. Tourn. Tor.* Eaſtern cypreſs Spurge, with ſpreading Branches, the upper Leaves ſhap'd like a Spear, and a very ſmall Flower.
35. TITHYMALUS *arboreus, humilior & patulus, latiore folio. Tourn. Cor.* Low ſpreading Tree-ſpurge, with a broader Leaf.
36. TITHYMALUS *arboreus, humilior & patulus, anguſtiore folio. Tourn. Cor.* Low ſpreading Tree-ſpurge, with a narrower Leaf.
37. TITHYMALUS *Græcus, amygdali folio acutiſſimo & glauco, caule purpureo. Tourn. Cor.* Greek Spurge, with a ſharp-pointed Almond-leaf, and a purple Stalk.
38. TITHYMALUS *Græcus helioſcopius maximus, foliis eleganter crenatis. Tourn. Cor.* Greateſt Sun-ſpurge of Greece, with Leaves elegantly notched.
39. TITHYMALUS *orientalis paluſtris, tuberoſa radice, lathyridis facie. Tourn. Cor.* Marſh eaſtern Spurge, with a tuberoſe Root, and the Face of Cataputia minor.
40. TITHYMALUS *orientalis, latiſſimo folio, villoſus, flore aureo, ſegmentis rotundioribus. Tourn. Cor.* The broadeſt-leav'd hairy eaſtern Spurge, with a golden Flower, having rounder Segments.
41. TITHYMALUS *orientalis, anacampſerotis folio flore magno criſtato. Tourn. Cor.* Eaſtern Spurge, with an Orpine-leaf, and a large creſted Flower.
42. TITHYMALUS *orientalis, anacampſerotis folio, tenuiſſime ſerrato, flore minori non criſtato. Tourn. Cor.* Eaſtern Spurge, with an Orpine-leaf finely ſaw'd, and a ſmaller Flower not creſted.
43. TITHYMALUS *orientalis, latiſſimo folio glauco & glabro. Tourn. Cor.* Eaſtern Spurge, with a very broad ſmooth ſea-green Leaf.
44. TITHYMALUS *orientalis, patulus & humilior, ſalicis folio villoſo. Tourn. Cor.* Low ſpreading eaſtern Spurge, with a hairy Willow-leaf.
45. TITHYMALUS *orientalis, linariæ folio, humillimus. Tourn. Cor.* The loweſt eaſtern Spurge, with a toad-flax Leaf.
46. TITHYMALUS *arboreus, caule corallino, folio hyperici, pericarpio barbato. Boerh. Ind. alt.* Tree-ſpurge, with a red Stalk, a St. John's-wort Leaf, and a bearded Cover to the Fruit.
47. TITHYMALUS *arboreus altiſſimus, folio ſalicis, caulibus rubentibus. Boerh. Ind. alt.* The talleſt Tree-ſpurge, with a Willow-leaf, and reddiſh Stalks.
48. TITHYMALUS *Lugdunenſis, laureolæ folio. D. Goiſſon. Boerh. Ind. alt.* French Spurge, with a Spurge-laurel-leaf.

49. Tithymalus *marinus, folio retuſo, Terracinenſis. Barr. Obſ.* Sea-ſpurge, with a blunt Leaf.

50. Tithymalus *folio longo glauco, caule rubro, capſulis verrucoſis, elatior Siculus. Raii Hiſt.* Taller Spurge of Sicily, with a long ſea-green Leaf, a red Stalk, and warted Seed-veſſels.

51. Tithymalus *amygdali folio anguſtiori, Montis Pollini. H. Cath.* Sicilian Spurge, with a narrow Almond-leaf.

52. Tithymalus *amygdali folio breviori latiori hirſuto, Montis Pollini. H. Cath.* Sicilian Spurge, with a broader and ſhorter hairy Almond-leaf.

53. Tithymalus *arboreus, tuberoſa radice, mollioribus foliis, ſemine verrucoſo aſpero. Bocc. Muſ.* Tree-ſpurge, with a knobbed Root, ſoft Leaves, and a rough warted Seed.

34. Tithymalus *arboreus Africanus. Inſt. R. H.* African Tree-ſpurge.

55. Tithymalus *arboreus Americanus, cotini folio. Hort. Amſt.* American Tree-ſpurge, with a Venice Sumach-leaf.

56. Tithymalus *Americanus arboreſcens, cotini foliis minoribus, & verticillatim naſcentibus. Plum. Cat.* American Tree ſpurge, with ſmaller Venice Sumach-leaves, growing in Whorles.

57. Tithymalus *Americanus arboreſcens, foliis linariæ. Plum. Cat.* American Tree-ſpurge, with toad-flax Leaves.

58. Tithymalus *qui peplis maritima fruticoſa geniculata. Sloan. Cat.* Shrubby American Sea-ſpurge, with a jointed Stalk.

59. Tithymalus *Americanus characias variegatus, flore albo, fructu villoſo. Houſt.* American ſtrip'd Spurge, with a white Flower, and a hairy Fruit.

60. Tithymalus *Curaſſavicus, ſalicis & atriplicis foliis hirſutis, caulibus ſubrubentibus. Prod. Par. Bat.* Spurge from Curaſſo, with hairy Leaves, like the Willow or Orach, and reddiſh Stalks.

61. Tithymalus *Curaſſavicus, ſalicis & atriplicis foliis glabris, caulibus viridantibus. Prod. Par. Bat.* Spurge from Curaſſo, with ſmooth Willow or Orach-leaves, and greeniſh Stalks.

62. Tithymalus *Americanus annuus erectus, caule triangulari, foliis variis. Houſt.* Upright annual American Spurge, with a triangular Stalk, and variable Leaves.

63. Tithymalus *Americanus annuus erectus latifolius, foliolis juxta flores albis. Houſt.* Upright annual American Spurge, with broad Leaves, and the ſmall Leaves near the Flowers white.

64. Tithymalus *maritimus, Barbadenſis & Bermudenſis, ſeu paralius minor Americanus ramoſiſſimus. Pluk. Phyt.* American branching Sea-ſpurge.

65. Tithymalus *dulcis, parietariæ foliis hirſutis, floribus ad caulium nodos conglomeratis. Sloan. Cat.* Sweet American Spurge, with hairy Pellitory-leaves, and Flowers growing in Cluſters from the Joints of the Stalk.

66. Tithymalus *erectus acris, parietariæ foliis glabris, floribus ad caulium nodos conglomeratis. Sloan. Cat.* Upright acrid Spurge, with ſmooth Pellitory-leaves, and Flowers growing in Cluſters from the Joints of the Stalk.

67. Tithymalus *Americanus annuus erectus ramòſiſſimus, ocymi caryophyllati foliis. Houſt. Cat.* Upright annual branching American Spurge, with Leaves like the Buſh-baſil.

68. Tithymalus *maritimus Americanus procumbens, foliis ſubrotundis rarioribus, fructu majore. Houſt.* Trailing American Sea-ſpurge, with roundiſh Leaves, and a larger Fruit.

69. Tithymalus *Americanus procumbens, foliis ſubrotundis, & ab alterâ parte auritis. Houſt.* Trailing American Spurge, with roundiſh Leaves, and in other Parts the Leaves are eared.

70. Tithymalus *exiguus glaber, nummulariæ folio. Inſt. R. H.* Small ſmooth Spurge, with a Moneywort-leaf.

71. Tithymalus *exiguus villoſus, nummulariæ folio. Inſt. R. H.* Small hairy Spurge, with a Moneywort-leaf.

The firſt is a biennial Plant, which will ſcatter its Seeds, and the Plants will come up without any Care, which will flower and ſeed the following *Summer*, after which the Plants will die; theſe Plants come up much better when the Seeds fall of themſelves, than if ſown with great Care, nor will they bear Removing, unleſs it be done while they are young; becauſe they generally ſend forth a Tap-root, which is often broken by tranſplanting, and thereby the Plant deſtroy'd. This is order'd by the *College of Phyſicians* to be uſed in Medicine, under the Title of *Cataputia minor*, for which Reaſon it is preſerv'd in ſome Gardens, though there is no great Beauty in the Plant.

The ſecond Sort is found wild in Woods and other ſhady Places in divers Parts of *England*, but is worthy of a Place in ſmall Wilderneſs Quarters, or in other ſhady Plantations, where it will thrive very well, and in the *Spring* will produce great Tufts of Flowers, which although not very beautiful, yet are of a ſingular Figure and Colour, and will add to the Variety of the Place. Theſe Plants may be taken out of the Woods in *Autumn*, and tranſplanted into the Places where they are deſign'd, in which, if they are once eſtabliſh'd, they will ſow their Seeds, and thereby be continued; but if they are not placed under the Shelter and Shadow of Trees, they will not thrive ſo well.

The third Sort is a Variety of the ſecond; the Leaves of this Kind are beautifully ſtrip'd, ſo as to appear of three Colours: This may be propagated by Cuttings, which ſhould be planted in Pots, filled with light ſandy Earth, and placed in the Shade until they have taken Root, after which they may be placed amongſt other curious Plants, where they may be ſcreen'd from the Violence of the Sun in *Summer*, and in *Winter* they muſt be ſhelter'd under a Frame from hard Froſt, which will deſtroy them, but they muſt have the free Air in mild Weather, and not too much Wet in *Winter*.

The fourth Sort is found wild upon the Sea-Coaſts in ſeveral Places in *England*, from whence it has been tranſplanted into ſeveral Gardens: This may be propagated by ſowing the Seeds, or by Cuttings, which muſt be planted in the *Spring*, upon a gravelly poor Soil, in which this Plant will endure the Cold of our ordinary *Winters* very well, but in very ſevere Froſts it is often deſtroy'd. This is preſerved in ſome Gardens, more for the Sake of its Variety than Beauty.

The fifth Sort may alſo be propagated either by ſowing its Seeds or planting Cuttings, in the ſame manner as the former, but muſt have a dry Soil, and a warm Situation, otherwiſe the Cold will deſtroy it in *Winter*. This Plant trails upon the Ground, ſo ſhould be planted at a Diſtance from other Plants, becauſe, if it be over-hung by 'em, it will not thrive, and the Branches of this will many times extend themſelves two Feet from the Root, ſo that if it has not Room, they will rot and die away.

The ſixth Sort grows wild in marſhy Places in *France*, *Italy*, and *Germany*, but in *England* it is preſerved in ſome curious Botanick Gardens, it being an officinal Plant. This may be propagated by parting the Roots, and planting Cuttings in the *Spring*, which muſt be done in a light Soil and an open Situation, where it will grow four or five Feet high, and become very ſhrubby; ſo that the Plants muſt be allowed at leaſt two Feet Room to grow, otherwiſe they will over-bear each other, or whatever Plants ſtand near them. There is not much Beauty in this Sort; but as it is a medicinal Plant, it ſhould have a Place in Phyſick Gardens.

The ſeventh Sort is a very hardy Plant, and propagates itſelf by its creeping Roots, ſo that if it be not confined in Pots, it will ſpread over the Ground wherever it is planted, ſo as not to be eaſily kept within Bounds. This being a medicinal Plant ſhould alſo have a Place in Phyſick-gardens, but there is not much Beauty in it to recommend it to the Curious.

The eighth, ninth, and tenth Sorts are tender Plants, which come from warm Countries; and in *England* are preſerved with great Care in Stoves, amongſt other curious ſucculent Plants. Theſe are propagated by Cuttings, which ſhould be cut from the old Plants at a Joint, and laid in a dry Part of the Stove for a Fortnight, that the wounded Part may heal over; then they ſhould be planted in ſmall Pots filled with light ſandy Earth, mixed with Lime-rubbiſh, and plunged into a Hot-bed of Tanners-bark, where they ſhould remain until they have taken Root, after which they ſhould be inured to the Air by Degrees, and then be removed into the Stove, where they muſt conſtantly be kept, for they are too tender to be expoſed abroad in the Heat of *Summer*; therefore they ſhould be placed near the Glaſſes of the Stove in *Summer*, where they may have Air in very hot Weather, but they muſt not have much Wet, being very full of Moiſture, and ſubject to rot if over-watered. In *Winter* they muſt be ſet in a warm Part of the Stove, and ſhould have very little Wet during that Seaſon: With this Management theſe Plants will thrive and grow very large, but they ſeldom produce Flowers in this Country.

The eleventh Sort was found by Monſieur *Tournefort* in the *Levant*, and by him brought into *Europe*, by the Name here given to it, tho' many curious Botaniſts are not ſatisfied how it differs from the *Tithymalus characias rubens peregrinus* of *Caſpar Bauhinus*. This has a great deal of the Appearance of our *Wood Spurge*, but the Stalks are redder, and the Flowers are much fairer: It may be propagated by Cuttings, which ſhould be planted in Pots, filled with light ſandy Earth, and in *Winter* muſt be ſheltered, otherwiſe it is apt to periſh with ſevere Cold. In *March* it flowers, at which Time it makes a beautiful Appearance, and is worthy of a Place in every good Garden.

The twelfth, thirteenth, fourteenth, fifteenth, ſixteenth, ſeventeenth, eighteenth and nineteenth Sorts, are annual Plants, which grow wild in ſeveral Parts of *England*, ſo are rarely admitted into Gardens; but ſome of them generally come up as Weeds in moſt cultivated Lands. The moſt common of theſe are the twelfth, thirteenth and fifteenth Sorts, the others growing but in ſome particular Parts of *England* wild. Theſe Plants abound with a milky Juice, which ſome People apply to Warts to get them off; but this ſhould be done with Diſcretion, otherwiſe there may be Danger of injuring the Part where it is applied, becauſe it is a great Cauſtick. All theſe Sorts will come up from Seeds, whenever they are ſcattered; ſo that whoever hath a Deſire to preſerve them, need only allow them a Place; for they will require no Care to propagate them.

The twentieth Sort grows wild in ſeveral Parts of *Ireland*, where it was formerly much in uſe amongſt the Natives of that Country, and was the chief Phyſick uſed by them for all Diſtempers, till of late, that they have gotten the Knowledge of *Mercury*, which has obtained ſo much with them, as to put this Plant quite out of Uſe.

This is an abiding Plant, having thick knobbed Roots, which may be ſeparated every other Year, to propagate the Plant by thoſe who deſire it; tho' indeed it is rarely preſerved but in Botanick Gardens, for the ſake of Variety. It is very hardy, and will thrive in almoſt any Soil or Situation, and dies to the Root every *Autumn*, and the *Spring* following comes up again. This may be planted in Wilderneſſes, where it will thrive very well under the Drip of Trees, and will ſerve to fill up in ſuch Places where few other better Plants will live.

The twentyfirſt Sort is ſuppoſed to grow wild in *England*; but I believe ſome People have taken the common *Woodſpurge* for this, when it has appeared with Stalks ſomewhat redder than ordinary. This, and the ten following Sorts, grow wild in *France*, *Italy* and *Germany*, from whence they have been procured by ſome Perſons who are curious in Botany. All theſe are very hardy Plants, which may be propagated by Seeds, which may be ſown in a Bed of freſh Earth in the *Spring*; and when the Plants come up, they will require no farther Care, but to clear them from Weeds; and where they are too thick, ſome of them ſhould be drawn out, to give thoſe Plants, which are deſigned to remain, Room to grow until *Michaelmas*, when they ſhould be planted into Woods, and other Places covered with Trees; where they will make an agreeable Variety.

The fourteen Sorts next following were diſcovered by Dr. *Tournefort* in the *Levant*; from whence he ſent their Seeds to the Royal Garden at *Paris*, where many of them were raiſed, and have ſince been communicated to ſeveral Perſons who are curious in Botany in *England*. Theſe are all of them very hardy Plants, ſo will be very proper to intermix with the Sorts before mentioned, in Wilderneſs Quarters; where, if they have a dry Soil, they will thrive very well, and make an agreeable Appearance. Some of theſe Sorts die to the Root every *Autumn*, and riſe again the following *Spring*; but they will not require any Care to preſerve them; the only Culture they require is to keep them from being overborn by very large Weeds.

The fortyſixth, fortyſeventh and fortyeighth Sorts are ſomewhat tenderer than either of the former; therefore ſome Plants of each Kind ſhould be kept in Pots to be ſheltered in *Winter*, for fear thoſe which are planted ſhould be deſtroy'd. Theſe may be propagated by Cuttings, which ſhould be taken off from the old Plants a Week before they are planted, and laid in a dry Place, that the wounded Part may heal, otherwiſe they will rot. Theſe Cuttings may be planted in a Bed of freſh undunged Earth, and ſhaded with Mats until they have taken Root; after which Time they will require no farther Care, but to keep them clear from Weeds till *Michaelmas*; when they ſhould be tranſplanted ſome of them into Pots, and the others under Trees on a dry Soil, and in a warm Situation, where they will endure the Cold of our ordinary *Winters* very well; but in ſevere Froſts they are frequently deſtroyed. Thoſe Plants in Pots ſhould be removed into Shelter towards the End of *October*, and placed where they may have as much free Air as poſſible in mild Weather, otherwiſe their Shoots will be weak and unſightly; for if they are only protected from very hard Froſts, it is all theſe Plants require. Theſe Sorts grow to the Height of ſix or ſeven Feet, and may be allowed a Place in Gardens, for the ſake of Variety.

The fortyninth Sort is a very hardy Plant, which propagates itſelf very faſt by its creeping Roots; ſo ſhould not be planted near better Plants, becauſe it will ſpread ſo far, and intermix its Roots with them, and deſtroy them. This Sort may be planted in ſome Quarters under Trees, where the Soil is very poor, in which it will thrive and fill up better than moſt other Plants.

The fiftieth and fiftythird Sorts are ſomewhat tender, ſo ſome of the Plants ſhould be preſerved in Pots, and ſheltered in *Winter*, and the others may be planted on a dry Soil, and in a warm Situation, where they will endure the Cold of our common *Winters*, and will add to the Variety.

The fiftyfirſt and fiftyſecond Sorts are biennial Plants, which ſeldom continue long after they have perfected their Seeds. Theſe are very hardy Plants, ſo will grow in any Situation, provided they have a dry Soil; and if their Seeds are permitted to ſcatter, the Plants will come up and thrive without any other Care than to keep them from being overborn by large Weeds.

The fiftyfourth Sort is tenderer than either of the former, ſo muſt be placed in a warm Greenhouſe in *Winter*, otherwiſe it will not live in this Country. This is propagated by Cuttings, which muſt lie to dry a Fortnight before they are planted; for as the whole Plant abounds with a milky Juice, ſo, if the wounded Parts are not well healed over before they are planted, they are very ſubject to rot. The beſt time for planting of theſe Cuttings is in *July*, that they may be well rooted before *Winter*. Theſe ſhould be planted each into a ſeparate ſmall Pot, and if they are plunged into a very moderate Hot-bed, it will cauſe them to root the ſooner. They ſhould be now and then refreſhed with Water, but it muſt not be given them in large Quantities, leſt it rot them. When they are rooted, they muſt be inured to bear the open Air by Degrees, into which they may be removed, and placed in a warm Situation, where they may remain till *Michaelmas*, when they muſt be removed into the Green-houſe, and placed in the warmeſt Part of it. During the *Winter* Seaſon theſe Plants muſt have but little Water, eſpecially if they have no artificial Heat; for Moiſture is very apt to rot theſe Plants in cold Weather.

The fiftyfifth and fiftyſixth Sorts grow plentifully in the Iſland of *Jamaica*, and in ſeveral other Places in the *Weſt-Indies*. Theſe are very tender Plants, ſo muſt be preſerved in warm Stoves, otherwiſe they will not live in this Country. They may be propagated by Cuttings in the *Summer* Months, which muſt be treated in the ſame Manner as hath been directed for the *Euphorbiums*; with which Management theſe Plants will thrive extremely well, and will make an agreeable Variety amongſt other tender exotick Plants in the dry Stove.

The fiftyſeventh Sort was diſcovered by Father *Plumier* in the *French* Settlements in *America*, and was found by the late Dr. *Houſtoun* at the *Havannah*, growing in great Plenty. This Sort may be propagated by Cuttings as the former, and ſhould be treated in the ſame Manner.

The fiftyeighth Sort grows plentifully in *Jamaica*, and ſeveral other Parts of *America*. This may be propagated by Seeds, which ſhould be ſown on a Hot-bed early in the *Spring*; and when the Plants are come up, they ſhould be each tranſplanted into a ſeparate ſmall Pot filled with freſh, light, ſandy Earth, and then plunged into a Hot-bed of Tanners-bark, where they ſhould be ſhaded from the Sun until they have taken Root; after which time they ſhould have free Air admitted to them in warm Weather, and muſt be refreſhed two or three times in a Week with Water; but as theſe Plants are full of Juice, ſo they ſhould not have too much Moiſture, leſt it rot them. In this Hot-bed the Plants may remain till about *Michaelmas*, when they ſhould be removed into the dry Stove; and may afterwards be treated in the ſame Manner as the three former Sorts.

The fiftyninth Sort was found growing plentifully on the ſandy barren Ground at *La Vera Cruz*, by the late Dr. *Houſtoun*, who obſerved, that all the Plants which he ſaw were variegated, ſo that he ſuppoſed they continued to come up ſo from the Seeds. This is a very beautiful Plant, and being tender, muſt be treated in the ſame Manner as the Sorts laſt mentioned.

The ſixtieth and ſixtyfirſt Sorts were found in great Plenty at *Campechy* by the late Dr. *Houſtoun*, from whence he ſent their Seeds to *England*, where ſeveral of the Plants were raiſed. Theſe Plants have their lower Leaves narrow and entire; and thoſe which are produced near the upper Part of of the Shoots are broad and indented, ſomewhat like thoſe of the Garden *Orach*. The Flowers are produced at the Extremity of the Branches, which are of a greeniſh white, having little Beauty in them; and they ſoon fall off, ſo that the Plants rarely produce good Seeds in *England*.

Theſe Plants are propagated by Seeds, which ſhould be ſown on a Hot-bed early in the *Spring*; and when the Plants come up, they ſhould be each tranſplanted into a ſeparate Pot filled with freſh light Earth, and then plunged into the Hot-bed again, where they ſhould be ſhaded until they have taken new Root; after which time they ſhould be treated in the ſame Manner as the tender Sorts before-mentioned. And in *Winter*, if theſe are plunged into the Bark-bed in the Stove, the Plants may more certainly be maintained than if placed on Shelves in the dry Stove; but then they ſhould not have too much Water given them in *Winter*, leſt it rot them. With this Management the Plants may be preſerved two or three Years, in which time they will grow to the Height of ſeven or eight Feet, and produce many Branches.

The ten laſt mentioned Sorts are all of them annual Plants, ſo their Seeds ſhould be ſown early in the *Spring* on a moderate Hot-bed; and the Plants, when they are come up, muſt be planted into Pots, and plunged into a Hot-bed; for they are too tender to thrive in the open Air in this Country: So they muſt be continued in the Hot-bed, or, when they are pretty ſtrong, they may be removed into the Stove, where they will flower in *June* and *July*, and their Seeds will ripen ſoon after, which will ſcatter themſelves as ſoon as they are ripe, if they are not gathered; ſo that when the Plants are permitted to ſhed their Seeds, there will be a ſufficient Supply of young Plants come up, in whatever Pots ſtand near them, as alſo in the Tan, if it be not diſturbed. The firſt five of theſe Sorts grow uſually about two Feet high or more; the next three ſeldom riſe above a Foot high, and the two laſt trail on the Surface of the Ground, ſo that theſe make but an indifferent Appearance.

TOAD-FLAX; *vide* Linaria.

TOBACCO; *vide* Nicotiana.

TOMENTUM, is that ſoft, downy Subſtance, which grows on the Leaves of ſome Plants.

TORDYLIUM, Hartwort.

The *Characters* are;

It is an umbelliferous Plant, with a roſe-ſhap'd Flower, conſiſting of five unequal heart-faſhion'd Petals, which are placed circularly, and reſt on the Empalement, which afterward becomes an almoſt-round Fruit, compoſed of two flat Seeds, which eaſily caſt off their Covering, with a raiſed Border, which is commonly indented.

The *Species* are;

1. TORDYLIUM *maximum. Inſt. R. H.* The greateſt Hartwort.

2. TORDYLIUM *Narbonenſe minus. Inſt. R. H.* Small Hartwort of Narbonne.

3. TORDYLIUM *Apulum minimum. Col. P.* 4. 124. The ſmalleſt Hartwort of Apulia.

4. TORDYLIUM *minus, limbo granulato, Syriacum. Mor. Umb.* Small Hartwort of Syria, with a granulated Border.

5. TORDYLIUM *folio longo anguſto, flore albo magno, ſemine elegantiſſime & profundiſſime crenato albo. Boerh. Ind. alt.* Hartwort with a long narrow Leaf, a large white Flower, and a white Seed beautifully and deeply notch'd.

6. TORDYLIUM *orientale, Secacul Arabum dictum Rawolfio. Boerh. Ind. alt.* Eaſtern Hartwort, called by Rauwolf, Secacul of the Arabians.

7. TORDYLIUM *Luſitanicum, cicutæ folio, ſemine ſtriato. Inſt. R. H.* Portugal Hartwort, with a Hemlock-leaf, and a ſtreaked Seed.

8. TORDYLIUM *album, facio tordylii lutei Columnæ. Hort. Cath.* White Hartwort, with the Appearance of Columna's yellow Hartwort.

All theſe are annual Plants, which periſh ſoon after they have perfected their Seeds. The firſt Sort is found wild in ſeveral Parts *England*, and the ſecond Sort has been by ſome mentioned as an indigenous Plant of this Country; but I believe it is no where found wild, unleſs where the Seeds have been purpoſely ſcatter'd. Theſe Plants are preſerved in the Gardens of ſome Perſons, who are curious in Botany, but there is little Beauty in them.

They are propagated by Seeds, which ſhould be ſown in the *Autumn* ſoon after they are ripe; when the Plants will ſoon appear, and are very hardy, ſo that they require no farther Care, but to keep them clear from Weeds; and where they come up too cloſe together, they ſhould be thinned ſo as to leave them ſix Inches aſunder. In *June* following the Plants will flower, and their Seeds will ripen in *Auguſt*; which if permitted to ſcatter on the Ground, will produce a Supply of Plants without any Trouble. If the Seeds of theſe Plants are kept out of the Ground till *Spring*, they ſeldom ſucceed; for if any Plants are produced from the Seeds then ſown, they commonly periſh before they have perfected their Seeds; whereas thoſe which are ſown in *Autumn* do rarely fail. Theſe Plants will grow on any Soil or Situation, ſo may be put into any obſcure Part of the Garden.

TORMENTILLA, Tormentil.

The *Characters* are;

The Flower conſiſts of four Petals, which are placed orbicularly, and expand in form of a Roſe; out of whoſe one-leav'd Empalement (divided into ſeveral Segments, and ſhap'd like a Baſon) ariſes the Pointal, which afterward becomes an almoſt globular Fruit, in which many Seeds are gathered into a ſort of little Head, covered with the Empalement: to which Notes muſt be added, That there are commonly ſeven Leaves growing on the Top of the Foot-ſtalk.

The *Species* are;

1. TORMENTILLA *ſylveſtris. C. B. P.* Wild Tormentil, or Septfoil.

2. TORMENTILLA *radice repente. Inſt. R. H.* Creeping-rooted Tormentil.

3. TORMENTILLA *Alpina vulgaris major. C. B. P.* Greater Tormentil of the Alps.

4. TRRMENTILLA *Caſſubica major. Inſt. R. H.* Greater Tormentil, with deep cut Leaves.

5. TORMENTILLA *Caſſubica minor. Inſt. R. H.* Smaller Tormentil, with deep-cut Leaves.

The firſt Sort grows wild every-where on dry Paſtures, and on Commons in moſt Parts of *England*. The Roots of this Plant have been frequently uſed for Tanning of Leather, in Places where Oak-bark is very ſcarce. This Root is alſo much uſed in Medicine, and is accounted the beſt Aſtringent in the whole vegetable Kingdom.

The ſecond Sort is found in ſome particular Parts of *England* growing wild: the third Sort grows on the *Alps*, and the fourth and fifth Sorts grow in *Denmark*, *Sweden*, and ſome other Northern Countries; but are rarely preſerved, unleſs in ſome Botanic Gardens, for the ſake of Variety. It requires no Care to propagate theſe Plants, ſince, if their Seeds are ſown in almoſt any Soil or Situation, the Plants will come up and flouriſh without any other Care, but to prevent their being over-run with great Weeds.

TOXICODENDRON, [of τοξικὸν, *Poiſon*, and δένδρον, a *Tree*.] Poiſon-tree, *vulgo*.

The *Characters* are;

The Flower conſiſts of five Leaves, which are placed orbicularly, and expand in Form of a Roſe; out of whoſe Flower-cup riſes the Pointal, which afterwards becomes a roundiſh dry, and for the moſt part, furrowed Fruit, in which is contained one compreſs'd Seed.

The *Species* are;

1. TOXICODENDRON *triphyllum glabrum. Tourn.* Three-leav'd ſmooth Poiſon-tree.

2. TOXICODENDRON *triphyllum, folio ſinuato pubeſcente. Tourn.* Three-leav'd Poiſon-tree with a ſinuated hairy Leaf.

3. TOXICODENDRON *Carolinianum, foliis pinnatis, floribus minimis herbaceis.* Carolina Poiſon Aſh, *vulgo*.

4. TOXICODENDRON *rectum, foliis minoribus glabris. Hort. Elth.* Upright Poiſon-tree, with ſmaller ſmooth Leaves.

5. TOXICODENDRON *rectum pentaphyllum glabrum, foliis latioribus.* Smooth five-leav'd upright Poiſon-tree, with broader Leaves.

6. TOXICODENDRON *amplexicaule, foliis minoribus glabris. Hort. Elth.* Climbing Poiſon-tree, with ſmaller ſmooth Leaves.

7. TOXICODENDRON *foliis alatis, fructu rhomboide. Hort. Elth.* Poiſon-tree with winged Leaves, and a Fruit ſhap' like a Rhombus.

The two firſt Species were brought from *Virginia*, man Years ſince, where they grow in great Plenty, as it is probable they do in moſt other Northern Parts of *Americ* The firſt Sort ſeldom advances in Height, but the Branche trail upon the Ground, and ſend forth Roots, by which the propagate in great Plenty.

The ſecond Sort will grow upright, and make a Shrub about four or five Feet high, but rarely exceeds that in this Country. This may be propagated by Layers, and is equally as hardy as the former.

The third Sort was rais'd from Seeds, which were ſent from *Carolina* by Mr. *Catesby*. This is ſomewhat tenderer than either of the former, but will endure the Cold of our ordinary *Winters* very well, eſpecially if it be planted near the Shelter of other Trees.

The fourth Sort grows erect to the Height of five or ſix Feet: the Leaves of this Kind are much ſmaller, than thoſe of the common Poiſon-oak; but the Branches of this are flexible, ſo that it will never make a Shrub of any great Height or Strength.

The fifth Sort was found in *Maryland*, from whence the Seeds were ſent to *England*. This grows more upright than the former, and by the Appearance of the young Plants, ſeems to be a Shrub of much larger Growth.

The ſixth Sort is a Native of *Virginia*, from whence I received the Seeds: this puts out Roots from the Branches, which faſten themſelves to the Stems of Trees, or the Joints of Walls, by which the Branches are ſupported.

The ſeventh Sort is the ſame with the third, only differing in Sex; this being the Female, and the other the Male Tree. All the Sorts of *Toxicodendron* differ in Sex, the Male never producing any Fruit, having ſmall herbaceous Flowers, without any Embryo's.

The four laſt are hardy Plants, which will thrive in the open Air in this Country; but they love a moiſt Soil, and ſhould be planted under Trees in Wilderneſſes, where they will thrive very well, and endure the Cold better than where they have a more open Expoſure. They may be propagated by Seeds, or from Suckers, which ſome of the Sorts ſend forth in Plenty, or by laying down the Branches of thoſe Sorts which do not put forth Suckers; which in one Seaſon will be ſufficiently rooted to tranſplant; when they ſhould be planted, where they are deſigned to remain. The beſt Time to remove theſe Shrubs, is in *March*, becauſe then there will be no Danger of their ſuffering by Froſt.

The Wood of theſe Shrubs is accounted very poiſonous, either by the handling of it, or ſmelling it when it is burning. Mr. *Dudley* has given an Account of the poiſonous Quality of theſe Trees, in the *Philoſophical Tranſactions*, where he mentions a Neighbour of his in *New-England*, who was blind for ſeveral Days with handling the Wood; and another Gentleman of that County, who was ſitting by his Fire-ſide in *Winter*, in which was ſome of the Poiſon-tree burning, the Smoak of which ſwelled him for ſeveral Days. But he ſays it has this Effect only on particular Perſons; for his own Brother would handle and chew it, without any Harm; and that by the ſame Fire ſome Perſons ſhall be poiſoned, and others not the leaſt affected. This Poiſon is not mortal, but will go off itſelf in a few Days, like the Sting of a Bee; but the People generally apply Plantain-water, or Sallet-oil and Cream, to the Part affected.

When a Perſon is poiſoned by handling of this Wood, in a few Hours he feels an itching Pain, which provokes a Scratching, which is follow'd by an Inflammation and Swelling. Sometimes a Perſon has had his Legs poiſoned, which have run with Water. Some of the Inhabitants of *America* affirm, they can diſtinguiſh this Wood by the Touch in the Dark, from its extreme Coldneſs, which is like Ice. But what he mentions of this poiſonous Quality, is applicable to the ſeventh Sort here mention'd, which by his Deſcription agrees with this *Species*.

This Sort of Poiſon-tree is not only a Native of *America*, but grows plentifully on the Mountains in *Japan*, where it is called *Faſi No Ki*; and from this Tree they extract one Sort of their *Varniſh* or *Lacca*, which they uſe for Japanning their Utenſils. But this is not their beſt Kind of Varniſh, that being made of the Juice of another Tree, which is alſo very poiſonous, and nearly allied to this, and from which ſome Writers think it differs only by Culture.

The Juice of this Tree is milky, when it iſſues out of the wounded Part; but ſoon after it is expoſed to the Air, it turns black, and has a very ſtrong fœtid Scent, and is corroding. For I have obſerved, on cutting off a ſmall Branch from one of theſe Shrubs, that the Blade of the Knife has been changed black in a Moment's time, ſo far as the Juice had ſpread over it; which I could not get off without grinding the Knife.

As this Tree is very common in *Virginia*, *Carolina* and *New-England*, it would be well worth the Inhabitants Trial, to make this Varniſh.

TRACHELIUM, Throatwort.

The *Characters* are;

It hath a funnel-ſhap'd Flower, compoſed one Leaf, and cut into ſeveral Parts at the Top; whoſe Empalement afterward becomes a membranaceous Fruit often triangular, and divided into three Cells, which are full of ſmall Seeds.

The *Species* are;

1. TRACHELIUM *azureum umbelliferum. Pon. Bald.* Blue umbelliferous Throatwort.

2. TRACHELIUM *umbelliferum violaceum, foliis laciniatis. Inſt. R. H.* Throatwort with violet-coloured Flowers growing in Umbels, and jagged Leaves.

3. TRACHELIUM *villoſum, floribus confertim ex foliorum alis naſcentibus. Inſt. R. H.* Hairy Throatwort, with Flowers growing in Cluſters from the Wings of the Leaves.

4. TRACHELIUM *petræum, floribus in capitulum congeſtis. Inſt. R. H.* Rock Throatwort, with Flowers collected in Heads.

5. TRACHELIUM *minus Africanum, floribus violaceis, per caulem ſparſis. Inſt. R. H.* Smaller African Throatwort, with violet-coloured Flowers, growing thinly on the Stalks.

6. TRACHELIUM *Americanum, ſonchi folio, flore albo longiſſimo. Plum.* American Throatwort, with a ſow-thiſtle Leaf, and a very long white Flower.

The firſt Sort is preſerved in many curious Gardens for the Beauty of its Flowers, which continue a long time, and are ſucceeded by new Umbels on the Tops of the younger Shoots, ſo that the Plants continue in Beauty for ſome Months. This Plant is ſuppoſed to be a Native of ſome of the Iſlands in the *Archipelago*, from whence it was firſt brought to *Italy*, and hath been ſince ſpread to many Parts of *Europe*. It is hardy in reſpect to Cold, provided it has a proper Situation, which ſhould be in the Crevices of old Walls, where it will abide the Cold very well; when thoſe Plants which grow on warm Borders are frequently deſtroyed. This Plant has propagated itſelf by Seeds, on the Walls of ſome Gardens, where it has been planted; and thoſe Plants which have grown on the Walls continue, when thoſe which were in Pots, and preſerved with Care, have been intirely deſtroyed.

The ſecond Sort grows upon the Mountains of *Breſcia*, about the Mouths of Caves, between the hardeſt Rocks, ſo that it is very difficult to get out the Roots.

The third Sort grows on the Rocks in ſeveral Places in the *Levant*.

All theſe Sorts are propagated by Seeds, which ſhould be ſown ſoon after they are ripe; for if they are kept out of the Ground till the *Spring*, they ſeldom grow. Theſe Seeds ſhould be ſown in Pots filled with freſh undunged Earth, and placed in a ſhady Situation till the Beginning of *October*, when they may be removed into a more open Expoſure; where they may have as much Sun as poſſible, but be ſhelter'd from the cold Winds. When the Cold is ſevere, they ſhould be placed under a Hot-bed Frame, where they may enjoy as much free Air as poſſible in mild Weather; but they muſt be ſcreened from hard Froſts, otherwiſe they are frequently deſtroyed.

They may alſo be propagated by Off-ſets, or Cuttings, which may be taken off in the *Spring* or *Summer* Months; and ſhould be planted in Pots filled with freſh undunged Soil, and placed in a ſhady Situation until they have taken Root, when they may be removed into a ſheltered Part of the Garden; where being mix'd with other hardy exotic Plants, they will afford an agreeable Variety.

But as theſe Plants thrive better on old Walls, (when by Accident they have ariſen there from Seeds) ſo their Seeds, when ripe, may be ſcattered on ſuch Walls as are old, or where there is Earth lodged ſufficient to receive the Seeds; where the Plants will reſiſt the Cold much better, and they will continue longer, than when ſown in the full Ground; and when a few of the Plants are eſtabliſhed on the Walls, they will ſhed their Seeds, ſo that they will maintain themſelves without any farther Care. I have obſerved ſome Plants of the firſt Kind, which have grown from the Joints of a Wall, where there has not been the leaſt Earth to ſupport them; which have reſiſted the Cold, tho' they have been greatly expoſed to the Winds; ſo that theſe Plants are very proper to cover the Walls of Ruins, where they will have a very good Effect.

The fourth Sort grows on the Mountains in *Italy*, from between the Crevices of the Rocks, from whence it is difficult to get out the Roots. This may be treated in the ſame manner as the former Sorts, and will thrive better on Walls, than if ſown or planted in the Earth.

The fifth Sort is an annual Plant, which was brought from the *Cape of Good Hope* to *Holland*, where it has been preſerved in ſome of their curious Botanic Gardens. This Sort will ſucceed well, if the Seeds are permitted to ſcatter on the Pots of Earth which are near them; provided the Pots are placed in the Green-houſe, where the Plants will come up and flower early the following *Summer*, and will have Time to perfect their Seeds; whereas, when the Seeds are ſown in the *Spring*, the Plants will not flower till *Auguſt*; ſo that, if the *Autumn* ſhould prove bad; they will not produce Seeds.

The ſixth Sort grows plentifully in *Jamaica* and ſeveral other Places in the warm Parts of *America*, where it grows in moiſt Places by the Sides of Rivers. This may be propagated by Seeds, which ſhould be ſown early in the *Spring* on a moderate Hot-bed; and when the Plants are come up, they ſhould be tranſplanted on another Hot-bed, to bring the Plants forward; and then they may be treated in the ſame manner as hath been directed for the tender Sorts of *Rapuntium*. With which Management this Plant will thrive, and produce its Flowers; and if the Seeds are permitted to ſcatter, or are ſown as ſoon as they are ripe, if the Pots are kept in the Stove, the Plants will come up, and flouriſh much better than thoſe ſown in the *Spring*.

TRAGACANTHA, [τραγάκανθα of τράγος, a *Goat*, and ἀκάνθη a *Thorn*.] Goats thorn.

The *Characters* are;

It hath a papilionaceous Flower, out of whoſe Empalement ariſes the Pointal, which afterwards becomes a bicapſular Pod, fill'd with Kidney-ſhap'd Seeds. To theſe Notes muſt be added, The Leaves grow by Pairs on a middle Rib, which always ends in a Thorn.

The *Species* are;

1. TRAGACANTHA *Maſſilienſis. J. B.* Goats-thorn of Marſeilles.

2. TRAGACANTHA *Cretica incana, flore parvo, lineis purpureis ſtriato. T. Cor.* Hoary Goats-thorn of Crete, with a ſmall Flower ſtrip'd with purple Lines.

3. TRAGACANTHA *humilis Balearica, foliis parvis vix incanis, flore albo. Salvad.* Low Balearic Goats-thorn, with ſmall Leaves and a white Flower.

4. TRAGACANTHA *altera, Poterium fortè Cluſio. J. B.* Another Goats-thorn, with Leaves falling off in the Winter.

5. TRAGACANTHA *Alpina ſempervirens, floribus purpuraſcentibus. Inſt. R. H.* Ever-green Alpine Goats-thorn, with purpliſh Flowers.

6. TRAGACANTHA *Cretica, foliis minimis incanis, flore majore albo. Tourn. Cor.* Goats-thorn of Candy, with very ſmall hoary Leaves, and a larger white Flower.

7. TRAGACANTHA *orientalis humillima, flore magno albo. Tourn. Cor.* A very low eaſtern Goats-thorn, with a large white Flower.

8. TRAGACANTHA *orientalis humillima, barbæ Jovis folio. Tourn. Cor.* A very low eaſtern Goats-thorn, with a Jupiter's-beard Leaf.

9. TRAGACANTHA *orientalis humillima, foliis anguſtiſſimis argenteis. Tourn. Cor.* A very low eaſtern Goats-thorn, with very narrow ſilver Leaves.

10. TRAGACANTHA *orientalis humillima, ſe ſpargens, floribus ſpicatis. Tourn. Cor.* A very low ſpreading eaſtern Goats-thorn, with Flowers growing in Spikes.

11. TRAGACANTHA *orientalis humillima incana, flore purpuraſcente. Tourn. Cor.*, A very low hoary eaſtern Goats-thorn, with a purpliſh Flower.

12. TRAGACANTHA *orientalis erectior, foliis viciæ glabris, & ramis tomentoſis. Tourn. Cor.* A more upright eaſtern Goats-thorn, with ſmooth vetch Leaves, and woolly Branches.

13. TRAGACANTHA *orientalis humilis, candidiſſima & tomentoſa, floribus in foliorum alis in capitulum denſum naſcentibus. Tourn. Cor.* A lower very white and woolly eaſtern Goats-thorn, with Flowers growing in thick Heads, from the Wings of the Leaves.

14. TRAGACANTHA *orientalis humilis, floribus luteis denſè congeſtis in foliorum alis. Tourn. Cor.* A low eaſtern Goats-thorn, with yellow Flowers thick-ſet in the Wings of the Leaves.

15. TRAGACANTHA *humilior, luteis floribus. C. B. P.* A lower Goats-thorn, with yellow Flowers.

16. TRAGACANTHA *orientalis, floribus luteis in capitulum longo pediculo donatum congeſtis. Tourn. Cor.* Eaſtern Goats-thorn, with yellow Flowers gathered into a Head, on a long Foot-ſtalk.

17. TRAGACANTHA *orientalis veſicaria, floribus purpureis in capitulum longo pediculo donatum congeſtis. Tourn. Cor.* Bladder eaſtern Goats-thorn, with purple Flowers gathered into a Head, and ſet on a long Foot-ſtalk.

18. TRAGACANTHA *orientalis latifolia, flore purpureo magno. Tourn. Cor.* Eaſtern Goats-thorn, with a large purple Flower.

19. TRAGACANTHA *orientalis, foliis anguſtiſſimis, flore purpuraſcente. Tourn. Cor.* Eaſtern Goats-thorn, with very narrow Leaves, and a purpliſh Flower.

20. TRAGACANTHA *orientalis, foliis oleæ, humillima, floribus in capitulum congeſtis. Tourn. Cor.* A very low eaſtern Goats-thorn, with olive Leaves, and Flowers gathered into a Head.

21. TRAGACANTHA *orientalis, foliis oleæ, incanis & tomentoſis, caule ab imo ad ſummum florido. Tourn. Cor.* Eaſtern Goats-thorn, with hoary and woolly olive Leaves, and Flowers growing from the Bottom to the Top of the Stalks.

22. TRAGACANTHA *orientalis, foliis incanis, caule & ramulis tomentoſis. Tourn. Cor.* Eaſtern Goats-thorn, with hoary Leaves, and woolly Stalks and Branches.

23. TRAGACANTHA *foliis incanis minoribus, minuſque villoſis. Boerh. Ind. alt.* Goats-thorn with ſmaller hoary Leaves, which are leſs hairy.

Moſt of theſe Plants grow wild in the Iſlands of the *Archipelago*; but the three firſt are all the Sorts I have yet ſeen cultivated in the *Engliſh* Gardens.

Theſe Plants may be propagated either from Seeds or by Cuttings, but as they rarely produce Seeds in this Country, ſo the latter Method is only uſed here. The beſt time for this Work is in *April*, juſt as the Plants begin to ſhoot; at which time the tender Branches of the Plants ſhould be taken off, and their lower Parts diveſted of the decay'd Leaves; then they ſhould be planted on a very moderate Hot-bed, which ſhould be cover'd with Mats, to ſcreen them from the great Heat of the Sun by Day, and the Cold by Night: Theſe Cuttings ſhould be frequently water'd until they have taken Root; after which they may be expos'd to the open Air, obſerving always to keep them clear from Weeds, and in very dry Weather they muſt be refreſh'd with Water.

On this Bed they may remain until the following *Spring*, where, if the *Winter* ſhould be very ſevere, they may be cover'd with Mats, as before, and in *April* they may be tranſplanted out either into Pots filled with ſandy, light Earth, or into warm Borders, where, if the Soil be dry, gravelly, and poor, they will endure the ſevereſt Cold of our Climate; but if they are planted in a very rich Soil, they often decay in *Winter*.

From the ſecond Sort Monſieur *Tournefort* ſays, the Gum *Adragant* or *Dragon* is produc'd in *Crete*, of which he gives the following Relation in his Voyage to the *Levant*: “We
“ had the Satisfaction of fully obſerving the Gum *Adragant*
“ on Mount *Ida*. I cannot underſtand how *Bellonius* comes
“ to aſſert ſo poſitively, that there is no ſuch thing in *Can-*
“ *dia*: Sure he had not read the firſt Chapter of the ninth
“ Book of *Theophraſtus*'s Hiſtory of Plants. The little *bald*
“ *Hillocks* about the *Sheepfold* produce much of the *Traga-*
“ *cantha*, and that too a very good Sort. *Bellonius* and
“ *Proſper Alpinus* were doubtleſs acquainted with it; tho' it
“ is hardly poſſible, from their Deſcriptions, to diſtinguiſh
“ it from the other Kinds they make mention of. This
“ Shrub ſpontaneouſly yields the Gum *Adragant* towards
“ the End of *June*, and in the following Months; at which
“ time, the nutritious Juice of this Plant, thicken'd by the
“ Heat, burſts open moſt of the Veſſels wherein it is con-
“ tain'd. It is not only gather'd in the Heart of the Trunk
“ and Branches, but alſo in the Inter-ſpaces of the Fibres,
“ which are ſpread in the Figure of a Circle like Rays of the
“ Sun. This Juice is coagulated into ſmall Threads, which
“ paſſing through the Bark, iſſue out by little and little, ac-
“ cording as they are protruded by the freſh Supplies of Juice
“ ariſing from the Roots. This Subſtance being expos'd to
“ the Air, grows hard, and is formed either into Lumps, or
“ ſlender Pieces, curled and winding in the Nature of
“ Worms, more or leſs long, according as Matter offers. It
“ ſeems as if the Contraction of the Fibres of this Plant
“ contributes to the expreſſing of the Gum. Theſe delicate
“ Fibres, as fine as Flax, being uncover'd and trodden by
“ the Feet of the Shepherds and Horſes, are by the Heat
“ ſhrivelled up, and facilitate the Emanation of the extra-
“ vaſated Juices.

But notwithſtanding what *Tournefort* has ſaid concerning the Gum *Adragant* being produced from that particular Species, many Authors are of Opinion, that it is taken from from ſeveral other Species, but particularly that of *Marſeilles*,

ſeilles, from whence that Gum is often brought into *England.*

The laſt twenty Sorts were moſt of them diſcovered by Dr. *Tournefort* in the *Levant*, from whence he ſent the Seeds of ſeveral Kinds to the Royal Garden at *Paris*.

They may be propagated by Seeds, which ſhould be ſown on a Bed of freſh Earth in *March*; and when the Plants come up, they ſhould be carefully kept clean from Weeds; which, if permitted to grow amongſt the Plants, would ſoon over-bear and deſtroy them, while they are young. If the Seaſon ſhould prove very dry, it will be of great Service to water the Plants now and then; and when they are large enough to tranſplant, they ſhould be carefully taken up, and ſome of them planted into ſmall Pots filled with freſh Earth, placing them in the Shade until they have taken Root; after which Time they may be removed into an open Situation, where they may remain till the latter end of *October*; when they ſhould be placed under a common Frame, where they may be ſhelter'd from ſevere Froſt, but may have free Air in mild Weather; when the Glaſſes ſhould not be put over them.

The remainder of the Plants may be planted on a warm dry Border, where they muſt be ſhaded until they take Root; and if the Seaſon ſhould continue dry, they muſt be refreſh'd with Water, otherwiſe they will be in Danger; becauſe, while they are ſo young, their Roots will not have eſtabliſhed themſelves in the Ground, ſufficiently to nouriſh them in great Droughts.

Thoſe Plants which are planted in Pots may be preſerved for a Year or two under Frames in *Winter*, until they have obtained Strength, when they may be ſhaken out of the Pots, and planted in a lean dry Soil, and a warm Situation, where they will endure the Cold of our ordinary *Winters* very well; but as they are ſometimes deſtroyed by hard *Winters*, ſo it will be proper to keep a Plant of each Kind in Pots, which may be ſheltered in *Winter* to preſerve the *Species*.

Theſe Plants may alſo be propagated by Cuttings, which may be planted during the *Summer* Months, in the manner above directed.

The *Gum Dragon* which is uſed in the Shops, is produced from ſeveral of theſe Species; tho' it was only from the ſecond Sort which Dr. *Tournefort* ſaw it taken.

At preſent theſe Plants are rarely preſerved, excepting by ſome Perſons who are curious in Botany; yet in large Gardens many of them deſerve a Place, where, if they are planted on Hillocks, or the Slopes of dry Banks, they will have a very good Effect, eſpecially as they retain their Leaves thro' the Year.

TRAGIA.

The *Characters* are;

It hath a funnel-ſhap'd Flower, conſiſting of one Leaf, for the moſt part divided into three Segments, but theſe are barren; for the Embryos are placed at a Diſtance on the ſame Plant, which afterward becomes a tricoceos Fruit, compoſed of three Cells, each containing one ſpherical Seed.

The *Species* are;

1. Tragia *alia ſcandens, urticæ folio. Plum. Nov. Gen.* Climbing Tragia, with a Nettle-leaf.

2. Tragia *ſcandens, longo betonicæ folio. Plum. Nov. Gen.* Climbing Tragia, with a Betony-leaf.

Theſe Plants were diſcovered by Father *Plumier* in *America*, who conſtituted this Genus by this Name, in Honour to *Hieronymus Bock*, a famous Botaniſt, who was commonly called *Tragus*.

The firſt Sort grows plentifully in the *Savannahs* in *Jamaica*, and the other warm Parts of *America*; where it twines round whatever Plants or Trees it grows near, and riſes ſeven or eight Feet high, having tough woody Stems. The Leaves are like thoſe of the common Nettle, and the whole Plant is covered with burning Spines, like thoſe of the Nettle; which renders it very unpleaſant to handle.

The ſecond Sort was found by the late Dr. *Houſtoun* at *Campechy*, from whence he ſent the Seeds.

As theſe are Plants of no Beauty, ſo they are ſeldom preſerved in this Country, except in ſome Botanic Gardens, for the ſake of Variety. They are propagated by Seeds, which muſt be ſown on a Hot-bed early in the *Spring*, and muſt afterwards be tranſplanted into Pots, and plunged into a Hot-bed of Tanners-bark, and treated in the ſame manner as the *Dioſcorea*; with which Management theſe Plants will thrive very well.

TRAGOPOGON, [τραγοπώγων, of τράγος, a *Goat*, and πώγων, a *Beard*, becauſe the pappous Seed, while it is included in the *Calyx*, reſembles the Beard of a Goat] Goats-beard.

The *Characters* are;

It is a Plant with a ſemifloſculous Flower, conſiſting of many half Florets; theſe, with the Embryo's, are included in one common many-leav'd Flower-cup, which is not ſcaly, as in Scorzonera, *but the Segments are ſtretch'd out above the Florets, the Embryo's afterwards become oblong Seeds incloſ'd in Covers or Coats, and have a thick Down like a Beard adhering to them.*

The *Species* are;

1. Tragopogon *pratenſe luteum majus. C. B. P.* Greater Meadow Goats-beard, with a yellow Flower, *commonly called* Go-to-Bed-at-Noon.

2. Tragopogon *purpureo-cæruleum, porri folio, quod Artiſi, vulgo. C. B. P.* Goats-beard, with a Leaf like Leeks, and a purple blue Flower, *commonly called* Salſaffy *or* Saſſafy.

3. Tragopogon *alter, gramineo folio, ſuave-rubens. Col.* Another Goats-beard, with a graſſy Leaf and ſoft red Flowers.

There are ſeveral other Species of this Plant, which are preſerved in ſome curious Botanick Gardens for the Sake of Variety; but as they are not cultivated for Uſe, ſo I ſhall omit enumerating them in this Place.

The firſt Sort here mentioned grows wild in moiſt Meadows in divers Parts of *England*; and in *May*, when the Stems begin to advance, they are by many People gather'd to boil, and are by ſome preferr'd to *Aſparagus*.

The ſecond Sort was formerly more in Eſteem than at preſent: This was brought from *Italy*, and cultivated in Gardens for Kitchen Uſe, the Roots being by ſome People greatly valued; but of late there is but little cultivated for the Markets, tho' ſeveral Gentlemen preſerve it in Gardens to ſupply their Tables.

The third Sort is by ſome preſerved for the Variety of its Flowers.

Theſe Plants are propagated from Seeds, which ſhould be ſown in the *Spring* upon an open Spot of Ground, in Rows about nine or ten Inches diſtant; and when the Plants are come up, they ſhould be houghed out, leaving them about ſix Inches aſunder in the Rows: the Weeds ſhould alſo be carefully houghed down as they are produc'd, otherwiſe they will ſoon over-bear the Plants, and ſpoil them. This is the only Culture they require; and if the Soil be light, and not too dry, they will make large Plants before *Winter*; at which time the *Salſaffy*, whoſe Roots are moſt commonly uſed, will be fit for Uſe, and may be taken up any time after their Leaves are decay'd; but when they begin to ſhoot again, they will be ſticky, and not fit for Uſe; but many Perſons do cultivate this Sort for the Shoots, which they boil and eat after the manner of Aſparagus; for this Sort producing ſtrong Shoots, is more valuable than the yellow Sort.

The common yellow Sort, whoſe Shoots are preferr'd, will be fit for Uſe in *April* or *May*, according to the Forwardneſs of the Seaſon: The beſt time to cut them is, when their Stems are about four Inches long; for if they ſtand too long, they are never ſo tender as thoſe which are cut while young.

Some People in cultivating theſe Plants, ſow their Seeds in Beds pretty cloſe, and when the Plants come up, they tranſplant them out in Rows at the before-mentioned Diſtance; but as they do always form a Tap-root, which abounds with a milky Juice, ſo when the extreme Part of their Roots is broken by tranſplanting, they do ſeldom thrive well afterward; therefore it is by far the better Way to make ſhallow Drills in the Ground, and ſcatter the Seeds therein, as before directed, whereby the Rows will be at a due Diſtance, and there will be nothing more to do than to hough out the Plants when they are too thick in the Rows, which will be much leſs Trouble than the other Method of tranſplanting, and the Plants will be much larger and fairer.

TRAGOSELINUM, Burnet-ſaxifrage.

The *Characters* are;

It hath an umbellated Roſe-ſhaped Flower, compoſed of five unequal Heart-ſhaped Petals, which are placed circularly, and reſt on the Empalement; which afterward becomes a Fruit, compoſed of two oblong ſtreaked Seeds.

The *Species* are;

1. **Tragoselinum** *majus, umbellâ candidâ. Inſt. R. H.* Greater Burnet-ſaxifrage, with a white Umbel.

2. **Tragoselinum** *majus, umbellâ rubente. Inſt. R. H.* Greater Burnet-ſaxifrage, with a red Umbel.

3. **Tragoselinum** *alterum minus. Inſt. R. H.* Leſſer round-leaved Burnet-ſaxifrage.

4. **Tragoselinum** *minus. Inſt. R. H.* Small Burnet-ſaxifrage.

5. **Tragoselinum** *radice nigrâ, Germanicum. Jeſſieu.* German Burnet-ſaxifrage, with a black Root.

6. **Tragoselinum** *Auſtriacum, foliis profundiſſimè inciſis, Boerh.* Auſtrian Burnet-ſaxifrage, with Leaves very deeply cut.

7. **Tragoselinum** *Creticum maximum villoſum, flore albo. Tourn. Cor.* The greateſt hairy Burnet-ſaxifrage of Crete, with a white Flower.

8. **Tragoselinum** *minus ſaxatile fœtidiſſimum, apii folio. Tourn. Cor.* The leaſt ſtinking Rock Burnet-ſaxifrage, with a ſmallage Leaf.

9. **Tragoselinum** *Orientale laciniatum, umbellâ purpuraſcente. Tourn. Cor.* Eaſtern Burnet-ſaxifrage, with cut Leaves, and a purpliſh Flower.

10. **Tragoselinum** *Orientale laciniatum, umbellâ albâ. Tourn. Cor.* Eaſtern cut-leaved Burnet-ſaxifrage, with a white Umbel.

The firſt Sort is directed by the College of Phyſicians to be uſed in Medicine; but many times the Herb Women in the Markets impoſe on ignorant Perſons two Herbs for this one, *viz. Burnet*, and *Meadow-ſaxifrage*; which they ſell for *Burnet-ſaxifrage*, which are two very different Plants, and of contrary Qualities. This Sort grows wild on the dry ſhady Banks in *Kent*, and in ſeveral other Parts of *England*.

The ſecond Sort is a Variety of the firſt, from which it only differs in the Colour of the Flowers, which in this Sort are red, and the other are white.

The third Sort grows wild in ſome Parts of *England*, but is not ſo common as the fourth, which is the moſt common Sort in the Fields near *London*. This fourth Sort is ſometimes brought to the Markets, and may be uſed inſtead of the firſt; though it is much better to have the particular Sort ordered by the College, when it can be procured.

All the other Sorts are Strangers in this Country, but are often preſerved by the curious Botaniſts in their Gardens for Variety, and are all of them as hardy as the common Sorts.

Theſe Plants are propagated by Seeds, which ſhould be ſown on a ſhady Border of freſh Earth at *Michaelmas*; for if they are ſown in the *Spring* they frequently miſcarry, as do many of the umbelliferous Plants. In the *Spring* following the Plants will appear, when they ſhould be carefully clear'd from Weeds; and as the Plants obtain Strength, ſo they ſhould be thinned where they grow too cloſe; leaving them five or ſix Inches apart. After this they will require no other Culture, but to keep them clear from Weeds. The ſecond *Summer* theſe Plants will flower, and produce Seeds; but if the Roots are not diſturbed, they will continue ſeveral Years, and produce Seeds annually. Therefore, where the Plants are deſigned to remain, the Seeds ſhould be ſown in Drills, at about fixteen Inches apart, which will allow Room to dig the Ground between the Rows every *Winter*; whereby the Roots will be greatly encouraged, and the Weeds will be better deſtroyed.

TRANSPLANTING of TREES; *vide* Planting.

TRANSPORTATION of PLANTS: In ſending Plants from one Country to another, great Regard ſhould be had to the proper Seaſon for doing it: For Example, if a Parcel of Plants are to be ſent from a hot Country to a cold one, they ſhould be ſent in the *Spring* of the Year, that as they come towards the colder Parts, the Seaſon may be advancing, and hereby, if they have ſuffered a little in their Paſſage, there will be Time to recover them before *Winter*; whereas thoſe which arrive in *Autumn* are often loſt in *Winter*, becauſe they have not Time to recover and get Root before the Cold comes on.

On the contrary, thoſe Plants which are ſent from a cold Country to a hot one, ſhould always be ſent in *Winter*, that they may arrive time enough to be rooted before the great Heats come on, otherwiſe they will ſoon periſh.

The beſt Way to pack up Plants for a Voyage (if they are ſuch as will not bear to be kept out of the Ground) is, to have ſome handy Boxes with Handles to them, for the more eaſily removing them in bad Weather: Theſe ſhould have Holes bored in their Bottoms to let out the Moiſture, otherwiſe it will rot the Roots of the Plants. Over each of theſe Holes ſhould be laid a flat Tile or Oyſter Shell, to prevent the Earth from ſtopping them; then they ſhould be filled up with Earth, into which the Plants ſhould be ſet as cloſe as poſſible to each other, in order to ſave Room (which is abſolutely neceſſary, otherwiſe they will be very troubleſome in the Ship); and as the only Thing intended is, to preſerve them alive, and not to make any Progreſs while on their Paſſage, ſo a ſmall Box will contain many Plants, if rightly planted. The Plants ſhould alſo be placed in the Box a Fortnight or three Weeks before they are put on board the Ship, that they may be a little ſettled and rooted; and during the Time they are on board, they ſhould remain, if poſſible, on the Deck, that they may have Air: but in bad Weather they ſhould be covered with a Tarpawlin, to guard them againſt the ſalt Water, which will deſtroy them if it comes at them in any Quantity.

The Water theſe Plants ſhould have, while on board, muſt be proportioned to the Climate where they come from, and to which they are going: If they come from a hot Country to a cold one, then they ſhould have very little Moiſture, after they have paſſed the Heats; but if they are carry'd from a cold Country to a hot one, they muſt have a greater Share of Moiſture when they come into a warmer Climate, and ſhould be ſhaded in the Day from the violent Heat of the Sun, to which, if they are too much expoſed, it will dry them up and deſtroy them.

But if the Plants to be ſent from one Country to another, are ſuch as will live out of the Ground a conſiderable Time, as all thoſe which are full of Juice will do; as the *Sedums, Ficoides, Euphorbiums, Cereus's*, &c. then they require no other Care but to pack them up in a cloſe Box, wrapping them up well with Moſs, obſerving to place them ſo cloſely that they may not be tumbled about, which will bruiſe them, and that thoſe Plants which have Spines may not wound any of the others. The Box alſo ſhould be placed where they may receive no Moiſture, and where Rats cannot come to them, otherwiſe they are in Danger of being eaten by thoſe Vermin; but if theſe Plants are packed too cloſe, they are apt to ferment, and thereby either rot, or at leaſt grow ſickly; to prevent which they ſhould have a good Quantity of dry Hay or Straw laid between them, and ſeveral ſmall Holes ſhould be made in the Boxes, to let out the noxious Air.

If theſe Plants are thus carefully packed up, they will do well, tho' they ſhould be two, three, or ſome Sorts, if they are four or five Months on their Paſſage, and will be leſs liable to ſuffer than if planted in Earth, becauſe the Sailors generally kill theſe Plants by over-watering them.

There are alſo ſeveral Sorts of Trees which may be packed up in Cheſts with Moſs about them, which will bear to be kept out of the Ground two or three Months, provided it be at a Seaſon when they do not grow; as may be ſeen by the *Orange-trees, Jaſmines, Capers, Olive* and *Pomegranate-trees*, which are annually brought from *Italy*, and if ſkilfully managed, very few of them miſcarry, notwithſtanding they are many times kept three or four Months out of the Ground.

In ſending Seeds from one Country to another, the great Care to be taken is, to ſecure them from Vermin, and preſerve them dry, otherwiſe they mould and decay. The Method Mr. *Cateſby* always obſerved, was, to put up his Seeds dry into Papers, and then put them into a dry Gourd Shell, and ſeal them up; in which Way he ſent ſeveral large Parcels of Seeds from *Carolina* to *England*, which never miſcarried. There are ſome Perſons who have directed to put them into Glaſſes, and to ſeal them cloſely down, to keep out the external Air; but from ſeveral Experiments of this Kind which I have made, I find Seeds thus cloſely put up will not grow, if they remain ſtopped up any conſiderable Time, all Seeds requiring ſome Share of Air, to preſerve their vegetating Quality: So that where a Perſon has no other Conveniency, they may be put up in a Bag, and hung up in a dry Part of the Ship, or put into a Trunk, where they may be ſafe from Vermin; in which Places they will keep very well.

N. B. It is the ſafeſt Way to bring all Sorts of Seeds in their Pods or Huſks in which they grew, provided they are put up dry, becauſe their own Covering will afford them ſome Nouriſhment if the Seeds are not ſeparated from the *Placenta*.

TRIBULUS, Caltrops.

The *Characters* are;

It hath a Flower compoſed of ſeveral Leaves, which are placed circularly, and expand in form of a Roſe; out of whoſe Em-

Empalement riſes the Pointal, which afterward becomes a turbinated Fruit, compoſed of ſeveral Parts, which have Thorns, collected into a Head, and having ſeveral Cells, in which are incloſed oblong Seeds.

The *Species* are;

1. TRIBULUS *terreſtris, ciceris folio, fructu aculeato. C. B. P.* Land-caltrop, with a Chich Leaf, and a prickly Fruit.

2. TRIBULUS *terreſtris major Curaſſavicus. Prod. Par. Bat.* Greater Land American Caltrops.

3. TRIBULUS *terreſtris Americanus, fructu turbinato, foliis lanuginoſis. Plum. Cat.* American Land-caltrops, with a turbinated Fruit, and downy Leaves.

4. TRIBULUS *terreſtris Indiæ orientalis, foliis viciæ ſubrotundis & villoſis. Inſt. R. H.* Eaſt-India Land-caltrops, with roundiſh and hairy Vetch Leaves.

The firſt Sort is a very common Weed in the South of *France*, in *Spain* and *Italy*, where it grows amongſt Corn, and on moſt of the arable Land, and is very troubleſome to the Feet of Cattle; for the Fruit, being armed with ſtrong Prickles, run into the Feet of the Cattle which walk over the Land. This is certainly the Plant which is mentioned in *Virgil's Georgics*, under the Name of *Tribulus*, tho' moſt of his Commentators have applied it to other Plants.

It is called in *Engliſh*, *Caltrops*, from the Form of the Fruit, which reſembles thoſe Inſtruments of War that were caſt in the Enemies Way to annoy their Horſes.

This Plant is preſerved in ſeveral curious Gardens in *England*, for the ſake of Variety. It is propagated by Seeds, which ſhould be ſown in the *Autumn*; for thoſe which are kept out of the Ground till *Spring*, commonly remain in the Ground a whole Year before the Plants come up. Theſe Seeds ſhould be ſown on an open Bed of freſh light Earth, where they are deſigned to remain; for, as it is an annual Plant, ſo it doth not bear tranſplanting very well, unleſs it be done when the Plants are very young. In the *Spring*, when the Plants come up, they ſhould be carefully cleared from Weeds; and where they come up too cloſe, ſome of the Plants ſhould be pulled out, to give Room for the remaining Plants to grow. After this they will require no other Culture, but to keep them clear from Weeds. In *June* they will begin to flower, and their Seeds will ripen in *Auguſt* and *September*; which if permitted to ſcatter, the Plants will come up the following *Spring*, and maintain their Place, if they are not over-born with larger Weeds.

The Branches of this Plant trail on the Ground, and when the Plants are vigorous, will ſpread to a great Diſtance from the Root; the Flowers come out on long Foot-ſtalks from the Diviſion of the Branches, which are ſucceeded by the Fruit. Theſe, when they are ripe, divide into ſeveral Parts: ſo that if they are not gathered they will ſoon drop off.

The other three Sorts, being Natives of hot Countries, are very tender, ſo muſt be ſown on a Hot-bed early in the *Spring*; and when the Plants are come up, they muſt be each tranſplanted into a ſeparate Pot, filled with rich light Earth, and then plunged into a Hot-bed of Tanners-bark, where they muſt be treated in the ſame Manner as other tender exotick Plants; being careful to bring them forward as early as poſſible in the *Summer*, otherwiſe they will not perfect their Seeds in this Country.

Theſe are all of them annual Plants, whoſe Branches trail on the Ground, in the ſame Manner as the common Sort; but when their Roots are pretty much confined in the Pots, they will not grow ſo vigorous as when planted in larger Pots; ſo will flower and fruit much earlier in the Seaſon. The ſecond Sort produces large yellow Flowers, which have an agreeable Scent.

TRICHOMANES, Maiden-hair.

There are three or four Varieties of this Plant which grow in *Europe*; but in *America* there are a great Number of Species, which are remarkably different from each other, as alſo from the *European* Kinds.

Theſe being of the Tribe of *Ferns*, are ſeldom preſerved in Gardens, but where any Perſon is curious to collect them. Their Roots ſhould be planted in moiſt ſhady Places, eſpecially the *European* Sorts, which commonly grow from between the Joints of old Walls, about Wells, and in other very moiſt ſhady Situations. But thoſe Sorts which are brought from hot Countries, muſt be planted in Pots filled with Rubbiſh, and ſtrong Earth mixed; and in *Winter* they muſt be ſcreened from hard Froſts, to which if they are expoſed it will deſtroy them.

The common Sort in *England* is generally ſold in the Markets for the true *Maiden-hair*, which is a very different Plant, and not to be found in *England*, it being a Native of the South of *France*, and other warm Countries; ſo is rarely brought to *England*.

TRIFOLIUM, [of *tres*, *three*, and *folium*, Lat. a *Leaf*.] Trefoil.

The *Characters* are:

It hath a papilionaceous Flower, or reſembles a papilionaceous Flower, for it conſiſts of the Standard; the Wings and the Keel coming out of the Empalement, together with the Pointal, cover'd with its fringed Sheath; it becomes a Capſule, hidden in the Empalement, and full of Seeds, which are for the moſt part ſhaped like a Kidney, adhering cloſe to the Capſule when ripe. Some of this Genus have Flowers conſiſting of one Leaf, reſembling a papilionaceous Flower, out of whoſe Empalement ariſes the Pointal, which afterward becomes a membranaceous Capſule hidden in the Empalement, and filled with Kidney-ſhaped Seeds. To theſe Notes muſt be added, Leaves growing by Threes, ſeldom by Fours or Fives, on a common Foot-ſtalk.

The *Species* are;

1. TRIFOLIUM *purpureum majus ſativum, pratenſi ſimile. Raii Syn.* Greater purple manured Trefoil, *commonly called* Clover.

2. TRIFOLIUM *pratenſe purpureum vulgare. Mor. Hiſt.* Common Meadow Trefoil, with a purple Flower, *commonly called* Honey-ſuckle Trefoil.

3. TRIFOLIUM *pratenſe album. C. B. P.* White Meadow Trefoil.

4. TRIFOLIUM *arvenſe humile ſpicatum, ſive Lagopus. C. B. P.* Hare's-foot Trefoil.

5. TRIFOLIUM *fragiferum. Ger. Emac.* Strawberry Trefoil.

6. TRIFOLIUM *pratenſe luteum, capitulo lupuli, vel agrarium. C. B. P.* Hop Trefoil.

7. TRIFOLIUM *bitumen redolens. C. B. P.* Trefoil, ſmelling of Bitumen.

8. TRIFOLIUM *bitumen redolens, anguſtifolium. Boerh. Ind.* Narrow-leav'd Trefoil, ſmelling of Bitumen.

9. TRIFOLIUM *Africanum fruticans, flore purpuraſcente. H. Amſt.* African ſhrubby Trefoil, with a purpliſh Flower.

10. TRIFOLIUM *purpureum majus, foliis longioribus & anguſtioribus, floribus ſaturatioribus. Raii Syn.* The greater purple Trefoil, with longer and narrower Leaves and deeper coloured Flowers.

11. TRIFOLIUM *pratenſe folliculatum. C. B. P.* Bladder Meadow-trefoil.

12. TRIFOLIUM *luteum lupulinum minimum. Mor. Hiſt.* The leaſt yellow Hop-trefoil.

13. TRIFOLIUM *montanum, ſpicâ longiſſimâ rubente. C. B. P.* Mountain-trefoil, with a very long reddiſh Spike.

14. TRIFOLIUM *montanum anguſtiſſimum ſpicatum. C. B. P.* Narrow-leaved ſpiked Trefoil.

15. TRIFOLIUM *ſtellatum. C. B. P.* Rough ſtarry-headed Trefoil.

16. TRIFOLIUM *lagopoides hirſutum anguſtifolium Hiſpanicum, flore ruberrimo. Mor. Hiſt.* Hairy narrow-leaved Hare's-foot Spaniſh Trefoil, with a very red Flower.

17. TRIFOLIUM *Ægyptiacum, floribus albicantibus, foliis oblongis, vulgo* Berſain. *Jeſſieu.* Egyptian Trefoil, with whitiſh Flowers and oblong Leaves, *commonly called* Berſain.

18. TRIFOLIUM *Creticum bituminoſo ſimile, plane inodorum, flore purpureo. Tourn. Cor.* Trefoil of Candy, reſembling the bituminous one, but without Smell, with a purple Flower.

19. TRIFOLIUM *Creticum elegantiſſimum, magno flore. Tourn. Cor.* The moſt beautiful Trefoil of Candy, with a large Flower.

20. TRIFOLIUM *ampliſſimo folio ſubrotundo villoſo, flore purpuraſcente. Tourn. Cor.* Trefoil with a very large roundiſh hairy Leaf, and a purpliſh Flower.

21. TRIFOLIUM *orientale altiſſimum, caule fiſtuloſo, flore albo. Tourn. Cor.* The talleſt Eaſtern Trefoil, with a hollow Stalk, and a white Flower.

22. TRIFOLIUM *orientale majus villoſiſſimum, floribus flaveſcentibus. Tourn. Cor.* The greater and more hairy Eaſtern Trefoil, with yellowiſh Flowers.

23. TRIFOLIUM *clypeatum argenteum. Alp. Exot.* Silvery Target-ſhap'd Trefoil.

24. TRIFOLIUM *Apulum annuum, calyce veſicario. Hort. Piſſ.* Annual Trefoil of Apulia, with a Bladder Empalement.

The firſt of theſe Plants is greatly cultivated in *England* for feeding of Cattle, and is eſteem'd very profitable, becauſe the great Quantity of Cattle which this Graſs will maintain, does very much inrich all clayey Lands, and prepare them for Corn in two or three Years, which is the Length of Time which this Crop will continue good.

In the Choice of this Seed, that which is of a bright yellowiſh Colour, a little inclining to Brown, ſhould be preferr'd; but that which is Black, ſhould be rejected as good for little.

Ten or twelve Pounds of this Seed will be ſufficient for an Acre of Ground; for if the Plants do not come up pretty thick, it will not be worth ſtanding. The Land in which this Seed is ſown ſhould be well ploughed, and harrowed very fine, otherwiſe the Seeds will be buried too deep, and thereby loſt.

The beſt time to ſow it is about the Beginning of *Auguſt* at which time the *Autumnal* Rains will bring up the Plants in a ſhort time; whereas when the Seeds are ſown in the *Spring*, if it be done very early, they are many times burſt with Wet and Cold; and if it be done late, they are in Danger of miſcarrying from Drought: Whereas in *Autumn*, when the Ground has been warm'd by the *Summer*'s Heat, the Rains then falling do greatly promote the Vegetation of Seeds and Plants.

This Seed ſhould be harrow'd in with Buſhes, for if it be done with a common Harrow, they will be bury'd too deep.

Moſt People have recommended the Sowing of this Seed with ſeveral Sorts of Corn; but if it be ſown at the Seaſon before directed, it will be much better, if ſown alone; for the Corn prevents the Growth of the Plants until it is reaped, and taken off the Ground; ſo that one whole Seaſon is loſt, and many times, if there be a great Crop of Corn upon the Ground, it often ſpoils the *Clover*, ſo that it is hardly worth ſtanding; whereas in the Way before directed, the Plants will have good Root before *Winter*, and in the *Spring* will come on much faſter than that which was ſown the *Spring* before under Corn.

About the Middle of *May* this Graſs will be fit to cut, when there ſhould be great Care taken in making it, for it will require a great deal more Labour and Time to dry than common Graſs, and will ſhrink into leſs Compaſs; but if it be not too rank, it will make extraordinary rich Food for Cattle. The Time for cutting it is when it begins to flower, for if it ſtands much longer, the lower Part of the Stems will begin to dry, whereby it will make a leſs Quantity of Hay, and that not ſo well flavour'd.

Some People cut three Crops in one Year of this Graſs, but the beſt Way is to cut but one in the *Spring*, and feed it the remaining Part of the Year, whereby the Land will be enriched, and the Plants will grow much ſtronger.

One Acre of this Graſs will feed as many Cattle as four or five Acres of common Graſs: But great Care ſhould be taken of the Cattle when they are firſt put into it, leſt it burſt them. To prevent which, ſome turn them in for a few Hours only at firſt, and ſo ſtint them as to Quantity, and this by Degrees, letting them at firſt be only one Hour in the Middle of the Day, when there is no Moiſture upon the Graſs, and ſo every Day ſuffer them to remain a longer time, until they are fully ſeaſon'd to it: But great Care ſhould be had never to turn them into this Food in wet Weather; or if they have been for ſome time accuſtomed to this Food, it will be proper to turn them out at Night in wet Weather; and let them have Hay, which will prevent the ill Conſequences of this Food: But there are ſome who give Straw to their Cattle while they are feeding upon this Graſs, to prevent the ill Effects of it; which muſt not be given them in the Field, becauſe they will not eat it where there is Plenty of better Food. There are others who ſow Rye Graſs amongſt their *Clover*, which they let grow together, in order to prevent the ill Conſequences of the Cattle feeding wholly on *Clover*: But this is not a commendable Way, becauſe the Rye Graſs will greatly injure the *Clover* in its Growth.

Where the Seeds are deſign'd to be ſav'd, the firſt Crop in the *Spring* ſhould be permitted to ſtand until the Seeds are ripe, which may be known by the Stalks and Heads changing to a brown Colour; then it ſhould be cut in a dry time: And when it is well dry'd, it may be hous'd until *Winter*, when the Seeds ſhould be threſh'd out; but if the Seeds are wanted for immediate ſowing, it may be threſh'd out before it be hous'd or ſtack'd, but then it muſt be well dry'd, otherwiſe the Seeds will not quit their Huſks.

It has been a great Complaint amongſt the Farmers, that they could not threſh out theſe Seeds without great Labour and Difficulty, which I take to be chiefly owing to their cutting the *Spring* Crop when it begins to flower, and to leave the ſecond Crop for Seed, which ripens ſo late in *Autumn*, that there is not Heat enough to dry the Huſks ſufficiently, whereby they are tough, and the Seeds render'd difficult to get out, which may be intirely remedied by the leaving of the firſt Crop for Seed, as hath been directed.

When Cattle are fed with this Hay, the beſt Way is to put it in Racks, otherwiſe they will tread a great Quantity of it down with their Feet. This Feed is much better for moſt other Cattle than Milch Cows, ſo that theſe ſhould rarely have any of it, leſt it prove hurtful to them; tho' when it is dry, it is not near ſo injurious to any ſort of Cattle as when green.

The ſecond and third Sorts grow wild in Meadows amongſt the Graſs, where their Roots will abide many Years and are cut with the Graſs, and dry'd for Food: But theſe are rarely cultivated in *England*, becauſe they are Plants of much ſmaller Growth than the *Clover*.

The fourth Sort is an annual or biennial Plant, which periſhes as ſoon as the Seeds are ripe. This grows wild in divers Parts of *England* amongſt Corn, or upon other arable Land, and is ſeldom cultivated unleſs in Botanick Gardens, it being a medicinal Plant.

The fifth and ſixth Sorts do alſo grow wild in *England*, but are often preſerv'd in Botanick Gardens for Variety. The fifth Sort produces Heads very like a Strawberry, from whence it had its Name; and the ſixth Sort has Heads very like Hops, for which Diverſity they are ſometimes cultivated in Gardens, but they are not apply'd to any Uſe.

The ſeventh, eighth, and ninth Sorts are alſo preſerved in Gardens for Variety, where they are planted in Pots, and ſhelter'd in *Winter* amongſt other Exotick Plants; but the ſeventh and eighth Sorts will endure the Cold of our ordinary *Winters* in the open Air, provided they are planted on a dry Soil, and in a warm Situation; but the ninth Sort requires to be ſhelter'd from ſevere Froſt, but ſhould have as much free Air as poſſible in mild Weather.

Theſe Plants may be propagated either from Seeds, or by planting Cuttings of them in the *Spring*, upon a Bed of rich, light Earth, obſerving to water and ſhade them until they have taken Root; after which they muſt be carefully clear'd from Weeds during the *Summer* Seaſon, and in *Auguſt* ſome of the Plants ſhould be taken up and planted in Pots fill'd with light, ſandy Earth, which in *Winter* ſhould be placed under a common Hot-bed Frame, where they may have Air in mild Weather; but in froſty Weather may be ſhelter'd with Glaſſes, &c. If they are propagated from Seeds, theſe ſhould be ſown towards the latter End of *March* upon a Bed of light Earth, and when the Plants are come up, they muſt be carefully clear'd from Weeds, that they may not be over-borne thereby; and when they are about four Inches high, they ſhould be planted either into Pots, or the Borders where they are to remain, becauſe if they are ſuffer'd to grow very rank before they are removed, they do not bear tranſplanting ſo well. Theſe plants are preſeved in Gardens more for the ſake of Variety than any real Beauty, eſpecially the two firſt, which ſmell ſo ſtrong of Bitumen, when bruis'd, as ſcarcely to be borne without Uneaſineſs.

The tenth Sort grows wild in Paſtures in many Parts of *England*, and is cut with the Hay, as is the common Trefoil; from which it differs in having longer and narrower Leaves, and the Flowers being of a deeper red Colour.

The eleventh Sort grows wild in *Italy*, *Spain*, and the South of *France*; from whence the Seeds have been procured by ſome Perſons who are Lovers of Botany, who preſerve this Plant in their Gardens for the ſake of Variety. This is an annual Plant, ſo the Seeds ſhould be ſown in *Autumn*, where the Plants are to remain; and in the *Spring* they muſt be kept clear from Weeds, which is all the Culture they require. In *May* the Plants will flower, and their Seeds will ripen in *July*. The Branches of this Sort trail on the Ground, and the Flowers are produced on Pedicles, from the Diviſions of the ſmall Branches, which are of a bright red Colour, and collected in ſmall globular Heads.

The twelfth Sort is frequently found wild on barren ſandy Lands, in ſeveral Parts of *England*, ſo is not admitted into Gardens, this Sort has been by ſome Perſons propoſed to be cultivated for the Improvement of barren Land; but as it is a very ſmall Plant, and but an Annual, ſo it is not worth the Trial, becauſe the *Noneſuch* will thrive on any Soil where this will grow, and is a much ſtronger Plant; and if the Seeds are permitted to ſcatter in the manner I have directed, will produce a conſtant Supply of young Plants.

The thirteenth Sort grows wild in *Germany*, and ſeveral other Parts of *Europe*, but is not a Native of this Country

This Plant produces very long Spikes of reddiſh Flowers, which make a pretty Appearance, during the Time they continue in Beauty. This Plant is preſerved by the Curious in Botany for the ſake of Variety, but is ſeldom cultivated in other Gardens.

The fourteenth Sort produces very narrow Leaves, and ſlender Spikes of Flowers, which are of a pale red Colour, and being very ſmall, make but an indifferent Appearance. This is not a Native of this Country.

The fifteenth Sort grows wild in the South of *France*, in *Italy* and *Sicily*; from whence the Seeds have been obtained by ſome curious Perſons. This Sort produces ſtarry Heads on the Tops of the Stalks, ſo is preſerved for the ſake of Variety.

The ſixteenth Sort produces very beautiful red Flowers, which make a fine Appearance, ſo may be allowed a Place in ſome barren Part of the Garden, where few better Things will grow; or if the Seeds of this Kind were preſerved in Quantity ſufficient to ſow a ſmall Field in Sight of a Houſe, it would afford a very agreeable Proſpect when in Flower; and the Graſs is as proper Food for Cattle, as the common Trefoil; but this being an annual Plant, is not ſo proper to cultivate in common, becauſe it requires an annual Culture.

The ſeventeenth Sort is cultivated in *Egypt* for feeding of their Cattle, and alſo in ſome other eaſtern Countries. The Seeds of this Sort have been brought into *Europe* by ſome Perſons who were deſirous of having it cultivated here for the ſame Purpoſes; but this being an annual Plant alſo, is not ſo proper as the Clover, for the Reaſons before given; beſides, it being a tall ſlender Plant, is very ſubject to be beaten down by hard Rains, which will greatly damage it.

The nineteenth, twentieth, twenty-ſecond, twenty-third and twenty-fourth Sorts, are all of them annual Plants, which are preſerved in ſome curious Botanic Gardens, for the ſake of Variety; but are not cultivated for Uſe. The Seeds of all theſe annual Trefoils ſhould be ſown in *Autumn*, early enough for the Plants to get Strength before the Froſt comes on; for when the Seeds are ſown in the *Spring*, they frequently fail; and thoſe Plants which ariſe, ſeldom grow to any Magnitude, and rarely perfect their Seeds well. Some of theſe Sorts, which are remarkable for the Colours of their Flowers, are worth propagating in ſmall Patches in Paddocks, where they will afford an agreeable Variety, if they are permitted to flower.

The eighteenth and twenty-firſt Sorts are of longer Continuance than the other Sorts; but theſe are unfit for Fodder, ſo are only preſerved by ſome curious Perſons in their Gardens. Theſe may be propagated by Seeds, in the ſame manner as the other Sorts, and will live abroad in *Winter*, if they are planted in a warm Situation, and on a dry Soil. The ninth Sort may alſo be propagated by Cuttings, which ſhould be planted on a ſhady Border, where, if they are duly watered, they will ſoon take Root; and they may remain in this Border till *Michaelmas*, when they ſhould be planted where they are deſigned to remain.

TRIOSTEOSPERMUM, Doctor *Tinkar*'s Weed, or falſe *Ipecacuana*.

The *Characters* are;

It hath a tubulous Flower conſiſting of one Leaf, divided into five roundiſh Segments, and incloſ'd in a five-leav'd Empalement, having another Cup reſting on the Embryo; which afterward becomes a roundiſh fleſhy Fruit, incloſing three hard Seeds, which are broad at their upper Part, and narrower at Bottom.

We have but one *Species* of this Plant; *viz.*

TRIOSTEOSPERMUM *latiore folio, flore rutilo. Hort. Elth.* Broad-leav'd Trioſteoſpermum, with a reddiſh Flower, commonly called Dr. *Tinkar*'s Weed, or falſe *Ipecacuana*.

This Plant is a Native of *New-England*, *Virginia*, and ſome other Northern Parts of *America*, where it has been frequently uſed as an Emetic, and is commonly called *Ipecacuana*. One of the firſt Perſons who brought it into Uſe, was Dr. *Tinkar*, from whence many of the Inhabitants call it by the Name of *Dr. Tinkar's Weed*. The Leaves of this Plant greatly reſemble thoſe of the true *Ipecacuana*, but the Roots are very different; and by the moſt authentic Account we have of the true Sort, it differs in Flower and Fruit from this Plant.

It grows on low marſhy Grounds, near *Boſton* in *New-England*, very plentifully; where the Roots are taken up every Year, and are continued in Uſe amongſt the Inhabitants of *Boſton*.

This Plant is preſerved in ſeveral curious Gardens in *England*, and is hardy enough to thrive in the open Air: but it ſhould be planted on a moiſt light Soil; for if it is on a dry Ground, there muſt be Care taken to water the Plants conſtantly in dry Weather, otherwiſe they will not thrive. It may be propagated by Seeds, which ſhould be ſown on a Border of light Earth, where the Morning Sun only comes on it; but if theſe Seeds are ſown in the *Spring*, they will remain in the Ground a whole Year, before the Plants will come up: ſo that during this Time the Border muſt be conſtantly kept clear from Weeds; and the following *Spring*, when the Plants appear, they ſhould be duly watered in dry Weather, which will greatly promote the Growth of the Plants. They muſt alſo be conſtantly kept clean from Weeds, which, if permitted to grow amongſt them, will ſoon over-bear the Plants while they are young; and either quite deſtroy the Plants, or ſo much weaken them, that they will not recover it in a long time.

The Plants may remain in this Seed-border, until the *Michaelmas* following, when they ſhould be carefully taken up, and tranſplanted where they are deſigned to remain. Some of them ſhould be planted in Pots, that they may be ſheltered in *Winter*, leſt thoſe which are in the full Ground ſhould be deſtroyed by ſevere Froſt.

This Plant may be alſo propagated by parting of the Roots. The beſt Seaſon for this Work is in the *Spring*, juſt before the Plants begin to ſhoot, which is commonly about the Middle or latter End of *March*; but in doing of this, the Roots muſt not be parted too ſmall, for that will prevent their flowering ſtrong. This Plant uſually grows about two Feet high, and the Flowers come out from the Wings of the Leaves, which being ſmall, make no great Figure in a Garden. However, a few of the Plants may be allow'd a Place in ſome moiſt wilderneſs Quarters, where they are not too much over-ſhaded by Trees; where they will thrive, and add to the Variety.

This Plant perfects its Seeds in this Country every Year; which, if ſown in *Autumn* as ſoon as they are ripe, the Plants will come up the following *Spring*; by which a whole Year is ſaved. Theſe ſeedling Plants will not flower until the third Year; and then they ſeldom grow ſo ſtrong as the older Plants.

TRIPETALOUS FLOWERS, are ſuch as conſiſt of three Leaves, which are call'd *Petals*, to diſtinguiſh them from the Leaves of Plants.

TRIPOLIUM; *vide* Aſter.

TRITICUM; [ſo call'd of *Triturare*, *Lat.* to *threſh*, becauſe the Seeds or Grains are ſeparated from the Ears or Spikes by threſhing.] Wheat.

The *Characters* are;

It hath an apetalous Flower, which is diſpos'd into Spikes; each ſingle Flower conſiſts of many Stamina (or Threads), which are included in a ſquamous Flower-cup, which hath Awns, the Pointal alſo riſes in the Centre, which afterwards becomes an oblong Seed, which is convex on one Side, but hath a Furrow on the other; is farinaceous, and incloſ'd by a Coat which was before the Flower-cup: Theſe are produc'd ſingly, and are collected in a cloſe Spike, being affix'd to an indented Axis.

The *Species* are;

1. TRITICUM *hybernum ariſtis carens. C. B. P.* White or red Wheat without Awns.
2. TRITICUM *ſpica & granis rubentibus. Raii. Syn.* Red Wheat, *in ſome Places call'd* Kentiſh Wheat.
3. TRITICUM *ſpica & granis albis. Raii Syn.* White Wheat.
4. TRITICUM *ariſtis circumvallatum, granis & ſpica rubentibus, glumis lævibus & ſplendentibus. Raii. Syn.* Red-ear'd bearded Wheat.
5. TRITICUM *ſpica villoſa quadrata longiore, ariſtis munitum. Hiſt. Ox.* Cone Wheat.
6. TRITICUM *ariſtatum, ſpica maxima cinericea, glumis hirſutis. Raii Syn.* Grey Wheat, *and in ſome Places*, Duck-bil Wheat, *and* Grey Pollard.
7. TRITICUM *majus, longiore grano, glumis foliaceis incluſo, ſeu Triticum Poloniæ dictum. Hiſt. Ox.* Polonian Wheat.
8. TRITICUM *ſpica multiplici. C. B. P.* Many-ear'd Wheat.
9. TRITICUM *æſtivum. C. B. P.* Summer Wheat.
10. TRITICUM *ſpica hordei Londinenſibus. Raii Syn.* Naked Barley, *vulgo*.
11. TRITICUM *rufum hexaſtychon. C. P. B.* Six-row'd Wheat.

12. **Triticum** *ſemine oblongo. C. B. P.* Long-grain'd Wheat.

13. **Triticum** *ariſtis longioribus, ſpicâ albâ. C. B. P.* White-ear'd Wheat, with long Awns.

The ten firſt Sorts of *Wheat* are cultivated in divers Parts of *England*, but the Manner of ſowing and managing them being ſo well known to moſt Farmers, and being more proper for a Treatiſe of Husbandry than of Gardening, I ſhall omit it in this Place.

The eleventh Sort is not very common in *England* at preſent. This has ſix Rows of Grains to each Ear or Spike; but the Spikes are not ſo long as in ſome of the other Sorts: but it is very much eſteem'd for the Goodneſs of the Grain in *Savoy*, where it is chiefly cultivated.

The twelfth Sort I have obſerved in ſome Parts of *Kent*, where it is by ſome Farmers cultivated. This produces a longer Grain than moſt other Sorts, but is not ſo full; and having more Chaff, is not ſo much eſteem'd as ſome other Sorts.

The thirteenth Sort is frequently cultivated in moſt Parts of *England*, and is eſteemed a very hardy Sort of Corn. The Awns of this Sort are as long as thoſe of *Rie*; ſo that by unskilful Perſons it is frequently taken for it, while it is ſtanding on the Field.

Of all the Sorts of Wheat now cultivated in this Country, the *Cone* Wheat is chiefly preferr'd, as being a larger Ear, and a fuller Grain, than any other Sort. But the Seeds of theſe Corns ſhould be annually changed; for if they are ſown on the ſame Farm, where they are ſaved for ſome Years, they will not ſucceed ſo well as when the Seed is brought from a diſtant Country; nay, it is a much better Method to procure the Seeds from *Sicily*, or ſome other Corn Country, than to ſow *Engliſh* Seeds. The Husbandmen in the *Low Countries* annually procure their Seed Wheat from *Sicily*, or the Iſlands of the *Archipelago*; which they find thrives much better, and produces a finer Grain, and is alſo not ſo liable to Smut, as the Corn of their own ſaving.

TRIUMFETTA.

The *Characters* are;

It hath a Flower conſiſting of ſeveral Petals, which are placed circularly, and expand in form of a Roſe: from whoſe Empalement ariſes the Pointal, which afterward becomes a hard ſpherical burry Fruit, incloſing four angular Seeds.

The *Species* are;

1. **Triumfetta** *fructu echinato racemoſo. Plum. Nov. Gen.* Triumfetta with a burry-branching Fruit.
2. **Triumfetta** *fructu echinato racemoſo, minor. Millar.* Smaller Triumfetta, with a burr-branching Fruit.

The firſt of theſe Plants is very common in the Iſland of *Jamaica*, and ſeveral other Parts of *America*; but the ſecond Sort is more rare, being found in but few Places. The Seeds of this Kind were ſent to *England* by Mr. *Robert Millar*, who diſcovered the Plant on the North Side of the Iſland of *Jamaica*.

Theſe are both very tender Plants, ſo muſt be preſerved in the warmeſt Stoves, otherwiſe they will not live thro' the *Winter* in this Country. They are propagated by Seeds, which muſt be ſown on a Hot-bed early in the *Spring*; and when the Plants are come up, they ſhould be each tranſplanted into a ſeparate Pot filled with light freſh Earth, and then plunged into a moderate Hot-bed of Tanners-bark, and ſhaded from the Sun until they have taken new Root; after which Time they muſt be treated in the ſame manner as hath been directed for other tender exotic Plants. During the *Summer* Seaſon the Plants may remain in this Hot-bed, but in *Autumn* they muſt be removed into the Stove, and plunged into the Bark-bed, obſerving to water them frequently; but in very cold Weather it muſt not be given to them in large Quantities. If the Plants live thro' the *Winter*, they will flower the following *June*, ſo will ripen their Seeds in *September*; but the Plants may be continued two or three Years, provided they are carefully managed.

The Flowers of theſe Plants are ſmall, and of a yellow Colour, ſomewhat like thoſe of *Agrimony*; for which the Plant has been by ſome ranged under the Genus. Theſe Flowers are produced in Branches at the Extremity of the Shoots; but as they are not very beautiful, ſo they are ſeldom preſerved but in ſuch Gardens, where Variety is chiefly intended.

The firſt of theſe Sorts riſes to the Height of ſix or ſeven Feet, and the Stem becomes woody. Toward the Top it divides into ſeveral Branches, each of which produces a Spike or Bunch of Flowers. The Leaves of this Sort are pretty large, and ſhap'd like thoſe of the larger *Malvinda*.

The ſecond Sort ſeldom riſes more than three Feet high, and has ſmaller Leaves than the firſt. The Stem of this Sort is woody, but it doth not branch ſo much as the former, and is in every reſpect a much leſs Plant than that.

TUBEROSE; *vide* Hyacinthus Tuberoſus.

TUBEROUS ROOTS, are ſuch as conſiſt of an uniform fleſhy Subſtance, and are of a roundiſh Figure, as Turnips, *&c.*

TUBULOUS PLANTS, are ſuch whoſe Stems are hollow like a Pipe.

TULIPA, [is a *Turkiſh* Name, ſignifying a *Turkiſh* Cap or Turbant] Tulip.

The *Characters* are;

It hath a Lily Flower, compos'd for the moſt part of ſix Leaves, ſhap'd ſomewhat like a Pitcher; the Pointal, which ariſes in the Middle of the Flower, ſurrounded with Stamina, *afterwards becomes an oblong Fruit, which opens into three Parts, is divided into three Cells, and full of plain Seeds, which reſt upon one another in a double Row. To theſe Marks muſt be added, a coated Root, with Fibres in the lower Part.*

It would be to little Purpoſe to enumerate the ſeveral Varieties of theſe Flowers, which may be ſeen in one good Garden, ſince there is no End of their Numbers; and what ſome People may value at a conſiderable Rate, others reject; and as there are annually a great Quantity of new Flowers obtain'd from Breeders, ſo thoſe which are old, if they have not very good Properties to recommend them, are thrown out and deſpis'd: I ſhall therefore point out the Properties of a good *Tulip*, according to the Characteriſticks of the beſt Floriſts of the preſent Age. 1. It ſhould have a tall, ſtrong Stem. 2. The Flower ſhould conſiſt of ſix Leaves, three within, and three without; the former ought to be larger than the latter. 3. Their Bottom ſhould be proportioned to their Top, and their upper Part ſhould be rounded off, and not terminate in a Point. 4. Theſe Leaves, when opened, ſhould neither turn inward nor bend outward, but rather ſtand erect, and the Flower ſhould be of a middling Size, neither over large nor too ſmall. 5. The Stripes ſhould be ſmall and regular, ariſing quite from the Bottom of the Flower; for if there are any Remains of the former ſelf-colour'd Bottom, the Flower is in Danger of loſing its Stripes again. The Chives ſhould not be yellow, but of a brown Colour. When a Flower has all theſe Properties, it is eſteem'd a good one.

Tulips are generally divided into three Claſſes, according to their Seaſons of Flowering; as, 1. *Præcoces* or early Blowers, *Media's* or Middling Blowers, and *Serotines* or Late Blowers; but there is no Occaſion for making any more Diſtinctions than two, *viz.* Early and Late Blowers.

The Early Blowing *Tulips* are not near ſo fair, nor riſe half ſo high as the Late ones, but are chiefly valued for appearing ſo early in the *Spring*; ſome of which will flower the Beginning of *February*, if planted near a Wall, Pale, Hedge, or other Shelter; and the others do ſucceed them, ſo that they keep flowering until the general Seaſon for theſe Flowers is come, which is towards the End of *April*. As theſe Early Blowing *Tulips* are but few, ſo I ſhall inſert the Names of the principal of them, which are as follow:

1. *Duke Van Toll,* or *Winter Duke.*
2. *General Duke.*
3. *General Brancion.*
4. *Pretty Betty.*
5. *Ducheſs* of *Brancion.*
6. *Lac Verine.*
7. *Violet Ratgans.*
8. *Violet Remow* or *Pourpre Liſſe*
9. *Palto Van Leyden.*
10. *Floriſante.*
11. *Blindenburgh.*
12. *Nonſuch.*
13. *Admiral Crinki.*
14. *General Molſwick.*
15. *Paragan Cleremont.*
16. *Admiral Encuſen.*
17. *Morillion.*
18. *Nobleſt.*
19. *Early Perfect.*
20. *Superintendant.*
21. *Vice-Roy.*
22. *Maria.*
23. *Aurora Van Bart.*
24. *Paragon Grebberi.*
25. *Galatea.*
26. *Marquis.*
27. *Gilden Bloemen.*
28. *Alcetus.*
29. *Jeweel Van Haerlem.*
30. *Jacht Van Delft.*
31. *Goude Son.*
32. *Flamboyant.*
33. *Bruyd Renard.*
34. *Palamedes.*
35. *Apollo.*
36. *Juno.*
37. *Silver-Boot.*
38. *Florida Voorhelm.*
39. *Roy d' Eſpagne.*
40. *Mertopolit.*
41. *Konings-kroon.*

Theſe are the Names which have been impos'd on theſe Flowers by the Floriſts of the ſeveral Countries where they were rais'd, and by which the Roots may be obtained from *Flanders* and *Holland*, where the Floriſts are very exact in keeping up their Liſts of theſe Flowers complete.

The Roots of theſe Early Blowing *Tulips* ſhould be planted the Beginning of *September* in a warm Border, near a Wall, Pale, or Hedge; becauſe if they are put into an open Spot of Ground, their Buds are in Danger of ſuffering by Morning Froſts in the *Spring*. The Soil for theſe ſhould be renewed every Year, where People intend to have them fair. The beſt Soil for this Purpoſe is that which is taken from a light ſandy Paſture, with the Turf rotted amongſt it, and to this ſhould be added a fourth Part of Sea Sand. This Mixture may be laid about ten Inches deep, which will be ſufficient for theſe Roots, which need not be planted more than four or five Inches deep at moſt. The Off-ſets ſhould not be planted amongſt the blowing Roots, but in a Border by themſelves, where they may be planted pretty cloſe together, eſpecially if they are ſmall; but theſe ſhould be taken up when the Leaves decay, and in the ſame manner as the blowing Roots, otherwiſe they would rot, if the Seaſon ſhould prove very wet; for theſe are not ſo hardy as the late Blowers, nor do they increaſe half ſo faſt as thoſe, ſo that a greater Care is required to preſerve the Off-ſets of them.

When theſe *Tulips* come up in the *Spring*, the Earth upon the Surface of the Borders ſhould be gently ſtirr'd and clear'd from Weeds; and as the Buds appear, if the Seaſon ſhould prove very ſevere, it will be of great Service to cover them with Mats; for want of which many times they are blighted, and their Flowers decay before they blow, which is often injurious to their Roots, as is alſo the cropping of the Flowers ſo ſoon as they are blown, becauſe their Roots, which are form'd new every Year, are not at that time arrived to their full Magnitude, and are hereby depriv'd of their proper Nouriſhment.

If when theſe Flowers are blown, the Seaſon ſhould prove very warm, it will be proper to ſhade them with Mats, *&c.* in the Heat of the Day; as alſo if the Nights are froſty, they ſhould be in like manner covered, whereby they may be preſerved a long time in Beauty; but when their Flowers are decayed, and the Seed Veſſels begin to ſwell, they ſhould be broken off juſt at the Top of the Stalks, becauſe if they are permitted to ſeed, it will injure the Roots.

When the Leaves of theſe Flowers are decayed, (which will be before the late Blowers are out of Flower) their Roots ſhould be taken up, and ſpread upon Mats in a ſhady Place to dry; after which they ſhould be clear'd from their Filth, and put up in a dry Place, where the Vermin cannot come to them, until the Seaſon for planting them again, being very careful to preſerve every Sort ſeparate, that you may know how to diſpoſe of them at the time for planting them again; becauſe it is the better Way to plant all the Roots of each Sort together (and not to intermix them, as is commonly practis'd in moſt other Kinds of Flowers;) for as there are few of them which blow at the ſame Time, ſo when the ſeveral Roots of one Sort are ſcattered thro' a whole Border, they make but an indifferent Appearance; whereas when twenty or thirty Roots of the ſame Sorts are placed together, they will all flower at the ſame Time, and afford a more agreeable Proſpect.

There are many curious Perſons, who, in order to preſerve their ſeveral Kinds of *Tulips*, and other bulbous-rooted Flowers ſeparate, have large flat Boxes made, which are divided into ſeveral Parts by ſmall Partitions, each of which is numbered in the ſame Manner as the Diviſions of their Beds; ſo that when a Catalogue of their Roots is made, and the Numbers fixed to each Sort in the Beds, there is nothing more to do when they take up their Roots, but to put every Kind into the Diviſion marked with the ſame Number which was placed to each Sort in the Bed, which ſaves a great deal of Trouble in making freſh Marks every Time the Roots are taken up, and effectually anſwers the Purpoſe of preſerving the Kinds ſeparate.

The ſeveral Sorts of theſe early-blowing *Tulips* do riſe to different Heights in their Stems, ſo that ſcarcely any two of them do flower to an equal Height. The *Duke Van Toll* being one of the firſt that appears in the *Spring*, is generally very ſhort ſtalked, and ſo the other Sorts in Proportion to their Earlineſs, are ſhorter than thoſe which ſucced them; and the late-blowing Kinds are all of them conſiderably longer in their Stems than any of the *Præcoces*, or early Blowers; ſo that when they are confuſedly mixed together, they make a very indifferent Appearance.

The late blowing *Tulips* are ſo numerous, that as I before obſerved, it would be to no Purpoſe to attempt to make a Catalogue of them. Theſe are generally obtained from Breeders, which is a Term applied to all ſuch Flowers as are produced from Seeds, which are of one Self-colour, and have good Bottoms and Chives: Theſe do, in Time, break into various beautiful Stripes, according to the Ground of their former Self-colour: But this muſt be entirely thrown off, otherwiſe they don't eſteem a Flower well broke.

Of theſe Breeders there hath been a great Variety brought into *England* from *Flanders* of late Years, which is the grand Nurſery for moſt Sorts of bulbous-rooted Flowers; but there are ſome curious Perſons who have lately obtained many valuable Breeders from Seed ſown in *England*: And doubtleſs, were we as induſtrious to ſow the Seeds of theſe Flowers, as the People of *France* and *Flanders*, we might in a few Years have as great a Variety as is to be found in any Part of *Europe*: For altho' it is ſix or ſeven Years from the ſowing before the Flowers do blow, yet if after the firſt ſowing there is every Year a freſh Parcel ſown, when the ſeven Years are expired, there will be conſtantly a Succeſſion of Roots to flower every Year, which will reward the Expectation, and keep up the Spirit of Raiſing: But it is the Length of Time at firſt, which deters moſt People from the beginning of this Work.

The Manner of propagating theſe Flowers from Seeds is as follows: 1. You ſhould be careful in the Choice of the Seed, without which there can be little Succeſs expected. The beſt Seed is that which is ſaved from Breeders, which have all the good Properties before-related; for the Seeds of ſtriped Flowers do ſeldom produce any Thing that is valuable.

The beſt Method to obtain good Seeds, is to make choice of a Parcel of ſuch breeding *Tulip* Roots as you would ſave Seeds from, and place them in a ſeparate Bed from the Breeders, in a Part of the Garden where they may be fully expoſed to the Sun, obſerving to plant them at leaſt nine Inches deep; for if they are planted too ſhallow, their Stems are apt to decay before their Seed is perfected.

Theſe Flowers ſhould always be expoſed to the Weather, for if they are ſhaded with Mats, or any other Covering, it will prevent their perfecting the Seed. About the Middle of *July* (a little ſooner or later, as the *Summer* is hotter or colder) the Seeds will be fit to gather, which may be known by the Dryneſs of their Stalks, and the Opening of the Seed-veſſels, at which Time it may be cut off, and preſerved in the Pods until the Seaſon for ſowing it, being careful to put it up in a dry Place, otherwiſe it will be ſubject to mould, which will render it good for little.

Having ſaved a Parcel of good Seed, about the Beginning of *September* is the beſt Seaſon for ſowing it; when there ſhould be provided a Parcel of ſhallow Seed-pans or Boxes, which ſhould have Holes in their Bottoms, to let the Moiſture paſs off: Theſe muſt be filled with freſh, ſandy Earth, laying the Surface very even, upon which the Seeds ſhould be ſown as regularly as poſſible, ſo that they may not lie upon each other; then there ſhould be ſome of the ſame light, ſandy Earth ſifted over them, about half an Inch thick. Theſe Boxes or Pans ſhould be placed where they may have the Morning Sun 'till eleven of the Clock, in which Situation they may remain until *October*; at which Time they ſhould be removed into a more open Situation, where they may enjoy the Benefit of the Sun all the Day, and be ſheltered from the North Winds, where they ſhould remain during the *Winter* Seaſon; but in the *Spring*, when the Plants are up, they ſhould be again removed to their firſt Situation, and if the Seaſon ſhould be dry, they muſt be refreſhed with Water, while the Plants remain green, but as ſoon as their Tops begin to decay, there muſt be no more given them, leſt it rot their tender Bulbs; therefore the Boxes ſhould be placed in a ſhady Situation during the *Summer* Seaſon, but not under the Drip of Trees.

Theſe Plants, at their firſt Appearance, have very narrow graſſy Leaves, very like thoſe of Onions, and do come up with bending Heads, in the ſame Manner as they do, ſo that Perſons who are unacquainted with them, may pull them up inſtead of Graſs, whilſt they are very young, before their Leaves are a little more expanded, which is rarely performed the firſt Year; for they ſeldom appear before the Middle of *March*, and they commonly decay about the latter End of *May* or the Beginning of *June*, according as the Seaſon is hotter or colder.

The Weeds and Moſs ſhould alſo be clear'd off from the Surface of the Earth in the Boxes, and a little freſh Earth ſifted over them ſoon after their Leaves decay, which will be of great Service to the Roots; theſe Boxes ſhould be conſtantly kept clear from Weeds, which if permitted to grow therein, when they are pulled up, their Roots will be apt to draw the Bulbs out of the Ground; at *Michaelmas* they ſhould be freſh earth'd again, and as the *Winter* comes on, ſo they muſt be again removed into the Sun as before, and treated in the ſame Manner, until their Leaves decay in the *Spring*, when their Bulbs ſhould be carefully taken up, and planted in Beds of freſh, ſandy Earth, which ſhould have Tiles laid under them, to prevent the Roots from ſhooting downward, which they often do when there is nothing to ſtop them, and thereby are deſtroyed. The Earth of theſe Beds ſhould be about five Inches thick upon the Tiles, which will be ſufficient for nouriſhing theſe Roots while they are young.

The Diſtance which theſe young Bulbs ſhould be allowed need not be more than two Inches, nor ſhould they be planted above two Inches deep; but toward the End of *October*, it will be proper to cover the Beds over with a little freſh Earth, about an Inch deep, which will preſerve the Roots from the Froſt, and prevent Moſs or Weeds from growing over them. But if the *Winter* ſhould be very ſevere, it will be proper to cover the Beds either with Mats or Peaſe-haulm, to prevent the Froſt from entering the Ground, becauſe theſe Roots are much tenderer while young, than they are after they have acquired Strength.

In the *Spring* the Surface of the Ground ſhould be gently ſtirred, to make it clean, before the Plants come up; and if the *Spring* ſhould prove dry, they muſt be frequently refreſhed with Water, during the Time of their Growth; but this muſt not be given to them in great Quantities, leſt it rot their tender Bulbs; and when the Leaves are decayed, the Weeds ſhould be taken off, and the Beds covered with freſh Earth, which ſhould alſo be repeated again in *Autumn*.

In theſe Beds the Bulbs may remain two Years, during which Time they muſt be conſtantly kept clear from Weeds, and in *Spring* and *Autumn* freſh earth'd, in the Manner already directed; after which the Bulbs muſt be taken up, and planted into freſh Beds, at four Inches aſunder, and as many deep, where they may remain two Years more, during which Time they ſhould have the ſame Culture as before: And after that, the Bulbs being large enough to blow, they ſhould be taken up, and planted in freſh Beds, at the uſual Diſtance, and in the ſame Manner as old Roots; where, when they flower, ſuch of them as are worthy to be preſerved ſhould be marked with Sticks, and at the Seaſon for taking up the Bulbs, they muſt be ſeparated from the others, in order to be planted as Breeders, in different Beds, but you ſhould by no Means throw out the reſt, until they have flowered two or three Years, becauſe it is impoſſible to judge exactly of their Value in leſs Time; for many which at firſt flowering do appear beautiful, will afterwards degenerate ſo as to be of little Value, and others which did not pleaſe at firſt, will many times improve, ſo that they ſhould be preſerved until their Worth can be well judged of.

In this Method many Sorts of new Breeders will be annually raiſed, from which there will always be fine Flowers broken, which being the Produce of a Perſon's own Sowing, will be greatly valued, becauſe they are not in other Hands, which is what enhances the Price of all Flowers; and it has been entirely owing to this Method of raiſing new Flowers that the *Dutch* have been ſo famous; amongſt whom the Paſſion for fine *Tulips* did ſome time ſince reign ſo violently, that many of the Floriſts near *Haerlem*, have often given an hundred Ducats for one ſingle Root; which Extravagance was the Occaſion of an Order being made by the *States*, to limit the utmoſt Price that ſhould be afterward given for any *Tulip* Root, were it ever ſo fine.

Having thus given an Account of the Method of raiſing theſe Flowers from Seeds, I ſhall now proceed to the Management of ſuch Roots which are termed Breeders, ſo as to have ſome of them every Year break out into fine Stripes.

There are ſome who pretend to have Secrets how to make any Sort of Breeders break into Stripes whenever they pleaſe; but this I dare ſay is without Foundation; for from many Experiments which I have made in this Kind, I never could find any Certainty of this Matter: All that can be done by Art, is, to ſhift the Roots every Year into freſh Earth, and a different Situation, by which Method I have had very good Succeſs.

The Earth of theſe Beds ſhould be every Year different; for altho' it is generally agreed, that lean, hungry, freſh Earth doth haſten their breaking, and cauſe their Stripes to be the finer, and more beautiful; yet if they are every Year planted in the ſame Sort of Soil, it will not have ſo much Effect on them, as if they were one Year planted in one Sort of Earth, and the next Year in a very different one, as I have ſeveral times experienced.

The beſt Compoſt for theſe Roots is a third Part of freſh Earth from a good Paſture, which ſhould have the Sward rotted with it; a third Part of Sea Sand, and the other Parts ſifted Lime-rubbiſh; theſe ſhould be all mixed together, ſix or eight Months at leaſt before it is uſed, and ſhould be frequently turned, in order to mix the Parts well together. With this Mixture the Beds ſhould be made about eighteen Inches deep, after the following Manner: After the old Earth is taken from out of the Bed to the Depth intended, then ſome of the freſh Earth ſhould be put in about ten Inches thick, this ſhould be levelled exactly, and then Lines drawn each Way of the Bed, chequerwiſe; at ſix Inches Diſtance, upon the Center of each Croſs, ſhould be placed the *Tulip* Roots in an upright Poſition; and after having finiſhed the Bed in this Manner, the Earth muſt be filled in ſo as to raiſe the Bed eight Inches higher, obſerving in doing this, not to diſplace any of the Roots, and alſo to lay the Top of the Beds a little rounding, to throw off the Water.

There are many Perſons who are ſo careleſs in planting their *Tulip* Roots, as only to dig and level the Beds well, and then with a blunt Dibble to make Holes, into which they put the Roots, and then fill up the Holes with a Rake; but this is by no Means a good Method, for the Dibble in making the Holes, preſſes the Earth cloſely on each Side and at the Bottom, whereby the Moiſture is often detained ſo long about the Roots as to rot them; beſides, the Earth being hard at the Bottom of the Bulbs, they cannot ſo eaſily emit their Fibres, which muſt certainly prejudice the Roots.

Theſe Beds ſhould be ſunk, more or leſs, below the Surface, according to the Moiſture or Dryneſs of the Soil, for the Roots ſhould be ſo elevated as never to have the Water ſtand near them long, which is very apt to rot them. So that where the Soil is very wet, it will be proper to lay ſome Lime-rubbiſh under the Earth, in order to drain off the Wet, and the Beds ſhould be entirely raiſed above the Level of the Ground; but to prevent their falling down into the Walks, after Froſt or hard Rains, it will be proper to raiſe the Paths between them, either with Sea-coal Aſhes or Rubbiſh, eight or ten Inches, which will ſupport the Earth of the Beds, and theſe Paths may ſlope at each End from the Middle, which will cauſe the Water to run off as it falls. But where the Soil is dry, the Beds may be ſunk a Foot or fourteen Inches below the Surface; for in ſuch Places the Beds need not be more than four or ſix Inches above the Surface, which will be Allowance enough for their Settling.

During the *Winter* Seaſon there will be no farther Care required, the Roots being planted thus deep will be in no Danger of ſuffering by Froſt; but in the *Spring*, when their Leaves begin to appear above Ground, the Earth upon the Surface of the Beds ſhould be ſtirred, to clear it from Weeds, Moſs, *&c.* and when the Flower-buds begin to come up, they ſhould be guarded from Froſt, otherwiſe they are very ſubject to blight and decay ſoon after they appear; but they need only be covered in ſuch Nights when there is a Proſpect of Froſt, for at all other Times they ſhould have as much open Air as poſſible, without which they will draw up weak, and produce very ſmall Flowers.

When theſe Breeders are in flower, you ſhould carefully examine them, to ſee if any of them have broken into beautiful Stripes, which if you obſerve, there ſhould be a Stick put into the Ground, by every ſuch Root, to mark them, that they may be ſeparated from the Breeders, to plant amongſt the ſtriped Flowers the following Year; but you ſhould carefully obſerve whether they have thrown off their former Colour entirely, as alſo when they decay, to ſee if they continue beautiful to the laſt, and not appear ſmeared over with the original Colour; in both which Caſes they are very ſubject to go back to their old Colour the next Year; but if their Stripes are diſtinct and clear to the Bottom, and continue ſo to the laſt, (which is what the Floriſts call dying well) there is no great Danger of their returning back again, as hath been by ſome confidently reported; for if one of theſe Flowers is quite broken (as it is termed) it will never loſe its Stripes, though ſometimes they will blow much fairer than at others, and the Off-ſets will often be more beautiful than the old Roots.

This Alteration in the Colour of theſe Flowers may be ſeen long before they are blown, for all the green Leaves of the Plant will appear of a fainter Colour, and ſeem to be ſtriped with white, or of a browniſh Colour, which is a plain Proof that the Juices of the whole Plant are altered, or at leaſt the Veſſels through which the Juice is ſtrained, ſo that hereby Particles of a different Figure are capable of paſſing through them, which, when entered into the Petals of the Flower, do reflect the Rays of Light in a different Manner, which occaſions the Variety we ſee in the Colours of Flowers (but this is more fully explained in the Article of *Vegetation*,

tion, which ſee). This breaking of the Colours in Flowers proceeds from Weakneſs, or at leaſt is the Cauſe of Weakneſs in Plants; for it is obſervable, that after *Tulips* are broken into fine Stripes, they never grow ſo tall as before, nor are the Stems, Leaves or Flowers ſo large; and it is the ſame in all other variegated Plants and Flowers whatever, which are alſo much tenderer than they were before they were ſtriped; ſo that many Sorts of exotick Plants, which by Accident become variegated in their Leaves, are often rendered ſo tender as not to be preſerved without great Care, tho' indeed the Striping of *Tulips* doth never occaſion ſo great Weakneſs in them; the greateſt Effect it hath on them, is in leſſening their Growth, cauſing ſome (which while they continued in their original plain Colours, did riſe near three Feet in Height) to advance little more than two Feet, after their Colours were altered; and the more beautifully their Stripes do appear, the ſhorter will be their Stems, and the weaker their Flowers.

There is nothing more to be obſerved in the Culture of ſtriped Flowers, than what has been directed for Breeders, excepting that theſe ſhould be arched over with tall Hoops and Rails, that they may be ſhaded from the Sun in the Day-time, and protected from ſtrong Winds, hard Rains, and froſty Mornings, otherwiſe the Flowers will continue but a ſhort Time in Beauty; but where theſe Inſtructions are duly followed, they may be preſerved in Flower a full Month, which is as long as moſt other Flowers do continue.

There are ſome Perſons who are ſo extremely fond of theſe Flowers, as to have large Frames of Iron-work to cover their Beds of *Tulips*, in ſuch a Manner, that they may walk between two Beds under the Frames, over which are ſpread Tarpawlins, ſo as to keep off Sun, Rain, and Froſt; whereby they can view the Flowers without being at the Trouble of taking off or turning up the Tarpawlin, or being incommoded by the Sun or Rain, which cannot be avoided where the Covering is low: Beſides, by thus raiſing the Covers, the Flowers have a greater Share of Air, ſo that they are not drawn ſo weak as they are when the Covering is low and cloſe to them; but theſe Frames being expenſive, can only be purchaſed by Perſons of Fortune; however, there may be Frames of Wood contriv'd for a ſmall Expence, which being arched over with Hoops, may anſwer the Purpoſe as well as the Iron Frames, tho' they are not ſo ſightly or laſting.

But after their Flowers are faded, their Heads ſhould be broken off, to prevent their ſeeding; for if this is not obſerved, they will not flower near ſo well the following Year, and this will cauſe their Stems to decay ſooner than otherwiſe they would do, ſo that their Roots may be taken up early in *June*; for they ſhould not remain in the Ground long after their Leaves are decayed. In taking theſe Roots out of the Ground, you muſt be very careful not to bruiſe or cut them, which will endanger their rotting; and, if poſſible, it ſhould be done a Day or two after Rain. Theſe Roots muſt be cleared from their old Covers, and all Sorts of Filth, and ſpread upon Mats in a ſhady Place to dry, after which they ſhould be put up in a dry Place, where Vermin cannot get to them, obſerving to keep every Sort ſeparated, but they ſhould not be kept too cloſe from the Air, nor ſuffered to lie in Heaps together, leſt they ſhould grow mouldy, after which they commonly rot when they are planted again.

The Off-ſets of theſe Roots, which are not large enough to produce Flowers the ſucceeding Year, ſhould be alſo put by themſelves, keeping each Sort diſtinct; theſe ſhould be planted about a Month earlier in *Autumn* than the blowing Roots, in particular Beds in the Flower-nurſery, where they may not be expoſed to publick View: But the Earth of the Beds ſhould be prepared for them in the ſame Manner as for larger Roots, tho' theſe muſt not be planted above five Inches deep, and may be placed much nearer together than thoſe which are to flower, and in one Year moſt of them will become ſtrong enough to flower. when they may be removed into the Flower-garden, and placed in the Beds amongſt thoſe of the ſame Kinds.

TULIPIFERA, of *Tulipa*, a *Tulip*, and *fero*, Lat. to *bear*.] The Tulip-tree.

The *Characters* are;

The Flower conſiſts of ſeveral Leaves, which expand in ſuch a Manner, as (by ſome thought) to reſemble a Tulip; the Pointal riſes in the Center of the Flower, ſurrounded by a great Number of Chives, and afterwards becomes a ſquamous Fruit, or Cone growing erect. To theſe Marks may be added, the Leaves, for the moſt part, being angular, the upper Part is hollowed, as if cut off with Sciſſars, terminating in two Points.

The *Species* are;

1. Tulipifera *arbor Virginiana. H. L.* The Virginian Tulip-tree.

2. Tulipifera *Virginiana, laurinis foliis, averſa parte rore cæruleo tinctis Conibaccifera. Pluk. Phyt.* The Laurel-leav'd Tulip-tree, *vulgo.*

The firſt Sort is very common in *America*, where it grows to a great Magnitude, but in *England* there are at preſent but very few of them which have arrived to any conſiderable Stature. This Sort was formerly kept in Pots and Tubs, and houſed in *Winter* with great Care, in which Management the Plants made but poor Progreſs, nor would ever have produced Flowers. But about fifty Years ago there was one of theſe Trees planted out in a Wilderneſs in the Gardens of the Right Honourable the Earl of *Peterborough* at *Parſons-green* near *Fulham*, which ſoon convinced the Curious of their Miſtake in the Culture of this Tree, by the great Progreſs it made, and in a few Years after it produced Flowers. This Tree is yet ſtanding, and annually produces a great Quantity of Flowers, though ſome of the Branches begin to decay, which perhaps may have been occaſioned by its being too cloſely ſurrounded with other Trees, whoſe Roots are ſo much entangled with thoſe of this Tree, that they draw the Nouriſhment of the Ground from it. In ſome Years this Tree produces Cones, but they have not been ever perfected ſo as to contain good Seeds.

There are ſome other Trees of this Kind which have produced Flowers ſeveral Years, though I believe none of them are very large; the biggeſt I have ſeen (excepting that at *Parſons-green*) is not more than twentyfive Feet high; whereas my Lord *Peterborough's* is upwards of fifty Feet high, and is proportionably large in the Trunk; but this has a naked Body near forty Feet high, all the Branches growing near the Top of the Tree, which might be occaſioned by being ſo cloſely ſurrounded with other Trees; for I have obſerved, wherever they have a more open Situation, they are ſubject to extend their Branches, and do not aſpire upwards very much, though they generally have one upright Shoot in the Middle, much after the Manner of the Plane Tree, whoſe Manner of Growth is very like that of this Tree.

The Flowers which theſe Trees produce, are by no means like thoſe of the Tulip, though many Perſons have been ſo incurious as to imagine them ſo, eſpecially the Inhabitants of *America*, who firſt gave the Name of *Tulip-tree* unto this Plant, by which Name it has been ſince called by the Inhabitants of *Europe*, who received it from them with the Plants many Years ſince; but I have not heard that any of theſe Trees have flowered in any Part of *Europe*, except in *England*.

Mr. *Cateſby*, in his *Natural Hiſtory of Carolina*, &c. ſays, There are ſome of theſe Trees in *America*, which are thirty Feet in Circumference, that the Boughs are very unequal and irregular, making ſeveral Bends or Elbows, which makes the Tree diſtinguiſhable at a great Diſtance, even when they have no Leaves upon them. They are found in moſt Parts of the Northern Continent of *America*, from the Cape of *Florida* to *New-England*, where the Timber is of great Uſe.

This Tree may be propagated from Seeds, which are often brought from *America* in the Cones; theſe ſhould be taken out in the *Spring*, and ſown in Pots or Boxes filled with light, freſh Earth, and placed upon a moderate Hot-bed, which ſhould be covered only with Mats, and not have Glaſſes over them, becauſe the Glaſſes will cauſe the Earth to dry too faſt, and thereby ſpoil the Seeds.

Theſe Pots ſhould be frequently refreſh'd with Water, and when the Plants are come up, they ſhould be plac'd in a ſhady Situation during the *Summer* Seaſon, but in *Winter* they muſt be put into a Frame, where they may enjoy the open Air in mild Weather, but muſt be ſhelter'd from Froſt.

In the following *Spring* the Plants ſhould be taken up, and each planted in a ſeparate ſmall Pot, fill'd with light, freſh Earth, and if theſe Pots are plung'd into a moderate Hot-bed, under Mats, it will promote their Rooting; in *Summer* theſe Plants muſt be remov'd into the Shade, and in *Winter* into a Frame as before: After this manner they may be treated three or four Years, until they have acquired Strength, when they may be turn'd out of the Pots in the *Spring*, and planted where they are to remain, which ſhould always be near the Shelter of other Trees, where they will grow much better than in an open Situation, provided they are not too much crowded or over-hung by large Trees.

There are ſome People who propagate this Tree by Layers, but they are commonly two or three Years before they take Root, and theſe do ſeldom make ſo ſtrait Trees as thoſe rais'd from Seeds, though indeed they will produce Flowers ſooner, as is always the Caſe with ſtunted Plants.

This Tree ſhould be planted on a light loamy Soil, not too dry, on which it will thrive much better than upon a ſtrong Clay, or a dry gravelly Ground; for in *America* they are chiefly found on a moiſt deep Soil, where they will grow to a prodigious Size. Though it will not be proper to plant theſe Trees in a Soil which is too moiſt in *England*, becauſe it might endanger the rotting of the Fibres of the Roots, by the Moiſture continuing too long about them, eſpecially if the Bottom be a Clay or a ſtrong Loam, which will detain the Wet.

The *Laurel-leav'd Tulip-Tree* is at preſent very rare in *England*, tho' formerly there were ſeveral of theſe Trees in the Gardens of the Biſhop of *London* at *Fulham*, and thoſe of the Dutcheſs of *Beaufort* at *Chelſea*; but theſe have been ſince loſt, ſo that there are very few of them to be ſeen in the *Engliſh* Gardens. The largeſt Tree of this Kind, which I know at preſent, is in the Gardens of Mr. *Peter Collinſon* at *Peckham*, which has produced a great Number of Flowers the three Years paſt. This Sort is propagated by Layers, for the Seeds do never come up if ſown in *England*; the Layers ſhould remain undiſturb'd two Years, by which Time they will take Root, and may then be taken off in the *Spring*, and planted in Pots fill'd with freſh light Earth, and plac'd upon a moderate Hot-bed, to promote their taking Root; after which they ſhould ſtand in a ſhady Situation during the Heat of *Summer*, but in *Winter* they ſhould be ſhelter'd from the Froſt, eſpecially while young, though when they have acquired Strength, they may be planted out in a warm Situation, where they may be ſhelter'd by other Trees, in which Places, with a little Care, they will endure the Cold of our *Winters* very well, and in a few Years will produce Flowers.

Though I have inſerted this Tree under this Title (which is the Name by which it was firſt brought into *England*,) yet it does not ſtrictly belong to this Place, there being a *Genus* under which this Plant ſhould be ranged, which was eſtabliſh'd by *Pere Plumier*, by the Name of *Magnolia*, in Honour to the learned Botaniſt *Peter Magnol*, Profeſſor of Phyſick and Botany in the Univerſity of *Montpelier*. This Plant is curiouſly figured in the third Part of Mr. *Catesby*'s *Natural Hiſtory of Carolina*, by the Name of *Magnolia lauri folio ſubtus albicante*; he deſcribes it to be a ſmall Tree, ſeldom growing more than ſixteen Feet high, that the Wood is white and ſpongy, cover'd over with a white Bark; the Leaves are in Shape like thoſe of the common *Bay*, of a pale green Colour, and white on their Backſides. In *May* they begin to produce their Flowers, which are white, and very fragrant; theſe are continued the moſt part of *Summer*, during which Time the Woods are perfum'd with their Odour. When the Petals of theſe Flowers are decay'd, the Pointal becomes a conical Fruit, about the Size of a large Walnut, thick ſet with Knobs or Riſings, from each of which, when the Fruit is ripe, are diſcharged flat Seeds, of the Bigneſs of *French Beans*, having a Kernel within a thin Shell, cover'd with a red Skin. Theſe red Seeds, when diſcharged from their Cells, fall not to the Ground, but are ſupported by ſmall white Threads, of about two Inches in length, which makes a very beautiful Appearance. The Fruit is at firſt green; when ripe, red; and when declining, turns brown: The Tree grows naturally in moiſt Places, and often in ſhallow Water; and, what is very extraordinary, they being removed on high, dry Ground, become more regular and handſome, and are more prolifick of Flowers and Fruit. They uſually loſe their Leaves in *Winter*, unleſs it be moderate. It is call'd by ſome *The Sweet Bay*.

There is alſo another Species of this Tree, which hath been lately brought into *England*, which is called by *Pere Plumier*, *Magnolia ampliſſimo flore albo, fructu cæruleo*. This is eſteem'd one of the moſt beautiful Trees in *America*, where they uſually grow in moiſt ſwampy Woods, and do often riſe to the Height of ſixty Feet, or more; the Leaves are much larger than thoſe of our common *Laurel*, and are of a light-green Colour; the Flowers, I am told, are very large, of a whitiſh Colour, and very fragrant. The Fruit is ſhap'd like that of the former Sort, but is much larger, and does emit the Seeds in like manner; ſo that it is in Beauty from *May* to *November*, and the Leaves always remaining green, do afford an elegant Proſpect in *Winter*. They are of quick Growth, and generally riſe with ſtrait Stems, which is a great Addition to their Beauty; and ſince they are hardy enough to endure the Cold of our Climate in the open Ground, I doubt not but in a few Years we ſhall have the Pleaſure of ſeeing its beautiful Flowers, there being ſeveral Trees planted in the Gardens of ſome curious Perſons near *London*, where they have borne the Cold of ſeveral *Winters* without Shelter, and do make conſiderable Progreſs every Year.

This Tree is quick of Growth; for his Excellency the late Colonel *Johnſon*, who was Governor of *South Carolina*, told me, he had taken many ſmall Plants out of the Woods, and planted them near his Habitation, which Trees in three or four Years were grown near twenty Feet high; and ſince thoſe which have been planted in the open Air, in ſeveral curious Gardens near *London*, have made ſo great Progreſs, it is to be hop'd, that this Tree will become more frequent in *England*: For theſe beautiful Trees, which retain their Verdure throughout the Year, will be very ornamental in Wilderneſs Quarters, where being intermix'd with other Trees of the ſame Growth, they will add to the Variety; and when they do come to Maturity, ſo as to produce Flowers and Fruit in this Country, there are not any of the flowering Trees yet known, that will afford a greater Pleaſure than theſe; which ſhould excite a Curioſity in ſuch People who have Opportunities of procuring ſome of theſe Plants from *Carolina*, to bring over as many as they can, ſince the greater Variety of Places they are planted in, the more Chances there are of their ſucceeding; and when the Nature of the Plants are better known in *England*, they may be propagated in greater Plenty than at preſent.

This Tree muſt alſo be obtained in Plants from Abroad, and increas'd by Layers as the former, for the Seeds have not ſucceeded in any Part of *Europe*, where they have yet been ſown; and in the Woods of *America*, where they naturally grow, it is very difficult to find young Plants, the Cattle being ſo fond of 'em, that they generally eat off their Tops ſoon after they appear above-ground; but in little Iſlands, which are ſurrounded by Rivulets, ſo that the Cattle can't eaſily get in, there are great Numbers of theſe Plants; therefore whoever would procure a Quantity of them, muſt always have Recourſe to ſuch Places as are unfrequented by Cattle.

TURKS CAP; *vide* Lilium flore reflexo.

TURKEY WHEAT; *vide* Mays.

TURNERA.

The *Characters* are;

It hath a funnel-ſhaped Flower, conſiſting of five Leaves, which are faſtened to the Calyx, which is monopetalous, and divided into five Parts at the Top: under the Flower-cup there are two Leaves, which join at the Bottom, and ſurround the Cup: from the Center of the Flower-cup ariſes the Pointal, which is divided into three Parts to the Bottom, and ſurrounded by five Stamina. This Pointal afterward becomes an almoſt ſpherical Fruit, which is divided into three Parts, and filled with roundiſh Seeds, which are faſtened to the Placenta by ſlender Threads.

The *Species* are;

1. TURNERA *fruteſcens ulmifolia. Plum. Nov. Gen.* 15. Shrubby Turnera, with an Elm-leaf.
2. TURNERA *fruteſcens, folio longiore & mucronato.* Shrubby Turnera, with a longer pointed Leaf.

Theſe Plants are both of them Natives of the warm Parts of *America*. The firſt *Species* was found by Father *Plumier* in *Martinico*, who gave it the Name of *Turnera*, from Dr. *Turner*, a famous *Engliſh* Phyſician, who lived in Queen *Elizabeth*'s Reign, and wrote a Herbal, in which he has chiefly figured and deſcribed the uſeful Plants.

The other *Species* was diſcovered by Sir *Hans Sloane*, Baronet, who has figured it in his *Natural Hiſtory of* Jamaica, under the following Name; *Ciſtus urticæ folio, flore luteo, vaſculis trigonis*. But both theſe Sorts were obſerved by my late Friend Dr. *William Houſtoun*, in ſeveral Parts of *America*. Theſe grow to the Height of five or ſix Feet, and may be trained into regular Shrubs: they both produce yellow Flowers, which come out at the Foot-ſtalks of the Leaves, and are continued for at leaſt nine Months, which renders them worthy of a Place in the Stove.

The

They may eaſily be propagated, by ſowing their Seeds on a Hot-bed early in the *Spring*; and when the Plants are come up two Inches high, they muſt be tranſplanted into ſmall Pots, and plunged into a Hot-bed of Tanners-bark, obſerving to water and ſhade them until they have taken Root; after which Time they muſt be treated as hath been directed for the *Guava's*; to which the Reader is deſired to turn, to avoid Repetition. The Seeds of theſe Plants will often fall into the Pots which are placed near them in the Stove; which will grow, and ſoon furniſh Plants enough, after a Perſon is once poſſeſſed of them. Theſe Plants are too tender to live in the open Air in *England*; ſo they muſt be placed in the Bark-bed in the Stove; where, during the *Winter* Seaſon, they muſt be kept warm, and frequently watered; but in the *Summer* Seaſon they muſt have a great Share of Air, otherwiſe they will draw up tender, and not produce many Flowers.

When the Plants are grown pretty large, they may be treated more hardily, by placing them in the dry Stove; where, if they are kept in a moderate Degree of Heat, they will thrive and flower very well. Thoſe who would ſave the Seeds of theſe Plants, muſt watch them carefully, becauſe, when they are ripe, they ſoon ſcatter, if they are not gathered.

TURNIP; *vide* Rapa.

TURNSOLE; *vide* Heliotropium.

TURRITIS: Tower-Muſtard.

The *Characters* are;

The Flower conſiſts of four Leaves, which expand in Form of a Croſs, out of whoſe Empalement riſes the Pointal, which afterwards becomes a long ſmooth Pod, which grows for the moſt part upright, and opens into two Parts, in each of which are contain'd many ſmooth Seeds.

The *Species* are;

1. TURRITIS *vulgatior. J. B.* Common Tower-Muſtard.
2. TURRITIS *foliis inferioribus cichoraceis, cæteris perfoliata. Tourn.* Tower-Muſtard, with its under Leaves like thoſe of Cichory, and the upper Leaves like Thorough-wax.
3. TURRITIS *muralis minor. Pet. H. B.* Wall-Creſs, or Tower-Muſtard with Daiſie Leaves.
4. TURRITIS *leucoii folio. Tourn.* Tower-Muſtard with a Stock-gilliflower Leaf.

There are ſeveral other Species of this Plant, which are preſerv'd in curious Botanick Gardens for the ſake of Variety, but as they have little Beauty or Uſefulneſs, ſo they are ſeldom cultivated in other Gardens. The three firſt Sorts do grow wild upon Walls and Buildings in divers Parts of *England*, but the fourth Sort has not been diſcover'd to grow in this Country, except in Gardens.

They may be all cultivated by ſowing their Seeds upon a Bed of light dry Earth in the *Spring*, and when the Plants are come up, they ſhould be tranſplanted where they are to remain for good, obſerving to water 'em until they have taken Root, after which they will require no farther Care, but to clear 'em from Weeds, and the ſecond Year they will produce Seeds, after which the Plants never do continue.

TUSSILAGO: Coltsfoot.

The *Characters* are;

It hath a radiated Flower, whoſe Diſk conſiſts of many Florets, but the Crown is compos'd of many half Florets; the Embryo's are included in a multifid Flower-cup; which are afterwards turn'd to downy Seeds, fix'd in a Bed. To which Notes may be added, The Flowers appearing before the Leaves, in Spring.

The *Species* are;

1. TUSSILAGO *vulgaris. C. B. P.* Common Coltsfoot.
2. TUSSILAGO *Alpina rotundifolia glabra. C. B. P.* Round-leav'd ſmooth Coltsfoot of the Alps.

The firſt of theſe Sorts is very common in watery Places in almoſt every Part of *England*, and is rarely kept in Gardens; for the Roots do creep under-ground, and increaſe ſo faſt, that in a ſhort Time they will ſpread over a large Spot of Ground.

The ſecond Sort grows wild upon the *Alps*, from whence it has been tranſplanted into ſome curious Botanick Gardens for the ſake of Variety; the Flowers of this are purple, and thoſe of the common Sort are yellow.

V A

VACCARIA; *vide* Lychnis.

VACCINIA; *vide* Vitis Idea.

VALERIANA, [ſo called of *valere*, Lat. to *avail*, becauſe of its great Virtues: or of *Valerius*, who firſt made uſe of this Plant in Phyſick. It is the true *Phu* of *Dioſcorides*, or of the Antients; in *Greek* φῦ, of φύω, to *be born*, or *Phu*, of *Phy*, a *Pontic* Word; which laſt denotes the penetrating Odour of this Root.] Valerian.

The *Characters* are;

The Leaves grow by Pairs, oppoſite upon the Stalks; the Flower conſiſts of one Leaf, is tubuloſe, and divided into five Segments at the Top: Theſe Flowers are, for the moſt part, collected into a ſort of Umbel upon the Top of the Stalks, and are ſucceeded by oblong flat Seeds, which are winged with a ſoft Down.

The *Species* are;

1. VALERIANA *hortenſis, Phu cluſatri folio Dioſcoridis. C. B. P.* Great Garden Valerian, *or* Phu.
2. VALERIANA *ſylveſtris magna aquatica. J. B.* Great wild Water Valerian.
3. VALERIANA *major ſylveſtris montana. C. B. P.* Great wild Mountain Valerian.
4. VALERIANA *paluſtris minor. C. B. P.* Small Marſh Valerian.
5. VALERIANA *rubra. C. B. P.* Red Garden Valerian.
6. VALERIANA *rubra anguſtifolia. C. B. P.* Narrow-leav'd red Garden Valerian.
7. VALERIANA *marina latifolia major alba. Mor. Umb.* Great broad-leav'd white Sea Valerian.
8. VALERIANA *Alpina, foliis integris, radice repente, inodora. Raii Hiſt.* Alpine Valerian, with undivided Leaves, and a creeping Root, without Smell.
9. VALERIANA *Alpina prima. C. B. P.* The firſt Alpine Valerian, of *Caſpar Bauhin*.
10. VALERIANA *Alpina altera. C. B. P.* Another Alpine Valerian of *Caſpar Bauhin*.
11. VALERIANA *Alpina, ſcrophulariæ folio. C. B. P.* Alpine Valerian, with a Fig-wort Leaf.
12. VALERIANA *montana, ſubrotundo folio. C. B. P.* Mountain Valerian, with a roundiſh Leaf.
13. VALERIANA *Alpina, nardo Celticæ ſimilis. C. B. P* Alpine Valerian, reſembling the Celtic Spikenard.
14. VALERIANA *Cretica, filipendulæ radice. Inſt. R. H.* Candy Valerian, with a Drop-wort Root.
15. VALERIANA *Celtica. Inſt. R. H.* Celtic Valerian, *or* Spikenard.
16. VALERIANA *marina anguſtifolia, ſive minor alba. Mor. Hiſt.* Narrow-leav'd or ſmaller White Sea Valerian.
17. VALERIANA *Alpina minor. C. B. P.* Smaller Alpine Valerian.
18. VALERIANA *tuberoſa Imperati. Tourn. Cor.* Tuberoſe-rooted Valerian of Imperatus.
19. VALERIANA *orientalis anguſtifolia, floribus & radice Valerianæ hortenſis. Tourn. Cor.* Narrow-leav'd Eaſtern Valerian, with the Flowers and Root of the Garden Valerian.
20. VALERIANA *orientalis, alliariæ folio, flore albo. Tourn. Cor.* Eaſtern Valerian, with a Sauce-alone Leaf, and a white Flower.
21. VALERIANA *orientalis, ſiſymbrii Matthioli folio. Tourn. Cor.* Eaſtern Valerian, with a Water-creſs Leaf.
22. VALERIANA *orientalis minima, flore leucophæo. Tourn. Cor.* The leaſt Eaſtern Valerian, with a whitiſh Flower.
23. VALERIANA *maxima Pyrenaica, cacaliæ folio. D. Fagon. Inſt. R. H.* The greateſt Pyrenean Valerian, with a ſtrange Coltsfoot Leaf.
24. VALERIANA *foliis calcitrapæ. C. B. P.* Valerian with Leaves like thoſe of the Star-thiſtle.
25. VALERIANA *Luſitanica annua latifolia laciniata. Inſt. R. H.* Broad jagged-leav'd annual Valerian of Portugal.

26. VALERIANA *humilis Americana, folio rotundo ſubtus argenteo. Plum.* Dwarf American Valerian, with a round Leaf white underneath.

The firſt of theſe Sorts is propagated in *England* for medicinal Uſe, and is called in the Shops by the Name of *Phu*, to diſtinguiſh it from the *Mountain Valerian*, which is preferred to all the other Sorts, by the modern Phyſicians, tho' the Roots of this firſt are ſtill continued in ſome of the capital Medicines.

This Plant is propagated by parting of its Roots, either in *Spring* or *Autumn*, which ſhould be planted in Beds of freſh, dry Earth, about eight or ten Inches aſunder, (for they commonly ſpread and multiply very faſt); if the Seaſon be dry you muſt water the Plants until they have taken Root; after which they will require no farther Care, but to keep them clean from Weeds, and in *Autumn*, when their Leaves are decayed, the Roots ſhould be taken up and dried for Uſe.

The ſecond Sort is very common in moiſt Places, and by the Sides of Rivers and Ditches in moſt Parts of *England*, but is rarely cultivated in Gardens. The Roots of this Kind, being ſo common near *London*, are generally ſold in the Markets inſtead of the third Sort, which is what ſhould always be uſed, as being by far the ſtrongeſt and moſt valuable.

The third Sort is generally found upon dry chalky Soils, in ſhady Places, in divers Parts of *England*, the Roots of which are much preferable to thoſe of the ſame Kind which are cultivated in Gardens; as are all the Sorts of aromatick Plants, when gathered from their native Places of Growth.

This Plant may be propagated by parting the Roots either in *Spring* or *Autumn*, as was directed for the firſt Sort; but you ſhould always obſerve to plant them upon a dry, freſh, undunged Soil, in which, though the Roots will not make near ſo great Progreſs as in a rich, moiſt Soil, yet they will be much preferable to them for Uſe. Theſe Roots ſhould alſo be taken up, when the Leaves decay, in *Autumn*, and preſerved dry until uſed.

The fourth Sort is very common in moiſt Soils, in divers Parts of *England*, but is ſeldom propagated in Gardens. This is placed among the officinal Simples, in the *College Diſpenſatory*, though it is rarely uſed in Medicine. It may be propagated in a moiſt Soil, by parting the Roots as the former.

The fifth, ſixth and ſeventh Sorts are propagated in Gardens for the Beauty of their Flowers, but they are only proper for large Gardens, being very apt to grow too large for ſmall Places. Theſe may be propagated by parting their Roots, in the Manner before directed, or from Seeds, which ſhould be ſown in *Autumn*, ſoon after they are ripe, upon a Bed of light, freſh Earth; and in the *Spring*, when the Plants come up, they ſhould either be tranſplanted into Nurſery-beds, or the Borders where they are to remain for good.

Some of theſe Plants will flower the firſt Seaſon, but the ſecond Year they will all flower very ſtrong. They commonly grow above three Feet high, and when the Roots are ſtrong, they will continue flowering moſt Part of the *Summer*, which renders them worthy of a Place in large Borders, and alſo in Avenues and other abject Parts of the Garden, they being very hardy, and will grow in almoſt any Soil or Situation; but their Roots will abide longeſt in a dry barren Soil; for in rich, moiſt Places they ſeldom continue more than two Years.

The Seeds of theſe Kinds will often get into the Joints of old Walls, where they will grow and abide many Years, without any Care or Culture, and produce Flowers moſt Part of the *Summer*; and in ſuch a Situation they will endure all Weathers, without the leaſt Injury. Theſe Plants are never uſed in Medicine.

The eighth, ninth, tenth, eleventh, thirteenth and ſeventeenth Sorts grow on the *Alps*, from whence they have been procured by ſome curious Botaniſts, and are preſerved in their Gardens for Variety. Theſe are abiding Plants, which may be propagated by parting of their Roots. The beſt Time to tranſplant theſe Plants, and part their Roots, is ſoon after *Michaelmas*, when their Leaves decay, that they may have good rooting in the Ground before the dry Weather comes on in the *Spring*; otherwiſe they will not flower ſtrong the following *Summer*. All theſe Sorts ſhould be planted on a ſtrong, loamy Soil, and in a ſhady Situation; where they will thrive much better than on a light Earth, and in an open Situation, in which they will not live unleſs they are duly watered in dry Weather.

The twelfth Sort has been found on the Mountains in the North of *England*, but is very common in ſeveral Parts of *Germany*, as alſo on the *Alps* and *Pyrenean* Mountains.

The fourteenth Sort grows in ſeveral Iſlands of the *Archipelago*, and alſo in *Liguria*; It is chiefly found on Hills and Mountains which are moiſt. The Roots of this Sort are as large as ſmall Walnuts, which hang from Dugs after the Manner of *Dropwort*. Theſe Roots, when bruiſed, emit a Smell very like *Spikenard*.

The fifteenth Sort is the true *Spikenard*, which is uſed in Medicine. This grows in great Plenty amongſt the Moſs, on the Tops of the *Alps*, where the Snow lies a great Part of the Year. Theſe Roots are taken up for Uſe in *Auguſt*, when the Leaves decay, at which Time they have the ſtrongeſt Scent.

The eighteenth Sort has alſo knobbed Roots, about as large as Walnuts, which have a Scent ſomewhat like *Spikenard*. This Sort has Leaves like thoſe of the ſmall Valerian, and the Flowers reſemble thoſe of the great Garden Sort, which grow about two Feet high.

All theſe Sorts are very hardy Plants in reſpect to Cold; but they will not live in a dry, light Soil, and an open Situation: Therefore whoever is inclinable to cultivate them, ſhould plant them on a moiſt, loamy Soil, on a North Border, where they may be entirely ſcreened from the Sun; and in very dry Weather they muſt be conſtantly watered, otherwiſe they will not thrive. Theſe Sorts with knobby Roots ſhould not be often tranſplanted; if they are removed every third Year, it will be often enough; but then the Ground between the Roots ſhould be every *Spring* gently dug to looſen it, being careful not to cut or bruiſe the Roots. Theſe Plants uſually flower in *June*, but they ſeldom produce good Seeds.

The ſixteenth Sort is not very common in the *Engliſh* Gardens at preſent. This only differs from the Garden Valerian with white Flowers, in having narrow Leaves; ſo may be propagated in the ſame Manner as the red and white Garden Valerian. It will alſo propagate itſelf by Seeds, if they are permitted to ſcatter in a ſhady Situation, where the Plants will come up without any Care, and may be tranſplanted into large Borders, where they will make an agreeable Variety, and continue a long time in flower.

The nineteenth, twentieth, twentyfirſt and twentyſecond Sorts, were diſcovered by Dr. *Tournefort* in the *Levant*, from whence their Seeds were ſent to *Paris*. Theſe are alſo hardy Plants, which will live in the open Air, and ſhould have a ſhady Situation, and be planted on a moiſt, light Soil.

The twentythird Sort is a Native of the *Pyrenean* Mountains; but is preſerved in the Gardens of the Curious in Botany, for the ſake of Variety. This is a biennial Plant, ſo muſt be permitted to ſcatter its Seeds, for a Supply of young Plants. This Plant ſhould have a moiſt Soil, and a ſhady Situation; where it will thrive, and produce good Seeds; but if the Seeds are not ſown in *Autumn*, they ſeldom grow; ſo that when they ſcatter themſelves, they generally grow better than when they are ſown by Hand. This Sort riſes three Feet high, and has very broad Leaves; but the Flowers being ſmall make no great Appearance; and when their Seeds are ripe the Plants ſoon after periſh.

The twentyfourth and twentyfifth Sorts are annual Plants, which, if once introduced into a Garden, will ſcatter their Seeds, and maintain their Situation. The Seeds of theſe Kinds will diſperſe themſelves to a great Diſtance by the Help of the Down which adheres to them; and often grow on Walls and Buildings, where they are ſtunted and ſmall; but will flower and ſeed, whereby they will become arrant Weeds; notwithſtanding they decay as ſoon as their Seeds are ripe. Theſe two Sorts will grow on any Soil, or in any Situation; but they will thrive beſt on a moiſt Soil, and in a ſhady Situation. Their Seeds muſt be ſown in *Autumn*, otherwiſe they ſeldom ſucceed.

The twentyſixth Sort is a native of the warm Parts of *America*, ſo is a tender Plant, and very rare in *Europe*; for the Seeds will not grow when kept long out of the Ground; but ſhould be ſown in Tubs of Earth abroad; and when the Plants are come up, they may be brought over to *England*. This Sort muſt be preſerved in a Stove, for it is too tender to live in the open Air in this Country. In *Summer* this Plant ſhould have a large Share of free Air, by opening the Glaſſes of the Stove in warm Weather; and muſt be frequently watered, for it grows naturally on low, marſhy Places, and requires a large Share of Water in hot Weather; but in *Winter* it muſt be kept warm, and have but little Water in very cold Weather.

VALERIANA GRÆCA; *vide* Polemonium.

VALERIANELLA, [*q. d.* Small Valerian.] Corn-ſallet, *or* Lamb's-lettuce.

The *Characters* are;

The Leaves grow by Pairs oppoſite on the Branches; the Branches are always divided into two Parts, and appear at the Top like an Umbrello; the Flower conſiſts of one Leaf, which is cut into many Segments, and is ſucceeded by one naked Seed, having no Down adhering to it, in which it differs from the Valerian.

The *Species* are;

1. VALERIANELLA *arvenſis præcox humilis, ſemine compreſſo. Mor. Umb.* Early low Corn-ſallet, with a flat Seed.
2. VALERIANELLA *arvenſis præcox humilis, foliis ſerratis. Tourn.* Early low Corn-ſallet, with ſerrated Leaves.
3. VALERIANELLA *arvenſis ſerotina altior, ſemine turgidiore. Mor. Umb.* Taller late Corn-ſallet, with a turgid Seed.
4. VALERIANELLA *ſemine ſtellato. C. B. P.* Corn-ſallet with a ſtarry Seed.
5. VALERIANELLA *cornucopioides rubra vel Indica. Mor. Umb.* Red or Indian Corn-ſallet, reſembling the Cornucopia.
6. VALERIANELLA *ſemine umbilicato nudo rotundo. Mor. Umb.* Corn-ſallet, with a round naked umbilicated Seed.
7. VALERIANELLA *ſemine umbilicato nudo oblongo. Mor. Umb.* Corn-ſallet, with an oblong naked umbilicated Seed.
8. VALERIANELLA *ſemine umbilicato hirſuto majore. Mor. Umb.* Corn-ſallet, with a larger hairy umbilicated Seed.
9. VALERIANELLA *ſemine umbilicato hirſuto minore. Mor. Umb.* Corn-ſallet, with a ſmaller hairy umbilicated Seed.
10. VALERIANELLA *Cretica, fructu veſicario. Tourn. Cor.* Candy Corn-ſallet, with a bladder'd Fruit.
11. VALERIANELLA *cornucopioides echinata. Inſt. R. H.* Prickly Corn-ſallet, reſembling a Helmet.
12. VALERIANELLA *orientalis, fructu parvo corniculato. Tourn. Cor.* Eaſtern Corn-ſallet, with a ſmall horned Fruit.

The three firſt Sorts are found wild in ſeveral Parts of *England*. The third is often cultivated in Gardens, for Sallets in the *Spring*, though either of the three may be cultivated for the ſame Purpoſe, they being equally good. The Seeds of theſe Plants ſhould be ſown in *Autumn*, ſoon after they are ripe; for if they are kept till *Spring*, the Plants ſeldom come up the ſame *Summer*; the Seeds commonly remaining in the Ground, will come up the ſucceeding *Spring*, notwithſtanding the Place be dug and ſowed with other Seeds, as I have often obſerved.

Theſe Plants will grow in almoſt any Soil or Situation, and require no farther Care, but to keep them clear from Weeds until they are fit for Uſe. They ſhould always be cut while they are young, for if they are grown pretty large, they will become ſtrong and bitter.

The fourth and fifth Sorts are preſerved in Botanick Gardens for Variety, but are not of any Uſe. Theſe may be propagated by ſowing their Seeds in the *Spring*, upon a Bed of dry Earth, where they may remain to flower and ſeed.

Theſe are all annual Plants, which muſt be ſown every Year, or their Seeds permitted to ſcatter upon the Ground, where they will come up, and thrive without any other Culture, than only to clear them from Weeds.

The ſixth, ſeventh, eighth and ninth Sorts are Varieties of the common *Corn-ſallet*, which are preſerved in ſome curious Botanick Gardens, for the ſake of Variety. Theſe are all very hardy Plants, which, if permitted to ſcatter their Seeds, will come up in almoſt any Soil or Situation, and require no other Care but to keep them clear from Weeds. When they are not permitted to ſcatter their Seeds, they ſhould be ſown in *Autumn*, otherwiſe the Seeds will often lie in the Ground till the following *Autumn* before they grow.

The tenth and twelfth Sorts were diſcovered by Dr. *Tournefort* in the *Levant*, from whence he ſent their Seeds to the Royal Garden at *Paris*; which have ſince been communicated to many curious Perſons in *England*. Theſe are very hardy Plants, which may be propagated by Seeds, in the ſame Manner as the other Sorts; and if they are permitted to ſcatter their Seeds, will come up, and require no other Care, but to keep them clear from Weeds.

The eleventh Sort produces Tufts of red Flowers, which are ſhaped like a Helmet, and make a pretty Appearance when blown. This is alſo a hardy Plant, and may be propagated in the ſame Manner as the other Sorts.

VANILLA.

The *Characters* are;

It hath an anomalous Flower, conſiſting of ſix Leaves, five of which are placed in a circular Order, and the other, which occupies the Middle, is concave. The Empalement afterward becomes a horned, ſoft, fleſhy Fruit, filled with very ſmall Seeds.

The *Species* are;

1. VANILLA *flore viridi & albo, fructu nigreſcente. Plum. Nov. Gen.* Vanilla with a green and white Flower, and a blackiſh Fruit.
2. VANILLA *flore violaceo, fructu breviori rubro. Plum. Nov. Gen.* Vanilla, with a Violet-colour'd Flower, and a ſhort red Fruit.
3. VANILLA *flore albo, fructu breviori corallino. Plum. Nov. Gen.* Vanilla, with a white Flower, and a ſhort coralline Fruit.

The Fruit of theſe Plants is called by the *Spaniards* in *America*, *Vanilla*, or *Vinello*, and is much uſed by them to ſcent their *Chocolate*. It is the firſt *Species* here mentioned, which is chiefly eſteemed. This grows plentifully in the *Bay of Campechy*, in the *Weſt-Indies*; where they are uſually ſold for about three Pence each Fruit, *Engliſh* Money.

The other two Sorts are found in ſeveral Parts of *America*, where they always grow in low marſhy Places under Trees, and faſten themſelves to the Trunks of the Trees, and are thereby ſupported. The Fruit of theſe Kinds are rarely uſed, being of little Value; but the other Sort is often brought into *Europe*, and ſold by the Druggiſts.

The Method of gathering and preparing of this Fruit for Uſe is little known to the *Europeans*, being manufactured by the *Indians*, who ſell it very cheap to the *Spaniards*. However, I ſhall ſubjoin an Account which I received from an intelligent Perſon, who had reſided in the *Spaniſh Weſt-Indies* for ſome time; but ſhall firſt deſcribe the Plant, with its Manner of Growth, and how it may be propagated in the warm Parts of *America*.

The Plant which produces the Fruit called *Vanilla* or *Banilla*, by the *Spaniards*, hath a trailing Stem, ſomewhat like common *Ivy*, which faſtens itſelf to whatever Tree grows near it, by ſmall Fibres, which are produced at every Joint, which faſten to the Bark of the Tree, and by which the Plants are often nouriſhed, when they are cut or broken off from the Root a conſiderable Height from the Ground, in like manner as the *Ivy* is often ſeen in *England*. The Leaves are as large as thoſe of the common Laurel, but are not quite ſo thick: theſe are produced alternately at every Joint, (which are ſix or ſeven Inches aſunder) and are of a lively green Colour on the upper Side, but are of a paler Green underneath. The Stems of theſe Plants ſhoot into many Branches, which faſten themſelves alſo to the Branches of the Trees; by which means they riſe to the Height of eighteen or twenty Feet, and ſpread quite over ſome of the ſmaller Trees, to which they are joined. The Flowers are of a greeniſh yellow Colour, mixed with white; which, when fallen, are ſucceeded by the Fruit, which are ſix or ſeven Inches long.

This Sort, which is manufactured, grows not only in the *Bay of Campechy*, but alſo at *Carthagena*, at the *Caraccas*, *Honduras*, *Darien* and *Cayan*; at all which Places, the Fruit are gathered and preſerved: but is rarely found in any of the *Engliſh* Settlements in *America* at preſent, tho' it might be eaſily carried thither and propagated; for the Shoots of theſe Plants are full of Juice, ſo may be eaſily tranſported; becauſe they will continue freſh out of the Ground for ſeveral Months. I had ſome Branches of this Plant, which were gathered by Mr. *Robert Millar* at *Campechy*, and ſent over between Papers by way of Sample: theſe had been at leaſt four Months gathered, when I received them; and upon opening of the Papers, I found the Leaves rotten, with the Moiſture contained in them, and the Paper was alſo periſhed with it; but the Stems appear'd freſh: upon which I planted ſome of them in ſmall Pots, and plunged them into a Hot-bed of Tanners-bark; where they ſoon put out Leaves, and ſent forth Roots from their Joints. But as theſe Plants naturally faſten themſelves to the Stems of the Trees, ſo it is with great Difficulty they are kept alive, when they have not this Aſſiſtance: therefore whoever would preſerve any of theſe Plants in *Europe*, ſhould plant them in Tubs of Earth, near the Stem of ſome vigorous *American* Tree, which requires a Stove, and can bear a great deal of Water; becauſe the Vanilla's muſt be plentifully watered in the *Summer* Seaſon, otherwiſe they will not thrive. They require alſo to be ſhaded from the

Sun by Trees; ſo that if theſe are planted at the Foot of the *Hernandia*, or *Jack-in-a-Box*, whoſe Leaves are very large, and afford a good Shade, they will ſucceed better than when they are expoſed in ſingle Pots alone; and as theſe require the ſame Degree of Heat in *Winter*, ſo they will agree well together.

When theſe Plants are deſigned for Propagation in the warm Parts of *America*, there is nothing more required than to make Cuttings of about three or four Joints in Length, which ſhould be planted cloſe to the Stems of Trees, in low marſhy Places; and to keep down other troubleſome Plants, which if permitted to grow about the Cuttings before they are well rooted, would over-bear and deſtroy them: but after they are eſtabliſhed, and have faſtened their Shoots to the Stems of the Trees, they are not in much Danger of being injured by neighbouring Plants; tho' when the Ground is kept clear from Weeds, the Plants will be much better nouriſhed.

Theſe Plants do not produce Flowers until they are grown ſtrong, ſo that the Inhabitants affirm, that it is ſix or ſeven Years from the Planting to the Time of their bearing Fruit. But when they begin to flower and fruit, they continue for ſeveral Years bearing, and this without any Culture; and as it is a Commodity which bears a good Price, it is well worth Cultivating in ſeveral of the *Engliſh* Settlements, eſpecially as they will grow in moiſt woody Places, where the Land is not clear'd from Timber.

The Method uſed to prepare the Fruit, is, when it turns of a yellow Colour, and begins to open, to gather it and lay it in ſmall Heaps to ferment two or three Days, in the ſame manner as is practiſed for the *Cocoa* or *Chocolate* Pods. Then they ſpread them in the Sun to dry, and when they are about half dried, they flat them with their Hands, and afterwards rub them over with the Oil of *Palma Chriſti*, or of the *Cocoa*: then they expoſe them to the Sun again to dry, and afterward they rub them over with Oil a ſecond time; then they put them in ſmall Bundles, covering them with the Leaves of the *Indian-Reed* to preſerve them.

Theſe Plants produce but one Crop of Fruit in a Year, which is commonly ripe in *May*, fit for gathering; for they do not let them remain on the Plants to be perfectly mature, becauſe then they are not ſo fit for Uſe; but when they are about half changed yellow, they eſteem them better for keeping, than when they are changed to a dark brown Colour; at which time the Fruit ſplits, and ſhews a great Quantity of ſmall Seeds, which are incloſed within it. While the Fruit is green, it affords no remarkable Scent; but as it ripens, it emits a moſt grateful aromatic Odour. When the Fruit begins to open, the Birds attack them, and devour all the Seeds very greedily, but do not eat any other Part of the Fruit.

The Fruit which are brought to *Europe*, are of a dark brown Colour, about ſix Inches long, and ſcarce an Inch broad; are wrinkled on the Outſide, and full of a vaſt Number of black Seeds like Grains of Sand, of a pleaſant Smell, like Balſam of *Peru*.

This Fruit is only uſed in *England*, as an Ingredient in Chocolate, to which it gives a pleaſant Flavour. But the *Spaniſh* Phyſicians in *America* uſe it in Medicine, and eſteem it grateful to the Stomach and Brain, for expelling of Wind, to provoke Urine, to reſiſt Poiſon, and cure the Bite of venomous Animals.

As this Plant is ſo eaſily propagated by Cuttings, it is very ſtrange, that the Inhabitants of *America* ſhould neglect to cultivate it, eſpecially as it is an Ingredient in Chocolate, which is ſo much drank all over *America*; but as the *Engliſh* have in a manner quite neglected the Culture of the *Cocoa*, it is no wonder they ſhould neglect this; ſince the former was cultivated in great Plenty by the *Spaniards* in *Jamaica*, while that Iſland remained in their Poſſeſſion; ſo that the *Engliſh* had an Example before them, if they would have followed it: whereas the *Vanilla* was not found growing there; and therefore it is not to be ſuppoſed, that the Perſons who were ſo indolent, as to quit the Culture of many valuable Plants then growing on the Spot, ſhould be at the Trouble of introducing any new Plants.

VAPORIFEROUS, ſignifies cauſing or producing *Vapours*.

VAPOUR, is by ſome defin'd to be a thin Veſicle of Water, or other humid Matter, fill'd or inflated with Air, which being rarefied to a certain Degree by the Action of Heat, aſcends to a certain Height in the Atmoſphere, where it is ſuſpended till it returns in form of Rain, Snow, or the like.

Some uſe the Term *Vapour* indifferently for all Fumes emitted either from moiſt Bodies, as Fluids of any Kind; or from dry Bodies, as Sulphur, *&c.* But Sir *Iſaac Newton* and other Authors, better diſtinguiſh between humid and dry Fumes, calling the latter *Exhalations*.

VAPOURS, are defin'd by Naturaliſts to be thoſe watry Particles which are ſevered from others by the Motion of the Air, and are carry'd about it in ſeveral Ways, according as the Wind, or Warmneſs of the Air ſerves: They riſe out of the Sea, Rivers, Lakes, and other Waters.

As to their hanging in the Air, we may obſerve, in a hot Day, when there is no Wind ſtirring, ſuch a Company of *Vapours* to riſe out of moiſt Ground, as make thick Fogs, which are ſometimes higher, and ſometimes lower, as the Multitude and Motion of the *Vapours* happen to be. They are to be ſeen as well upon high Grounds as low.

They are eaſily diſſipated by the Wind, and particularly if it be a drying Wind.

The Sun has the ſame Effect upon them; and we commonly ſee, when there are thick Fogs about Sun-riſing, they diſappear a little after it is up.

It is evident, that Fogs do conſiſt of aqueous Particles rarefied, becauſe they mightily bedew every thing that lies open to them. Theſe Particles, being ſoundly moved, muſt needs fly aloft into the Air; but if their Motion be ſomething faint, they play about the Surface of the Earth. For this is agreeable to the Laws of Motion, that ſuch Things as are about the Globe of the Earth, the more they are moved, the more they recede from the Centre of the Earth.

Again, theſe Fogs ariſe out of all Places, mountainous or champain, and continue 'till they are diſpell'd by Wind or Heat; but they continue longeſt in the loweſt Grounds, becauſe thoſe Places are fulleſt of Moiſture, and are not ſo much expos'd to the Winds: But where-ever they be, when the Wind riſes upon them, they are diſſipated and driven about, till we ſee no more of them.

So, in like manner, the Heat of the Sun, by putting them into a brisker Motion, either diſſipates them by Rarefaction, or raiſes them higher, and forms them into Clouds.

And whereas ſometimes the Fogs ſtink, it is not becauſe they come from ſtinking Water, but becauſe the *Vapours* are mixed with ſulphureous Exhalations, which ſmell ſo. Perhaps theſe Exhalations would fly up directly to the Clouds, if there were no Fogs to hold them, and ſo would not affect the Senſe of Smelling; but when they are once entangled and blended with the Fog, they laſt as long as that does.

The Clouds are higher than the Fogs; they hang in the Air, and are carried about in it by the Winds. The Clouds are of various Figures, and ſometimes ſo thin, that the Rays of the Sun paſs through them; but at other times they are thick enough to intercept and obſtruct them: They alſo appear of ſeveral Colours, as, white, red, and ſometimes very dark.

The Thickneſs of the Clouds proceeds from the Cloſeneſs of the vapourous Particles one to another; and their Thinneſs from the Diſtance of thoſe Particles one from another, of which there are ſeveral Cauſes. When they are very thin, they leave ſo many Interſtices, that the Rays of the Sun dart through them in many Places, but are intercepted in others.

As to the Varieties of the Figures of the Clouds, they ariſe from their Plenty of Vapours, and the Influence of the Sun and Wind: For they cannot be variouſly condens'd, rareſy'd, and carry'd about in the Air, but their Figure muſt needs be changed.

To account for the Clouds hanging in the Air, is a Matter of ſome Difficulty.

All the watry Particles, of which they conſiſt, are heavier than Air; and ſo, if there were nothing to hinder them, they would fall to the Earth. But there are two Things that ſeem to keep them up.

1. The Winds which blow from all Parts, under the Region of the Clouds, and bear about with them many lighter Sorts of Bodies; eſpecially if thoſe Bodies contain but a ſmall Quantity of ſolid Matter under a broad Superficies. And thus it is viſible, how eaſy Paper-Kites are kept up by the Wind, when they are mounted pretty high; and ſo the Particles of Water, pretty much rarefied, may eaſily be ſuſpended at that Height.

2. New Exhalations and Vapours are perpetually fuming out of the Earth, and by their moving upwards, prevent the Clouds from deſcending, unleſs the Denſity of the Clouds over-weigh them. Thus we ſee the Vapour of Fire carries lighter Bodies up the Chimney: And Smoke can turn a thin Plate of Iron, artfully plac'd in it, ſo ſtrongly, as to turn about a Spit, and roaſt Meat.

It is a Queſtion among Naturaliſts, whether Clouds and thicker Fogs are compos'd alike? Or whether there be ſomething more in the Clouds.

Some think that Clouds are groſſer than all Fogs; and that they are compos'd of Flakes of Snow, rather than Particles of Water, ſuch as make Fogs.

Others ſay, it is enough to conſider Clouds as a cloſer Sort of Fogs. And indeed the Fogs that hang upon the Tops of very high Hills, appear to People in the Plains, to be all one with Clouds; though thoſe that are at them, perceive nothing but a thick Fog.

There being always many *Vapours* in the Air, though not always viſible, it comes to paſs, that great Dews fall even in clear Weather, and eſpecially in thoſe Countries where it ſeldom rains. For when it happens, that the ſcattered *Vapours* are collected and condens'd together, and forc'd downwards, they muſt needs fall, and bedew Plants and Graſs.

The Time for the falling of the Dew is either before the Riſing of the Sun, or after the Setting of it. But in order to its falling regularly, at thoſe Times, it is neceſſary that the Air be calm; for windy or ſtormy Weather hinders it. But when the Weather is calm, and gentle Breezes are felt from the Weſt about the Time that the Sun ſets; and from the Eaſt about the Riſing of it; it is probable they collect the *Vapours*, and precipitate them, by moderately cooling the Air. And becauſe the Morning Breezes are more general than the Evening ones, therefore the Evening Dews fall only here and there; but the Morning ones ſeldom fail to be univerſal.

It is likewiſe found by Experience, That the Dews are more copious in hotter Countries than in cold; the Reaſon of which ſeems to be this: That the Heat of the Sun does, in the Day-time, raiſe abundance of *Vapours* out of the Water, which *Vapours* are ſo extremely rarefied by the ſame Heat, that they are diſperſed far and wide; but the Cool of the Night brings them together again, and condenſes them to that Degree, that they fall to the Ground, but not in ſuch large Drops as Rain does.

But in colder Countries, where there are frequent Rains, and the *Vapours* are leſs rarefied, moſt of them come down in Rain, and but a ſmall Part turns to Dew.

A certain Author ſays, That in ſome of the hotter Climates, the Earth is without Rain for ſix or ſeven Months together, and is every *Summer* Seaſon ſo much parch'd and dry'd, that there is hardly any Moiſture to be found in it for three or four Feet deep, and during that Time, the Heats are ſo exceſſive, that without the refreſhing Dews of the Nights (which are there very conſiderable) the Plants muſt inevitably periſh; for there is no Moiſture they can have, but from the *Dews*: And yet that Moiſture ſupports the Trees and Plants in a flouriſhing State. Towards the End of the Day, the Leaves contract themſelves, by reaſon of the exceſſive Heat of the Sun; but by the falling of the Dews at Night, they expand and open themſelves; ſo that in the Morning and Forepart of the Day they have a moſt agreeable Verdure. And alſo this Moiſture of the Dews affords ſufficient Nouriſhment to the Plants to bring the Fruits to Perfection.

Dr. *Deſaguliers* has preſented us with the following Attempts, to ſolve the Phænomenon of *Vapours*, Formation of Clouds, and Deſcent of Rain.

He tells us, That though this has been a Subject ſo often treated of, none of the Accounts (that he has met with) ſeem to him to be ſufficient to ſolve all the Circumſtances of it.

That as to what Dr. *Niewentyt* and ſome others have ſaid, that Particles of Fire ſeparated from the Sun-Beams, by adhering to Particles of Water, make up *Moleculæ* or ſmall Bodies, ſpecifically lighter than Air, which therefore by Hydroſtatical Laws, muſt riſe and form Clouds that remain ſuſpended, when they are riſen up to ſuch an Height, that the Air about them is of the ſame ſpecifick Gravity with themſelves.

That Rain is produced by the Separation of the Particles of Fire from thoſe of Water, which laſt being then reſtor'd to their former ſpecifick Gravity, can be no longer ſuſtain'd by the Air; but muſt fall in Drops.

This, ſays Dr. *Deſaguliers*, is liable to ſeveral Objections.

1. It is built upon a Suppoſition, that Fire is a particular Subſtance, or diſtinct Element, which has never yet been prov'd by convincing Experiments and ſufficient Obſervations; and which the Reverend Dr. *Hales* has ſhewn to be an ill-grounded Opinion, in his late Book of *Vegetable Staticks*, and has made it very plain, that thoſe Bodies which had been thought to become heavier by Particles of Fire adhering to them, have, by chymical Operations, been prov'd to be only ſo by the Adheſion of Particles of Air, &c. which he has ſhewn to be *abſorbed* in great Quantities by ſome Bodies, whilſt it is *generated* (or reduced from a fixed to an elaſtick State) by others; nay, that it may be *abſorbed* and *generated* ſucceſſively by the ſame Body under different Circumſtances.

2dly, If the above-mentioned Suppoſition ſhould be allowed, the Difficulty will ſtill remain about the Rain which is produc'd by the Fire's being ſeparated from the Water: For Dr. *Niewentyt* aſcribes this Effect to two different Cauſes.

Firſt, to Condenſation; for he ſays; "That when contrary Winds blow againſt the ſame Cloud, and drive the watry Particles together, the Fire that adher'd to them gets looſe, and they (becoming then ſpecifically heavier) precipitate and fall down in Rain." And in the very next *Section* he aſcribes it to Rarefaction; in that he ſays; "When a Wind blowing obliquely upwards, cauſes a Cloud to riſe in a thinner Air, (*i. e.* ſpecifically lighter than itſelf) the Fire, which by ſticking to the Particles of Water render'd them lighter, extricates itſelf from them, and aſcending by its Lightneſs, the Water will become too heavy, not only to remain in this thin and light Air, but even in a thicker and heavier near the Earth, and ſo will be turn'd into a deſcending Dew, Miſt, or Rain, or Snow, or the like, according as the watry *Vapours* are either rarefied or compreſſed."

To this Dr. *Deſaguliers* anſwers; That the firſt of theſe Cauſes of Rain is contrary to Experience; for when two contrary Winds blow againſt each other, over any Place of the Earth, the Barometer always riſes, and we have fair Weather. For then (as Dr. *Halley* ſays, in *Philoſophical Tranſactions*, Nº 183.) the Air being accumulated above, becomes ſpecifically heavier about the Clouds, which (inſtead of falling into Rain, as Dr. *Niewentyt* ſuppoſes) aſcend up into ſuch a Part of the Atmoſphere, as has the Air of the ſame ſpecifick Gravity with themſelves.

If the falling of Rain might be attributed to the ſecond of theſe Cauſes, then every Time a Cloud is encompaſſed with Air ſpecifically lighter than itſelf, (whether it be when by the blowing away ſome of the ſuperior Air, that which is about the Cloud becomes rarer, as it is leſs compreſs'd, or by the Cloud being driven upwards;) Rain muſt neceſſarily follow; whereas one may often ſee Clouds riſe and fall without Rain, even when the Barometer ſhews the Weight of the Air to be altered.

For that happens only, when by the great Diminution of the ſpecifick Gravity of the Air about the Cloud, it has a great Way to fall; in which Caſe the Reſiſtance of the Air, which increaſes as the Velocity of the deſcending Cloud, cauſes the floating Particles of Water to come within the Power of each other's Attraction, and form ſuch big Drops, as being ſpecifically heavier than any Air, muſt fall in Rain.

No gentle Deſcent of a Cloud; but only an accelerated Motion downwards, produces Rain.

He explains himſelf, that by this he does not mean, *That the quick Deſcent of a Cloud is the only Cauſe of Rain; becauſe the Shock from a Flaſh of Lightning, and the ſudden Return of the Air, after the* Vacuum *made by the Flaſh, will condenſe the floating* Vapour *into Water; and alſo the ſame Cloud which in the free Air might be carried horizontally, without being turned into Rain, meeting with a high Hill in the Way, will be condenſed, and fall in Drops; eſpecially if in the Day-time it be driven by the Wind out of the Sun-ſhine, againſt the ſhaded Side of a Mountain.*

Beſides all this, if Particles of Fire were join'd with thoſe of Water to raiſe them up, thoſe igneous Particles muſt be at leaſt a thouſand times greater in Bulk than the watry ones, ſo that a Perſon, who at the Top of an Hill, has his Hands and Face in a Cloud, muſt feel a very ſenſible Warmth, by touching a much greater Surface of Fire than Water in the Cloud, and afterwards find the Rain produc'd by that *Vapour* ſenſibly colder; whereas the contrary is prov'd by our Senſes, the Tops of Hills, though in the Clouds, being much colder than the Rain at the Bottom.

There is another Opinion concerning the Riſe of *Vapours*, namely; That tho' Water be ſpecifically heavier than Air, yet if its Surface be increas'd, by very much diminiſhing the Bulk of its Particles, when once rais'd, it cannot eaſily fall; becauſe the Weight of each Particle diminiſhes, as the Cube Root of its Diameter, and the Surface to which the Air reſiſts, only as the Square Root of the Diameter: That we ſee this in the Duſt in *Summer*, and in *Menſtruums* that ſuſtain Metals diſſolv'd, which are ſpecifically heavier than the *Menſtruums*.

But this will not explain the Phænomenon; becauſe though the Increaſe of Surface (the Weight remaining the ſame) will, in a great meaſure, hinder (or rather retard) the Deſcent of ſmall Bodies, moving in the Air, by reaſon of its great Reſiſtance to ſo large a Surface; it will for the ſame Reaſon alſo hinder the Aſcent.

For the Riſe of Duſt is owing to the Motion of Animals Feet in it, or to the Wind; whereas *Vapours* riſe in cold Weather, as well as windy; neither do they, like the Duſt, always fall to the Ground, when the Wind ceaſes to blow.

The third Opinion, and which is moſt commonly receiv'd, is, that by the Action of the Sun on the Water, ſmall Particles thereof are form'd into hollow Spherules, fill'd with an *Aura*, or finer Air highly rarefied, ſo as to become ſpecifically lighter than common Air, and conſequently that they muſt riſe in it by Hydroſtatical Laws.

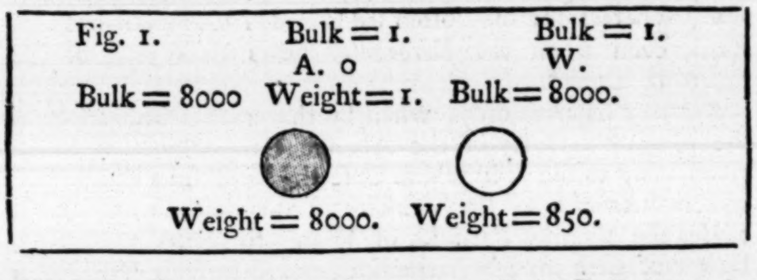
As for Example: If a Particle of Water, as it becomes a hollow Sphere, be only increaſed ten times in Diameter, its Bulk will be increas'd a thouſand times; therefore, it will be ſpecifically lighter than common Water, whoſe ſpecifick Gravity is to that of Air as 850 to 1; then, if the Denſity of the *Aura*, or Spirit within the little Shell, be ſuppoſed 9 times leſs than that of Air, or as 95 to 850, that ſpecifick Gravity of the Shell, and its Contents will be to that of Air, as 945 to 1000; therefore ſuch an aqueous Bubble muſt riſe till it come to an *Æquilibrium* in Air, whoſe Denſity is to the Denſity of that in which it began to riſe, as 850 to 945, or nearly.

But it appears by Experiments, that Air rarefied by an Heat, which makes a Retort red hot, is only increaſed in Bulk, or dilated 3 times: by the Heat of boiling Water only $\frac{10}{14}$, or near two Thirds; and by the Heat of human Body, (ſuch as will raiſe *Vapours* plentifully) only $\frac{10}{39}$, or about one Fourth.

He owns his Objection may be anſwered, by ſuppoſing the Spherule of Water to be more increas'd in Diameter; as for Example, 20 Times; becauſe then if it be filled with Air only $\frac{1}{4}$ rarer than common Air, it will be ſpecifically lighter, and capable of riſing to a conſiderable Height.

To give this Solution all its Force, let it be expreſſed in Numbers. Let A and W *(Fig. 1.)* repreſent a Particle of Air, and one of Water of equal Bulk, then will the Weight of A be to the Weight of W as 1 to 850, their Bulks being equal. If the Particle of Water be blown up in a Bubble (W) of 20 times its Diameter, then will its Bulk be to its Weight as 8000 to 850, whilſt a Sphere of Air (A) of the ſame Bigneſs, has its Weight as well as Bulk equal to 8000: Now, if an Air or *Aura*, $\frac{1}{4}$ rarer than common Air, be ſuppoſed within the watry Bubble to keep it blown, it will be the ſame as if $\frac{3}{4}$ of the Air of (A) was carryed into (W), and then the Weight of (W) would be increaſed by the Number 6000; ſo that the Shell of Water being in Bulk 8000, would be in Weight 850+6000=6850, whilſt an equal Bulk of Air weighed 8000, and conſequently the watry Bubble would riſe 'till it came to an Air, whoſe Denſity is to that of the Air, next to the Surface of the exhaling Water, as 6850, to 8000.

Fig. 1.



This is the ſtrongeſt Way of ſtating the Hypotheſis; but to ſupport it, the following *Queries* muſt be anſwered.

Query 1. How comes the *Aura* or Air in the Bubbles to be ſpecifically lighter than that without them, ſince the Sun's Rays, which act upon the Water, are equally denſe all over its Surface?

Query. 2. If it could be poſſible for a rarer Air to be ſeparated from the denſer ambient Air, to blow up the Bubbles (as Bubbles of ſoap'd Water are blown up by warm Air from the Lungs, whilſt the ambient Air is colder and denſer) what would hinder that cold Air, by its greater Preſſure, from reducing the Bubbles to a leſs Bulk, and greater ſpecifick Gravity than the Air, eſpecially ſince Cold can be communicated thro' ſuch thin Shells, and the Tenacity of common Water is very ſmall, when compared to that of ſoaped Water, whoſe Bubbles, notwithſtanding that Tenacity, are ſoon deſtroyed by the Preſſure of the outward Air, as the Air within them cools?

Query 3. If we ſhould grant all the reſt of the Suppoſition, yet this Difficulty will remain: If Clouds are made up of hollow Shells of Water fill'd with Air, why do not thoſe Clouds always expand when the ambient Air is rarefied, and preſſes leſs than it did before, and alſo ſuffer a Condenſation, as the ambient Air is condenſ'd by the Accumulation of the ſuperior Air?

If this Condenſation and Rarefaction ſhould happen to Clouds, they would always continue at the ſame Height, contrary to Obſervation, and we ſhould never have any Rain.

From all this it follows, that the Condenſation and Rarefaction of the Vapours, *which make Clouds, muſt depend upon another Principle, than the Condenſation and Rarefaction of the Air; and that there is ſuch a Principle will be hereafter ſhewn.*

Lemma. *The Particles of all Fluids have a repellent Force.*

Fluids are elaſtick or unelaſtick: The elaſtick Fluids have their Denſity proportionable to their Compreſſion, and Sir *Iſaac Newton* has demonſtrated (*Princip. Lib.* 2. *Sect.* 5.) that they conſiſt of Parts that repel each other from their reſpective Centers.

Unelaſtick Fluids, like Mercury, Water, and other Liquors, are, by Experiments, found to be incompreſſible; for Water, in the *Florentine* Experiment, could not, by any Force be compreſs'd into leſs Room, but ooz'd like Dew through the Pores of the hollow golden Ball, in which it was confin'd, when a Force was apply'd to preſs the Ball out of its ſpherical, into a leſs capacious Figure.

Now this Property of Water, and other Liquors, muſt be entirely owing to the centrifugal Force of its Parts, and not its want of Vacuity; ſince Salts may be imbib'd by Water without increaſing its Bulk, as appears by the Increaſe of its ſpecifick Gravity.

So Metals, which (ſingly) have a certain ſpecifick Gravity, beyond which they cannot be condenſ'd, will yet receive each other in their Interſtices, ſo as to make a Compound ſpecifically heavier than the moſt ponderous of them; as is experienc'd in the Mixture of Copper and Tin.

Scholium. By increaſing the repellent Force of the Particles, an unelaſtick or incompreſſible Fluid, may become elaſtick; or a ſolid (at leaſt a great Part of it) may be chang'd into an elaſtick Fluid; and, *vice verſa*, by diminiſhing the repellent Force, an elaſtick Fluid may be reduc'd to an unelaſtick Fluid or to a Solid.

That the Particles of Quickſilver, Water, and other Liquors, are likewiſe endued with an attractive Force, is evident from thoſe Subſtances running into Drops in an exhauſted Receiver, as well as in the Air, and likewiſe their adhering to other Bodies.

The Attraction and Repulſion exert their Forces differently: The Attraction only acts upon the Particles which are in Contact, or very near it; in which Caſe it overcomes the Repulſion ſo far, as to render that Fluid unelaſtick, which otherwiſe would be ſo; but it does not wholly deſtroy the Repulſion of the Parts of the Fluid; becauſe it is on account of that Repulſion that the Fluid is then incompreſſible.

When by Heat or Fermentation (or any other Cauſe, if there be any) the Particles are ſeparated from the Contact, the Repulſion grows ſtronger, and the Particles exert that Force at great Diſtances, ſo that the ſame Body ſhall be expanded into a very large Space by becoming fluid, and may ſometimes take up more Room than it did in a ſolid or incompreſſible Fluid. (See the *Queries* at the End of Sir *Iſaac Newton's Opticks.*) Thus is Water by boiling and leſs Degrees of Heat, chang'd into an elaſtick *Vapour*, rare enough to riſe in Air; and Oils and Quickſilver in Diſtillation, made to riſe in a very rare Medium; ſuch as remains in the red-hot Retort and ſulphureous Steams will riſe even in an exhauſted Receiver, as the Matter of the *Aurora Borealis* does in the thinner Part of our Atmoſphere.

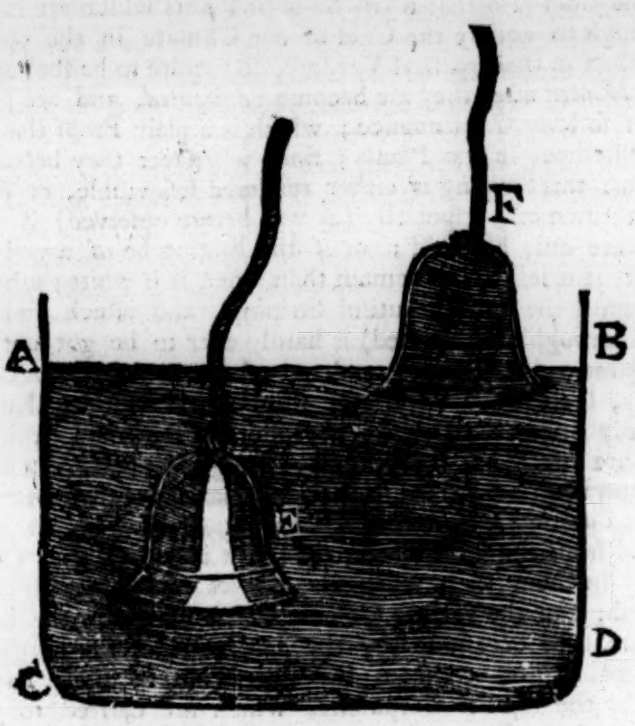
If *Aqua-fortis* be poured on Quickſilver, a reddiſh Fume will riſe, much lighter than common Air: So alſo will Fumes ariſe from Fileings of Metals, from Vegetables, when they ferment by Putrefaction (as the Reverend Dr. *Hales* has ſhewn;) ſeveral ſolid Subſtances, by Diſtilling as well as Fermentation, will generate permanent Air.

That Heat will add Elaſticity to Fluids is evident, from numberleſs Experiments, eſpecially from Diſtilling and Chymiſtry: But what is needful to be conſidered here, is only that it acts more powerfully on Water than common Air; for the ſame Heat which rarefies the Air only $\frac{2}{3}$, will rarefy Water very near 14000 times, changing it into Steam or *Vapour* as it boils; and in *Winter*, that ſmall Degree of Heat, which, in reſpect to our Bodies appears cold, will raiſe a Steam or *Vapour* from Water at the ſame Time that it condenſes Air.

By a great many Obſervations made by Mr. *Henry Beighton*, F. R. S. and Dr. *J. T. Deſaguliers*, to raiſe Water by Fire; according to Mr. *Newcomen*'s Improvement of it, they found that the Water, by boiling, was expanded 14000 times, to generate Steam as ſtrong (*i. e.* as elaſtick) as common Air, which therefore muſt be near 16 $\frac{1}{2}$ times ſpecifically lighter.

And it is plain that this Steam is not made of the Air extricated out of the Water, becauſe it is condens'd again into Water by a Jet of cold Water ſpouting into it; and the little Quantity of Air that comes out of the injected Water muſt be diſcharg'd at every Stroke, otherwiſe the Engine will not work well.

EXPERIMENT.



ABCD repreſent a pretty large Veſſel of Water, which muſt be ſet on the Fire to boil. In this Veſſel muſt be ſuſpended the Glaſs Bell E, made heavy enough to ſink in Water; but put in, in ſuch a manner, that it be fill'd with Water when upright, without any Bubbles of Air at its Crown within, the Crown being all under Water.

As the Water boils, the Bell will by Degrees be emptied of its Water, being preſs'd down by the Steam which riſes above the Water in the Bell; but as that Steam has the Appearance of Air, in order to know whether it be Air or not, take the Veſſel off the Fire, and draw up the Bell by a String faſten'd to its Knob at Top; then as the Steam condenſes by the cold Air on the Outſide of the Bell, the Water will riſe up into the Bell a F, quite to the Top, without any Bubble above it, which ſhews that the Steam that kept out the Water was not Air.

N. B. *This Experiment ſucceeds beſt when the Water has been firſt purged of Air by boiling, and the Air-Pump.*

We know by ſeveral Experiments made on the Fire-Engine, (in Captain *Savory*'s Way, where the Steam is made to preſs immediately on the Water) that Steam will drive away Air, and that in Proportion to its Heat; tho' in the open Air, it floats, and riſes in it like Smoak.

Now, if the Particles of Water turn'd into *Steam* or *Vapour*, repel each other ſtrongly, and repel Air more than they repel each other, Aggregates of ſuch Particles made up of *Vapour* and *Vacuity*, may riſe in Air of different Denſities, according to their own Denſity dependant on their Degree of Heat, without having Recourſe to imaginary Bubbles, form'd in a manner only ſuppos'd, and not prov'd; as has been already ſhewn.

Indeed he owns, that if the watry Particles had no repellent Force, they muſt precipitate in the ſame manner that Duſt will do after it has been rais'd up: But there are too many Obſervations and Experiments to leave any Doubt of the Exiſtence of the repellent Force above-mention'd.

And that he cannot ſhew, by any Experiment, how big the Moleculæ *of Vapour muſt be which will exclude Air from their Interſtices; nor that theſe* Moleculæ *do vary in Proportion to the Degree of Heat by an Increaſe of repellent Force in each watery Particle; or by a farther Diviſion of the Particles ſtill leſs: But in the general, we may reaſonably affirm, that the Rarety of the* Vapour *is proportionable to the Degree of its Heat, as it happens in other Fluids: (See Philoſophical Tranſactions,* Numb. 270.) *And though the different Degrees of the Air's Rarefaction are alſo proportionable to the Heat, yet the ſame Degree of Heat rarefies* Vapour *much more than* Air.

Now to ſhew that what has been ſaid will account for the Riſe of *Vapours* and Formation of *Clouds*, we muſt only conſider, whether that Degree of Heat which is known to rareſy Water 14000 times, being compared with ſeveral of thoſe Degree of Heat in *Summer*, *Autumn*, and *Winter*, which are capable of raiſing Exhalations from Water or Ice; the Rarety of the *Vapours* (being conſider'd the Degree of Heat) will appear to be ſuch, that the *Vapour* will riſe high enough in *Winter*, and not too high in *Summer*, to agree with the known Phænomena.

That the Effects are adequate to the Cauſes in this Caſe, he thinks may be made out in the following Manner, *viz.*

The Heat of boiling Water, according to Sir *Iſaac Newton*'s Table (*Philoſoph. Tranſact.* Numb. 270. is 34, the mean Heat of *Summer* 5, the mean Heat of *Spring* or *Autumn* 3, and the leaſt Degree of Heat at which *Vapours* riſe in *Winter* (*alias* the mean Heat of *Winter*) is 2.

The Rarety of *Vapour* proportionable to theſe 4 Degrees of Heat, is 14000, 2058, 1235, and 823.

The Rarety of Air is in *Summer* 900, in *Spring* or *Autumn* 850, and in *Winter* 800.

The Denſity of Water, compar'd with the above-mention'd Denſities, being inverſely as 1. to the 'fore-mention'd four Numbers.

The Heights above the Earth to which the *Vapours* will ariſe, and at which they will be in *Equilibrio*, in an Air of the ſame Denſity with themſelves, will vary according to the Rarety of the *Vapour* depending upon the Heat of the Seaſon.

For the *Vapour* which is rais'd by the *Winter*'s Heat expreſs'd by the Number 2, when the Rarety of the Air is 800, will riſe to (and ſettle at) an Height of about the ſixth Part of a Mile, when the *Barometer* is above 30 Inches high.

But if the Heat be greater, then the *Vapours* will riſe higher, and pretty much higher if the Sun ſhines, tho' in froſty Weather, the *Barometer* then being very high.

If the *Barometer* falls, and thereby brings the Place of *Equilibrium* (for *Vapours* rais'd by the Heat 2,) nearer the Earth, then alſo will the Heat be increas'd, the *Vapour* more rarefied, and conſequently the new Place of *Equilibrium* ſufficiently high.

It is to be obſerv'd that, in *Winter*, when the Heat is only equal to 2, the Air is dens'd cloſe to the Earth, which has not any Heat ſufficient to rarefy it near the Ground, as happens in warm Weather; therefore the *Vapour* will riſe gradually in an Air whoſe Denſity decreaſes continually from the Earth upwards; neither will the *Vapour* be hinder'd of its full Riſe by any Condenſation from a greater Cold of the ambient Air, the Air being then as cold next to the Ground, where the *Vapour* begins to riſe, as it is at any Height from the Earth.

The *Vapour* which is rais'd by the Heat of the *Spring* or *Autumn*, expreſs'd by Number 3, will riſe to the Height of 3 $\frac{1}{2}$ Miles when the *Barometer* is at 30, and the Air's Rarety is 850. But then as the Air is hotter near the Ground than at the Height of half a Mile or a Mile, the *Vapour* will condenſe as it riſes; and as the Air, when the Earth is heated, is rather near the Ground than at ſome Height from it, the Place for *Equilibrium* will, upon theſe two Accounts, be brought much lower than otherwiſe it would be: As for Example, To the Height of about a Mile; which will agree with *Phænomena.*

In *Summer*, the two Cauſes above-mention'd increaſing, the *Vapour* rais'd by the Heat 5, (whoſe Place of *Equilibrium* would be 5 $\frac{1}{2}$ Miles high, if the *Vapour*, after it began to riſe, was not condens'd by cooling, and the Air was dens'd cloſe to the Earth) will ſettle at the Height of about 1 $\frac{1}{2}$ or 2 Miles, which is alſo agreeable to *Phænomena.*

Laſtly, As the Denſity and Rarety of the *Vapour* is chiefly owing to its Degree of Heat, and in a ſmall meaſure, to the increas'd or diminiſh'd Preſſure of the circumambient Air, when it is not confin'd; and the Denſity and Rarety of the Air is chiefly owing to the increas'd or diminiſh'd Preſſure, by the Accumulation or Exhauſtion of ſuperior Air, whilſt Heat and Cold alter its Denſity in much leſs Proportion: The Clouds made of the *Vapours* above-mentioned, inſtead of conforming themſelves to the alter'd Denſity of the ambient Air, will riſe when it is condens'd, and ſink when it is rarefied; and alſo riſe or ſink, when the Preſſure of the Air is not alter'd, and its Denſity very little chang'd, by their own Dilatation, owing to Heat or Cold: As may be often obſerv'd, by ſeeing them change their Height conſiderably, whilſt the *Barometer* continues exactly at the ſame Degree, and the Liquor of the *Thermometer* riſe or falls very little, and ſometimes not at all.

As for the Manner how Clouds are chang'd into Rain, it has been hinted at the Beginning of this Article; but, for farther Satisfaction, let the Reader have Recourſe to Dr.

Halley's Account of it in the *Philoſophical Tranſactions*, N° 183, which Dr. *Deſaguliers* ſays he has always found agreeable to the *Phænomena*.

He adds, That ſince he had, for Brevity ſake, only mentioned at what Height from the Surface of the Earth *Vapours* of different Denſities will come to an *Equilibrium*, without giving a Reaſon for ſettling the Place of *Equilibrium*, at whoſe Heights he thought it proper here to give the Method by which they may be found, *viz.*

As the *Vapours* will ſettle and riſe where the Air is of the ſame Denſity with themſelves, it is only required to find the Denſity of the Air at any Diſtance from the Earth at ſeveral Heights of the *Barometer*, which may be deduced from Dr. *Halley*'s two Tables, *Philoſophical Tranſactions* N° 386. (the firſt ſhewing the Altitudes to given Heights of the *Mercury*, and the ſecond the Heights of the *Mercury* again at given Altitudes) and knowing the Degree of Heat by the *Thermometer*, becauſe the Denſity of the *Vapour* depends upon the Degree of Heat of the Seaſon, provided that proper Allowances be made for the great Rarefaction of the Air near the Earth in hot and dry Weather, and the Condenſation of the *Vapours* in their Riſe, by reaſon of the Air being colder at a little Height above the Earth than juſt at the Surface of it.

The Quantity of *Vapour* raiſed from the Sea by the Warmth of the Sun, is far greater than one would imagine. Dr. *Halley* has attempted to eſtimate it.

In an Experiment made with that View, and deſcribed in the *Philoſophical Tranſactions*, he found that a Quantity of Water no warmer than Air in *Summer*, loſt in *Vapour*, in the Space of two Hours, no leſs than $\frac{1}{53}$ Part of an Inch in Depth: Now for $\frac{1}{53}$ in two Hours, taking for the eaſier Calculation, $\frac{1}{60}$ in the twelve Hours that the Sun is up each Day, it will riſe $\frac{1}{10}$ of an Inch from the Surface of the Sea.

On this Suppoſition, every ten ſquare Inches of the Surface of the Water yield in *Vapour*, *per Diem*, a cubick Inch of Water; four feet ſquare, a Gallon; a Mile ſquare, 6914 Tuns: A ſquare Degree, ſuppoſed of 60 *Engliſh* Miles, will evaporate 33 Millions of Tuns; and if the *Mediterranean* Sea be eſtimated at 410 Degrees long, and 4 broad, Allowances being made for the Places where it is broader, by thoſe where it is narrower, there will be 160 ſquare Degrees at Sea; and conſequently the whole *Mediterranean* muſt loſe in *Vapour*, in a *Summer*'s Day, at leaſt 5280 Millions of Tuns.

In this Quantity of *Vapour*, though very great, are only the Remains of another Cauſe, which cannot be reduced to Rule; that is, the Winds, whereby the Surface of the Water is licked up, ſometimes faſter than it exhales by the Heat of the Sun; as it is well known to thoſe who have conſider'd thoſe drying Winds.

For the Manner wherein *Vapours* are raiſed, ſee more in *Dew*, *Rain*, *Heat*, *Cold*, and *Barometer*.

For the Effect of *Vapours* in Formation of Springs, ſee *Springs*, &c.

VARIEGATED, ſignifies ſtreak'd or diverſified with ſeveral Colours. There are now a great Variety of Plants in the Gardens of the Curious, whoſe Leaves are *variegated* with yellow or white. Thoſe which are ſpotted with either of theſe Colours in the Middle of their Leaves, are called *blotch'd* (in the Gardener's Term); but thoſe whoſe Leaves are edged with theſe Colours, are called *ſtrip'd* Plants: Thoſe Plants whoſe Leaves are blotch'd, are generally ſubject to become plain, when planted in a good Soil, or at leaſt in the growing Seaſon, will have but ſmall Appearance of the two Colours; but thoſe which have edged Leaves, do rarely become plain again, eſpecially if the Edging is broad, and goes quite thro' the Leaves; tho' theſe do not appear ſo finely *variegated* in the growing Seaſon, as they do the other Parts of the Year.

All the different Sorts of *Variegation* in Plants were at firſt accidental, being no more than a Diſtemper in the Plant; which being obſerved, has been cheriſhed by impoveriſhing the Soil in which they grow, by which Method their Stripes are rendered more laſting and beautiful. But whatever ſome Perſons have affirmed of ſtriping Plants by Art, I could never obſerve it done by any, unleſs in woody Shrubs and Trees, which may be *variegated* by putting in a Bud or Graft taken from a *variegated* Plant, where altho' the Buds ſhould not grow, yet if they keep freſh but eight or ten Days, they will many times communicate their gilded *Miaſma* to the Sap of the Trees into which they were budded; ſo that in a ſhort Time after, it has appeared very viſible in the next adjoining Leaves, and has been afterwards ſpread over the greateſt Part of the Tree: But in ſuch Plants which are herbaceous, where this Operation cannot be performed, there is no Way yet aſcertained whereby this Striping can be effected by Art.

In ſome Sorts of Plants this Diſtemper is often communicated to the Seeds; ſo that from thoſe Seeds gathered from *variegated* Plants, there will conſtantly be ſome *variegated* Plants produced; as in the *Strip'd-wing Pea*, the *Greater Maple*, &c. ſo that theſe may be conſtantly propagated that Way.

That this Striping proceeds from the Weakneſs of Plants, is very evident, ſince it is always obſerved, that whenever Plants do alter thus in the Colour of their Leaves, they do not grow ſo large as before, nor are they ſo capable to endure the Cold; ſo that many Sorts of Plants which are hardy enough to endure the Cold of our Climate in the open Air, when in their natural Verdure, do require to be ſhelter'd in the *Winter* after they are become *variegated*, and are ſeldom of ſo long Continuance; which is a plain Proof that it is a Diſtemper in the Plants; ſince whenever they become vigorous, this Striping is either rendered leſs viſible, or entirely thrown off; eſpecially (as was before obſerved) if the Plants are only blotch'd; or if the Edging be of a yellow Colour, it is leſs apt to remain than when it is white; which is eſteemed the moſt beautiful Striping, and which (when once thoroughly eſtabliſhed) is hardly ever to be got out of the Plants again, ſo as to render the Leaves entirely green.

Nay, ſuch is the Venom of this morbid Matter, that it not only tinges the Leaves, but alſo the Bark and Fruit of Trees are infected by it; as in the Orange, Pear, &c. whoſe Bark and Fruit are ſtriped in the ſame Manner as their Leaves.

The different Colours which appear in Flowers do alſo proceed from the ſame Cauſe, though it is generally in a leſs Degree in them than when the Leaves and Branches are infected: For the various Colours which we ſee in the ſame Flowers, are occaſioned by the Separation of the nutritive Juice of Plants, or from the Alteration of their Parts, whereby the ſmaller Corpuſcles, which are carried to the Surface of the Flower-leaves, are of different Forms, and do thereby reflect the Rays of Light in different Proportions. In order to underſtand this, it may not be improper to ſay ſomething concerning the Phænomenon of *Colours*, as it hath been diſcovered by the late excellent Philoſopher Sir *Iſaac Newton*.

1. *Colour* may be conſidered two Ways. (1.) As a Quality reſiding in the Body, that is ſaid to be ſo and ſo colour'd, or which doth modify the Light after ſuch and ſuch a Manner: Or, (2.) As more properly the Light itſelf, which being ſo modified, ſhines upon the Organ of Sight, and produces that Senſation we call *Colour*.

2. *Colour* is defined to be a Property inherent in Light, whereby, according to the different Sizes or Magnitudes of its Parts, it excites different Vibrations in the Fibres of the Optick Nerve; which being propagated to the *Senſorium*, affects the Mind with different Senſations.

3. Again: *Colour* may be defined a Senſation of the Soul, excited by the Application of Light to the *Retina* of the Eye; and different, as the Light differs in the Degree of its Refrangibility, and the Magnitude of its component Parts.

4. According to the firſt Definition, Light is the *Subject* of *Colour*; according to the latter, it is the *Agent*.

5. So then, *Light* ſometimes ſignifies that Senſation occaſioned in the Mind by the View of luminous Bodies; ſometimes that Property in thoſe Bodies, whereby they are fitted to excite thoſe Senſations in us.

6. Various are the Opinions of ancient and modern Authors, and of the ſeveral Sects of Philoſophers, with regard to the Nature and Origin of the Phænomenon *Colour*.

7. The *Peripateticks* aſſert *Colours* to be real Qualities, and inherent in the coloured Bodies, and ſuppoſe that *Light* doth only diſcover them, but not any Way affect their Production.

8. *Plato* thought *Colour* to be a Kind of Flame, conſiſting of moſt minute Particles, very congruous to the Pores of the Eye, and darted againſt it from the Object.

9. Some Moderns will have *Colour* to be a Kind of internal Light, of the more lucid Parts of the Object darkened, and conſequently altered by the various Mixtures of the leſs luminous Parts.

10. Others, as did ſome of the ancient Atomiſts, maintain *Colour* not to be a lucid Stream, but a corporeal Effluvium iſſuing out of the coloured Body.

11. Others account for all *Colours* out of the various Mixture of Light and Darkneſs: And the Chymiſts will have it ſometimes ariſe from the Sulphur, and ſometimes from the Salt that is in Bodies; and ſome alſo from the third Hypoſtatick Principle, *i. e. Mercury*.

12. The moſt popular Opinion is that of the Followers of *Ariſtotle*, who maintain, that *Colour* is a Property inherent in

the coloured Body, and that it exiſts without any Dependance on Light.

13. The *Carteſians*, who make the Senſation of Light to be the Impulſe made on the Eye by certain ſolid, but very minute Globules, eaſily permeating the Pores of the Air and diaphonous Bodies: Theſe derive *Colour* from the various Proportion of the direct Progreſs or Motion of theſe Globules, to their Circumrotation or Motion round their own Centres; by which Means they are qualified to ſtrike the Optick Nerve, after diſtinct and divers Manners, and ſo do produce the Perception of various *Colours*.

14. They own, that as the *coloured* Body is not immediately apply'd to the Organ, to occaſion the Senſation, and as no Body can affect the Senſe but by immediate Contact, the *coloured* Body does not excite the Senſation of itſelf, or contribute any Thing to it, otherwiſe than by moving ſome interpoſed Medium, and by that the Organ of Sight.

15. They add, That as it is found that Bodies do not affect the Senſe in the Dark, and that Light only occaſions the Senſation of *Colour*, by moving the Organ; and that *coloured* Bodies are no farther concerned, than in reflecting the Light in a certain Modification; the Difference in *Colours*, according to them, ariſes in a Difference in the Texture of their Parts, by which they are diſpoſed to reflect the Light with this or that Modification.

16. Dr. *Hook*, in his *Micographia*, ſays, The Phantaſm of *Colours* is cauſed by the Senſation of the oblique or uneven Pulſe of Light, and that this is capable of no more Varieties than two, which ariſe from the two Sides of the oblique Pulſe; ſo that there is in Reality but two ſimple *Colours*, *Yellow* and *Blue*; from the Mixture of which, and a due Proportion of Black and White (that is, Darkneſs and Light) all *Colours* may be produced.

17. But this Phænomenon of Nature, *Colour*, having long perplexed Philoſophers to account for the Diſcoveries relating thereto, the incomparable Sir *Iſaac Newton* found, by two Experiments on Priſms, that there is a great Deformity in the Rays of Light, and that hereby the *Origin of Colours* may be unfolded: The Doctrine of *Colours* therefore, according to his Notion and Experiments, are contained in the following Propoſitions:

1. That Light conſiſts of an infinite Number of Rays, right-lined and parallel; but of different Degrees of Refrangibility, when meeting with a different Medium.
2. Each Ray, according to its Degree of Refrangibility, when ſo refracted, appears to the Eye of a different Colour.
3. The leaſt refrangible Rays appear of a *deep Scarlet* Colour; the moſt refrangible appear of a *Violet Blue*: The intermediate proceeding from *Scarlet* to *Yellowiſh*, then to *light Green*, and ſo to *Blue*.
4. The *Colours* ariſing from the different Degrees of Refrangibility of Light, are not only the more noted *Colours* of *Red*, *Yellow*, *Green*, *Blue*; but alſo all the intermediate *Colours* of *Red* to *Yellow*, of *Yellow* to *Green*, &c.
5. *Whiteneſs*, (ſuch as the Sun's Light appears) containing all thoſe Degrees of Refrangibility, is conſequently made up of all the abovementioned *Colours*.
6. *Simple* or *Homogeneal Colours*, are ſuch as are produced by *Homogeneal* Lights or Rays, which have the ſame Degree of Refrangibility; and mix'd *Colours* are ſuch as are produced by Rays of different Refrangibility.
7. Rays of the ſame Refrangibility produce the ſame *Colour*; which *Colour* is not alterable by repeated Refractions, but only made more ſtrong or faint, as the Rays are united or ſcattered.
8. All Bodies appear of this or that *Colour*, according as their Surfaces are adapted to reflect only the Rays of ſuch a *Colour*, or (at leaſt) in more Plenty than the reſt.

But to explain theſe Things farther:

It is found by Experience, that Rays or Beams of Light, are compoſed of Particles very heterogeneous or diſſimilar to each other; *i. e.* ſome of them, as it is highly probable, are larger, and others leſs: For a Ray of Light being received on a refracting Surface in a dark Place, is not wholly refracted, but ſplit, as it were, and diffuſed into ſeveral little Rays, ſome of which are refracted to the extreme Points, and others to the intermediate Points; *i. e.* thoſe Particles of the Light which are moſt minute, are diverted the moſt eaſily and moſt conſiderably of all others, by the Action of the refracting Surface, out of their rectilineal Courſe; and the reſt, as each exceeds another in Magnitude, ſo it is turned out of its right Line with more Difficulty, and leſs conſiderably.

Now each Ray of Light, as it differs from another in its Degree of Refrangibility, ſo likewiſe it differs from it in *Colour*: This is warranted by numerous Experiments.

Thoſe Particles which are moſt refracted, are found to conſtitute a Ray of a *Violet Colour*; *i. e.* in all Probability, the moſt minute Particles of Light, thus ſeparately impell'd, excite the ſhorteſt Vibration in the *Retina*, which are thence propagated by the ſolid Fibres of the Optick Nerves into the Brain, there to excite the Senſation of *Violet Colour*, as being the moſt duſky and languid of all *Colours*.

Again: Thoſe Particles which are the leaſt refracted, conſtitute a *Radiolus*, or little Ray, of a *Red Colour*, i. e. The largeſt Particles of Light excite the longeſt Vibrations in the *Retina*, ſo as to excite the Senſation of *Red Colour*, the brighteſt and moſt vivid of all *Colours*.

Authors diſtinguiſh three general Kinds of *Red*; one bordering on the *Blue*, as *Columbine*, or *Dove Colour*, *Purple* and *Crimſon*, &c. another bordering on *Yellow*, as *Flame Colour*, and *Orange*.

Between theſe Extremes is a Medium, which partakes neither of the one nor the other, and this is what we properly call *Red*.

Acids turn *Black*, *Violet* and *Blue* into *Red*; and *Red* into *Yellow*; and *Yellow* into a very *pale Yellow*.

Alcali's change *Red* into *Violet*, or *Purple* and *Yellow* into *Feuillemorte*, or *Dead Leaf Colour*.

Terreſtrial and Sulphureous Matters become *Red* by extreme Heat; and ſome at length *Black*, as we ſee in *Brick*, *Red Bole*, *Red Chalk*, *Slate*, *Pumice*, &c. which when vitrified by a Burning-glaſs, become *Black*.

Lobſters become *Red* by a moderate Fire; and by a violent one *Black*.

Mercury and *Sulphur* mixed and heated over a moderate Fire, make a beautiful *Red*, called *Artificial-cinnabar*.

An acid Spirit, as *Lemon-juice*, being poured on a *Blue* Solution of *Turnſole*, turns it into a beautiful *Red*; *Alkali* reſtores it to an original *Blue*; and filtrating the reddeſt Wine takes from it its *Red Colour*.

Monſ. *de la Hire* has obſerved, that a very luminous Body, ſeen thro' a *Black* one, always appears *Red*; as the Sun appears, when ſhining thro' a *Black* Cloud. He adds, That many People who ſee all the other Colours perfectly well, yet have no Idea of *Red*, and only ſee it perfectly *Black*. But to proceed:

The other Particles being in like Manner ſeparated, according to their reſpective Magnitudes, into little Rays, excite the intermediate Vibrations, and by this Means occaſion the Senſations of the intermediate *Colours*; much in the ſame Manner as the ſeveral Vibrations of the Air, according to their reſpective Magnitudes, excite the Senſations of different Sounds.

We may add to this, That not only the more diſtinct and notable *Colours* of *Red*, *Yellow*, *Blue*, &c. do thus take their Riſe from the different Magnitude and Refrangibility of the Rays; but alſo the intermediate Degrees or Teints of the ſame *Colour*; as *Yellow* up to *Green*, of *Red* down to *Yellow*, &c.

Farther: The *Colours* of theſe little Rays, not being any adventitious Modification thereof, but connate, primitive and neceſſary Properties, as conſiſting, in all Probability, in the Magnitudes of their Parts, muſt be perpetual and immutable, *i. e.* cannot be changed by any future Refraction or Reflection, or any Modification whatſoever.

This is confirmed by abundance of Experiments; all Endeavours having been uſed, after ſeparating a *colour'd* Ray from thoſe of other Kinds, to change it into ſome other *Colour* by repeated Refractions; but to no Effect.

Indeed, it is poſſible to effect apparent Tranſmutations of *Colours*, *viz.* where there is an Aſſemblage or Mixture of Rays of different Kinds; the component *Colours* never appearing in their natural Hue in ſuch Mixtures, but always allay'd and temper'd with each other: Whence a middling Kind of *Colour* does reſult; which may be ſeparated into the component ones by Refraction; and thoſe, after Separation, being remix'd, return to their former *Colour*.

Hence the Tranſmutations of *Colours*, by mixing thoſe of different Kinds, are not real, but mere Appearances or Deceptions of the Sight; for the Rays being again ſevered, exhibit the ſame *Colours* as they did at firſt: Thus *Blue* and *Yellow* Powders, being mix'd, appear *Green* to the naked Eye; yet without having paſſed any Alteration, when view'd thro' a Microſcope, the *Blue* and *Yellow* Particles will appear diſtinct.

Hence two Kinds of *Colours* do ariſe; the one *Original* and *Simple*, produced by homogeneous Light, or by Rays that have the ſame Degree of Refrangibility, and the ſame Magnitude of their Parts; ſuch are *Red*, *Yellow*, *Green*, *Blue*, a *Violet-purple*, *Orange*, and *Indigo*, with all their intermediate Teints and Degradations.

The other Kind of *Colours* is *Secondary* or heterogeneous compounded of the primary ones, or of a Mixture of Rays differently refrangible, *&c.*

There may alſo be *Secondary* Colours produced by Compoſition, like the primary ones, or thoſe conſiſting of homogeneal Light, as to the Species or Appearance of the *Colour*, but not as to the Permanency and Immutability of it.

Thus *Yellow* and *Blue* mix'd, make *Green*; *Red* and *Yellow* being mix'd, make *Orange*; *Orange* and *yellowiſh Green* mix'd, make *Yellow*.

And in the general, any two *Colours* being mix'd, which in the Series of thoſe generated by the Priſm are not too far apart, that *Colour* will reſult from this Mixture, which is found in the Mid-way between them in the ſaid Series: But thoſe will not do ſo that are ſituated at too great a Diſtance.

Indeed, the more any *Colour* is compounded, the leſs perfect and vivid it is; they may be diluted and weakened, till they ceaſe, by too much Compoſition. Alſo *Colours*, not like to any of thoſe of homogeneal Light, may be produced by Compoſition.

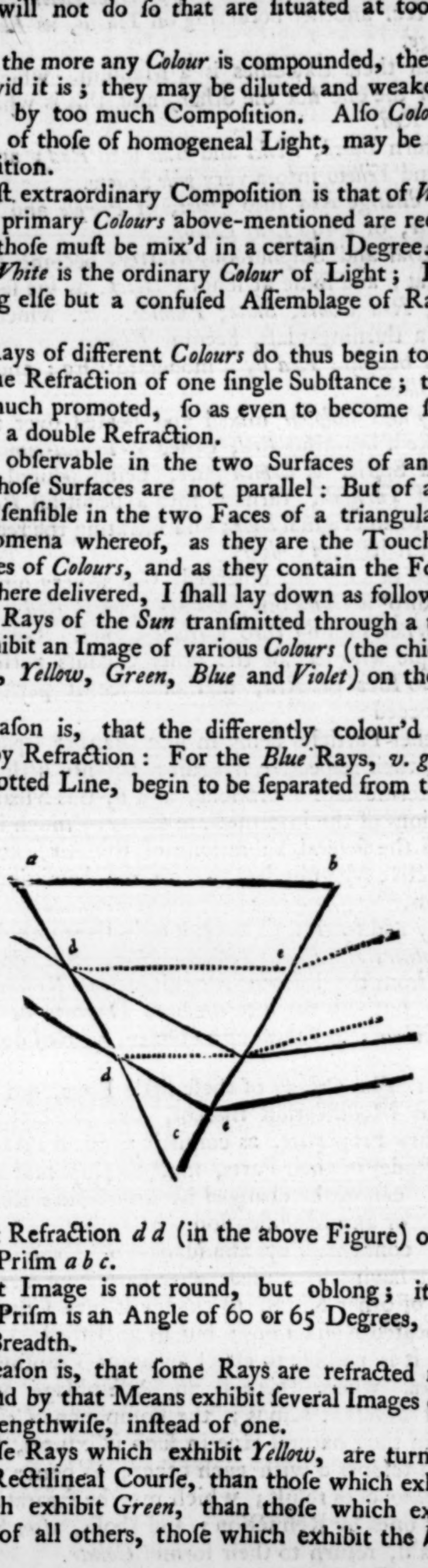
The moſt extraordinary Compoſition is that of *Whiteneſs*: For all the primary *Colours* above-mentioned are required to this; and thoſe muſt be mix'd in a certain Degree. Hence it is that *White* is the ordinary *Colour* of Light; Light being nothing elſe but a confuſed Aſſemblage of Rays of all *Colours*.

If the Rays of different *Colours* do thus begin to be ſeparated by one Refraction of one ſingle Subſtance; that Separation is much promoted, ſo as even to become ſenſible to the Eye by a double Refraction.

This is obſervable in the two Surfaces of any Glaſs; provided thoſe Surfaces are not parallel: But of all others, it is moſt ſenſible in the two Faces of a triangular Priſm; the Phænomena whereof, as they are the Touch-ſtone of all Theories of *Colours*, and as they contain the Foundation of what is here delivered, I ſhall lay down as follows:

1. The Rays of the *Sun* tranſmitted through a triangular Priſm, exhibit an Image of various *Colours* (the chief whereof are *Red*, *Yellow*, *Green*, *Blue* and *Violet*) on the oppoſite Wall.

The Reaſon is, that the differently colour'd Rays are ſeparated by Refraction: For the *Blue* Rays, *v. g.* marked with the dotted Line, begin to be ſeparated from the reſt by the firſt Refraction *d d* (in the above Figure) of the Side *c a* of the Priſm *a b c*.



2. That Image is not round, but oblong; its Length, when the Priſm is an Angle of 60 or 65 Degrees, being five times its Breadth.

The Reaſon is, that ſome Rays are refracted more than others; and by that Means exhibit ſeveral Images of the *Sun* extended lengthwiſe, inſtead of one.

3. Theſe Rays which exhibit *Yellow*, are turned farther from the Rectilineal Courſe, than thoſe which exhibit *Red*; thoſe which exhibit *Green*, than thoſe which exhibit *Yellow*; but of all others, thoſe which exhibit the *Violet*, the moſt.

Accordingly, if the Priſm through which the Light is tranſmitted be turned about its Axis, ſo as the *Red*, *Yellow*, *Green*, &c. Rays be projected in order through a narrow Aperture, into another Priſm placed at the Diſtance of about twelve Feet; the *Yellow*, *Green*, &c. Rays, though falling through the ſame Aperture in the ſame Manner, and on the ſame Point of the ſecond Priſm, will not be refracted to the ſame Place as the *Red*, but to a Point at ſome Diſtance from it, on that Side to which the Rotation was made.

This is what Sir *Iſaac Newton* calls *Experimentum Crucis*, being that which led him out of the Difficulties into which the firſt Phænomenon, *&c.* had brought him, and plainly ſhew'd a different Degree of Refrangibility, and a different *Colour* correſponding thereto in the Rays of Light; and that *Yellow* Rays, *v. g.* are more refracted than *Red* ones, and *Blue* and *Violet* moſt of all.

4. The *Colours* of colour'd Rays, well ſeparated by the Priſm, are not at all changed or deſtroy'd by paſſing an illuminated Medium, nor by their mutual Decuſſation, their bordering on a deep Shadow, nor being reflected from any natural Body, or reflected through any one, in a Place how obſcure ſoever.

The Reaſon is, that *Colours* are not Modifications ariſing from Refraction or Reflection, but immutable Properties, and ſuch as belong to the Nature of the Rays.

5. An Aſſemblage of all Kinds of colour'd Rays, collected either by ſeveral Priſms, by a Convex Lens, or a Concave Mirrour, or in any other Manner, form what we call *Whiteneſs*; yet each of theſe, after Decuſſation, becoming ſeparated, again exhibits its proper Colour: For as the Ray was *white* before its Parts were ſeparated, ſo the Parts being mix'd, it becomes *white* again; and coloured Rays, when they meet together, don't deſtroy one another, but are only interſperſed.

Hence a *red*, *green*, *yellow*, *blue*, and *violet* Colour, being mix'd in a certain Proportion, appear *whitiſh*; *i. e.* are of ſuch a Colour as ariſes from *White* and *Black* mix'd together, and would be plainly *white*, if ſome Rays were not abſorb'd and loſt.

In like manner, if a Paper cut into a Circle be ſtain'd with each of thoſe *Colours* ſeparately, and in a certain Proportion, then ſwiftly turned round its Centre, ſo as the Species of *Colours* be mixed together in the Eye by the Briskneſs of the Motion, the ſeveral *Colours* will diſappear, and the whole Paper appear of one continual Colour, which will be a Mean betwixt *White* and *Black*.

6. If the Rays of the Sun fall very obliquely on the inner Surface of a Priſm, thoſe that are reflected will be *Violet*, thoſe tranſmitted *Red*.

For the Rays were coloured before any Separation; and by how much the more they are refrangible, by ſo much they are the more eaſily reflected, and by that means are ſeparated.

7. If two hollow Priſms, the one filled with a *blue* Fluid, and the other with a *red* one, be joined together, they will be opaque, tho' each apart be tranſparent.

For the one tranſmitting none but *blue* Rays, and the other none but *red* ones; the two together will tranſmit none at all.

8. All natural Bodies, eſpecially *white* ones, view'd through a Priſm held to the Eye, appear fimbriated or bordered on one Side with *Red* and *Yellow*, and on the other Side with *Blue* and *Violet*.

For thoſe *Fimbriæ* are the Extremes of intire Images, which the Rays of any Kind, as they are more or leſs refracted, would exhibit nearer, or at a greater Diſtance from the real Place of the Object.

9. If two Priſms be ſo placed, as that the *Red* of the one, and the *Purple* of the other meet together, in a Paper fit for the Purpoſe, incompaſs'd with Darkneſs, the Image will appear pale; and if viewed through a third Priſm, held to the Eye at a proper Diſtance, it will appear double, the one *Red*, the other *Purple*.

In like manner, if two Powders, the one perfectly *Red*, the other *Blue*, be mixed, any little Body covered pretty deeply with this Mixture, and viewed through a Priſm held to the Eye, will exhibit a double Image, the one *Red*, and the other *Blue*; in regard that the *Red* and *Purple*, or *Blue* Rays are ſeparated by their unequal Refraction.

10. If the Rays tranſmitted thro' a Convex Lens, be received on a Paper, before they meet in a Focus, the Confines or Boundary of Light and Shadow, will appear tinged with a *red* Colour; but if they be received beyond the Focus, with a *blue* one.

Becauſe in the firſt Caſe, the *red* Rays being ſomething more refracted, are the higher; but in the ſecond, after Decuſſation in the Focus, the *blue* ones.

Laſtly, If the Rays about to paſs through either Side of the *Pupilla*, be not intercepted by the Interpoſition of any opaque Body near the Eye, the Extremes of Bodies, plac'd as if view'd through a Priſm, will appear ting'd with *Colours*, tho' thoſe are not very vivid.

For then the Rays tranſmitted through the reſt of the Pupil will be ſeparated by Refraction into *Colours*, without being diluted with the Admixture of the intercepted Rays, which would be refracted in a different Manner.

And hence it is, that a Body viewed thro' a Paper pierced with two Holes, appears double, and alſo tinged with *Colours*.

Of the Colours *of thin Plates.*] As Rays of different *Colours* are ſeparated by the Refraction of Priſms, and other thick Bodies, ſo are they ſeparated, tho' in a different Manner, in the thin *Lamellæ* or Plates of any pellucid Matter; *v. g.* the Bubbles raiſed in Water thickned by Soap, *&c.*

For all *Lamellæ* under a determined Thickneſs, in Arithmetical Proportion, begin to reflect firſt *Blue* Rays; then in order *Green*, *Yellow* and *Red*, all pure; then again *Blue*, *Green*, *Yellow*, and *Red*, all pure; then again, *Blue*, *Green*, *Yellow*, and *Red*, more and more mixed and diluted; till at length arriving at a certain Thickneſs, they reflect Rays of all Colours perfectly intermixed, *viz. White*.

But in whatſoever Part a ſlender *Lamella* reflects any one Colour, *v. g. Blue*, in that Part it always tranſmits the oppoſite Colour, *v. g. Red* or *Yellow*.

It is found by Experiment, that the Difference of Colour of a Plate, does not depend on the Medium that encompaſſes it; but the Degree of Vividneſs does: *cæteris paribus*, the Colour will be more vivid, if the denſer Medium be incompaſs'd with the rarer: A Plate, *cæteris paribus*, reflects more Light, as it is thinner, as far as a certain Degree of Thinneſs, beyond which it reflects no Light at all.

In Plates whoſe Thickneſs increaſe in an Arithmetical Proportion of the natural Numbers, 1, 2, 3, 4, 5, *&c.* if the firſt or thinneſt reflect any homogeneal Ray, the ſecond will tranſmit it; the third again will reflect it; and thus is the ſame Ray alternately reflected and tranſmitted; *i. e.* the Plates correſponding to the odd Number, 1, 3, 5, 7, *&c.* will reflect the ſame Rays that thoſe correſponding to the even ones 2, 4, 6, 8, *&c.* tranſmit.

Hence an homogeneal *Colour* in a Plate is ſaid to be of the *firſt Order*, if the Plate reflect all the Rays of that Colour: In a Plate whoſe Thinneſs is triple the firſt, it is ſaid to be of the *ſecond Order*: In another, whoſe Thinneſs is five times that of the firſt, it is ſaid to be of the *third Order*, &c.

A *Colour* of the firſt Order is more vivid than any; and ſucceſſively the Vividneſs of the *Colour* increaſes as the Quantity of the Order increaſes: The more the Thickneſs of the Plate is increaſed, the more *Colours* it reflects, and thoſe of more different Orders: In ſome Plates the *Colour* will vary as the Poſition of the Eye varies; in others it is permanent.

Colours *of Natural Bodies.*] Bodies only appear of different *Colours*, as their ſurfaces are diſpoſed to reflect Rays of this or that *Colour* alone, or of this or that *Colour* more abundantly than the other: Hence Bodies appear of that *Colour* that ariſes from the Mixture of the reflected Rays.

All *Natural Bodies* conſiſt of very thin tranſparent *Lamellæ*; which, if they be ſo diſpoſed with regard to each other, as that there happen no Reflections or Refractions in their Interſtices, thoſe Bodies become pellucid or tranſparent; but if their Intervals be ſo large, and thoſe filled with ſuch Matter, or ſo empty (and with regard to the Denſity of the Parts themſelves) that there happens a Number of Reflections and Refractions within the Body, the Body in that Caſe becomes opaque.

The Rays which are not reflected from an opaque Body, penetrate into it, and there ſuffering innumerable Reflections and Refractions, at length unite themſelves to the Particles of the Bodies themſelves.

Hence it is that an opaque Body grows hot the ſooner, as it reflects Light leſs copiouſly: hence we ſee, that a white Body, which reflects almoſt all the Rays that ſtrike upon it, heats much more ſlowly than a black one, which reflects ſcarce any.

In order to determine the Conſtitution of the Surface of Bodies wherein their *Colour* depends, it muſt be obſerved, that the ſmalleſt Corpuſcles or Particles whereof Surfaces are made up, are moſt thin and tranſparent, and ſeparated by a Medium of a different Denſity from the Particles themſelves.

In the Surface then of every coloured Body are innumerable ſmaller, thin Plates, anſwering to thoſe of Bubbles.

Hence it may be gathered, that the *Colour* of a Body depends upon the Denſity and Thickneſs of the Parts of the Body between the Pores of the Surface; that the *Colour* is more vivid and homogeneous, as the Parts are thinner; that, *cæteris paribus*, the ſaid Parts are the thickeſt when the Body is *Red*, and thinneſt when *Violet*.

That the Parts of Bodies are uſually much denſer than the Medium contained in their Interſtices; but that in the Tails of Peacocks, and ſome Silks, and generally in all Bodies whoſe *Colour* varies according to the Situation of the Eye, it is leſs; and that the *Colour* of the Body is leſs vivid to the Eye, as it has a denſer Medium within its Pores.

Now, of the ſeveral opaque Bodies, thoſe which conſiſt of the thinneſt *Lamellæ* are *Black*, thoſe conſiſting either of the thickeſt *Lamellæ*, or of *Lamellæ* very different from each other in Thickneſs, and on that account fitted to reflect all *Colours*, as the Froth of Water, *&c.* are *White*.

Thoſe again, which conſiſt of *Lamellæ*, moſt of which are of ſome intermediate Thickneſs, are *Blue*, *Green*, *Yellow*, or *Red*; inaſmuch as they reflect the Rays of that particular *Colour* much more copiouſly than that of any other *Colour*; moſt of which laſt they either abſorb and extinguiſh, by intercepting them, or elſe tranſmit.

Hence it is, that ſome Liquors, *v. g.* an Infuſion of *Lignum Nephriticum*, appear *Red* or *Yellow*, if viewed by reflected Light; and *Blue*, by tranſmitted Light; and Gold Leaves, *Yellow* in the former Circumſtances, but *Green* or *Blue* in the latter.

To this may be added, that ſome of the Powders uſed by Painters, have their *Colours* changed by being very finely ground; which muſt be occaſioned by the Comminution or Breaking of their ſmall Parts into others ſtill ſmaller; juſt as a *Lamella* has its Colour altered, by altering its Thickneſs.

In fine; Thoſe odd Phænomena ariſing from the Mixture of Liquors of different Colours, can no way be better accounted for than from the various Actions of the ſaline, *&c.* Corpuſcles of one Liquor, with the coloured Corpuſcles of another: If they unite, the Maſs will either ſwell or ſink; and thereby its Denſity will be altered. If they ferment, the Size of the Particles may be diminiſhed, and thereby coloured Liquors may become tranſparent: If they coagulate, an opaque Liquor may be produced of two tranſparent ones.

Hence it is eaſy to ſee, why a coloured Liquor in a Glaſs of a conical Figure, placed between the Eye and the Light, appears of a different Colour in different Parts of the Veſſel, there being more and more Rays intercepted, as they paſs thro' a longer or ſhorter Section of the Veſſel, till at the Baſe they are all intercepted, and none ſeen but thoſe reflected.

From the various *Colours* of natural Bodies, Sir *Iſaac Newton* obſerves, that the Bigneſs of their component Parts may be eſtimated, for that the Parts of Bodies do properly exhibit the ſame *Colour* with a *Lamella* of equal Thickneſs, provided the Denſity in both be the ſame.

Why the *Colours* of the Rainbow appear in falling Drops of Rain, is alſo from hence evident: For thoſe Drops which refract the Rays diſpoſed to appear Purple, in greateſt Quantity to the Spectator's Eye, refract the Rays of other Sorts ſo much leſs, as to make them paſs beſide it; and ſuch are the Drops of the Inſide of the *primary* Bow, and on the outſide of the *ſecondary* or exterior one: So theſe Drops which refract in greateſt Plenty the Rays apt to appear red to the Spectator's Eye, refract thoſe of other Sorts ſo much more as to make them paſs beſide it; and ſuch are the Drops on the exterior Part of the *primary*, and interior Part of the *ſecondary* Bow. See *Rainbow*.

It is very obſervable, that *White* is much brighter, as it is produced by a great Quantity of Rays; and the leſs Rays *Black* has, by ſo much the obſcurer it is.

Red is the medium Colour between theſe two Extremes; becauſe it contains as much Force of the one as the other: But *Yellow* contains more of the *White*, and *Blue* more of the *Black*.

Green is a Compound of *Yellow* and *Blue*; for if a Piece of *blue* Glaſs be laid upon a Piece of *yellow* Glaſs, and ſo placed between the Eye and the Object, whatſoever it is that is ſeen through them, will appear *green*.

But other *Colours* are not ſo inclinable to unite as *Blue* and *Yellow*; and for this a good Reaſon may be given, becauſe the Parts of all other ſuch like Mixtures are different in Proportion; and while there is any one Colour predominant, there can be no Union.

Father *Niceron* ſays, That *Red* is produced by an equal Interruption and Continuation of Rays; as if we ſuppoſed three continued Rays, and three Points of the Object which were dark: And this Suppoſition might give us to believe, that all *Colours* were compoſed of *White* and *Black*, that is to ſay, of certain Proportions of *Light* and *Darkneſs*: and nothing that is *Yellow* is equally diſtant from *White* and *Red*, as *Blue* is from *Red* and *Black*. But the following Table may better explain the Difference of theſe.

White has 100 Rays of *Light*.

Red is compoſed of equal Parts of *White* and *Black*; or of 50 Rays and 50 Points.

Black 100 Angles or Points of Darkneſs.

Yellow has 75 Rays, and 25 Points

Blue has 75 Points, and 25 Rays.

Green the Medium of *Blue* and *Yellow*.

Sanctorius will have all *Colours* to proceed from *Shade* and *Temperancy*; and produces an Experiment to prove that *White* and *Black* are each of them compoſed of tranſparent Globes; and that thoſe which give us the *White* are void and empty; and thoſe which produce the *Black*, he thinks, are full of Matter.

The *White* containing only Air, gives no Shade; but the *Black* gives Shade; for Air, and ſuch like ſubtil Bodies, make no Refraction.

Now, if we ſuppoſe all bright *Colours* to be compoſed of ſpherical Particles, then we may reaſonably imagine, that the brighteſt Sorts of them do conſiſt of ſmaller Globes than thoſe do that are more faint; becauſe, as *Sanctorius* ſays, we know that in all tranſparent Bodies in this Form, every ſingle Globe will ſend at leaſt one ſingle Ray to the Eye; and by ſo many the more there are of thoſe Rays, by ſo much the more ſuch *Colours* come nearer to *Light* itſelf, which as theſe Parts are more ſubtil and refined, is the more dazzling.

And in like manner the darker *Colours*, by how much the more they are compoſed either of more triangular Parts, or as the Parts that compoſe them tend towards the laſt conceivable Point of Magnitude, by ſo much they become more ſenſibly obſcure.

It may be farther obſerved, that *Heat* and *Cold* do neceſſarily reſult from *Light* and *Darkneſs*; the more moderate Points of which are *Yellow* and *Blue*, which together produce *Green*; and that ſeems to be the moſt prevailing *Colour* of the Earth.

It is alſo remarkable, that in the growing of Plants, the ſame Plants do, from time to time, alter and change their *Colours*, as the Veſſels which are in thoſe Shoots grow larger: The Leaves are of a faint *Yellow* when they are in their ſmaller State; but they become of a bright *Green*, or ſometimes *Red*, when they are in their middle State; but when their Veſſels are enlarged to their full Growth, they become of a dark *Green*, and then change to a *Feuillemort* Colour towards *Autumn*, from the ripening of their Juices; from thence to Putrefaction, which reſolves itſelf again into Earth, its firſt Principle.

VASCULIFEROUS PLANTS, are ſuch whoſe Seeds are contained in Veſſels which are ſometimes divided into Cells; and theſe have always a monopetalous Flower, either uniform or difform.

VASE, is ſometimes us'd for *Calyx*.

VASES: A *Vaſe* is a Sort of a Flower-Pot ſet in a Garden.

VEGETABLE, a Term applyed to all Plants, conſidered as capable of Growth, *i. e.* to all natural Bodies which have Parts organically formed for Generation and Accretion, but not for Senſation.

M. *Boerhaave* defines a *Vegetable* to be a Body generated of the Earth, to which it adheres, and is connected by Parts called Roots, through which it receives the Matter of its Nouriſhment and Increaſe, and conſiſts of Juices and Veſſels, ſenſibly diſtinct from each other: Or a *Vegetable* is an organical Body compoſed of Veſſels and Juices, every where diſtinguiſhable from each other, to which Roots grow, or Parts, by which it adheres to ſome other Body, from which it derives the Matter of its Life and Growth.

This Definition of a *Vegetable* is very *ſcientific*, and furniſhes us with a juſt and adequate Idea of it; for by its conſiſting of Veſſels and Juices, it is diſtinguiſhed from a *Foſſil*; and by its adhering to another Body, and deriving its Nouriſhment therefrom, it is diſtinguiſhed from an *Animal*.

He defines a *Vegetable* an *Organical Body*, becauſe it conſiſts of different Parts, which jointly concur to the Exerciſe of the ſame Function.

The Definition of its adhering by ſome of its Parts to another Body, is very proper; for we know of no Plant that is ſo abſolutely vague and fluctuating, but has ſtill a Body it adheres to; tho' that Body may be various, *e. g.* Earth, as in our common Plants; Stone, as in Rock Plants; Water, as in Sea Plants; Air, as in ſome Mucilages.

As to thoſe few Plants that appear to float with the Water, their Manner of Growth is ſomewhat anomalous: Monſieur *Tournefort* has ſhewn, That all Plants do not ariſe ſtrictly from Seeds; but that ſome, inſtead of Semen, depoſite or let fall a little Drop of Juice, which ſinking in the Water, by its Gravity reaches the Bottom, or ſome Rock, *&c.* in its Way, to which it ſticks, ſtrikes Root, and ſhoots into Branches: Such is the Origin of *Coral*.

To which may be added, That a Root of a Plant may have any Situation at Pleaſure with reſpect to the Body thereof; nor needs it be either loweſt or higheſt, *&c.* Accordingly, in *Coral*, *Moſſes*, *Fungus's*, &c. the Root is frequently uppermoſt, and its Growth downwards.

VEGETABLES are natural Bodies, having Parts organically formed, but without Senſation.

VEGETABLE STATICKS, ſignifies the Weight, or Gravity, and the Motion of the Juices in *vegetable* Bodies.

It will not, I hope, be thought improper to ſet down that curious Account of a Book (intitled *Vegetable Staticks*, being an Eſſay towards a Natural Hiſtory of *Vegetation*, by *Stephen Hales*, D. D. and F. R. S.) which was drawn up by Dr. *Deſaguliers*, and publiſhed in the *Philoſophical Tranſactions*, ſince it will not only give the Reader an Idea of the many curious Experiments which are contained in that Book; but alſo give him a much clearer Notion of the Buſineſs of *Vegetation* than can be found in any Books yet extant.

The incomparable Sir *Iſaac Newton* has not only ſhorten'd the Geometrician's Work, by his wonderful Diſcoveries in abſtract Mathematicks, but has alſo taught us, by his own Practice, how to make and judge of Experiments and Obſervations with the utmoſt Accuracy: And as he avoided making *Hypotheſes*, he was ſo cautious as to deliver only by way of Queries ſeveral Truths which he was convinced of, becauſe he wanted a ſufficient Number of Experiments to make them as evident as thoſe others, whereby he has ſo far improved and advanced natural Knowledge.

The Reverend Dr. *Hales* has followed his Steps, aſſerting nothing but what is evidently deduced from thoſe Experiments, which he has carefully made, and faithfully related; giving an exact Account of the Weights, Meaſures, Powers and Velocities, and other Circumſtances of the Things he obſerved; with ſo plain a Deſcription of his *Apparatus*, and manner of making every Experiment and Obſervation, that as his Conſequences are juſtly and eaſily drawn, ſo his Premiſes or Facts may be judged of by any body that will be at Pains to make the Experiments; which are moſt of them very eaſy and ſimple.

His Account of every thing is written in ſuch an intelligible Manner, that the inquiſitive Reader is capable of underſtanding it without being puzzled with perplexed Calculations and complex Experiments, which Authors have ſometimes contrived, in order to be admired for thoſe Things which they themſelves found out, either by mere Chance, or with very little Labour: He has illuſtrated, and put paſt all Doubt, ſeveral Truths mentioned in Sir *Iſaac Newton*'s Queries; which tho' believed by ſome of our eminent Philoſophers, were called in Queſtion by others of an inferior Claſs, who were not acquainted with thoſe Facts and Experiments upon which Sir *Iſaac Newton* had built thoſe Queries.

An Abſtract of each Head is as follows.

I. *Experiments, ſhewing the Quantity of Moiſture imbib'd and perſpir'd by Plants and Trees.*

The Author having covered, with Mill'd Lead, a Garden-Pot, in which a Sun-flower was growing, ſo as to leave only one Paſſage for Air to communicate, and another to pour in Water to water the Plant, made ſeveral curious Experiments upon it.

1. That the Plants which weighed about 3 Pounds, perſpired about 30 Ounces in a 12 Hours Day, in the Month of *July* 1724. but in a warm Night it perſpired only 3 Ounces, and nothing in a cold Night; nay ſometimes it gained weight by imbibing Dew.

2. That as the Area of the Surface of the Leaves was equal to 5616 ſquare Inches; and the Area of the Roots only to 2286 ſquare Inches, the Water or Moiſture imbib'd by the Roots to ſupply the Perſpiration at the Leaves, muſt move

faſter in the Roots than through the Leaves, in the Proportion of 5 to 2. But in the Stem, whoſe tranſverſe Section was one ſquare Inch, faſter than in the Leaves, in the Proportion of 5616 to one.

3. That by comparing his Experiments made on this and other *Sun-flowers* and *Plants* with Dr. *Keil*'s Experiments mention'd in the *Medicina Statica Britannica*, it is evident, that a Man (Surface for Surface) perſpires more than a Plant, in the Proportion of 3 ½ to 1. That the Quantity of the Food of a Man is to the Food of a Plant nearly as 7 to 2; but Bulk for Bulk, the Plant imbibes into its Veſſels 17 times more Fluid than the Quantity of the Chyle which enters into a Man's Veſſels; and that becauſe, as the Sap to Plants is leſs nutritive than Chyle to Man, it muſt be more in Quantity: To ſuck in the more Sap, a Plant has a very great Surface, and thereby (Perſpiration promoting its imbibing of the Sap) perſpires 17 times more than a Man, in Proportion to their reſpective Weights.

4. That a Man or Plant may perſpire different Quantities, and yet continue in an healthy State.

A Man may perſpire in 24 Hours from 1 Pound and an half to three Pounds; and a Plant, which at one time perſpired but 16 Ounces, may, without being leſs healthy, perſpire 28 Ounces in the ſame time.

Dr. *Hales* obſerv'd, That, in order to ſupply the Evaporation in the Leaves of a Vine, the Sap roſe 150 Inches in 12 Hours, ſuppoſe the Sap to riſe as denſe as Water; but if it riſes in a Steam, which muſt at leaſt be ten times rarer than Water, then the Velocity of the Sap will be ten times greater, and conſequently riſe at the rate of 125 Inches in an Hour.

N. B. *That the Heat of the Sun ſhould rareſy the Moiſture of the Earth to that Degree, or a great deal more, to drive it into the Roots of Plants, is very probable from ſome Obſervations made by Mr.* H. Beighton *and Dr.* Deſaguliers *upon the Engine to raiſe Water by Fire; whereby it appears that the Steam or Vapour of boiling Water is rarer than the Water from which it was produced above 13,000 times, when its Elaſticity is equal to that of common Air.*

This curious Experimenter, by his Obſervations on twelve *Ever-greens*, found, that they perſpire much leſs than other Plants, and compares them to the exanguous Tribe of Animals; which as they perſpire little, ſo they live the whole *Winter* without Food. He likewiſe obſerved, what Part of an Inch in Thickneſs is perſpired by a Man, and by ſeveral Plants: By a Man in 24 Hours $\frac{1}{30}$ Part of an Inch; and by the following Plants, *viz.* the *Vine*, the *Sun-flower*, the *Cabbage*, the *Apple-tree*, the *Lemon-tree*, $\frac{1}{191}$ $\frac{1}{165}$ $\frac{1}{104}$ $\frac{1}{241}$ Part of an Inch in 12 Hours.

That when the perſpiring Surface is diminiſhed by taking away the Leaves, the Power of imbibing is likewiſe diminiſhed; for the ſame which, with the Leaves on, imbibed 30 Ounces in 12 Hours, without the Leaves, imbibed only 1 Ounce.

That Fruit will imbibe through the Stem, in Proportion to its Surface, he tried in an *Apple*, which imbibed as much as two Leaves equal to it in Subſtance.

That as the Leaves draw Nouriſhment to the Bloſſoms and Fruit, ſo they grow large firſt in thoſe Places where the Bloſſoms are.

That *Hops* in the Middle of an Hop-ground thrive beſt, becauſe they imbibe and perſpire leaſt.

That by 9000 *Hop-Vines* growing on one Acre of Ground, 220 Gallons of Water are imbibed in a 12 Hours Day; which Quantity of Water is equal to a Depth of $\frac{1}{101}$ Part of an Inch ſpread on the ſame Surface.

That Fire-blaſts (as the Gardeners call them) may be occaſioned by ſolar Rays reflected from, or condenſed by Clouds, or even collected by Means of the denſe Steams, which ariſe moſt plentifully in the Middle of the Hop-ground.

That the perſpiring Matter of Trees is not protruded by the Power of the Veſſels, but exhaled by Heat; which he proves by ſeveral curious Experiments.

He made Trees imbibe Spirit of Wine, and other Liquors impregnated with Aromaticks, which gave a Smell and Taſte to the Stalk, Leaves and Wood, but could not penetrate to the Fruit, by reaſon of the Fineneſs of the Capillary Sap-veſſels near the Fruit, which aſſimilated to their own Subſtance the high-taſted and perfum'd Liquors. Spirits kill'd the Trees, as far as they were imbibed, but ſcented Waters did not.

He receiv'd in proper Veſſels the Matter perſpir'd from Trees, which is a taſteleſs Water, but corrupts and ſtinks ſooner than common Water.

He weigh'd three Cubick Feet of the ſame ſort of (Brick) Earth, taken from the Surface of the Earth downwards, in *July* 1724, the lighteſt of which was about twice the ſpecifick Gravity of Water: Then ſetting them to dry, found, by the Loſs of Weight, how much Water they contain'd; the greateſt Quantity exhaled from a Cubick Foot being 10 Pounds, and the leaſt 6 Pounds 11 Ounces, *Averdupois* Weight.

In order to find the Heat of the external Air in Green-houſes and Stoves; as alſo the Degrees of Heat at ſeveral Depths of the Earth, and in Hot-beds, he provided ſix Thermometers, the Stems of which were of different Lengths, but adjuſted in their mark'd Degrees; ſo that they began at their freezing Point, and ended at 90 Degrees, where the Heat was equal to warm Water, that may be borne by the Hand, without ſtirring it about, which is the middle Point between Freezing and the Heat of boiling.

By theſe Thermometers, he obſerved the Degrees of Heat, in ſeveral Caſes, to be as follows: *Of the Blood*=64. *Of the Human Body*=54. *Milk from the Cow, and Heat fit to hatch Eggs,*=55. *Urine*=58. *Temperate Air*=18. *Greateſt Heat of Sun-ſhine in the Year* 1724=74; *and in the Year* 1727 *at* 76. *The Common Heat of the Noon-Sun in* July=50. *Air in the Shade at the ſame time*=38. *The Heat in* May *or* June, *fitteſt for Plants*=*from* 17 *to* 30 *Degrees. Autumnal Heat*=*from* 10 *to* 20. *A Hot-bed too hot for Plants, and about the Heat of Blood in Fevers,*=75. *Due Heat of a Hot-bed*=56. *Heat under a Glaſs at the ſame time*=34; *and in the open Air*=17.

He obſerved the Air to be cooler than the Earth out of the Sun, but hotter in Sun-ſhine; and that as ſoon as the Sun is ſo far decreaſed, as no longer to give a briſk Agitation to (or turn into Steam) the Moiſture of the Earth, the Leaves of the Plants fall of.

II. *Experiments to find the Force with which Trees imbibe Moiſture.*

This Author contrived an *Aqueo-mercurial* Gage, in order to make a juſt Eſtimate of the Force with which the Moiſture is drawn up by Plants and Trees.

He took a Glaſs Tube of an Inch diameter, and about eight Inches long; into one End of which he cemented a ſmaller Tube of about one-fourth of an Inch diameter, and eighteen Inches long; into the other End he ſucceſſively cemented a Root, or Branch, or Stem of a Tree or Plant, whoſe imbibing Force he wanted to find out: which he did in the following Manner; *viz.*

He turned the ſmall end of the Gage upwards, and having poured Water into it, down upon the Wood cemented in, he ſtopped the Orifice with his Finger; then turning the little End downward again, he placed it into a Veſſel of *Mercury*, before he took off his Finger: Which when he had done, he made his Obſervations.

For as the Plant imbibed the Water, the *Mercury* roſe up in the ſmall Tube, following the Water, and ſhewing, by its Height, the Force of imbibing; and for every Inch that the *Mercury* roſe, Water would have riſen 13 ½ Inches, as it is ſo much lighter ſpecifically than *Mercury*.

With this Gage he made Experiments upon Roots and Branches in an erect, Branches in an inverted Situation; large ones as well as ſmall, even to Sprigs of Plants and Fruits, and found that all of them imbibed the Water, ſo as to raiſe the *Mercury* in the ſmall Tube, but to different Heights.

The *Mercury* was rais'd the quickeſt, and to the greateſt Height, *viz.* twelve Inches in ſeven Minutes by a *Nonpareil* Branch, two Feet high, with twenty Apples, and ſeveral lateral Branches, whoſe tranſverſe Section was five-eighths of an Inch diameter.

It is to be obſerved, that the *Mercury* roſe higheſt in a warm Sun: but the whole Force of imbibing was much greater than the *Mercury* ſhould ſhew; becauſe ſeveral Bubbles of Air came out of the Section of the Branch as the Water went up, which happened moſt in large Branches, which raiſed the *Mercury* but to a ſmall Height; but Branches ſtripp'd of their Leaves, hardly raiſed it all.

He alſo made *Peaſe* imbibe Water under the Preſſure of great Weights, and found that *Peaſe*, when ſwell'd, ſuſtain'd a Weight equal to 1600 Pounds, by their Force of imbibing and growing.

The Force of imbibing, he ſhews to be owing to the attractive Power of the Particles of which Plants are made up; all Kinds of Wood (even Cork) when their Particles are well ſoak'd, being heavier than Water.

N. B. *It is very difficult to ſoak Cork ſo thoroughly as to make it heavier than Water: but it was found to be true, in a Tube where a Cork had been ſeal'd up with Water for four Years, ſo as to be moveable in the ſaid Water.*

III. *Experiments ſhewing the Force of the Riſe of the Sap in the Vine in the bleeding Seaſon.*

The ſaid Author, by a very curious Contrivance of Glaſs Tubes, ſcrew'd and cemented at the Top of one another, and altogether fixed to the Stem of a Vine, obſerv'd, that in the bleeding Seaſon, *viz.* in *March* and *April*, the Sap will riſe into the Tubes, by the Force of the Roots and Stem, to very great Heights, even above the Top of the Vine, as it did up to the Top of a Tube twenty-five Feet high, in two Hours, and run out at the ſaid Tube, though ſeven Feet above the Top of the Vine: but the Force was ſuch, that the *Mercury*, in a Gage (in other Experiments) was puſh'd up 32 ^{1} Inches high, which was equivalent to above 43 Feet of Water.

This is a much greater Force than the Blood is impelled with in Animals: which laſt Force he try'd in the Crural Artery of an Horſe, of a Dog, and of a Deer; for having ty'd them down alive upon their Backs, and fix'd a Glaſs Tube to the Crural Artery opened, he found that in the Horſe the Blood aroſe above eight Feet, in the Dog about ſeven Feet, and in the Deer not quite ſix: And theſe Heights are five, ſeven, and eight times leſs than the Height to which the Sap is raiſed by the Vine.

The Sap riſes all Night, but moſt in the Morning of a warm Day; but in very hot Weather it ceaſes to riſe about ten in the Morning, and then begins to riſe again about three or four in the Afternoon; and, during the great Heat, Bubbles of Air drawn in by the Roots, come up the Tube from the Section of the Stem, the Sap in the Tube ſinking and riſing as the Weather is cloudy or clear, like the Liquor in a Thermometer.

That the Force was not only in the Root, but in the Stem and Branches, appear'd by ſeveral Experiments: One of which was, That a Vine at forty-four Feet four Inches in Diſtance from the Root, puſh'd up Sap with the Force of a Column of thirty Feet eleven Inches of Water.

He alſo ſhews, by a nice Experiment, that the Sap does not come indifferently through all the *Interſtices* of the Wood, but is confined to its proper Veſſels.

The Fibres of Capillary Tubes, out of the bleeding Seaſon, cannot protrude the Sap beyond their Orifices in the Section of the Stem: but aſſiſted by the Perſpiration of the Leaves, the Sap will riſe in that very Branch; which will imbibe Water, if it was cut off, and a Tube applied to it, with Water pour'd in; nay, it would alſo imbibe Water at the ſmall End.

IV. *Experiments ſhewing the ready lateral Motion of the Sap, and conſequently the lateral Communication of the Sap-veſſels; the free Paſſage of it from the ſmall Branches towards the Stem, as well as from the Stem to the Branches; with an Account of ſome Experiments relating to the Circulation and Non-circulation of the Sap.*

The Analogy there is, in many reſpects, between Plants and Animals, has given Occaſion to ſeveral ingenious Perſons to imagine, that the Sap muſt circulate in Plants, as the Blood does in Animals: and being fond of this new Hypotheſis, they have contented themſelves with a few Experiments that ſeem to confirm the Notion; and inſtead of making a ſufficient Number of Experiments and Obſervations, and, comparing them impartially, they have ſupply'd the reſt by Conjectures, and endeavour'd to ſupport their Hypotheſis by other new Suppoſitions.

It is upon this Account they have ſuppoſed particular Veſſels (like Arteries) to carry up the Sap from the Roots to the Extremities or Leaves; and others (like Veins) to bring down the Sap back again to the Roots, imagining the former to come down between the Bark and the Wood: But they did not conſider, that a Plant is very differently nouriſhed from an Animal, and therefore requires a very different Mechaniſm and Structure for its Growth and Support.

The reverend Dr. *Hales* has diſproved the above-mentioned Opinion, by ſeveral Experiments and Obſervations; the chief of which are theſe that follow:

1. Having cut a long Notch in a growing Branch which had Leaves on, he obſerved that the Notch was moiſt at the Bottom towards the Root, and not at the Top.

2. He made the ſame Experiment with another Branch ſet in Water, which imbibed the Liquor at a tranſverſe Section below the Notch, and found the Notch as before.

3. He obſerved, that in the *Spring* the Sap riſes plentifully between the Bark and the Wood, and that chiefly in Vines, and that if a Ringlet of Bark be taken off all round in bleeding Trees, the Bleeding abates moſt in the upper Part of the bare Place.

4. The Sap will move any Way by the Attraction of the ſame Capillary Tubes, and Perſpiration of the Leaves, ſhewn by the Branch of an *Apple-tree*, which drew up Moiſture plentifully at the ſmall End: Alſo by a Tree which throve, tho' its Root was taken out of the Ground, receiving its Nouriſhment only from two other Trees to which it was inarched, and from which it was ſuſpended; and likewiſe by a Bough, with two Branches cut off from a Tree; one Branch of which out of the Water, preſerved its Verdure, and received its Nouriſhment from the other Branch immers'd in Water, whilſt another Bough of the ſame Sort, without that Help, immediately withered.

By another Experiment, he proved chiefly, that there is a lateral Motion of the Sap through Veſſels, whereby the longitudinal Capillary Fibres communicate with one another, *viz.*

He cut four long Notches, one above another (but looking towards the ſeveral Cardinal Points) in a pretty large Branch, whoſe Section, ſome Inches below the ſaid Notches, was immers'd in Water; and found, that by the Attraction of the Fibres, and Perſpiration of the Leaves, the Moiſture roſe plentifully, notwithſtanding that the Continuity of the greateſt part (if not all) the longitudinal Fibres, was deſtroyed by thoſe deep Notches.

The lateral Motion may alſo be deduced from obſerving, that Branches will grow out of Roots, and thrive very well; and that *Elders*, *Sallows*, *Willows*, *Briers*, and *Vines* will grow, by putting either End of a Stem or Branch into the Ground.

He obſerves, that there is indeed an alternate receding and progreſſive Motion of the Sap, which recedes when cold Weather and Rain ſucceeds hot Sun-ſhine, the Trees then imbibing the Rains and Dews which fall upon the Leaves; but, upon the Return of the hot Weather, the Perſpiration is renewed, and the Sap riſes again.

This is ſufficient to account for *Jeſſamine* and the *Paſſion-tree* receiving a gilded Tincture below the gilded inoculated Bud; which has been given as an Inſtance of the Circulation of the Sap; but the *Ilex* grafted on the *Engliſh Oak*, as it keeps (whilſt the *Oak* ſheds) its Leaves in *Winter*, ſhews that the Sap does not circulate.

V. *Experiments whereby to prove, that a great Quantity of Air is inſpired by Plants.*

He makes it appear on this Head, that Plants imbibe a great deal of Air, not only that which comes up with the Sap from the Earth, (the Earth containing Air both in an elaſtick and in a fixed State) but alſo take it in thro' the old Eyes and Bark, eſpecially at Night, when the Plants are in an imbibing State.

The Experiments whereby he proves the ſaid Aſſertion, are chiefly theſe; *viz.*

1. An open, empty Glaſs Tube ſet upright, had an *Apple* Branch cemented in its upper end, the other end ſet in a Veſſel of Water; upon which the Air went up into the Branch out of the Tube, as appeared by the riſing of the Water into the Tube.

2. A Cylinder of Birch about ¾ of an Inch diameter, with the Bark on, cemented in the Middle to the Top of the Air-pump Receiver, ſo as to fill up the Hole at the Top of the ſaid Receiver upon the plate of the Air-pump; then, in working the Pump, Air came out at the Bottom of the ſaid Cylinder (bubbling up through the Water in the Veſſel) whether erect or inverted, cemented cloſe on the Top-ſection or not, and whether the old Eyes in the Sides were cemented up, or left bare, the Bark itſelf being pervious to the Air; but then it took in leſs Air than when the old Eyes and upper Section were open.

3. When Water (poured into a cylindrick Glaſs fixed over the Receiver) covered that Part of the Wood which was out of the Receiver, no Air came thro' the Bottom; and when the Water was taken away from covering the upper Part of the Wood, the Air did not come in through the Bottom, 'till the Top of the Cylinder of Wood had its Bark well dried.

4. He obſerves, with Dr. *Grew*, that the Mouths of the Air-veſſels are viſible in the Leaves of *Pines*, and in the Trunks of ſeveral Plants, with a Microſcope; and in ſome even without a Glaſs.

5. In making Experimens upon young Shoots, as their Veſſels are full of Sap, he did not find that the Air paſſed into or through them, (the Air in them, probably, being become fixed); but it came in freely at the Roots, applyed to the Air-pump in the ſame Manner as in the Piece of Birch.

VI. *A Specimen of an Attempt to analize the* Air, *by the Reverend Dr.* Stephen Hales, *by a great Variety of Chymico-ſtatical Experiments, which ſhew in how great a Proportion* Air *is wrought into the Compoſition of* animal, vegetable, *and* mineral *Subſtances; and withal, how readily it reſumes its former elaſtick State, when, in the Diſſolution of thoſe Subſtances it is diſengaged from them.*

The excellent Mr. *Boyle*, among his many Diſcoveries, found that Air was producible from *Vegetables*, by putting *Grapes*, *Plums*, *Gooſeberries*, *Cherries*, *Peaſe*, and ſeveral other Sorts of Grain, into exhauſted and unexhauſted Receivers, where they continued ſeveral Days, emitting great Quantities of Air. But Mr. *Boyle* did not ſhew the Way to know exactly, how much Air a certain Quantity of *vegetable* Subſtance will produce.

The incomparable Sir *Iſaac Newton*, (*Query* 31 of his *Opticks*) obſerves, “That true permanent Air ariſes by Fermentation or Heat, from thoſe Bodies which the Chymiſts call *fixed*, whoſe Particles adhere by a ſtrong Attraction, and are not therefore ſeparated and rarefied without Fermentation.

“Thoſe Particles receding from one another with the greateſt repulſive Force, and being moſt difficultly brought together, which, upon Contact, were moſt ſtrongly united. And (*Query* 80.) denſe Bodies, by Fermentation, rarefy into ſeveral Sorts of Air; and this Air, by Fermentation, and ſometimes without it, returns into denſe Bodies.”

The Reverend Dr. *Hales*, from the Conſideration of this and ſome of his own Experiments, concluded, that there muſt be Air not only in an elaſtick, but in a fixed State, in *Vegetables* and other Subſtances, and therefore that the Air-pump would not be ſufficient to get all the Air out of Bodies: For which Reaſon, he contrived Ways of getting the Air out of ſeveral Subſtances, by Fire (diſtilling them) and Fermentation, and made uſe of a very ingenious, but ſimple and certain Method, of meaſuring the Quantity of Air generated from (or abſorbed by) the ſeveral Kinds of Bodies, upon which he made Experiments.

The Deſcription of his Hydroſtatical Gages, and the Manner of his making his Experiments, not being to be given better and ſhorter than in his own Words, is as follows:

“In order to make an Eſtimate of the Quantity of Air, which aroſe from any Body by Diſtillation or Fuſion, I firſt put the Matter, which I intended to diſtil, into a ſmall Retort *r* (*Fig.* 4.) and then at *a* cemented faſt to it the Glaſs Veſſel *a b*, which was very capacious at *b*, with a Hole in the Bottom.

“I bound a Bladder over the Cement, which was made of Tobacco-pipe Clay and Bean Flower, well mixed with ſome Hair, tying, over all, four ſmall Sticks, which ſerv'd as Splinters to ſtrengthen the Joint: Sometimes inſtead of the Glaſs Veſſel *a b*, I made uſe of a large Bolt-head, which had a round Hole cut, with a red-hot Iron Ring at the Bottom of it, thro' which Hole was put one Leg of an inverted Syphon, which reached up as far as *z*. Matters being thus prepared, holding the Retort uppermoſt, I immerſed the Bolt-head into a large Veſſel of Water, to *a*, the Top of the Bolt-head: As the Water ruſhed in at the Bottom of the Bolt-head, the Air was driven out through the Syphon: when the Bolt-head was full of Water to *z*, then I cloſed the outward Orifice of the Syphon with the End of my Finger, and, at the ſame Time drew the other Leg of it out of the Bolt-head, by which Means the Water continued up to *z*, and could not ſubſide. Then I placed under the Bolt-head, while it was in the Water, the Veſſel *x x*: Which done, I lifted the Veſſel *x x*, with the Bolt-head in it, out of the Water, and tied a waxed Thread at *z*, to mark the Height of the Water, and then approach'd the Retort gradually to the Fire, taking care to ſkreen the whole Bolt-head from the Heat of the Fire.

“The Deſcent of the Water on the Bolt-head, ſhewed the Sums of the Expanſion of the Air in the Retort, and of the Matter which was diſtilling: The Expanſion of the Air alone, when the lower Part of the Retort was beginning to be red hot, was, at a Medium, nearly equal to the Capacity of the Retort, ſo that it then took up a double Space, and in a white and almoſt melting Heat, the Air took up a triple Space, or ſomething more; for which Reaſon, the leaſt Retorts are beſt for theſe Experiments. The Expanſion of the diſtilling Bodies was ſometimes very little, and ſometimes many times greater than that of the Air in the Retort, according to their different Natures.

“When the Matter was ſufficiently diſtilled, the Retort, *&c.* was gradually removed from the Fire, and, when cool enough, was carried into another Room, where there was no Fire. When all was thoroughly cold, either the following Day, or ſometimes three or four Days after, I marked the Surface of the Water *y*, where it then ſtood. If the Surface of the Water was below *z*, then the empty Space between *y* and *z*, ſhewed how much Air was generated, or raiſed from a fixed to an elaſtick State, by the Action of the Fire in Diſtillation: But if *y*, the Surface of the Water, was above *z*, the Space between *z* and *y*, which was filled with Water, ſhew'd the Quantity of Air which had been abſorbed in the Operation, *i. e.* was changed from a repelling elaſtick, to a fixed State, by the ſtrong Attraction of other Particles, which I therefore call *abſorbing*.

“When I would meaſure the Quantity of this new-generated Air, I ſeparated the Bolt-head from the Retort; and putting a Cork into the ſmall End of the Bolt-head, I inverted it, and poured in Water to *z*: Then, from another Veſſel (in which I had a known Quantity of Water by Weight) I pour'd in Water to *y*; ſo the Quantity of Water which was wanting, upon weighing this Veſſel again, was equal to the Bulk of the new-generated Air. I choſe to meaſure the Quantities of Air, and the Matter from whence it aroſe, by one common Meaſure of cubick Inches, eſtimated from the ſpecifick Gravities of the ſeveral Subſtances, that thereby the Proportion of one to the other might be the more readily ſeen.

“I made Uſe of the following Means to meaſure the great Quantities of Air, which were either raiſed and generated, or abſorbed by the Fermentation ariſing from the Mixture of Variety of ſolid and fluid Subſtances, whereby I could eaſily eſtimate the ſurpriſing Effects of Fermentation on the Air; *viz.* I put into the Bolt-head *b* (*Fig.* 5.) the Ingredients, and then run the long Neck of the Bolt-head into the deep cylindrical Glaſs *a y*: and inclined the inverted Glaſs *a y* and Bolt-head almoſt horizontally in a large Veſſel of Water, that the Water might run into the Glaſs *a y*: When it was almoſt up to *a*, the Top of the Bolt-head, I then immerſed the Bottom of the Bolt-head, and lower Part *y* of the cylindrical Glaſs under Water, raiſing at the ſame Time the End *a* uppermoſt. Then, before I took them out of the Water, I ſet the Bolt-head, and lower Part of the cylindrical Glaſs *a y*, into the Earthen Veſſel *x x*, full of Water; and having liſted all out of the great Veſſel of Water, I marked the Surface *z* of the Water in the Glaſs *a y*.

“If the Ingredients in the Bolt-head, upon fermenting, generated Air, then the Water would fall from *z* to *y*, and the empty Space *z y* was equal to the Bulk of the Quantity of Air generated: But if the Ingredients, upon Fermentation, did abſorb or fix the active Particles of Air, then the Surface of the Water would aſcend from *z* to *n*: and the Space *z n*, which was filled with Water, was equal to the Bulk of Air which was abſorbed by the Ingredients, or by the Fume ariſing from them. When the Quantities of Æther, either generated or abſorbed, were very great, then I made uſe of large chymical Receivers, inſtead of the Glaſs *a y*: But if theſe Quantities were very ſmall, then, inſtead of the Bolt-head, and deep cylindrical Glaſs *a y*, I uſed a ſmall cylindrical Glaſs, or a common Beer Glaſs inverted, and placed under it a Phial or Jelly Glaſs, taking Care that the Water did not come at the Ingredients in them; which was eaſily prevented by drawing the Water up under the inverted Glaſs to what Height I pleaſed, by Means of a Syphon.

“I meaſured the Bulk of the Spaces *z y*, or *z n*, by pouring in a known Quantity of Water, as in the foregoing Experiment, and making an Allowance for the Bulk of the Neck of the Bolt-head within the Space *z y*.”

By theſe Experiments that the ingenious Author made upon ſeveral Subſtances, it appeared, that ſome by Diſtillation, and ſome by Fermentation, would generate Air, others would abſorb it; and ſome again would abſorb Air at one time, and generate it at another; and oftentimes, that more Air was generated by Fermentation than by Fire. I have made a TABLE, the better to demonſtrate what the Effects were, which I ſhall inſert in the ſucceeding Page, that the Reader may have it before him at one View.

Dr. *Deſaguliers* adds, That as ſeveral Perſons may be willing to try a great many of Dr. *Hales*'s Experiments, he thought it proper to mention here, that the Experiments on Subſtances that generate Air, made with a Glaſs Retort, are difficult and tedious; but a Muſket Barrel, with the Touch-hole welded up, and then turned into a Semicircle, makes a very commodious Iron Retort, whoſe cloſe End being put into the Fire of a Smith's Forge, will be ſo heated, with a little blowing, as to get the Air out of any Subſtance in a very little time; having firſt twiſted on, upon the open End of the Barrel, one end of a leaden Syphon, (which will be very tight, with only a little Sheep's Leather between) whilſt the other End of the Syphon goes up a little Way into an inverted Chymical Receiver, filled with Water.

As the Air gets out of the Subſtances diſtill'd, it comes bubbling up through the Water, which it depreſſes by its Bulk.

N. B. *Antimony and Sulphur muſt not be made Uſe of in this Barrel, becauſe they will demetalize the Iron; nor Lead, becauſe it will ſweat out through the Iron.*

The ſaid **TABLE** *is as follows.*

Bodies which generated Air.	Bodies which abſorb'd Air.	Bodies which ſometimes generated and ſometimes abſorb'd Air.
Hog's Blood.	Salt of *Sal Armoniac.*	Gun-powder.
Tallow.	*Phoſphorus.*	Apples maſh'd.
Fallow Deer's Horn.	Acid Spirits.	Filings of Steel and *Aqua-fortis.*
Oyſter Shells.	Lime.	Scurvy-graſs Leaves.
A Piece of Oak.	*Pulvis Aureus.*	*Sal Armoniac* mix'd with Oil of Vitriol.
Indian Wheat.	Brimſtone Matches, burning.	Spirit of Turpentine mix'd with Oil of Vitriol.
Peaſe.	A burning Candle.	Vinegar poured on Oyſter-ſhells.
Muſtard-ſeed.	Living Animals, *e. g.* a Cat.	Lemon Juice.
Amber.	Human Lungs, in breathing.	Ale.
Tobacco.	Filings of Iron, with Spirit of Nitre.	*Malaga* Raiſins.
Oil of Anis-ſeed.	Filings of Iron with Spirit of Hartſhorn.	N. B. *Moſt of the abovementioned Subſtances were in an abſorbing State in cold Weather.*
Oil of Olives.	Filings of Iron with Spirit of *Sal Armoniac.*	
Honey.	N. B. *When a lighted Candle is put into that Air which had been fouled by a Candle burning, and going out in it, tho' it burn'd but a fifth Part of the Time that it had done before, it abſorb'd as much Air: Which ſhews, that Air loaded with Vapours, is more apt to loſe its Elaſticity than clear Air.*	
Newcaſtle Coal.		
Wax.		
Earth.		
Salt.		
Antimony.		
Pyrites from *Walton* Heath.		
Sea-ſalt.		
Nitre.		
Calculus Humanus.		
Vitriol.		
Bones.		
Red Lead.		
Chalk.		
Wheat and Barley.		
Filings of Mercury, with Oil of Vitriol and Water.		

It appeared, by ſeveral Experiments, that the Air which was got out of the Subſtances above-mentioned, was true permanent Air; for it had, and after many Days, continued to have, both the Weight and Elaſticity of common Air, of which a cubick Inch weighs $\frac{2}{7}$ of a Grain; and after it had been compreſſed, it would expand again to its former Dimenſions.

Moſt of that Air has a poiſonous Quality; a Sparrow dying aſſoon as it was put into the Air made of Oak, eleven Days after the ſaid Air had been made. So Mr. *Boyle* found the Air drawn by the Air-pump, from Bread, and ſome other Subſtances, to have a poiſonous Quality.

Air generated by *Indian* Wheat, and by Peaſe, and moſt other Subſtances, flaſh'd when the Candle was apply'd to it.

The moſt ſolid Parts of Animals or *Vegetables*, commonly generated the moſt Air; Oak $\frac{1}{3}$ of its Weight, and 216 times its Bulk; and the Peaſe more than $\frac{1}{3}$ of their Weight, and 396 times their Bulk. But of all Subſtances, a Stone taken from the Bladder of a Man, generated moſt Air; namely, a Quantity of Air 645 times the Bulk, and above half the Weight of the Stone.

Our indefatigable Philoſopher, to judge the better of the Reſult of theſe Experiments, contrived a Gage with a Tube ſealed at one End, and having the other (open End) immerſed in Mercury covered with Honey, which, in the Riſe of the Mercury in the Glaſs, would leave a Mark, to ſhew how far the Mercury had riſen (See the Deſcription and Draught of it in his Book, *Page* 205.) by the Force of compreſſed Air, or of the Air that is generated from ſeveral Subſtances, whilſt confin'd; and propoſes this Gage for meaſuring the Depth of the Sea, which muſt anſwer better than any Contrivance hitherto try'd.

From obſerving that it would require a Force 48 times greater than that of the Atmoſphere, to compreſs the Air that comes out of an Apple into the ſame Space again (which, in an Apple of 16 ſquare Inches Surface, is equal to 11.776 Pounds) he concludes, that the greateſt Part of the ſaid Air muſt be in a fix'd State, and preſerv'd in that State by the Attraction of the Particles of Air and Apple in their Coheſion; otherwiſe Fruits, and all other Subſtances that contain much Air, would be torn to Pieces by its repellent Force, with a greater Exploſion than that of Gunpowder; and therefore that the Air, when extricated, does not conſiſt of fibroſe Particles wound up like little Springs; but of Particles that do not touch one another, but have a repellent Force, which is reciprocally proportionable to the Diſtances of the Particles, agreeable to what Sir *Iſaac Newton* ſays in his *Opticks*, *Query* 31.

The Particles, when they are ſhaken off from Bodies by Heat or Fermentation, ſo ſoon as they are beyond the Reach of the Attraction of the Body, receding from it, as alſo from one another, with greater Strength, and keeping at Diſtance, ſo as ſometimes to take above a Million of times more Space than they did before in the Form of a denſe Body; which vaſt Contraction and Expanſion ſeem unintelligible, by feigning the Particles of Air to be ſpongy and rameous, or rolled up like Hoops, or by any other Means than by a repulſive Power.

Our Author made ſome Experiments upon a Calf's Lungs, which help to confirm Dr. *James Keil*'s Aſſertion, *viz.* That the inner Surface of a Man's Lungs is equal to about 150 ſquare Feet, which is about ten times more than the Surface of the whole Body. Then, by ſeveral Experiments and curious Obſervations, found, that, of the Air which is inſpired by the Lungs in an Hour, *viz.* 48000 cubick Inches, about 353 Inches, or 100 Grains in Weight, are deſtroyed in that Time.

He ſhews, that the Reaſon that ſulphureous Air is pernicious, is, becauſe it loſes its Elaſticity ſo faſt, that the Lungs will ſubſide in it, and the Blood conſequently ſtagnate. He concludes, that when the Particles of ſuch Air are united into pretty large *Moleculæ*, in a fixed State, they are too big to enter into the Veſſels of the Lungs.

He ſhews the Miſtake of thoſe that ſuppoſed the Air did not loſe its Elaſticity, but its *vivifying Spirit*, by Vapours, by an Experiment made upon a Dog, into whoſe Lungs he drove by Force that effete Air which the Dog, by his own Action, could not draw into his Lungs: And whereas the Dog then was juſt expiring by the ſubſiding of his Lungs, he kept him alive by the forcible Impulſion of that very Air, as long as he could blow up the Dog's Lungs with it.

He makes it appear, that a cloſe warm Air, without a Communication with the outward Air, to carry off the Vapours, muſt be unfit for breathing long, and therefore condemns the Uſe of *German* Stoves.

That when Animals are killed by Lightning, without any viſible Wound, it is becauſe the ſulphureous Steams have deſtroy'd the Elaſticity of the Air about them: As appears by diſſecting ſuch Animals, whoſe Lungs are always found compreſſed together, without any Air in them. The ſame alſo appears in Men that have been killed by Damps in Mines.

Then he gives the Deſcription of an Inſtrument, whereby four or five Quarts of the ſame Air (which, in the common Way, can ſerve one Man to breathe very little above a Minute) may ſerve 8 ½ Minutes to breathe, by drawing in the Air, which has been in the Lungs, thro' four Diaphragms of Flannel, dipp'd in a *Lixivium* of highly-calcin'd Salt of Tartar, and afterwards dry'd, and blowing back the ſame Air in ſuch Manner, that it may, at every Inſpiration, return through the ſaid Diaphragms; which is done by Means of two Valves. The Moiſture and ſulphureous Vapours of the Air are, by this Contrivance, ſtopped in paſſing thro' the Flannel, and thereby the Air continues wholeſome much longer than it would in the common Way of breathing: This he propoſes as uſeful to thoſe who have Occaſion to go into Places where the Air is infectious: But where the noxious Vapours are not very denſe, Mufflers only of Cloth or Flannel, impregnated with Salt of Tartar, may ſerve; as he found by ſeveral Experiments.

He ſhews afterwards the Reaſons why *Pulvis Fulminans* has more Force than Gun-powder, and confirms Sir *Iſaac Newton*'s Account of Fire and Flame, (*Query* 9 and 10 of his *Opticks*) but ſhews Dr. *Newentyt*'s, Dr. *Boerhaave*'s, and Monſ. *L'Emery*'s Account of Fire, to be erroneous; but that it was not the Matter of Fire, but elaſtick Air, which that laſt named Gentleman had ſo often obſerv'd to be loſt in the Analyſis of Bodies.

That the artificial Sulphur made by Monſ. *Geoffrey* was inflammable, chiefly on Account of the Air ſupply'd to it by the Oil of Tartar.

That if Fire was a peculiar Matter, it ought to dilate, not to condenſe the Air; as it appears to do by Experiment. That Fire conſiſts in the Action and Re-action between repellent Air and attracting Sulphur; and that Heat is communicated by the ætherial *Medium* mentioned by Sir *Iſaac Newton* in the laſt Edition of his *Opticks*.

That Fermentation will diſſolve Bodies without the Help of included Fire, acting according to its ſeveral Degrees; a lower Degree of it (ſuch as attends every inteſtine Motion) not being inconſiſtent with the healthy State of Plants and Animals.

That acid Particles, by their great attractive Force, diſſolve Bodies ruſhing towards their Particles, ſo as to excite Heat, and ſhake aſunder ſome of them, and turn them into Air.

That Air in a fixed State, is the Bond of Union, which makes Salts durable, and which keeps together the ſolid Parts of *Vegetables*, of Animals, and even Globules of the Blood.

That the Air, in a moiſt State, is ſooner abſorbed by ſulphureous Steam, than in a dry State: For a Candle, which in a dry Receiver burn'd 70 Seconds, burn'd but 64 in the ſame Receiver, when it was filled with the Fumes of hot Water; but yet abſorbed ⅕ Part more of Air. But the abſorbing Subſtances loſe the Force of acting, when united in a large Body; Brimſtone in a Roll abſorbing no Air, tho' it does it ſo plentifully when reduced into minute Particles.

That ſome of the Food of Animals generates, and ſome abſorbs Air; and the Digeſtion in a healthy State is beſt performed, when there is but a little more Air generated than is abſorbed.

From the Conſideration of the ſeveral Experiments made by Dr. *Hales*, in his *Analyſis of Air*, he makes it appear, that our Atmoſphere is a Chaos of different Particles; ſome of which are elaſtick, and ſome unelaſtick; and that the elaſtick Parts are endu'd with very different Degrees of Elaſticity, according as they are bigger or leſs, more or leſs ſolid, more or leſs watry; and therefore, that ſome are eaſily, and ſome more difficultly reducible to a fixed State.

That it is chiefly by the Change of Air, from a fixed to an elaſtick, and from an elaſtick to a fixed State, that this beautiful *Frame of Things* is maintained in a continual Round of the Production and Diſſolution of animal and *vegetable* Bodies; and therefore, that there is as much Reaſon to adopt Air among the chymical Principles, as acid Sulphur, tho' it has hitherto been rejected by the Chymiſts.

VII. *The Author, in this Chapter, applies his ſeveral Experiments and Concluſions drawn from them, to* Vegetation; *and ſhews chiefly the following Things,* viz. *That* Vegetables *are compoſed of Sulphur, Volatile Salt, Water, Earth, and Air.*

That, in Nutrition, the Sum of the attracting Powers of thoſe Subſtances is ſuperior to the Sum of the repellent; and as the watry Vehicle flies off, the Parts harden.

That Oil which is made up of Sulphur and Air, abounds in Seeds, for their better Preſervation.

That in cold Countries, where thoſe Principles are not ſo firmly united, ſmall Wines, ſuch as *Rheniſh*, muſt eaſily yield their Tartar (which, by Experiments, appear to contain Oil and Air); but generous Wines, ſuch as *Madera*, having thoſe Principles more firmly united, will bear a great Degree of Heat before they part with them.

That the Uſe of the Leaves of Trees, is to bring up Nouriſhment within the Reach of the Attraction of the Fruit; to carry off the redundant watry Fluid; to imbibe Rains and Dews which are impregnated with Salt and Sulphur; as likewiſe to imbibe Air, and to be of the ſame Uſe to Plants, as Lungs are to Animals.

Theſe Plants which are over-ſhaded, or too replete with Moiſture, cannot ſo well imbibe Air: Therefore, tho' they will ſhoot out faſt, and have much Wood, they will be more barren in Proportion.

He alſo, by a very ingenious Contrivance, found the Degrees of growing in every Part of young Shoots, which in their growing, extend themſelves moſt in the Middle, and leaſt towards the Top and the Bottom; the ductile, Matter for their Growth being drawn out in Length, like melted Glaſs Tubes, which retain a Hollowneſs, tho' drawn out to the ſmalleſt Thread.

N. B. *In ſome Animals there is ſuch a tough, ductile Subſtance, which hardens when expoſed to the Air in ſmall Threads; as in Spiders and Silk-worms.*

He ſhews, that the Pith ſerves to ſupply the dilating Moiſture for the tender Shoots; but that their Figure may be oblong, and not round, as the Fruit commonly is: There are tough Diaphragms in the Pith, at ſmall Diſtances from each other, which check the lateral Expanſion; as alſo horizontal Fibres, which ſerve for the ſame Purpoſe. And of the ſame Sort is the Pith in the large-growing Feathers of Birds; which is made up of Veſicles that can be diſtended lengthwiſe, but have Splinters at the Ends, to prevent too great a lateral Dilatation.

That the Bones of Animals do not grow at the Joints, (which would prevent their free Motions) but at the *Symphyſis*, *viz.* where the Heads join to the Shanks of the Bones.

That there are particular Veſſels in *Vegetables*, as well as Animals, appropriated for conveying different Sorts of Nutriment; and that where a viſcid Subſtance is to be furniſhed, the Veſſels are lengthened, and often fetch a Compaſs to retard the Velocity of the Fluid, which is to be inſpiſſated into a hard Subſtance. Thus, in hard Stone-fruits, the umbilical Veſſel goes round the Concave of the Stone, and then enters the Kernel near its Cone.

Then at laſt he traces the *Vegetation* of a Plant, from a Seed to a Tree again producing Seed; which Account, as it cannot well be contracted, without leaving out ſomething material, and as it ſerves to ſhew ſome of the excellent Uſes of his happy Diſcoveries, it ſhall be given in his own Words:

Supported by the Evidence of many of the foregoing Experiments, I will now trace the *Vegetation* of a Tree, from its firſt ſeminal Plant in the Seed, to its full Maturity and Production of other Seeds, without entering into a particular Deſcription of the Structure of the Parts of *Vegetables*, which has already been done by Dr. *Grew* and *Malpighi*.

We ſee, by Experiment 56, 57, 58, on diſtilled Wheat, Peaſe, and Muſtard-ſeed, what a wonderful Proviſion Nature has made, that the Seeds of Plants ſhould be well ſtored with very active Principles; which Principles are there compacted together by him, who curiouſly adapts all Things to the Purpoſes for which they are intended, with ſuch a juſt Degree of Coheſion, as retains them in that State till the proper Seaſon of Germination: For if they were of a more lax Conſtitution, they would too ſoon diſſolve, like the other tender annual Parts of Plants; and if they were more firmly connected, as in the Heart of an Oak, they muſt neceſſarily have been many Years in germinating, tho' ſupply'd with Moiſture and Warmth.

When a Seed is ſown in the Ground, in a few Days it imbibes ſo much Moiſture, as to ſwell with very great Forces as we ſee in the Experiment on Peaſe in an Iron Pot. This forcible ſwelling of the Lobes of the Seed *a r*, *a r* (*Fig.* 1.) does probably protrude Moiſture and Nouriſhment from the Capillary Veſſels *r r*, which are called the Seed-roots, into the Radicle *c z d*; which Radicle, when it is thus ſhot ſome Length into the Ground, does then imbibe Nouriſhment from thence; and after it has acquired ſufficient Strength, as this tender ductile Root is extending from *z* to *c*, it muſt neceſſarily carry the expanding Seed-lobes upwards, at the ſame Time that the dilating from *z* to *d* makes it ſhoot downwards; and when the Root is thus far grown, it ſupplies the Plume *b* with Nouriſhment; which thereby ſwelling and extending, opens the Lobes *a r*, *a r*, which are at the ſame Time raiſed above Ground, with the Plume, where they, by expanding and growing thinner, turn to green Leaves (except the Seeds of the Pulſe Kind); which Leaves are of ſuch Importance to the yet tender Plume, that it periſhes, or will not thrive, if they are pulled off: Which makes it probable, that they do the ſame Office to the Plume, that the Leaves adjoining to Apples, Quinces, and other Fruit, do to them, *viz.* they draw Sap within the Reach of their Attraction (ſee *Exper.* 8, 30.) But when the Plume is ſo far advanced in Growth, as to have Branches and expanded Leaves to draw up Nouriſhment, then theſe ſupplemental, ſeminal Leaves *a r*, *a r*, being of no farther Uſe, do periſh; not only becauſe the now grown and more expanded Leaves of the young Plant or Tree do ſo overſhade the ſupplemental Leaves, that the former more plentiful Perſpiration is much abated; and thereby alſo their Power of attracting Sap fails, but alſo becauſe the Sap is drawn from them by the Leaves; and they being thus deprived of Nouriſhment, do periſh.

As the Tree advances in Stature, the firſt, ſecond, third, and fourth Order of the lateral Branches ſhoot out, each lower Order being longer than thoſe immediately above them; not only on the account of Primogeniture, but alſo becauſe being inſerted in larger Parts of the Trunk, and nearer the Root, they have the Advantage of being ſerved with greater Plenty of Sap, whence ariſes the beautiful parabolical Figure of the Tree.

But when Trees ſtand thick together in Woods or Groves, then their natural Shape is altered; becauſe the lower natural Branches being much ſhaded, they can perſpire little; and therefore drawing little Nouriſhment, they periſh: but the top Branches being expoſed to a free, drying Air, they perſpire plentifully; and thereby drawing the Sap to the Top, they advance much in Height. But, *vice verſa*, if when ſuch Grove of tall Trees is cut down, there be left here and there a ſingle Tree, that Tree will then ſhoot out lateral Branches, the Leaves of which Branches now perſpiring freely, will attract Plenty of Sap; on which account, the Top being deprived of its Nouriſhment, it uſually dies.

And as Trees in a Grove or Wood grow only in Length, becauſe all the Nouriſhment is by the Leaves drawn to the Top, moſt of the ſmall, ſhaded, lateral Branches, in the mean time, periſhing for want of Perſpiration and Nutrition; ſo the Caſe is the very ſame in the Branches of a Tree, which uſually making an Angle of about 45 Degrees with the Stem of the Tree, do thereby beautifully fill up, at equal and proper Diſtances, the Space between the lower Branches and the Top of the Tree, forming thereby, as it were, a parabolical Grove or Thicket; which ſhading the Arms, the ſmall lateral Shoots of thoſe Arms uſually periſh, for want of due Perſpiration; and therefore the Arms continue naked, like the Bodies of Trees in a Grove, all the Nouriſhment being drawn up to the Tops of the ſeveral Branches by the Leaves, which are there expoſed to the warm Sun, and free drying Air, whereby the Branches of Trees expand much.

And where the lateral Branches are very vigorous, ſo as to make ſtrong Shoots, and attract the Nouriſhment plentifully, there the Tree uſually abates of its Height: But where the Tree prevails in Height, as in Groves, there commonly its lateral Branches are ſmalleſt: So that we may look upon a Tree as a complicated Engine, which has as many different Powers as it has Arms and Branches, each drawing from their common Fountain of Life, the Root; and the whole of each yearly Growth of the Tree will be proportionable to their attracting Powers, and the Quantity of Nouriſhment the Root affords. But this attracting Power or Nouriſhment will be more or leſs, according to the different Ages of the Tree, and the more or leſs kindly Seaſons of the Year.

And the proportional Growth of their lateral and top Branches, in relation to each other, will much depend on the Difference of their ſeveral attracting Powers.

If the Perſpiration and Attraction of the lateral Branches is little or nothing, as in Woods or Groves, then the top Branches will mightily prevail: but when, in a free open Air, the Perſpiration and Attraction of the lateral Branches come nearer to an Equality with that of the Top, then is the aſpiring of the top Branches greatly checked. And the Caſe is the ſame in moſt other *Vegetables*, which, when they ſtand thick together, grow much in Length with very weak lateral Shoots.

And as the Leaves are thus ſerviceable in promoting the Growth of a Tree, we may obſerve, that Nature has placed the Petals or Leaf-ſtalks where moſt Nouriſhment is wanting to produce Leaves, Shoots, and Fruit, and ſome ſuch thin, leafy Expanſions, which may be called primary Leaves, that ſerve to protect and draw Nouriſhment to the young Shoots and Leaf-buds, before the Leaf itſelf is expanded.

And herein we ſee the admirable Contrivance of the Author of Nature, in adapting her different ways of conveying Nouriſhment to the different Circumſtances of her Productions. For in this Embryo-ſtate of the Buds, a ſuitable Proviſion is made to bring Nouriſhment to them, in a Quantity that is ſufficient for their then ſmall Demands. But when they are in ſome Degree increaſed and formed, a much greater Quantity of Nouriſhment is neceſſary, in proportion to their greater Increaſe: Nature, that ſhe may no longer ſupply with a ſcanty Hand, immediately changes her Method, in order to convey Nouriſhment with a more liberal Hand to her Productions; which Supply daily increaſes by the greater Expanſion of the Leaves, and conſequently the more plentiful Attraction and Supply of Sap, as the greater Growth and Demand for it increaſes.

We find a much more elaborate and beautiful *Apparatus* for the like Purpoſe, in the curious Expanſions of Bloſſoms and Flowers, which ſeem to be appointed by Nature, not only to protect, but alſo to draw and convey a Nouriſhment to the Embryo, Fruit, and Seeds. But as ſoon as the Calyx is formed into a ſmall Fruit, now impregnated, with its minute ſeminal Tree, furniſhed with its *Secundine*, *Chorion*, and *Amnion*, (which new-ſet Fruit may, in that State, be looked upon as a compleat Egg of the Tree, containing its young unhatched Tree, yet in *Embryo*) then the Bloſſom falls off, leaving the new-formed Egg, or firſt-ſet Fruit, in this infant State, to imbibe Nouriſhment ſufficient for itſelf, and the *Fœtus* with which it is impregnated; which Nouriſhment is brought within the Reach and Power of its Suction by the adjoining Leaves.

If I may be allowed to indulge Conjecture, (in a Caſe, in which the moſt diligent Enquirers are, as yet, after all their laudable Reſearches, advanced but little farther than mere Conjecture) I would propoſe it to their Conſideration, whether, from the manifeſt Proof we have, that Sulphur ſtrongly attracts Air, a Hint may not be taken, to conſider, whether this may not be the primary Uſe of the *Farina Fœcundans*, to attract, and unite with itſelf, elaſtick, or other refined active Particles?

That this *Farina* abounds with Sulphur, and that, a very refined Sort, is probable, from the ſubtile Oil, which Chymiſts obtain from the Chives of Saffron. And if this be the Uſe of it, was it poſſible that it could be more aptly placed for the Purpoſe than on very moveable *Apices*, fixed on the ſlender Points of the *Stamina*, whereby it might eaſily, with the leaſt Breath of Wind, be diſperſed in the Air, thereby ſurrounding the Plant, as it were, with an Atmoſphere of ſublimed ſulphureous Pounce? for many Trees and Plants abound with it: Which uniting with the Air Particles, they, or a very ſublimed Spirit from them, may be, perhaps, inſpired at ſeveral Parts of the Plant, and eſpecially at the *Piſtillum*, and be thence conveyed to the *Capſula Seminalis*, eſpecially towards the Evening, and in the Night, when the beautiful *Petala* of the Flowers are cloſed up, and they, with all the other Parts of the *Vegetable*, are in a ſtrongly imbibing State.

And if to theſe united ſulphureous and aërial Particles, we ſuppoſe ſome Particles of Light to be joined, (for Sir *Iſaac Newton* has found, that Sulphur attracts Light ſtrongly); then the Reſult of theſe three, by far the moſt active Principles in Nature, will be a *Punctum Saliens* to invigorate the ſeminal Plant: And thus we are at laſt conducted, by the regular *Analyſis of Vegetable Nature*, to the firſt enlivening Principle of the minuteſt Origin.

VEGETATION, is the Act whereby Plants receive Nouriſhment, and grow: The Word is derived from the Latin, *vegeto* to *quicken*, to *refreſh*, to make *lively and ſtrong*, and ſignifies the Way of Growth, or Increaſe of Bulk, Parts, and Dimenſions proper to all Trees, Shrubs, Herbs, Plants, Minerals, *&c.*

To underſtand the Proceſs of Nature in the Buſineſs of *Vegetation*, it is to be conſidered, that there is in Vegetables a Principle of Life; and this is differently ſeated.

A certain Author ſays; Generally ſpeaking, this Principle of Life is ſeated exactly between the Trunk and the Root; and this is obſerved to be the Place of its Poſition, in all or moſt of the Seminiferous Tribe: For if the *Oak* be included in that general Title, and the Body of it be cut down near the Place, it is Odds if ever it ſhoots again, or at leaſt to any Purpoſe.

In ſome Plants it is only the Roots; ſo that let them be cut into as many Pieces as reaſonably may be, if theſe Pieces are but planted in the Ground, they quickly grow; as is ſeen in the *Elm*, *&c.* and in abundance of edible Roots and Flowers.

In ſome, it is ſeated both in the Roots, and all over the Trunk and Branches; as, in the Vimineous or *Willow* Kinds: which, if they be cut into a thouſand Pieces, it is ſcarce poſſible to deſtroy or kill them, unleſs they are ſplit in the Middle: and ſcarcely then; for if you plant them in the Earth but the Length of three or four Inches, either the Roots or Branches will certainly grow again.

In ſome it is ſeated intirely in the Body, Branches, or Leaves; and of this Kind are many of the exotick Plants, which being of a ſucculent Nature, if the Trunk or Branches, or the Leaves and Stems, be put into the Ground, they will ſtrike Root immediately, and grow; as in the *Cereus's*, *Ficoides's*, *Sedums*, &c. Nay, ſo ſtrong is the Principle of Life in this Kind of Plants, that if they be hung up a conſiderable Time without any Earth, Water, *&c.* they will maintain their natural Verdure, and alſo this Principle of Life admirably, by their ſucculent Quality.

The Uſe of this Principle of Life, is accounted to be for the Concoction of the indigeſted Salts, which aſcend thro' the Roots, where they are ſuppoſed to aſſimilate the Nature of the Tree they are helping to form; though perhaps the Root may likewiſe aſſiſt in the Work.

Theſe Things being preſuppoſed, in the *Spring* of the Year, as ſoon as the Sun begins to warm the Earth, and the Rains do melt the latent Salts, the whole Work of *Vegetation* is ſet on foot; then the emulgent Fibres ſeek for Food, which has been prepared as aforeſaid.

It is very rational to ſuppoſe, that a great Part of the Roots are formed under Ground during the *Winter* Seaſon; becauſe in all Lands there is always an innate Heat, which ſeems to be a natural vital Quality, or nitrous Fermentation.

The Roots, by ſeeking out and aſſuming thoſe nitrous Salts, are immediately (by the Courſe of Nature, and the attractive Virtue of the Sun) drawn upwards to the vital Principle; and after Concoction, do aſcend ſtill higher into the Stem, and break out firſt in the Buds, the ſhelly and tendereſt Part of the whole Machine, and afterwards diffuſe themſelves into the Leaves, Flowers, Fruits, *&c.* which lie invelop'd therein, according to their natural Frames, *&c.*

There are ſome which ſay there are three Kinds of Sap different from each other in Rarefaction and Purity, which aſcend from the Root; from which are compoſed the Branches, Leaves, Flowers, and, conſequent to them, the Fruit; and that they paſs in different Channels.

But others, again, ſuppoſe it is rather all of one Kind; and that it aſſumes its proper Office by an hidden Inſtinct in Nature, juſt as it enters the Boughs or Branches whereon the Fruit is to be; they being, by ſome caſual Sprouts of the laſt Year, already form'd for that Purpoſe; or, probably, that it is rarefy'd by the Paſſage through the Stem.

And there are ſome that do ſuppoſe, that ſubterraneous Fires are concerned in the work of *Vegetation*, or the Growth of Plants: but as, upon the beſt Obſervation that hath been made, none can pretend to have diſcovered any Heat or Fumigation to iſſue from the Surface of the Bowels of the Earth, adequate to the meaneſt artificial Fire; it is plain, that the Sun is the Principle, and ſo may be called the Father, of *Vegetation*, and the Earth the Mother; the Rain and Air being neceſſary Co-efficients in this ſurprizing Work. See the Articles *Sun*, *Earth*, *Air*, *Rain*.

Another Author tells us, That as in animal Bodies there are ſeveral Degrees of Juices, which are refined more or leſs, as the Veſſels they paſs through are larger or ſmaller, or perhaps according to their Figure; ſo alſo Plants are found to have Veſſels of different Functions, which do, like Filtres of different Kinds, ſeparate and alter the Juices which paſs through them; ſo that they may be diſtinguiſhed ſeparately by the Senſes, altho' they do all originally proceed from the ſame Fund of indigeſted Juice in the Root: And by how much theſe Juices have the more Time to open and nouriſh the ſeveral Parts they paſs through; by ſo much, as well the Parts as the Juices, become more perfect, and approach nearer to the Point of Maturity, which is fixed by Nature for their Perfection. In this Progreſs, thoſe Parts which are to be acted upon, ripen equally, as thoſe do that are to act.

It is apparent, by the Uſe of Microſcopes, that Plants conſiſt of different Parts, Veſſels, *&c.* analogous to thoſe of Animals; and each Kind of Veſſel is ſuppoſed to be the Vehicle of a different Humour, or Juice, ſecreted from the Matter of the Sap; which is conſidered as the Blood or Common Fund of them all.

Dr. *Grew* farther explains this, by ſaying, That all Kinds of *vegetable* Principles are at the firſt received together in a Plant, and are ſeparated afterwards; *i. e.* they are filtred ſome from others, in very different Proportions and Conjunctions by the ſeveral Parts; ſo every Part is the Receptacle of a Liquor, become peculiar, not by any Transformation, but only by the Percolation of Parts out of the common Maſs or Stock of Sap; and thoſe that are ſuperfluous in any Plant, are diſcharged back by Perſpiration.

The ſame Author aſſigns the Offices of the ſeveral Veſſels: He calls thoſe Veſſels *Lymphæducts*, which are placed on the inner Verge of the Bark; and theſe, he ſuppoſes, are appointed for the Conveyance of the moſt aqueous or watry Liquor.

Thoſe Veſſels that are in the Middle of the Plant, he calls *Lactiferous*, or *Reſiniferous*; theſe he takes to be the principal *Viſcera* of Plants; and that as the *Viſcera* of *Animals* are but conglomerated Veſſels, ſo the *Viſcera* of *Plants* are Veſſels drawn out at Length.

It is alſo remarkable in many Caſes, That the Multitude and Largeneſs of the Veſſels do produce a ſweet and vinous Sap; and the Fewneſs and Smallneſs of the Veſſels produce an oily and aromatick Sap.

It ſeems neceſſary, to the Nutrition of Plants, as well as Animals, that there be a Concurrence of two ſpecifically diſtant Fluids: And a certain Author maintains, That there is an Intermixture of two ſuch Humours in every Part of a Tree; every Part of Sap being impregnated with other Tinctures, and continually filtred from Fibres of one Kind to thoſe of another; and from this Mixture many of the Phænomena of the Ripening, Odour, Colours, *&c.* are accounted for.

With regard particularly to the Odours in Plants, Dr. *Grew* is of Opinion, that they chiefly proceed from the Air-veſſels that are in the Wood; not but that the other Parts do alſo yield their Smells, which is moſt plain to be perceived in Plants that are freſh, undry'd, and unbruiſed: For he ſays, that the Air bringing along with it a Tincture from the Root, and from the ſeveral organical Parts, and at laſt entering the Concave of the Air-veſſels, it conſiſts there.

Another Writer ſays, That it cannot be denyed, but the *Effluvia*, which can be admitted into the Wood-veſſels, may give a Smell to the Wood: but however, as that Vapour paſſes through Veſſels which have a different Structure, ſo as to alter the Form of its Parts; ſo in every one of its Changes it will yield a Smell different from the reſt; the Smell of the Wood will differ from that of the Bark, the Juices in the one being more eſſential than the other; but yet both being bruiſed and mixed together, yield a Scent different from either of them ſingly; and likewiſe the Leaves give a Scent that is different from either of the former; and ſo alſo do the Flowers from that in the Leaves, and alſo the Fruit from that in the Flowers.

Dr. *Grew* is of Opinion, that the chief governing Principle in the Juice of Plants, is the *Saline*; which *ſaline* Principle, he ſays, muſt be underſtood as a *generick* Term, under which divers Species are comprehended. The *vegetable* Salts ſeem to be four; *viz.* the *nitrous* and the *acid*, *alkaline* and *marine*; and of theſe, the *nitrous Salts* ſeem to be aſſigned by Nature chiefly for the Growth of Plants.

The curious *Malpighius* has very accurately delivered the Proceſs of Nature in the *Vegetation of Plants*, to the Effect following:

The *Ovum* or Seed of the Plant being excluded out of the *Ovary*, (which is called the *Pod* or *Husk*) and requiring farther foſtering and brooding, is committed to the Earth.

Where the Earth, like a kind Mother, having received it into her Boſom, does not only perform the Office of Incubation, by her own warm Vapours and Exhalations, in Conjunction with the Heat of the Sun, but gradually ſupplies what the Seed requires to its farther Growth, as abounding every-where with Canals and Sinus's, in which the Dew and Rain-water, impregnated with fertil Salts, glide like the Chyle and Blood in the Arteries, &c. of Animals.

This Moiſture meeting with the new depoſited Seed, is percolated or ſtrained through the Pores or Pipes of the outer Rind or Huſk (anſwering the *Secundines* of *Fœtus's*); on the Inſide whereof lie one or more, commonly two, thick ſeminal Leaves (correſponding to the *Placenta* in Women, and the *Cotyledons* in Brutes.)

Theſe Seed-leaves conſiſt of a great Number of little *Veſiculæ* or Bladders, with a Tube correſponding to the Navel-ſtrings in Animals.

The Moiſture of the Earth ſtrain'd through the Rind of the Seed, is received into theſe *Veſiculæ*; which cauſes a ſlight Fermentation with the proper Juice before contain'd therein.

This fermented Liquor is conveyed by the Umbilical Veſſel to the Trunk of the little Plant, and to the Gem or Bud which is contiguous to it; upon which a *Vegetation* and Increaſe of the Plant ſucceeds.

This Procedure in the *Vegetation* of Plants, the aforeſaid Author exemplifies in a Grain of *Wheat*, as follows:

The *firſt* Day the Grain is ſown, it grows a little turgid, and the *Secundine* or Huſk gapes a little in ſeveral Places; and the Body of the Plant being continued by the Umbilical Veſſel to a conglobated Leaf, (which is call'd the Pulp or *Fleſh* of the Seed, and is what conſtitutes the Flower) ſwells, by which Means, not only the Gem or Sprout (which is to be the future Stem) opens and increaſes, but the Roots begin to bunch out: whence the *Placenta* or Seed-leaf becoming looſe, gapes.

The *ſecond* Day, the *Secundine* or Huſk being broken through, the Stem or Top of the future Straw appears on the Outſide thereof, and grows upwards by Degrees.

In the mean time the Seed-leaf, guarding the Roots, becomes turgid with its *Veſiculæ*, and puts forth a white Down, and the Leaf being pull'd away, you ſee the Roots of the Plant bare; the future Bud, Leaves, and the reſt of the Stalk, lying ſtill hid: Between the Roots and the aſcending Stem, the Trunk of the Plant is knit by the Navel-knot to the Flower-leaf; which is very moiſt, though it ſtill retains its white Colour, and its natural Taſte.

The *third* Day, the Pulp of the conglobated or round Leaf becomes turgid with the Juice it has received from the Earth fermenting with its own.

Thus the Plant increaſes in Bigneſs, and in its Bud or Stem becomes taller, and from whitiſh turns greeniſh: The lateral Roots alſo break forth greeniſh and pyramidal, from the gaping Sheaf, which adheres cloſely to the Plant; and the lower Root grows longer and hairy, with many Fibres growing out of the ſame.

Indeed, there are hairy Fibres hanging all along on all the Roots, except on the Tops; and theſe Fibres are ſeen to wind about the ſaline Particles of the Soil, little Lumps of Earth, &c. like *Ivy*, whence they grow curl'd: About the lateral Roots, there now break out two other little ones.

The *fourth* Day the Stem mounting upwards, makes a right Angle with the ſeminal Leaf: The laſt Roots put forth more; and the other three growing larger, are cloathed with more Hairs, which ſtraitly embrace the Lumps of Earth; and where they meet with any Vacuity, unite into a Kind of Net-work: The Conglobate or Flower-leaf, is now ſofter, and, when bruiſed, yields a white, ſweetiſh Juice, like Barley-cream. By ſtripping it off, the Root and Stem of the Plant are plainly ſeen, with the intermediate Navel-knot, whoſe outer Part is ſolid, like a Bark, and the inner more ſoft and medullary.

The *fifth* Day, the Stalk ſtill riſing, puts forth a permanent or ſtable Leaf, which is green and folded: The Roots grow longer, and there appears a new Tumour of a future Root: The Outer or Sheath is looſened, and the Seed-leaf begins to fade.

The *ſixth* Day, the Stable Leaf being looſened, the Plant mounts upwards, the Sheaf ſtill cleaving round it like a Bark: The Seed-leaf is now ſeen ſinuous or wrinkled and faded; and this being freed or cut from the *Secundine*, the Fleſh or *Pericarpium* is found of a different Texture: The Outer Part, whereby the Outſide of the Seed or Grain is heaved up, being more ſolid; but the Inſide viſcular and full of Humour, eſpecially that Part next the Navel-knot. All the Leaves being pulled off, the Roots torn, and the Flower-leaf removed, the Trunk appears; wherein, not far from the Roots, the Navel-knot bunches out, which is ſolid, and hard to cut: Above there is the Mark of the Sheath-leaf, which was pulled off; and underneath, as in an Arm-pit, the Gem is often hid: the hind Part of the Plant ſhews the breaking forth of the Roots likewiſe, with the faded *Placenta*, &c.

After the *eleventh* Day, the Seed-leaf, as yet ſticking to the Plant, is crumpled and almoſt corrupted; within, it is hollow; and about the *Secundine*, the mucous and white Subſtance of the Seed being continued to the Navel-knot, forms a Cavity: All the Roots becoming longer, put forth new Branches out of their Sides. The ſecond Leaf withers, and its Veſicles are emptied: The Internodes or Spaces between the Knots grow longer; new Gems appear, and the middle Root grows ſeveral Inches long.

After a Month, the Roots and Stalk being grown much longer, new Buds break out at the firſt Knot, and little Tumours bunch out, which, at length, break out into Roots.

As to the *vegetable Matter*, or the Food where the Plants grow, there is ſome Doubt: It hath been a general Opinion amongſt almoſt all the modern Naturaliſts, That the *Vegetation* of Plants, and even of Minerals too, is principally owing to Water, which not only ſerves as a Vehicle to convey to them the fine rich Earth, &c. proper for their Nouriſhment; but being tranſmuted into the Body of the Plant, affords the greateſt Part, if not all the Matter with which they are nouriſhed, and by which they grow and increaſe in Bigneſs. This Opinion is countenanced by very great Names; particularly by the ingenious Doctor *Woodward*, who, in order to aſcertain this Point, made the following Experiments:

In the firſt Place, he carefully examined all Sorts of Water, and found, that the cleareſt, fineſt Spring-water, which he could any-where meet with, exhibited even to the naked Eye, great Numbers of exceeding ſmall terreſtrial Particles; and that all other craſſer Waters had theſe in yet much greater Quantity; and alſo, that they were of a larger Bulk.

He found this terreſtrial Matter contain'd in all Water to be of two Kinds: The one properly a *vegetable Matter*, but conſiſting of very different Particles; ſome of which are very proper for the Nouriſhment of ſome Kinds of Plants; others for different Sorts, &c. The other Kind of earthy Matter he found to be purely of a mineral Nature; and this alſo was of very various and different Kinds.

The former Sort of *vegetable* earthy Matter abounds plentifully in all Waters; but for the mineral, it is found moſtly in Spring-water; next to that, in River-water; and leaſt of all, in Rain-water: though even there alſo it is to be found plentifully.

This Fact, he ſays, any one may diſcover, by only keeping Water for a competent Time without ſtirring it, in a clear Glaſs Phial, cloſely ſtopp'd to keep out Duſt, &c. for then he will obſerve, that theſe very ſmall terreſtrial Particles, which before were ſcarcely viſible ſingly, will now combine together into large and more conſpicuous Maſſes, which, by Degrees, will join together, and form Clouds, as it were, in the Water, which will grow daily more and more opacous and thick by the continual Acceſſion of new Matter: And if the earthy Matter in the Water be chiefly of the *vegetable* Kind, it will turn the Water green, the uſual Colour of *Vegetables*; and this will grow deeper and deeper-colour'd, but will not precipitate to the Bottom of the Glaſs, as the Mineral Water will, if there be any conſiderable Quantity, by reaſon of its much greater ſpecifick Gravity. On the Whole therefore he concludes very juſtly, That there is in all Water a conſiderable Quantity of the earthy Matter. And in order to determine whether the *Vegetation* of Plants was chiefly owing to bare Water or not, rather than to the *terreſtrial Matter* therein contain'd, he made, with very great Accuracy and Care, ſeveral Experiments.

Which Experiments, becauſe they were done with an uncommon Care and Exactneſs, and are follow'd by very ingenious *Reflections*, ſerving to explicate many Difficulties of Philoſophy, and to ſet the whole Affair of *Vegetation* in a very good Light; I ſhall give the Regiſter of as follows.

Anno Dom. 1691, he choſe ſeveral Glaſs Phials that were all, as near as poſſible, of the ſame Shape and Bigneſs. After he had put what Water he thought fit into every one of them, and taken an Account of the *Weight* of it, he ſtrain'd and ty'd over the Orifice of each Phial a Piece of Parchment, having Holes in the Middle of it large enough to admit the Stem of the Plant he deſigned to ſet into the Phial, without confining or ſtraitening it ſo as to impede its Growth. His Intention in this, was to prevent the incloſed Water from evaporating or aſcending any other Way than only through the Plant to be ſet therein.

Then he made Choice of ſeveral Sprigs of *Mint*, and other Plants, that were, as near as he could poſſibly judge, alike ſound, freſh, and lively: Having taken the Weight of each, he placed in a Phial, ordered as above; and as the Plant imbibed and drew off the Water, he took Care to add more of the ſame from time to time, keeping an Account of the Weight of all he added. Each of the Glaſſes were, for better Diſtinction, and the more eaſy keeping a Regiſter of all the Circumſtances, noted with a different Mark or Letter, as A, B, C, *&c.* and all ſet in a Row in the ſame Window, in ſuch manner that all might partake alike of Air, Light, and Sun.

Then they continu'd from *July* 20th to *October* the 5th, which is juſt 77 Days, when he took them out, weighed the Water in each Phial, and the Plant likewiſe, adding to its Weight that of all the Leaves that had fallen off, during the time it had ſtood thus: And, laſtly, he computed how much each Plant had gain'd; and how much Water was ſpent upon it.

The Particulars are as follow:

The Plant weigh'd, when put in, *July* the 20th, juſt 27 Grains: When taken out, *October* the 5th, 42 Grains. So that in the Space of 77 Days, it had gain'd in Weight 15 Grains.

The whole Quantity of Water expended during the 77 Days, amounts to 2558 Grains. Conſequently the Weight of the Water taken up, was 170 $\frac{8}{5}$ times as much as the Plant had gain'd in Weight.

This will be made plainer by the following TABLES.

Weight of the Plant when firſt put into Water.	Weight of the Plant when taken out of the Water.	Weight gain'd by the Plant during the 77 Days.	Weight of the Water expended upon the Plant.	Proportion of the Increaſe of the Plant to the Expence of the Water.
		A		
		Common Spear-Mint.	*Spring-Water.*	
27 *Grains.*	42 *Grains.*	15 *Grains.*	2558 *Grains.*	*as* 1 *to* $170\frac{8}{15}$.
		B		
		Common Spear-Mint.	*Rain-Water.*	
$28\frac{1}{4}$ *Grains.*	$45\frac{3}{4}$ *Grains.*	$17\frac{1}{2}$ *Grains.*	3004 *Grains.*	*as* 1 *to* $171\frac{23}{35}$.
		C		
		Common Spear-Mint.	*Thames-Water.*	
28 *Grains.*	54 *Grains.*	26 *Grains.*	2493 *Grains.*	*as* 1 *to* $95\frac{23}{26}$.
		D		
		Common Solanum or *Nightſhade.*	*Spring-Water.*	
49 *Grains.*	106 *Grains.*	57 *Grains.*	3708 *Grains.*	*as* 1 *to* $65\frac{3}{57}$.
		E		
		Lathyrus ſeu *Cataputia.*	*Ger. Spring-Water.*	
98 *Grains.*	$101\frac{1}{2}$ *Grains.*	$3\frac{1}{2}$ *Grains.*	2501 *Grains.*	*as* 1 *to* $714\frac{4}{7}$.

The Specimen D had ſeveral Buds upon it, when firſt ſet into the Water; theſe, in ſome Days, became fair *Flowers*, which were at length ſucceeded by Berries. Several other Plants were try'd, which did not thrive in Water, nor ſucceed any better than the *Cataputia* foregoing.

The Phials F and G were fill'd, the former with *Rain*, and the other with *Spring-Water*, at the ſame time as thoſe abovementioned were, and ſtood as long as they did; but they had neither of them any Plant: the Deſign of which was, in order to learn, whether any Water exhaled out of the Glaſſes, otherwiſe than through the Bodies of the Plants.

The Orifices of theſe two Glaſſes were cover'd with Parchment, each Piece of it being perforated with a Hole of the ſame Bigneſs with thoſe of the Phials above. In theſe was ſuſpended a Bit of Stick about the Thickneſs of the Stem of one of the aforeſaid Plants, but not reaching down to the Surface of the incloſed Water, that the Water in theſe might not have more Scope to evaporate than that in the other Phials.

Thus they ſtood the whole 77 Days with the reſt, when, upon Examination, none of the Water was found to be waſted or gone off; tho' he obſerv'd, both in theſe and the reſt, eſpecially after very hot Weather, ſmall Drops of Water, not unlike to Dew, adhering to the Inſides of the Glaſſes, *i. e.* that Part of them that was above the Surface of the incloſed Water.

The Water in theſe two Glaſſes that had no Plants in them, at the End of the Experiment exhibited a larger Quantity of terreſtrial Matter than that in any of thoſe that had the Plants in them did.

The Sediment in the Bottom of the Phials was greater, and the *Nubucelæ* diffus'd thro' the Body of the Water, thicker: And of that which was in the others, ſome of it proceeded from certain ſmall Leaves that had fallen from that Part of the Stem of the Plants that was within the Water, wherein they rotted and diſſolv'd.

The Terreſtrial Matter in the Rain-Water was finer than that in the Spring-Water.

Experiments, Anno 1692.

The Glaſſes made uſe of in this, were of the ſame Sort with thoſe of the former Experiment, and cover'd over with Parchment after the ſame manner.

The Plants here were all *Spear-Mint*, the moſt kindly, freſh, ſprightly Shoots he could chuſe. The Water and Plants were weighed, as above; and the Phials ſet in a Line, in a *South* Window, where they ſtood from *June* 2d to *July* 28th, which was juſt 56 Days.

The Plant H, was all along a very kindly one, and ran up about two Feet in Height. It had ſhot but one conſiderable collateral Branch, but had ſent forth many and long Roots; from which ſprung very numerous, tho' ſmall and ſhort leſſer Fibres. The leſſer Roots came out of the larger on two oppoſite Sides for the moſt part; ſo that each Root, with its *Fibrillæ*, appears not unlike a ſmall Feather. To theſe *Fibrillæ* adhered pretty much *terreſtrial Matter:* In the Water, which was at laſt thick and turbid, was a green Subſtance, reſembling a fine thin *Conſerva*.

The Plant I, was as kindly as the former, but had ſhot no collateral Branches: Its *Roots*, the *Water*, and the green Subſtance, all much as in the former.

The Plant K, though it had the Misfortune to be annoy'd with very ſmall Inſects, that happen'd to fix upon it, yet had ſhot very conſiderable collateral Branches, and at leaſt as many Roots as either H or I, which had a much greater

Weight of the Plant when first set in Water.	Weight of the Plant when taken out of the Water.	Weight gain'd by the Plant when it had stood 56 Days.	Weight of the Water expended upon the Plant.	Proportion of the Increase of the Plant to the Expence of the Water.
		H		
	Hyde Park	*Conduit Water*	*alone.*	
127 *Grains.*	255 *Grains.*	128 *Grains.*	14190 *Grains.*	*as* 1 *to* $110\frac{110}{128}$.
		I		
	The	*same Water*	*alone.*	
110 *Grains.*	249 *Grains.*	139 *Grains.*	13140 *Grains.*	*as one to* $94\frac{74}{139}$.
		K		
The same Water, with	*an Ounce and*	*half of common*	*Garden Earth diſ*	*ſolved in it.*
76 *Grains.*	244 *Grains.*	168 *Grains.*	10731 *Grains.*	*as* 1 *to* $63\frac{147}{168}$.
		L		
Hyde Park	*Water, with the*	*ſame Quantity of*	*Garden Mould as*	*the former.*
92 *Grains.*	376 *Grains.*	284 *Grains.*	14950 *Grains.*	*as* 1 *to* $52\frac{182}{284}$.
		M		
	Hyde Park Water	*diſtill'd with a*	*gentle Still.*	
114 *Grains.*	155 *Grains.*	41 *Grains.*	8803 *Grains.*	*as* 1 *to* $214\frac{29}{41}$
		N		
The Reſidue of the	*Water which re*	*mained in the Still*	*after that in* M	*was diſtill'd off.*
81 *Grains.*	175 *Grains.*	94 *Grains.*	4344 *Grains.*	*as* 1 *to* $46\frac{20}{94}$.

Quantity of *terreſtrial Matter* adhering to the Extremities of them. The ſame green Subſtance here, that was in the two preceding.

The Plant L was far more flouriſhing than any of the preceding, had ſeveral conſiderable collateral Branches, and very numerous Roots, to which *terreſtrial Matter* adhered very copiouſly.

The Earth in both theſe Glaſſes was very ſenſibly and conſiderably waſted, and leſs than when firſt put in. The ſame Sort of green Subſtance here, as in thoſe above.

The Plant M was pretty kindly; had two ſmall collateral Branches, and ſeveral Roots, tho' not ſo many as thoſe in H or I: But as much *terreſtrial Matter* adhering to them as thoſe had: The Water was pretty thick, having very numerous ſmall *terreſtrial Particles* ſwimming in it, and ſome Sediment at the Bottom of the Glaſs. This Glaſs had none of the green Matter above-mention'd in it.

The Plant N was very lively, and had ſent out ſix collateral Branches, and many Roots; but the Water was very turbid, and as high colour'd as ordinary Beer.

The Glaſs O had alſo *Hyde-park Conduit Water*, in which was diſſolved a Dram of *Nitre*. The *Mint* ſet in this, ſuddenly began to wither and decay, and died in a few Days; as likewiſe did two more Sprigs that were ſet in it ſucceſſively. In another Glaſs, he diſſolved an Ounce of good Garden Mould, and a Dram of *Nitre*; and in a third, half an Ounce of Wood-aſhes, and a Dram of *Nitre*: But the Plants in theſe ſucceeded no better than the former. In other Glaſſes, he diſſolved ſeveral other Sorts of Earth, Clay, Marles, and Variety of Manures, *&c.* and he ſet *Mint* in diſtill'd *Mint-water*, and made other Experiments of ſeveral Kinds, in order to get a Light and Information what haſtened or retarded, promoted or impeded *Vegetation*.

The Glaſs P, *Hyde-park Conduit Water*: In this he fixed a Glaſs Tube ten Inches long, the Bore one-ſixth of an Inch diameter, filled with very fine and white Sand, which he kept from falling down out of the Tube into the Phial, by tying a fine Piece of Silk over that End of the Tube that was downwards. Upon Immerſion of the lower End of it into the Water, this, by little and little, aſcended quite up to the Orifice of the Tube: And yet in all the 56 Days that it ſtood thus, a very inconſiderable Quantity of Water had gone off, *viz.* ſcarcely 20 Grains, tho' the Sand continued moiſt up to the Top till the very laſt.

The Water had imparted a green Tincture to the Sand, quite to the very Top of the Tube: And in the Phial it had precipitated a greeniſh Sediment, mix'd with black. To the Bottom and Sides of the Tube, as far as it was immerſed in the Water, adhered pretty much of the green Subſtance deſcribed above.

Other like Tubes he filled with *Cotton*, *Lint*, *Pith of Elder*, and ſeveral other porous *vegetable Subſtances*; ſetting ſome of them in clear Water, others in Water tinged with *Saffron*, *Cochineal*, &c, and ſeveral other Trials were made, in order to give a mechanical Repreſentation of the Motion and Diſtribution of the Juices in Plants, and of ſome other *Phænomena* obſervable in *Vegetation*.

Several Plants being alſo ſet in the Phials Q, R, S, *&c.* ordered in like Manner as thoſe above, in *October*, and the following colder Months; theſe throve not near ſo much; nor did the Water aſcend in nigh the Quantity it did in the hotter Seaſons, in which the before-cited Trials were made.

The Reſult of all which *Experiments* he gives us in the following Obſervations and Reflections.

I. *In Plants of the ſame Kind, the leſs they are in Bulk, the ſmaller Quantity of the fluid Maſs, in which they are ſet, is drawn off: The Conſumption, where the Maſs is of equal Thickneſs, being pretty nearly proportioned to the Bulk of the Plant.*

In Effect, the Water ſeems to aſcend up the Veſſels of the Plants, in much the ſame Manner as up a Filtre; and it is not to be wondered at, that the larger Filtre ſhould draw off more Water than the ſmaller; or that a Plant that hath more or larger Veſſels, ſhould take up a greater Part of the Fluid in which it is ſet, than one that has fewer can: Nor is it thus noted as a Thing very conſiderable in itſelf, but chiefly with regard to what follows.

II. *Much the greater Part of the fluid Maſs thus drawn off, and convey'd into the Plant, does not ſettle or abide there, but paſſes thro' their Pores, and exhales up into the Atmoſphere.*

That the Water, in theſe *Experiments*, aſcended only thro' the Veſſels of the Plants, is certain; ſince ſome Glaſſes which had no Plants in them, tho' diſpoſed in the like Manner as the reſt, did remain, at the End of the Experiment, as at firſt, and without any Diminution of Water; and that the greateſt Part of it flies off from the Plant into the Atmoſphere, is as certain.

The leaſt Proportion of the Water expended, was to the Augment of the Plant as 46 or 50 to 1; and in ſome 100, 200 to 1, nay 700 to 1.

Thus ſo continual an Emiſſion of Water, in ſo great Plenty, from the Parts of the Plant, affords a manifeſt Reaſon, why Countries that abound with Trees, and the larger *Vegetables* eſpecially, ſhould be very obnoxious to Damps, great Humidity in the Air, and more frequent Rains, than others that are more open and free.

The great Moiſture of the Air, was a great Inconvenience and Annoyance to thoſe who firſt ſettled in *America*, which, at that Time, was over-grown with Woods and Groves: But as theſe were burnt down and deſtroy'd, to make way for Habitations, and Culture of the Earth, the Air mending, changed into a Temperature more ſerene and dry than before.

Nor does this Humidity go off pure and alone, but uſually carries with it many Parts of the ſame Nature with thoſe whereof the Plant conſiſts: The Craſſer indeed, are not ſo eaſily borne up into the Atmoſphere, but are uſually depoſited on the Surface of the Leaves, Flowers, and other Parts of the Plants; whence proceed our *Manna's*, our *Honey's*, and other gummous Exudations of *Vegetables*: But the finer and lighter Parts are with greater Eaſe ſent up into the Atmoſphere; thence they are convey'd to our Organs of Smelling, by the Air we draw in Reſpiration; and are pleaſant or offenſive, beneficent or injurious to us, according to the Nature of the Plants from whence they ariſe. And ſince theſe owe their Riſe to the Water that aſcends out of the Earth thro' the Bodies of Plants, we cannot be far to ſeek for the Cauſe why they are more numerous in the Air, and a greater Quantity of Odours is found exhaling from *Vegetables* in warm humid Seaſons, than in any other.

III. *A great Part of the terreſtrial Matter that is mixed with Water, aſcends up into the Plant, as well as the Water.*

There was much more terreſtrial Matter at the End of the Experiment, in the Water of the Glaſſes that had no Plants in them, than in thoſe that had Plants. The Garden Mould diſſolved in ſome of the Glaſſes was conſiderably diminiſh'd and carry'd off; nay, the terreſtrial and *vegetable* Matter was borne up in the Tubes filled with Sand, Cotton, *&c.* in that Quantity, as to be evident even to Senſe; and the Bodies in the Cavities of the other Tubes, that had their lower Ends immerſed in Water, wherein Saffron, Cochineal, *&c.* had been infuſed, were tinged with Yellow, Purple, *&c.*

To look abroad a little towards our Shores and Parts within the Verge of the Sea, theſe will preſent us with a large Scene of Plants, that, along with the *vegetable*, take up into them mere mineral Matter alſo, in great abundance; ſuch as our *Sea-purſlain*, ſeveral Sorts of *Algas*, of *Samphires*, and other marine Plants: Thoſe contain common Sea Salts, which are the ſame as the Foſſil, in ſuch Plenty, as not only plainly to be diſtinguiſhed on the Palate, but may be drawn out of them in conſiderable Quantity: Nay, ſome affirm, there are Plants found, that will yield Nitre, and other Mineral Salts.

The *vegetable* Matter being very fine and light, is ſurpriſingly apt and diſpoſed to attend Water in all its Motions, and follow it into each of its Receſſes; as appears not only from the Inſtances above alledged, but many others: Percolate it with all the Care imaginable, filtre it with ever ſo many Filtrations, yet ſome terreſtrial Matter will remain.

Dr. *Woodward* has filtred Water thro' ſeveral Sheets of thick Paper, and after that, through very cloſe fine Cloth, twelve times double, and this over and over, and yet a conſiderable Quantity of this Matter diſcover'd itſelf in the Water after all.

Now, if it thus paſſes Interſtices that are ſo very ſmall and fine, along with the Water, it is leſs ſtrange it ſhould attend it in its Paſſage through the Ducts and Paſſages of Plants. It is true, filtring and diſtilling of Water interrupts and makes it quit ſome of the earthy Matter it was before impregnated withal; but then that which continues with the Water after this, is fine and light, and ſuch, conſequently, as is in a peculiar Manner fit for the Growth and Nouriſhment of *Vegetables*.

And this is the Caſe of Rain Water: The Quantity of terreſtrial Matter it bears up into the Atmoſphere is not great; but what it doth bear up is chiefly of that light Kind of *vegetable* Matter, and that too perfectly diſſolved, and reduced to ſingle Corpuſcles, all fit to enter the Tubes and Veſſels of Plants; on which Account it is, that this Water is ſo very fertil and prolifick.

The Reaſon why all the terreſtrial Matter mix'd with the Water does not aſcend into that, is, that the mineral Matter makes a great deal of it, which is not only groſs and ponderous, but ſcabrous and inflexible, and ſo not diſpoſed to enter the Pores of the Roots; beſides, a great many of the ſimple *vegetable* Particles do by Degrees unite and form ſmall Clods, or *Moleculæ*, which ſtick to the Extremities of the Roots of thoſe Plants; and others of them, entangled in a looſer Manner from the *Nubeculæ*, or green Bodies, ſo commonly obſerved in ſtagnant Water: Theſe, when thus conjoined, are too big to enter the Pores or aſcend up the Veſſels of Plants, which, ſingly, they might have done.

Hence it is that in Agriculture, be the Earth never ſo rich, good, and fit for the Production of Corn, or other *Vegetables*, little will come of it, unleſs the Particles be ſeparated and looſe; and 'tis on this Account ſuch Pains are beſtowed in the digging, tilling, ploughing, fallowing, harrowing, and breaking the clodded Lumps of Earth: And 'tis the ſame Way that Sea Salt, Nitre, and other Salts promote *Vegetation*.

Some Authors imagine Nitre eſſential to Plants, and that nothing in the *vegetable* Kingdom is tranſacted without it; but Dr. *Woodward* ſays, by all the Trials he has been able to make, the Thing ſeems to him quite otherwiſe; and when contiguous to the Plant, Nitre rather deſtroys than nouriſhes it.

But Nitre and other Salts do certainly looſen the Earth, and ſeparate the concreted Parts of it; by that Means fitting and diſpoſing them to be aſſumed by the Water, and carry'd up into the Seed or Plant for its Formation and Increaſe.

It is evident to Obſervation, how apt all Sorts of Salts are to be wrought upon by Moiſture, how eaſily they run with it; and when theſe are drawn off, and have deſerted the Lumps with which they are incorporated, thoſe muſt moulder immediately, and fall aſunder in courſe.

The hardeſt Stone that is to be met with, if it happens, as it frequently does, to have any Salt intermixed with the Sand of which it conſiſts, upon its being expoſed to a humid Air, in a ſhort Time diſſolves and crumbles all to Pieces, and much more will clodded Earth or Clay, which is not of ſo compact and ſolid a Conſtitution.

Lime likewiſe is in the ſame Way ſerviceable in this Affair. The Huſbandmen ſay, it does not fatten, but only mellows the Ground; by which they mean, it doth not contain any Thing in itſelf that is of the ſame Nature with the *vegetable* Mould, or afford any Matter fit for the Formation of Plants, but merely ſoftens and relaxes the Earth; by that Means rendering it more capable of entering the Seeds and *Vegetables* ſet in it, in order to their Nouriſhment, than otherwiſe it would have been.

The Properties of *Lime* are well known, and how apt it is to be put in a Ferment and Commotion by Water; nor can ſuch Commotion ever happen, when Lime is mix'd with Earth, however hard and clodded it may be, without opening and looſening it.

IV. *The Plant is more or leſs nouriſhed, in Proportion as the Water in which it ſtands, contains a greater or ſmaller Quantity of proper terreſtrial Matter in it.*

The Truth of this Propoſition is diſcernible through the whole Proceſs of the Doctor's Experiments. The Mint in one of the Glaſſes was of much the ſame Bulk and Weight with that of two others; but the Water in which the firſt was, being River Water, which was apparently more copiouſly ſtored with terreſtrial Matter, than the Spring or Rain Water, in which the others ſtood, occaſioned it to arrive at almoſt double the Bulk that either of them had, and with a leſs Expence of Water too.

So likewiſe the Mint in another Glaſs, in the Water of which was diſſolved a ſmall Quantity of good Garden Mould; tho' it had the Diſadvantage to be leſs, when firſt ſet, than either of the Mints in the two other Glaſſes, the Water in which was the very ſame as the firſt, only had none of the Earth mix'd with it, yet in a ſhort Time the Plant not only overtook, but much out-ſtripped the other.

The Reaſon why the Proportion of the Increaſe of the Plant was limited to the Quantity of proper terreſtrial Matter in the Water, is, that all, even *vegetable* Matter, is not proper for the Nouriſhment of every Plant: Nor do there want good Indications, that every Kind requires a peculiar and ſpecifick Matter for its Formation and Nouriſhment; yea, each Part of the ſame *Vegetable*; and that there are very many, and different Ingredients, to go to the Compoſition of the ſame individual Plant.

If therefore the Soil wherein any *Vegetable* or Seed is planted, contains all, or moſt of theſe Ingredients, and thoſe in due Quantity, it will grow and thrive, otherwiſe it will not: If there be not as many Sorts of Corpuſcles, as are requiſite for the Conſtitution of the main and more eſſential Parts of the Plant, it will not proſper at all; if there are theſe, and not in ſufficient Plenty, it will never arrive to its natural Stature: Or if any of the leſs neceſſary and eſſential Corpuſcles are wanting, there will be ſome Failure in the Plant; it will be defective in Smell, Taſte, Colour, or ſome other Way.

Indeed it is inconceivable, how one uniform, homogeneous Matter, having its Principles or original Parts of the ſame Subſtance, Conſtitution, Magnitude, Figure and Gravity, ſhould conſtitute Bodies ſo unlike, in all thoſe Reſpects, as *Vegetables* of different Kinds are; nay, even as the different Parts of the ſame *Vegetable*: That one ſhould carry a reſinous, another a milky, a third a yellow, a fourth a red Juice in its Veins; that one affords a fragrant, another an offenſive Smell; one ſweet to the Taſte, another acid, bitter, acerb, auſtere, *&c.* that one ſhould be nouriſhing, another poiſonous; one purging, another aſtringent.

And this Argument makes equally ſtrong againſt thoſe who ſuppoſe mere Water the Matter out of which all Matters are formed.

A *Cataputia* in one of the Glaſſes afforded but a little Increaſe, only 3 ½ Grains all the While, tho' 2501 Grains of Water were ſpent upon it: But this might poſſibly be owing not to the Water's wanting Matter fit for the Nouriſhment of that particular Plant, but from its being an improper *Medium* for that to grow in. Too much of that Liquor in ſome Plants may, probably, hurry the terreſtrial Matter through the Veſſels too faſt for them to lay hold of it.

But a farther Proof of this Matter is, that the Soil once proper for the Production of ſome Sort of *Vegetables*, does not ever continue ſo, but in Tract of Time loſes its Property; and ſooner in ſome Lands, and later in others.

As for Example: If *Wheat* be ſown upon Land proper for that Grain, the firſt Crop will ſucceed very well, and perhaps the ſecond and third, as long as the Ground is in Heart, as the Farmers call it; but in a few Years it will produce no more, if ſow'd with that Corn; ſome other Grain it may, as *Barley*: And after this has been ſown ſo oft, that the Land can bring no more of it, it may afterwards yield ſome good *Oats*, and perhaps *Peas* after them.

At length it becomes barren, the *vegetative* Matter that at firſt it abounded with, being reduced by the ſucceſſive Crops, and moſt of it borne off, each Sort of Grain takes out that peculiar Matter that is proper for its own Nouriſhment.

It may be brought to bear another Series of the ſame *Vegetables*; but not till it is ſupply'd with another Fund of Matter of the like Sort with what it firſt contained, either by the Ground's lying fallow for ſome Time, till the Rain hath poured a freſh Stock upon it, or by the manuring it.

That this Supply is of the like Sort, is evident by the ſeveral Manures found beſt to promote the *Vegetation*; which are chiefly either of Parts of *Vegetables*, or of Animals; which either derive their own Nouriſhment immediately from *vegetable* Bodies, or from other Animals that do ſo; in particular, the Blood, Excrements and Urine of Animals that do ſo; ſhaving of Horns and Hoofs, Hair, Feathers, calcin'd Shells, Lees of Wine and Beer, Aſhes of all Sorts of *vegetable* Bodies, Leaves, Straw, Roots and Stubble, turn'd into Earth by ploughing, or otherwiſe, to rot and diſſolve there.

Theſe are our beſt Manures, and being *vegetable* Subſtances, when refunded back again into the Earth, ſerve for the Formation of other Bodies.

But to apply this to Gardens, where the Trees, Shrubs and Herbs, after their having continued in one Station, till they have derived thence the greateſt Part of the Matter fit for their Increaſe, will decay and degenerate, unleſs either freſh Earth, or ſome fit Manure be apply'd to them.

It is true, they may maintain themſelves there for ſome Time, by ſending forth Roots farther and farther, to an Extent all around, to fetch in more Proviſion; but at laſt they muſt have a freſh Supply brought to them, or they themſelves removed or tranſplanted to ſome Place better furniſhed with Matter for their Subſiſtence. And accordingly Gardeners obſerve, that Plants that have ſtood a long while in a Place, have longer Roots than uſual, Part of which they cut off when they tranſplant to a freſh Soil, as not now of any farther Uſe to them.

All theſe Inſtances argue a particular terreſtrial Matter, and not Water, for the Subject to which Plants owe their Increaſe: Were it Water only, there would be no need of Manures, or Tranſplanting; the Rain falls in all Places, in this Field and in that, indifferently, on one Side of an Orchard or Garden as well as the other; nor could there be any Reaſon why a Tract of Land ſhould yield *Wheat* one Year and not the next, ſince the Rain ſhowers down all alike upon the Earth.

V. *Vegetables are not form'd of Water, but of a certain peculiar terreſtrial Matter.*

It has been ſhewn, that there is a conſiderable Quantity of this Matter contained both in Spring, Rain, and River-water, and the Experiments before-mentioned ſhew, that the much greateſt Part of the fluid Maſs, that aſcends up into Plants, does not ſettle or abide there, but paſſes through the Pores of them, and exhales into the Atmoſphere, and that a great Part of the terreſtrial Matter, mixed with the Water, paſſes up into the Plant along with it, and that the Plant is more or leſs augmented, in Proportion as the Water contains a greater or leſſer Quantity of Matter: From all which we may reaſonably infer, that Earth, and not Water, is the Matter which conſtitutes *Vegetables*.

One of the Sprigs of Mint before-mentioned drew up into it 2501 Grains of the fluid Maſs, and yet had received but 3½ Grains Increaſe from it.

A ſecond, tho' it had at firſt the Diſadvantage to be much leſs than a third, yet being ſet in Water, wherein Earth had been plentifully mix'd, and the other in Water without any ſuch Earth, it had vaſtly out-grown it, weighing at leaſt 145 Grains more than that did.

A fourth Plant, tho' at firſt a great deal leſs than the fifth, yet being ſet in foul, craſs Water, that was left in the Still, after that in which the laſt was ſet was drawn off, had gained in Weight, at the End, above double what that in the finer and thinner Water had.

The Proportion of the Augment of that Plant, which throve moſt, was in the ſaid Maſs ſpent upon it, but as 1 to 46, in others as one to 60, 100, 200, and in the *Cataputia*, but as 1 to 714.

One of the Sprigs took up 39 Grains of Water a Day, one Day with another, which was much more than the whole Weight of the Plant originally, and yet it gained not ¼ of a Grain a Day in Weight.

And another took up 253 Grains a Day, which was near twice as much as its original Weight, and after all, the daily Increaſe of the Plant was no more than $2\frac{1}{3}{}^{5}$ Grains.

VI. *Spring and Rain-water contain near an equal Charge of* vegetable *Matter; River-water more than either of them.*

Theſe Proportions hold in the main; but a ſtrict and juſt Compoſition is hardly to be expected; inſomuch as, in all Probability, the Water which falls in Rain contains ſometimes a greater Share of terreſtrial Matter, than that which falls at other times; a more powerful and intenſe Heat, of Neceſſity, hurrying up a larger Quantity of that Matter, along with the humid Vapours that form Rain, than one more feeble and remiſs poſſibly can.

The Water of one Spring may flow forth with an higher Charge of this Matter than that of another: This depending partly upon the Quickneſs of the Ebullition of the Water, and partly on the Quantity of that Matter latent in the *Strata*, thro' which the Fluid paſſes, and the greater or leſs Laxity of thoſe *Strata*: For the ſame Reaſon the Water of one River may abound with it more than that of another; nay, the ſame River, when much agitated and in Commotion, muſt bear up more of it than when it moves with leſs Rapidity and Violence. That there is a great Quantity of this Matter in Rivers; and that it contributes vaſtly to the ordinary Fertility of the Earth, the *Nile* affords a pregnant Inſtance, and ſo does the *Ganges* and other Rivers, which annually overflowing the neighbouring Plains, their Banks ſhew the faireſt and largeſt Crops of any in the World.

VII. *Water ſerves only for a Vehicle to the terreſtrial Matter which forms* Vegetables, *and does not itſelf make any Augmentation to them.*

Where the proper terreſtrial Matter is wanting, the Plant is not augmented, tho' never ſo much Water aſcend into it: Water then is not the Matter that compoſes *vegetable* Bodies, it is only the Agent that conveys the Matter into them, that diſtributes it to their ſeveral Parts to their Nouriſhment; that Matter is ſluggiſh and unactive, and would lie eternally confined to its Beds of Earth, without advancing up into Plants, did not Water, or ſome like Inſtrument, fetch it forth, and carry it into them.

This Fluid is capacitated ſeveral Ways for the Office here aſſigned it, by the Figure of its Parts, which appears from many Experiments to be exactly and mathematically ſpherical, their Surfaces being perfectly polite, and without any the leaſt Irregularities.

It is evident, that Corpuſcles of ſuch a Figure are eaſily ſuſceptible of Motion, and far above any others whatever, and conſequently more capable of moving and conveying other Matter that is not ſo active; then the Intervals of the Bodies of that Figure are, in reſpect to their Bulk, of all others the largeſt, and ſo the moſt fitted to receive and entertain foreign Matter in them: Beſides, as far as the Trials hitherto made inform us, the conſtituent Corpuſcles of Water are each ſingly conſidered abſolutely ſolid, and do not yield to the greateſt external Force: This ſecures their Figure againſt any Alteration, and the Intervals of their Corpuſcles muſt be always alike.

By the latter, it will ever be diſpoſed to receive Matter into it; and by the former, when once received, to bear it along with it. Water is farther capacitated to be a Vehicle to this Matter, by the Tenuity and Fineneſs of the Corpuſcles of which it conſiſts. We hardly know any Fluid in all Nature, except Fire, whoſe conſtituent Parts are ſo exceeding ſubtil and ſmall as thoſe of Water are; they will paſs Pores and Interſtices, that neither Air nor any other Fluid will. This enables them to enter the Tubes, and fineſt Veſſels of Plants, and to introduce the terreſtrial Matter, and convey it to all Part of them, whilſt each, by means of Organs it is endued with for that Purpoſe, intercepts and aſſumes into itſelf ſuch Particles as are ſuitable to its own Nature, letting the reſt paſs on through the common Ducts.

VIII. *Water is not capable of performing this Office to Plants, unleſs aſſiſted by a due Quantity of Heat.*

Heat muſt concur, or *Vegetation* will not ſucceed. The Plants ſet in the Glaſſes in *October*, and the following Months, had not near the Quantity of Water ſent up into them, or ſo great an additional Increaſe by much, as thoſe that were ſet in *June*, *July*, or the hotter Months.

It is plain the Water has no Power of moving itſelf, or riſing to the vaſt Height it doth in the more tall and lofty Plants; ſo far from it, that it doth not appear, by any Diſcovery yet made, that even its own Fluidity conſiſts in the inteſtine Motion of its Parts, whatever the *Carteſians* think.

Indeed we want nothing more to ſolve all the Phænomena of Fluidity, that ſuch a Figure and Diſpoſition of Parts as Water has; ſpherical Corpuſcles muſt ſtand ſo tickliſh upon each other, as to be ſuſceptible of every Impreſſion, and though not perpetually in Motion, muſt be always ready and liable to be put into it by any the ſlighteſt Force imaginable: 'Tis true, the Parts of Fire or Heat are not capable of moving themſelves any more than thoſe of Water; but they are more ſubtil, light, and active than thoſe are, and ſo the more eaſily put in Motion.

That the Concourſe of Heat is really neceſſary in this Work, appears not only from the Experiments before us, but from all Nature; from the Fields and Forreſts, Gardens and Orchards: We ſee in *Autumn*, as the Sun's Power is gradually leſs and leſs, ſo its Effects on Plants is remitted, and *Vegetation* ſlackens by little and little.

Its Failure is firſt diſcernable in Trees; which being raiſed higheſt above the Earth, require a more intenſe Heat to elevate the Water charged with Nouriſhment to their Tops; ſo that for want of freſh Support and Nutriment, they ſhed their Leaves, unleſs ſupported by a very firm and hard Conſtitution indeed, as our *Ever-greens* are. Next, the Shrubs part with theirs; then the Herbs and lower Tribes: The Heat at length not being ſufficient to ſupply even to theſe, tho' ſo near the Earth, the Fund of their Nouriſhment.

As the Heat returns the ſucceeding *Spring*, they all recruit again, and are furniſhed with freſh Supplies and Verdure: But firſt, thoſe which are loweſt and neareſt the Earth, and that require a leſſer Degree of Heat to raiſe the Water with its earthy Charge into them: Then the Shrubs and higher *Vegetables* in their Turn; and laſtly, the Trees.

As the Heat increaſes, it grows too powerful, and hurries the Matter with too great Rapidity through the finer and more tender Plants: Theſe therefore go off and decay; and others that are more hardy and vigorous, and require a greater Degree of Heat, ſucceed in their Order. By which Mechaniſm, provident Nature furniſhes us with a very various and different Entertainment, and what is beſt ſuited to each Seaſon all the Year round.

As the Heat of the ſeveral Seaſons affords us a different Face of Things, ſo the ſeveral diſtant Climates ſhew the different Scenes of Nature and Productions of the Earth.

The hotter Countries ordinarily yield the largeſt and talleſt Trees, and thoſe too in a much greater Variety than the colder: Even thoſe Plants common to both, attain to a much greater Bulk in the Southern, than in the Northern Climates.

Nay, there are ſome Regions ſo cold, that they raiſe no *Vegetables* at all to a conſiderable Size: This we learn from *Greenland*, *Iceland*, and other Parts of like cold Situation and Condition: in theſe there are no Trees, and the Shrubs are poor, little, and low.

Again, in the warmer Climates, and ſuch as do furniſh Trees, and the large *Vegetables*, if there happen a Remiſſion or a Diminution of the uſual Heat, their Productions are impeded in Proportion. Our cold *Summers* give us Proof enough of this; for tho' at ſuch times there is Heat ſufficient to raiſe the *vegetative* Matter into the lower Plants, as *Wheat*, *Barley*, *Peas*, and the like; and we have Plenty of *Strawberries*, *Raſpberries*, *Gooſeberries*, *Currants*, and the Fruits of ſuch *Vegetables* as are low and near the Earth; and a moderate Store of *Mulberries*, *Cherries*, *Plums*, &c. and ſome others, that grow at ſomething of a greater Height: Yet our *Apples*, *Pears*, *Walnuts*, and the Production of the taller Trees, have been fewer, and thoſe not ſo throughly ripened and brought to Perfection, as they are in more benign and warm Seaſons.

And indeed, in Trees of the ſame Kind, thoſe that keep cloſeſt to the Earth, always produce moſt and beſt Fruit: For which Reaſon it is, that Gardeners check and reſtrain the Growth of their better Fruit-Trees, and prevent their running up to too great an Height.

As to our *Grapes*, *Apricocks*, *Peaches*, *Nectarines*, and *Figs*, they being tranſplanted hither out of warmer Countries, it is leſs to be wondered at, that we fail of them in cold *Summers*.

Nor is it that Heat only which promotes *Vegetation*, but any other indifferently, according to its Power and Degree; as we find from our Stoves, Hot-beds, &c.

VERATRUM; [ſo called as though *vere atrum*, i. e. *truly black*, becauſe this Plant has a black Root, or becauſe it purges a black Humour] White Hellebore.

The *Characters* are;

The Flower is naked, conſiſting of ſix Leaves, which expand in form of a Roſe, in the Middle of which ariſes the Pointal, ſurrounded by ſix Stamina, or Threads, which afterwards turn to a Fruit, in which, for the moſt part, three membranaceous Sheaths are gathered into a little Head, and are full of oblong Seeds, reſembling a Grain of Wheat, and encompaſs'd, as it were, by a leafy Wing.

The *Species* are;

1. VERATRUM *flore ſubviridi. Tourn.* White Hellebore, with a greeniſh Flower.
2. VERATRUM *flore atro-rubente. Tourn.* White Hellebore, with a dark-red Flower.

The firſt of theſe Plants is that which is ordered for Medicinal Uſe, and is by much the ſtronger and more acrid Plant; for when both Sorts are placed near each other, the Snails will intirely devour the Leaves of the ſecond Sort, when at the ſame time they will ſcarcely touch thoſe of the firſt. The ſecond Sort doth alſo appear ſooner in the *Spring*, and flowers near a Month before the firſt Sort.

Theſe Plants are very pretty Ornaments, when planted in the Middle of open Borders of the Pleaſure-Garden; for if they are placed near Hedges or Walls, where generally Snails do harbour, they will greatly deface the Leaves, eſpecially of the ſecond Sort, by eating them full of Holes; and as a great Part of the Beauty of theſe Plants conſiſts in their broad-folded Leaves, ſo when they are thus defaced, the Pleaſure is almoſt loſt.

They may be propagated by parting their Roots toward the latter End of *February*, or the Beginning of *March*, juſt before they begin to ſhoot, and ſhould be planted in a light, freſh, rich Soil, in which they will thrive exceedingly, and produce ſtrong Spikes of Flowers. Theſe Roots ſhould not be removed oftener than once in three Years, by which Time (if they like the Soil) they will be very ſtrong, and afford many Heads to be taken off; but if they are frequently tranſplanted, it will prevent their increaſing, and cauſe them to flower very weak.

You may alſo propagate theſe Plants by Seeds, which ſhould be ſown as ſoon as ripe, either in a Bed or Box filled with freſh, light Earth, and the Ground kept conſtantly clear from Weeds. In the *Spring* the Plants will appear, at which Time, if the Seaſon be dry, you ſhould now and then refreſh them with Water, which will greatly promote their Growth; and you muſt carefully clear them from Weeds, which, if permitted to grow, will ſoon over-ſpread and deſtroy theſe Plants while young. The *Spring* following, juſt before the Plants begin to ſhoot, you ſhould prepare a Bed of freſh, light Earth, and carefully take up the young Plants, (obſerving not to break their Roots) and plant them therein about ſix Inches ſquare, where they may remain until they are ſtrong enough to flower, when they ſhould be tranſplanted into the Borders of the Pleaſure-Garden. But as theſe Plants ſeldom flower in leſs than four Years, from Seeds, ſo this Method of propagating them is not very much practiſed in *England*.

VERBASCUM; [ſo called, as though *Barbaſcum*, becauſe the Leaves of this Plant are bearded, rough, and hairy. It is alſo called *Candela Regia*, *Lychnitis*, becauſe its Leaves are uſed inſtead of Cotton in a Lamp; it is alſo called *Phlomos*, of φλέγω to *burn*, becauſe it ſeems, as it were, to burn] Mullein.

The *Characters* are;

The flower conſiſts of one Leaf, which expands in a circular Form, and is cut into ſeveral Segments; out of the Center ariſes the Pointal, which afterwards becomes an oval, pointed Fruit, divided into two Cells, by a middle Partition, which are filled with ſmall angular Seeds.

The *Species* are;

1. VERBASCUM *mas latifolium luteum. C. B. P.* Great white Mullein, High-taper, *or* Cows-Lungwort.

2. VERBASCUM *pulverulentum, flore luteo parvo. J. B.* Hoary Mullein, with ſmall yellow Flowers.

3. VERBASCUM *flore albo parvo. J. B.* White flowered Mullein.

4. VERBASCUM *nigrum, flore parvo, apicibus purpureis. J. B.* Sage-leav'd black Mullein.

5. VERBASCUM *blattariæ foliis, nigrum, amplioribus foliis ac luteis, apicibus purpuraſcentibus. Hor. Bat.* Mullein with a dark Moth-Mullein Leaf, and yellow Flowers with purpliſh Apices.

6. VERBASCUM *Orientale, ſophiæ folio. T. Cor.* Eaſtern Mullein, with a Flix-weed Leaf.

7. VERBASCUM *nigrum, folio papaveris corniculati. C. B. P.* Black Mullein, with a Horn-poppy Leaf.

8. VERBASCUM *humile Alpinum villoſum, boraginis folio & flore. Tourn.* Low hairy Alpine Mullein, with a Leaf and Flower like that of *Borage*, *commonly called* Bears-ear Sanicle.

9. VERBASCUM *fœmina, flore luteo magno. C. B. P.* Female Mullein, with a large yellow Flower.

10. VERBASCUM *anguſtifolium ramoſum, flore aureo, folio craſſiore. J. B.* Branching narrow-leav'd Mullein, with a golden Flower, and a thicker Leaf.

11. VERBASCUM *foliis viridibus, annuum, floribus luteis. H. L.* Annual Mullein, with green Leaves and yellow Flowers.

12. VERBASCUM *nigrum Dioſcoridis. Lob. Icon.* Black Mullein of Dioſcorides.

13. VERBASCUM *Alpinum perenne nigrum, flore albo, ſtaminibus purpureis. H. R. Par.* Black perennial Mullein of the Alps, with a white Flower, and purple Chives.

14. VERBASCUM *ramoſum floribus albis parvis. Mor. H. R. Blæſ.* Branching Mullein, with ſmall white Flowers.

15. VERBASCUM *Creticum ſpinoſum fruteſcens. Tourn. Cor.* Shrubby and thorny Mullein of Crete.

16. VERBASCUM *Græcum fruticoſum, folio ſinuato candidiſſimo. Tourn. Cor.* Shrubby Mullein of Greece, with a very white indented Leaf.

17. VERBASCUM *orientale maximum candidiſſimum, ramis candelabrum æmulantibus. Tourn. Cor.* The greateſt and whiteſt Eaſtern Mullein, with Branches reſembling a Candleſtick.

18. VERBASCUM *orientale, conyzæ folio, flore micante, è ferrugineo ad aureum colorem vergente. Tourn. Cor.* Eaſtern Mullein, with a Flea-bane Leaf, and a ſhining Flower, from an Iron inclining to a Gold Colour.

19. VERBASCUM *orientale, betonicæ folio, flore magno. Tourn. Cor.* Eaſtern Mullein, with a Betony Leaf, and a larger Flower.

20. VERBASCUM *orientale anguſto oblongo folio. Tourn. Cor.* Eaſtern Mullein, with an oblong and narrow Leaf.

21. VERBASCUM *orientale, foliis ſubrotundis candidiſſimis. Tourn. Cor.* Eaſtern Mullein, with roundiſh white Leaves.

The four firſt Sorts grow wild in divers Parts of *England*, and are rarely cultivated, except in Botanick Gardens for Variety. The firſt Sort is that which is uſed in Medicine, which is the moſt common of them all, growing upon the Sides of dry Banks, in moſt Parts of *England*.

Theſe may be all cultivated by ſowing their Seeds in *Auguſt*, on a Bed of light Earth, in an open Situation, where the Plants will come up the ſucceeding Month, and will endure the *Winter*'s Cold very well, provided they have a dry Soil. In *February* the Plants ſhould be tranſplanted where they are to remain, allowing them a great Diſtance; for they grow pretty tall and large: In *June* following they will flower, and their Seeds will be ripe in *July*. But notwithſtanding theſe Plants grow wild in *England*, yet two or three of each Kind may be admitted in large Gardens, for the Variety of their hoary Leaves, together with the extreme Sweetneſs of their Flowers, which have a Scent ſomewhat like Violets.

The fifth, ſixth and ſeventh Sorts are not Natives of this Country, but have been obtained from abroad; the fifth was ſent from *Leyden*, by the learned Dr. *Boerhaave*, but I do not at preſent know from whence he received it. The ſixth Sort was gathered by my ingenious Friend Mr. *Henry Hopkey*, upon *Gibraltar* Hills, from whence he ſent me the Seeds, which flouriſh'd in the *Phyſick Garden* very well two Years, and flower'd extremely, but did not perfect Seeds; and being a biennial Plant, is ſince entirely decay'd.

The ſeventh Sort was found in the *Levant*, by Monſieur *Tournefort*, chief Botaniſt to the late *French* King, who brought the Seeds to the Royal Gardens at *Paris*, from whence it hath been communicated to ſeveral other curious Gardens in *England* and *Holland*. This Plant is alſo biennial, and rarely produces good Seeds in *England*, unleſs the *Summer* be warm and dry.

Theſe Sorts may be propagated in the ſame Manner as the four firſt, but ſhould be planted in a warm, dry Situation in *Winter*, otherwiſe they are very ſubject to be deſtroy'd by Froſt, being Natives of warmer Countries.

The eighth Sort is a Native of the *Alps* and *Pyrenean* Mountains, and was formerly preſerved in ſeveral Gardens with great Care, being placed in the Green-houſe in *Winter*, as ſuppoſing it too tender to endure the Cold of our Climate in the open Air; but this is now treated in a different Manner, for it ſhould be placed, as much as poſſible, in the Shade, and manag'd as *Auricula's*, with which Treatment it thrives much better than if preſerv'd with great Tenderneſs, and will produce Flowers and Seeds in great Plenty. This Plant may be propagated by Off-ſets, as is practiſed for *Auricula's*, and ſhould be planted in a light, rich Earth, in which it will multiply very faſt.

The ninth, tenth, eleventh, twelfth, thirteenth and fourteenth Sorts are very hardy Plants, which grow wild in ſeveral Parts of *Europe*, but are preſerved in the Gardens of curious Botaniſts for the ſake of Variety.

The fifteenth Sort grows in the Iſland of *Crete* in the *Archipelago*, where it riſes to the Height of three Feet, having a woody Stem; and divides into many Branches, which are armed with Thorns towards their Extremities. The Leaves are oblong, narrow, and ſinuated like thoſe of the *Wild Rocket*, but are very white and woolly. The Flowers are produced near the Extremity of the Branches, which are of a yellow Colour, reſembling thoſe of the *Wall-flower*; from whence ſome Authors have named it *Leucoium ſpinoſum*, i. e. Prickly Gilliflower.

The ſixteenth Sort is very like the ſeventh; but Dr. *Tournefort*, who found this in the *Archipelago*, thinks it to be different, becauſe it has not degenerated in the Royal Garden at *Paris*, as the other Sort commonly will do when it has been cultivated two or three Years in a Garden. This Sort ſeldom continues longer than two or three Years before the Roots periſh.

The ſeventeenth, eighteenth, nineteenth, twentieth and twentyfirſt Sorts, were diſcovered by Dr. *Tournefort* in the *Levant*, from whence he ſent their Seeds to the Royal Garden at *Paris*. All theſe Sorts are hardy enough to thrive in the open Air in *England*, provided they are ſown on a dry undunged Soil; for when they grow on a moiſt Soil, their Roots are ſubject to rot in the *Winter*; and if the Ground is enriched with Dung, it cauſes the Plants to grow ſo rank in *Autumn*, that they are in Danger of being deſtroyed by hard Froſt.

All theſe Plants are propagated by Seeds, which ſhould be ſown on a Bed of light freſh Earth, in an open Situation. The beſt Time to ſow theſe Seeds is in *Autumn*, ſoon after they are ripe; when they will more certainly grow than if they are ſown in the *Spring:* And when they are ſown early in the *Autumn*, the Plants will flower the following *Summer*, by which there will be a Year ſaved. Theſe Seeds ſhould be ſown in Drills, which ſhould be made about eighteen Inches aſunder, becauſe it will be proper to let ſome of the Plants remain to flower in the Seed-bed, where they will grow much ſtronger than thoſe which are tranſplanted; when the Plants come up, they ſhould be kept clean from Weeds; and about *Michaelmas* ſome of the Plants ſhould be carefully drawn out, where they grow too cloſe together, which may be tranſplanted out into a Nurſery-bed to get Strength; and afterward they may be removed, and planted about in Wilderneſs Quarters; where (if they are not too much over-ſhaded by Trees) they will thrive and flower very well, and make an agreeable Variety. Thoſe Plants which are left in the Seed-beds to flower, ſhould be ſingled out to a Foot or more Diſtance in the Rows; otherwiſe they will not have Room to ſpread.

There are very few of the *Mulleins* which are planted in Gardens for Ornament; becauſe ſeveral of the Sorts grow wild in *England*, for which Reaſon many Plants are rejected, and meaner Sorts are cultivated, becauſe they are more rare: But in large Gardens, where there are many Wilderneſs Quarters, theſe Plants are very proper Furniture, becauſe they require very little Care to cultivate them, and they continue a long time in Flower; and tho' they do not make ſo fine an Appearance as ſome other Plants, yet for the agreeable Scent of their Flowers, which reſemble the Violets, they deſerve a Place much better than many other Plants which are cultivated in Gardens.

The fifteenth Sort being tenderer than any of the others, ſome of the Plants ſhould be planted in Pots, filled with freſh light Earth, that they may be ſheltered under a Hot-bed Frame in *Winter*, where they ſhould have as much free Air as poſſible in mild Weather, and covered only in very hard Froſt. The other Plants may be planted on a dry Soil in a warm Situation, where they will endure the Cold of our ordinary *Winters* very well.

VERBENA; [takes its Name of *verrere*, Lat. to *bruſh*, becauſe in old Times it was uſed in cleanſing the Altars: It was alſo called *Periſterium*, of Περιστερὰ, a *Dove*, becauſe Doves are greatly delighted with it. There is no Herb of which the Ancients have ſaid ſo much of its being Vulnerary or Wound-herb; whence it is called *Herba Vulneraria*, or a Species of the *Sideritis:* There has been no Herb of which the Poets have been more fertile in their Fictions, no Herb more commended for Sacrifices; whence it is called *Hierebotane*, of ἱερὰ *ſacred*, and Βοτάνη an *Herb:* Nor any Herb of which the *Magi* have been fuller of their Fables: They ſay, that if a Perſon crop it with his Left-hand, being circumſcribed in a Circle, before he has ſeen Sun or Moon, then he ſhall obtain whatſoever he wiſhes for; but if it be plucked with the Right-hand, nothing will favour him.] Vervain.

The *Characters* are:

It hath a labiated Flower, conſiſting of one Leaf, whoſe upper Lip is upright, and commonly divided into two, but the under Lip is cut into three Parts, ſo that at the firſt Sight it appears like a Flower with five Leaves; theſe Flowers are each ſucceeded by four naked Seeds, which fill the Calyx: To which may be added, the Flowers do generally grow in Spikes or Heads, but not in Whorles round the Stalks.

The *Species* are;

1. VERBENA *communis, cæruleo flore. C. B. P.* Common Vervain, with a blue Flower.
2. VERBENA *Luſitanica latifolia procerior. Tourn.* Taller broad-leav'd Portugal Vervain.
3. VERBENA *Urticæ folio, Canadenſis. H. R. Par.* Canada Nettle-leav'd Vervain.
4. VERBENA *Americana, ſpica multiplici, foliis Urticæ anguſtioribus, floribus cæruleis. Par. Bat. Brod.* American Vervain, with many Spikes, narrow Nettle Leaves and blue Flowers.
5. VERBENA *tenuifolia. C. B. P.* Narrow-leav'd Vervain.
6. VERBENA *Urticæ folio longiore ſerrato. Houſt.* American Vervain, with a longer ſawed Nettle Leaf.
7. VERBENA *Bonarienſis altiſſima, lavendulæ Canarienſis ſpica multiplici. Hort. Elth.* The talleſt Vervain of Buenos Ayres, with many Spikes reſembling the Canary Lavendar.
8. VERBENA *Carolinienſis, meliſſæ folio aſpero. Hort. Elth.* Carolina Vervain, with a rough Balm Leaf.
9. VERBENA *Mexicana, trachelii folio, fructu aparines. Hort. Elth.* Mexican Vervain, with a Throatwort Leaf, and a Fruit like Gooſe-graſs.

The firſt Sort is very common in moſt Parts, and is rarely cultivated in Gardens; this is the Sort which is directed by the *College of Phyſicians* for medicinal Uſe, and is brought to the Markets by thoſe who gather it in the Fields.

The ſecond, third and fourth Sorts, tho' not Natives of this Country, yet are very hardy, and will endure the ſharpeſt of our *Winters* in the open Air.

Theſe may be all propagated by ſowing their Seeds on a Bed of freſh Earth in the *Spring*, and when the Plants come up, they ſhould be tranſplanted out, or thinned ſo as to allow them ten or twelve Inches Diſtance, (for they generally grow pretty large, and require to have Room) after which they will require no farther Care, but to clear them from Weeds, and the ſecond *Summer* they will flower and ſeed, which, if permitted to fall upon the Ground, will come up the ſucceeding *Spring*, without any farther Culture.

The fifth Sort is equally as hardy as the common Vervain, from which it only differs in having narrower Leaves; ſo is never admitted in Gardens, unleſs for the ſake of Variety.

The ſixth Sort was diſcover'd by the late Dr. *William Houſtoun* in *Jamaica*, from whence he ſent the Seeds into *England*. This is a biennial Plant, which commonly periſhes ſoon after it has perfected its Seeds.

The ſeventh Sort was brought from *Buenos Ayres*. This Plant grows to the Height of five or ſix Feet, or more, and produces its Flowers at the Extremity of the Branches in many ſlender Spikes, which are placed cloſe together, ſomewhat like the *Canary* Lavendar. Theſe Flowers are ſmall, and of a blue Colour.

The eighth Sort is a Native of *Carolina*. This is a much humbler Plant, for it rarely riſes above two Feet and a half high. This produces its Flowers in Spikes like the common Sort.

The ninth Sort was brought from *Mexico*. This commonly grows about three Feet high, or more, and generally produces three Spikes from a Joint at the Extremity of the Branches. The Flowers are Male and Female on the ſame Spike. The Female Flowers produce their Seeds covered with the Empalement, which ſwells into a roundiſh Form, ſo as to appear ſomewhat like the Seeds of Gooſe-graſs, or Clivers.

The ſixth, ſeventh and ninth Sorts are tender Plants, which may be propagated by Seeds, and ſhould be ſown on a Hot-bed early in the *Spring*; but when the Plants are come up, they muſt have a good Share of free Air admitted to them in warm Weather, otherwiſe they will draw up too weak: They muſt alſo be often refreſhed with Water. When the Plants have obtained ſome Strength, they ſhould be tranſplanted on another moderate Hot-bed, obſerving to ſhade them until they have taken new Root; after which Time they muſt have Air and Moiſture in warm Weather in great Plenty, which will ſtrengthen the Plants. About the Beginning of *June*, the Plants ſhould be carefully taken up with Balls of Earth to their Roots, planted into Pots fill'd with freſh light Earth, and then plunged into a very moderate Hot-bed, where they ſhould be ſcreened from the Sun until they have taken new Root; and then they ſhould be inured to the open Air by Degrees; for in *July* they may be removed out of the Hot-bed, and placed in a warm ſheltered Situation, where they may remain till the Middle or latter End of *September*, when they muſt be removed into the Stove; where, if they have a moderate Degree of Warmth in *Winter*, and are duly ſupply'd with Water, the Plants may be preſerved, and the following *Summer* they will produce Flowers; and if the Seaſon proves favourable, they will perfect their Seeds in *Autumn*.

The ſeventh Sort is much more hardy than thoſe laſt mentioned, ſo may be ſown on a Bed of light Earth in a warm Situation, about the Middle of *March*; and when the Plants are come up, they muſt be conſtantly kept clean from Weeds, until they are ſtrong enough to tranſplant; when they muſt be carefully taken up, and ſome of them planted into ſmall Pots filled with freſh light Earth, and placed in a ſhady Situation, until they have taken new Root; then they may be placed in an open Situation with other hardy exotick Plants, where they may remain during the *Summer* Seaſon; but in *Winter* they muſt be ſheltered from ſevere Froſt. The other Plants may be planted in a warm Border, where they will endure the Cold of our ordinary *Winters* without Covering; but in hard *Winters* theſe are ſometimes deſtroy'd;

for which Reaſon, it will be proper to have ſome of the Plants in Pots, in order to preſerve the Kind. This Sort flowers and produces good Seeds in this Country, but the Roots ſeldom continue above two or three Years.

VERGE, is the Edge or Outſide of a Border; but in Gardening it is generally underſtood to be a Slip of Graſs which joins to Gravel-walks, and divides them from the Borders in the Parterre Garden.

VERONICA; [was ſo called after the Princeſs *Veronica*, who firſt diſcover'd it.] Speedwell, *or* Fluellin.

The *Characters* are;

The Leaves, for the moſt part, grow oppoſite by Pairs; the Calyx conſiſts of one Leaf, which is divided into four Parts, and expands in form of a Star; the Flower conſiſts of one Leaf, which is, for the moſt part, divided into four Segments, and expands in a circular Order; when the Flower decays, the Ovary becomes a membranaceous Fruit, divided into two Cells, which are ſhaped like a Heart, and are filled with Seeds, which are ſometimes ſmall, and at other times large and thick.

The *Species* are;

1. VERONICA *mas ſupina & vulgatiſſima. C. B. P.* Common Male Speedwell, *or* Fluellin.
2. VERONICA *ſpicata anguſtifolia. C. B. P.* Narrow-leav'd ſpik'd Speedwell.
3. VERONICA *major latifolia erecta. Mor. Hiſt.* Greater broad-leav'd upright Speedwell.
4. VERONICA *multicaulis Pannonica. Tourn.* Hungarian Speedwell, bearing many Stalks or Spikes of Flowers.
5. VERONICA *ſpicata Cambro-Britannica, bugulæ ſub hirſuto folio. Raii Syn. Edit.* 3. Welſh ſpiked Speedwell, with a hairy Bugle Leaf.
6. VERONICA *cærulea, trifido aut quinquefido folio. Flor. Bat.* Blue Speedwell, with a trifid or quinquefid Leaf.
7. VERONICA *Virginiana altiſſima, ſpica multiplici, floribus candidis. Flor. Bat.* Tall Virginian Speedwell, with many Spikes, and white Flowers.
8. VERONICA *ſpicata longifolia. Tourn.* Long-leav'd ſpiked Speedwell.
9. VERONICA *petræa ſemper-virens, Pon. Bald.* Evergreen Rock Speedwell.
10. VERONICA *mas repens Pyrenaica, folio longiori glabro. Schol. Bot.* Male creeping Pyrenean Speedwell, with a longer ſmooth Leaf.
11. VERONICA *mas erecta. C. B. P.* Male upright Speedwell.
12. VERONICA *ſpicata, flore purpureo. Mor. Hort. Reg. Blæſ.* Spiked Speedwell, with a purple Flower.
13. VERONICA *ſpicata minor. C. B. P.* Smaller ſpiked Speedwell.
14. VERONICA *Alpina fruteſcens. C. B. P.* Shrubby Speedwell of the Alps.
15. VERONICA *Alpina fruticans, ſerpilli minoris folio circinato. Pluk. Phyt.* Shrubby Speedwell of the Alps, with a round leſſer Mother-of-thyme Leaf.
16. VERONICA *fruteſcens durior, oblongo chamædryos folio, Patavina. Bocc. Muſ.* Harder ſhrubby Speedwell of Padua, with an oblong Germander Leaf.
17. VERONICA *Auſtriaca foliis tenuiſſimè laciniatis. Inſt. R. H.* Auſtrian Speedwell, with Leaves finely jagged.
18. VERONICA *maxima. Lugd.* The greateſt Speedwell, or Falſe Germander.
19. VERONICA *maxima Pyrenaica, non ramoſa. Inſt. R. H.* The greateſt unbranched Speedwell, of the Pyrenean Mountains.
20. VERONICA *major fruteſcens altera. Mor. Hiſt.* Another greater ſhrubby Speedwell, *or* Falſe Germander.
21. VERONICA *ſupina, facie teucrii pratenſis. Lob. Icon.* Low Speedwell, with the Face of Meadow-germander.
22. VERONICA *longifolia Virginiana altiſſima, foliis ternis profunde ſerratis caulem amplexantibus, ſpicâ multiplici cæruleâ. Royen.* The talleſt long-leav'd Virginian Speedwell, with deeply-ſawed Leaves embracing the Stalks, and many Spikes of blue Flowers.
23. VERONICA *minor anguſtifolia ramoſior & procumbens. Mor. Hiſt. Oxon.* Small narrow-leav'd branching and trailing Speedwell.
24. VERONICA *aquatica major, folio ſubrotundo. Mor. Hiſt.* Greater Water Speedwell, with a roundiſh Leaf, *commonly called* Brook-lime.
25. VERONICA *aquatica, anguſtiore folio. Inſt. R. H.* Narrow-leav'd Water Speedwell, *or* Brooklime.
26. VERONICA *aquatica minor, folio ſubrotundo. Inſt. R. H.* Leſſer Water Speedwell, with a roundiſh Leaf.
27. VERONICA *aquatica major, folio oblongo. Mor. Hiſt.* Greater Water Speedwell, *or* Brooklime, with an oblong Leaf.
28. VERONICA *aquatica minor, folio oblongo. Mor. Hiſt.* Small Water Speedwell, with an oblong Leaf.
29. VERONICA *Conſtantinopolitana incana, chamædryos folio. Tourn. Cor.* Hoary Speedwell of Conſtantinople, with a Germander Leaf.
30. VERONICA *orientalis, foliis hederæ terreſtris flore magno. Tourn. Cor.* Eaſtern Speedwell, with Ground-ivy Leaves, and a large Flower.
31. VERONICA *orientalis erecta, gentianellæ foliis. Tourn. Cor.* Upright Eaſtern Speedwell, with ſmall Gentian Leaves.
32. VERONICA *orientalis elatior, gentianellæ foliis, flore majore albido. Tourn.* Taller Eaſtern Speedwell, with ſmall Gentian Leaves, and a larger white Flower.
33. VERONICA *orientalis minima, foliis laciniatis. Tourn. Cor.* The leaſt Eaſtern Speedwell, with jagged Leaves.
34. VERONICA *orientalis, telephii folio. Tourn. Cor.* Eaſtern Speedwell, with an Orpine Leaf.
35. VERONICA *major fruteſcens altera, foliis conſtanter & eleganter variegatis. Boerh. Ind. alt.* The other great ſhrubby Speedwell, with Leaves conſtantly and beautifully variegated.
36. VERONICA *Americana erecta, foliis gramineis, floribus ex foliorum alis. Houſt.* Upright American Speedwell, with Graſs Leaves, and Flowers coming out of the Wings of the Leaves.
37. VERONICA *fruticoſa erecta dulcis, hexangulari caule, flore dilute cæruleo. Sloan. Cat.* Wild Liquoriſh, *or* Sweet-weed.
38. VERONICA *caule hexangulari, foliis ſatureiæ ternis ſerratis. Sloan. Cat.* Speedwell, with an hexangular Stalk, and ſawed Savory Leaves growing by Threes.
39. VERONICA *quæ ſcordium maritimum, fruticoſum procumbens flore cæruleo. Sloan. Cat. Houſt.* Shrubby trailing maritime Speedwell, *or* Scordium, with a blue Flower.

The firſt Sort grows wild in Woods and other ſhady Places in divers Parts of *England*, and is a Plant of little Beauty, but as it is the Sort which is uſed in Medicine, under the Title of *Paul's Betony*, ſo I thought it not amiſs to ſet it down here. This is generally brought to Market by ſuch Perſons who make it their Buſineſs to gather Herbs in the Fields to ſupply the ſame, ſo that it is not often cultivated in Gardens; but thoſe who have a mind to propagate it, may do it with much Eaſe; for as the Branches trail upon the Ground, they puſh out Roots from their Joints, which Branches being cut off, and planted, will take Root and grow in almoſt any Soil or Situation.

The ſecond, third, and fourth Sorts are very ornamental Plants in the large borders of the Flower-Garden, particularly the fourth which produces a great Number of Spikes of beautiful blue Flowers. Theſe continue flowering at leaſt two Months, and in cool, moiſt Seaſons much longer; and theſe Flowers are very proper to cut for Baſons or Flower-pots to adorn Rooms in the *Summer*-ſeaſon.

The fifth Sort is a Native of the Mountains in *Wales*, from whence it hath been tranſplanted into many curious Gardens. This produces fine large Spikes of blue Flowers, and deſerves a Place in every Garden.

The ſixth, ſeventh, eighth, and ninth Sorts are Natives of warmer Countries than *England*, but are hardy enough to endure the Cold of our *Winters* very well, provided they are planted in a dry Soil. Theſe are all pretty Varieties, and do ſucceed each other in Flowering, which renders them worthy of a Place in every curious Garden. Theſe ſhould all be planted in the Middle of the Borders in the Pleaſure-Garden, (except the fifth and ninth, which ſeldom grow above a Foot high, and ſo are better placed amongſt Flowers of the ſame Growth) where, being intermix'd with other Flowers, they afford an agreeable Variety.

They may be propagated by parting of their Roots, which commonly increaſe very faſt, ſo that the raiſing them from Seeds is ſeldom practiſed. The beſt Time for parting and tranſplanting the Roots is in *September*, that they may have Time to take freſh Root before the *Winter* comes on; and theſe being fix'd in *Autumn*, will be much ſtronger than thoſe which are removed in the *Spring*, and will produce a greater Number of Flowers.

They may be planted in almoſt any Situation, but ſhould have a middling freſh Soil, not too wet, in which they will thrive exceedingly, and require no farther Care but to keep them clear from Weeds, and to part their Roots every *Autumn*; for if they are ſuffered to remain too long unremoved, their Roots will ſpread, and take up too much Room in the Borders, ſo as to injure ſuch Plants as grow near them.

The tenth and thirteen following Sorts are very hardy abiding Plants, and may be propagated either by Seeds, or parting of their Roots. If propagated by Seeds, they ſhould be ſown on an open Bed of freſh Earth in *March*, and in *April* the Plants will come up, when they muſt be kept clear from Weeds; and if the Seaſon ſhould prove very dry, if they are watered two or three times a Week, it will cauſe them to make a great Progreſs. Where the Plants come up too cloſe together, ſome of them ſhould be drawn up, and tranſplanted into Nurſery-beds, where they ſhould be ſhaded and watered until they have taken new Root; and then they will require no farther Care, but to keep them clean from Weeds until *Michaelmas*, when they will be fit to tranſplant out where they are deſigned to remain for good. All theſe Sorts are very proper to plant on the Side of ſloping Banks, or in wilderneſs Quarters under Trees, where they will flower a long time, and make an agreeable Variety.

The twenty-ſecond Sort is a Plant of larger Growth than the others: this commonly riſes four or five Feet high, if it is planted on a good Soil; and produces fine Spikes of blue Flowers, which in a cool Seaſon, or when they grow on a moiſt Soil, and in a ſhady Situation, will continue in Beauty a long time; for which it may deſerve a Place in every good Garden.

Theſe Plants may alſo be propagated by parting of their Roots, which may be done every third Year; for if they are too often parted, or divided into ſmall Heads, they will not make any Figure, becauſe when they have not a Number of Stems, ſo as to form a good Bunch, they are ſoon paſt their Beauty, and have but a mean Appearance. The beſt Time to part theſe Roots is at *Michaelmas*, that they may be well rooted again before *Winter*; for when they are removed in the *Spring*, they ſeldom flower ſtrong the ſame Year, eſpecially if the Seaſon ſhould prove dry. Thoſe Sorts which grow pretty tall, are very proper to plant under large Trees, in open wilderneſs Quarters; but thoſe trailing Branches are fit for the Sides of Banks, or irregular ſhady Slopes, where they will make an agreeable Variety.

The twenty-fourth Sort is uſed in Medicine, being accounted a very good Antiſcorbutic; it is ſtiled *Becabunga* in the Diſpenſatory, and in *Engliſh Brooklime*. It is very common in ſtanding Waters, in moſt Parts of *England*, ſo is ſeldom admitted into Gardens.

The twenty-fifth, twenty-ſixth, twenty-ſeventh and twenty-eighth Sorts, grow in ſtanding Waters, ſo are only preſerved in ſome Botanic Gardens for the ſake of Variety. Theſe may be eaſily propagated by taking the Plants from the Places of their natural Growth, and putting them on the Surface of ſhallow ſtanding Waters, where they will ſoon ſtrike out their Roots, and multiply exceedingly.

The ſix Sorts next mentioned were diſcovered by Dr. *Tournefort* in the *Levant*, from whence he ſent their Seeds to the Royal Garden at *Paris*: theſe are all of them hardy Plants, ſo will thrive in the open Air. They may be propagated by Seeds in the ſame manner as the above-mentioned, and deſerve a Place in good Gardens for their Variety.

The thirty-fifth Sort is preſerved in Gardens for the ſake of its beautiful variegated Leaves, which make a pretty Appearance in the *Winter*. This may be propagated by parting of the Roots, or from Slips taken off in the *Spring*, and planted in a ſhady Border, which if duly watered, will take Root; and the *Michaelmas* following they may be tranſplanted where they are deſigned to remain.

The thirty-ſixth Sort was diſcovered by the late Dr. *Houſtoun* at *La Vera Cruz*, from whence he ſent the Seeds to *England*. This is a low annual Plant, which ſeldom riſes above four or five Inches high. The Flowers are produced from the Wings of the Leaves, and are very ſmall and white. This grows on ſandy Ground, where the Seeds ſcatter, and the Plants come up in plenty.

The thirty-ſeventh, thirty-eighth and thirty-ninth Sorts, grow plentifully in the Iſland of *Jamaica*, from whence they have been brought into *Europe*, and are preſerved in ſeveral curious Botanic Gardens, for the ſake of Variety. All theſe being Plants natural to hot Countries, are too tender to thrive in the open Air in *England*: ſo their Seeds ſhould be ſown on a Hot-bed early in the *Spring*; and when come up, each Plant ſhould be tranſplanted into a ſeparate ſmall Pot, and plunged into a moderate Hot-bed of Tanners-bark, obſerving to ſhade them until they have taken new Root; and then they may be treated in the ſame manner as is directed for the *Samoloides*, with which Management they will flower, and perfect their Seeds in *England*.

I cannot omit mentioning the Virtues of the common Speedwell, which have cauſed it to be in great Requeſt of late. It is found an excellent Remedy for the *Gout*, and all Rheumatic Diſorders. The Method is to make a Tea of the dried Herb, the Quantity to be uſed is about a quarter of an Ounce, from which four common Diſhes of Tea may be drawn: theſe are to be drank every Morning, until the Patient finds Relief. To this ſome add the dried Herbs of *Bog-bean* and *Ground-pine*, which they mix in equal Quantities, and make a Tea of them, from which many Perſons have received great Benefit.

VIBURNUM; The Way-faring *or* Pliant Mealy Tree.

The *Characters* are;

The Flower conſiſts of one Leaf, which is divided into five Parts, and expands in a circular Order; theſe are collected into the Form of an Umbrella; the Ovary, which is placed on the upper part of the Flower, becomes a ſoft Berry, full of Juice, which contains one ſtony, compreſs'd, furrow'd Seed.

The *Species* are;

1. VIBURNUM. *Matth.* The common Viburnum, *or* Pliant Mealy Tree.
2. VIBURNUM *folio variegato.* The common Viburnum, with ſtrip'd Leaves.
3. VIBURNUM *Americanum odoratum, urticæ foliis latioribus, ſpinoſum, floribus miniatis. Par. Bat. Prod.* American ſweet-ſcented Viburnum, with broad Nettle Leaves, beſet with Thorns and Vermilion Flowers.
4. VIBURNUM *Americanum odoratum, foliis urticæ, floribus miniatis. H. L.* American ſweet-ſcented Viburnum, with Nettle Leaves, and Vermilion Flowers.
5. VIBURNUM *ciſti fœminæ ſive ſalviæ foliis mucronatis, Americanum odoratum minus, floribus incarnatis. Par. Bat. Prod.* Leſſer American Viburnum, with Leaves like the Female Ciſtus, and pale-colour'd Flowers.
6. VIBURNUM *Americanum, ſalviæ foliis obtuſis, floribus albis. Par. Bat. Prod.* American Viburnum, with blunt Sage Leaves, and white Flowers.
7. VIBURNUM *Americanum, ciſti fœminæ ſeu ſalviæ foliis mucronatis, floribus luteis. Par. Bat. Prod.* American Viburnum, with Leaves like thoſe of the Female Ciſtus, and yellow Flowers.
8. VIBURNUM *Americanum, folio urticæ, floribus ex aureo & roſeo miſtis. Boerh. Ind.* American Viburnum, with a Nettle Leaf, and gold and roſe-coloured Flowers intermixed.
9. VIBURNUM *Carolinianum, floribus purpuraſcentibus ex alis foliorum.* Carolina Way-faring-tree, with purpliſh Flowers, coming out from the Wings of the Leaves.
10. VIBURNUM *Americanum latifolium, floribus albis, ramulis tomentoſis.* Broad-leav'd American Way-faring-tree, with white Flowers, and woolly Branches.

The firſt of theſe Trees is very common in divers Parts of *England*, particularly in *Kent*, where it grows in moſt of the Hedges upon the dry, chalky Hills, near *Graveſend*, *Rocheſter*, &c. in very great Plenty. But notwithſtanding its being thus common, yet it deſerves a Place in ſmall Wilderneſs Quarters, among other flowering Trees, where, by its mealy Leaves and Shoots, together with its large Bunches of white Flowers in the *Spring*, which are ſucceeded by red Berries in *Autumn*, it affords an agreeable Variety.

This Tree may be propagated either from Seeds, or by laying down the tender Branches; but the former Method being tedious, is ſeldom practiſed, eſpecially ſince young Plants may be taken from the Woods or Hedges, where there are many of the old Trees growing; from which a Number may ſoon be propagated.

The beſt Time for laying theſe Branches is in *Autumn*, juſt as the Leaves begin to fall, (the Manner of laying them being the ſame as for other hardy Trees, need not be here repeated;) by the ſucceeding *Autumn* the Layers will be rooted, when you may take them off from the old Plants, and tranſplant them into a Nurſery for two or three Years, in which they may be trained up to regular Stems and Heads, and may afterwards be planted where they are to remain. This Tree commonly grows about twelve or fourteen Feet high, but it is rarely ſeen above ſixteen or eighteen, ſo that it ſhould be planted in Lines with ſuch Trees as do not exceed this Growth; otherwiſe it will be hid thereby, and their Beauty loſt.

The ſtrip'd Sort may be propagated by inarching it upon the plain Sort. This is preſerv'd by ſuch as delight in variegated Plants, but there is no great Beauty in it; but theſe Trees do ſeldom grow near ſo large as thoſe of the plain Sort, as is the Caſe of all other ſtrip'd Plants.

There is alſo another Sort very like to the common, which has been introduc'd into the *Engliſh* Gardens lately, which was brought from *Virginia*; but as this Sort has not yet flowered with us, ſo I can't ſay how it differs from ours. This was at firſt ſomewhat tender, while young, and in the ſharp *Winter*, *Anno* 1728. the Plants of this Kind, which were placed in the open Air, were kill'd down to the Ground; but the Roots of moſt of them ſhot up again the ſucceeding *Spring*, and have ſince endured the Cold of our *Winters* very well.

All the other *American* Sorts are Natives of the warm Parts of the *Weſt-Indies*, where, by the *Engliſh* Inhabitants, they are promiſcuouſly called *Wild Sage*; but by the Natives of thoſe Countries, they are called *Camara*, which, by *Pere Plumier*, is the Name appropriated to the Genus.

Theſe are all tender Plants, requiring the Aſſiſtance of a Stove, to maintain them in this Country. They may be propagated by planting their Cuttings, during any of the *Summer* Months, into Pots fill'd with freſh, light, rich Earth, and plunged into a moderate Hot-bed, obſerving to water and ſhade them until they have taken Root, after which they may be removed into the Stove, hardening them by degrees to bear the open Air, into which they ſhould be remov'd in *July*, placing them where they may be defended from ſtrong Winds, in which Situation they may remain until the Middle or latter End of *September*, when they muſt be carried into the Stove, and placed where they may have a moderate Warmth, but as much free Air as poſſible in very mild Weather.

During the *Winter* Seaſon theſe Plants muſt be frequently refreſhed with Water, which ſhould be placed in the Stove at leaſt twenty four Hours before it be uſed, that it may have acquired a proportionable Warmth to the Air of the Houſe, and muſt be given to them in ſmall Quantities; for much Wet at that Seaſon is very injurious to theſe Plants. The temperate Heat (as mark'd on Mr. *Fowler*'s Botanical Thermometers) is what theſe Plants ſucceed beſt with; for if the Stove be kept too warm, the Plants are very ſubject to ſhoot in *Winter*, and the Branches which are produc'd at that Seaſon are always weak, and ſeldom flower well, ſo that the Strength of the Plant is greatly exhauſted in nouriſhing weak and irregular Shoots: But if the Houſe in which they are plac'd be not kept too near that Heat, the tender Shoots will decay, and many times the Heads of the Plants will be intirely deſtroy'd by Cold.

In *June*, when the Weather is ſettled, theſe Plants may be brought out of the Houſe, but they ſhould not be expos'd to the open Air and Sun at firſt, but rather placed near Hedges or other Trees, whereby they may be ſhelter'd, and by degrees inured to the open Air; which if they are ſuddenly expos'd to, will cauſe their Leaves to change brown, and appear unſightly; and the Growth of the Plants will alſo be greatly retarded thereby. During the Time they are abroad, they muſt be frequently watered; for the Sun and Air will dry the Earth in the Pots, much faſter than while they remain'd in the Houſe; ſo that if they are not ſupply'd with Moiſture, they will not produce their Flowers ſo ſoon, nor near ſo ſtrong, in which the Beauty of theſe Plants doth conſiſt.

The Beginning of *Auguſt* the Flowers will begin to appear at the Extremity of the Branches, and if the Plants are carefully managed, they will continue flowering until *December*; and during this Time they will afford as much Pleaſure as moſt other Exotick Plants, their Flowers growing in cloſe Bunches, and are, for the moſt part, of a very beautiful Colour; but theſe Plants rarely produce good Seeds in this Country.

The Soil in which theſe Plants thrive beſt, is the following Mixture, *viz.* one Load of freſh light Earth, one Load of very rotten Dung, or Tanners-Bark, and a Load of Sea-Sand; theſe ſhould be well mix'd and laid in a Heap three or four Months before it be us'd, obſerving to turn it over often, to ſweeten and mix the Parts, as alſo to prevent Weeds from growing thereon; and before it be put into the Pots, it ſhould be ſcreen'd roughly, juſt to ſeparate the large Stones and Clods from it; but by no means ſift it very fine; for when it is rendered very fine, the often watering of the Plants will cauſe it to join and conſolidate into one intire Maſs, whereby the Moiſture will be detain'd, which will rot the tender Fibres of the Roots, ſo that the Plants will grow ſickly, and if not remedied, ſhortly decay.

The ninth Sort grows plentifully in *South Carolina* and *Georgia*, from whence the Seeds have been brought to *England*. This riſes to the Height of eight or nine Feet, and divides into many Branches near the Ground. The Leaves which are produced by Pairs, are ſomewhat like thoſe of the *European* Kind. The Flowers are produced in ſmall Umbels from the Wings of the Leaves, which are of a purpliſh Colour. Theſe are rarely ſucceeded by Fruit in *England*, becauſe it is generally late in *Summer* before the Flowers appear; ſo that if the *Autumn* is not very favourable, the Flowers fall off without producing Seeds.

This Plant is hardy enough to live abroad in the open Air in *England*, provided it is planted in a ſheltered Situation; for as it naturally grows in Woods, where it is ſheltered from Cold by taller Trees, ſo if it is placed in an open Situation, it is often injured by ſevere Froſts. It is commonly propagated by Seeds, which are procured from the Countries of its natural Growth: they ſhould be ſown in Pots filled with freſh Earth early in the *Spring*, and then plunged into a Hot-bed of Tanners-bark. Theſe Pots muſt be conſtantly watered every other Day, or at leaſt twice a Week, according as the Earth dries; for if it is not kept pretty moiſt, the Seeds will remain a long time in the Ground, before they vegetate. When the Plants come up, they muſt be kept clean from Weeds, and in warm Weather ſhould have a large Share of Air admitted to them otherwiſe they will draw up very weak. They muſt alſo be duly watered, for they naturally grow on moiſt Places, and are pretty droughty Plants. About the middle of *June*, they muſt be inured to the open Air by Degrees. In *July* the Pots ſhould be taken out of the Hot-bed, and placed in a ſheltered Situation in the open Air; where they may remain till *October*, when the Pots ſhould be placed under a common Hot-bed Frame, where the Plants may be covered in froſty Weather; but when the Weather is mild, they ſhould be expoſed as much as poſſible. This Plant ſheds its Leaves in *Autumn*; and the latter End of *March*, or the Beginning of *April*, it puts out new Leaves; ſo ſhould be tranſplanted, juſt before the Buds begin to come out. Some of them ſhould be planted into ſeparate ſmall Pots filled with freſh light Earth; and the others may be put into a warm Border of freſh light Earth, where they may remain two Years to get Strength; and then they may be removed to the Places where they are deſigned to remain. Thoſe which are potted, ſhould be plunged into an old Bed of Tanners-bark, and covered either with Mats or Glaſſes, until they have taken new Root; and then they may be placed in the open Air with other hardy Exoticks, where they may remain during the *Summer* Seaſon; but in *Winter* they ſhould be ſheltered under a Hot-bed Frame as before. When they have obtained Strength, they may be ſhaken out of the Pots, and planted in wilderneſs Quarters, reſerving two or three Pots to be ſheltered in *Winter*, for fear thoſe abroad ſhould be deſtroyed by ſevere Froſt.

Theſe Plants may alſo be propagated by laying down of the young Branches, in the ſame manner as is practiſed for the common Sort. The beſt Time for laying them down, is in *March*, juſt before the Leaves come out. If theſe are duly watered in dry Weather, they will be ſufficiently rooted by the following *Spring*, when they may be taken off, and treated in the ſame manner as the ſeedling Plants.

The tenth Sort is very tender. The Seeds of this Kind were ſent from *Campechy* by Mr. *Robert Millar*, who found the Plants growing in low marſhy Places in great Plenty. This Sort riſes to the Height of eight or ten Feet, and has broader Leaves than the common Sort, which are (while young) covered pretty thick with a ſoft white Down; but as the Leaves grow older, their upper Sides are greener, and loſe moſt of the Down. The young Branches are alſo very woolly; but as theſe grow older it falls off. The Flowers are produced from the Wings of the Leaves in large Bunches, which are white; but the Apices or Summits are of a red Colour, which at a ſmall Diſtance appears like Stripes in the Flowers. After the Flowers are decayed, the Fruit appears, which, when ripe, turns black.

This Plant may be propagated by Seeds, which ſhould be ſown on a Hot-bed early in the *Spring*; and when the Plants are come up, and fit to tranſplant, they ſhould be each planted into a ſeparate ſmall Pot filled with light rich Earth, and then plunged into a Hot-bed of Tanners-bark, obſerving to ſhade them from the Sun until they have taken new Root, when they ſhould have free Air admitted to them every Day in proportion to the Warmth of the Seaſon; and as they are Plants which delight in low marſhy Places, ſo they muſt be conſtantly ſupplied with Water in hot Weather, otherwiſe they will not thrive. When they have filled the ſmall Pots with their Roots, they ſhould be ſhaken out, and their Roots trimm'd, and then put into Pots a Size larger; but they muſt be plunged again into the Hot-bed, becauſe while they are young they will not thrive, if they are too much expoſed to the open Air; tho' in warm Weather the Glaſſes ſhould be every Day raiſed with Stones, to admit freſh Air, otherwiſe they will draw up too weak. At *Michaelmas* they ſhould be removed out of the Hot-bed, and plunged into the Bark-bed in the Stove, where they ſhould be kept in a moderate Temperature of Heat, and muſt be frequently watered; in which Stove they will retain their Leaves all the Year, and make conſiderable Progreſs; ſo that in two Years from ſowing, they will produce Flowers and Fruit.

As theſe Plants grow older and ſtronger, ſo they may be treated more hardily: therefore they may be placed in a dry Stove in *Winter*; and in the Middle of *Summer* may be expoſed abroad in a warm ſheltered Situation, with other tender exotick Plants, obſerving in dry Weather to water them duly, and to ſhift them into other Pots, as they ſhall require it: with which Management they will produce their Flowers every Year toward the End of *Summer*; and if the *Autumn* proves very favourable, or the Plants are early removed into the Stove, they will perfect their Seeds very well.

This Sort may alſo be propagated by Layers, as the ninth; but when the Shoots are laid down, it will be proper to plunge the Pots into a moderate Hot-bed of Tanners-bark, which will cauſe them to put out Roots much ſooner than when they are expoſed abroad. The Layers, when ſufficiently rooted, may be taken off, and planted into ſeparate Pots, and treated in the ſame manner as the ſeedling Plants.

VICIA; [ſo called of *Vincire*, *Lat.* to *bind*, becauſe it clings about any Stays or Supporters] Vetch.

The *Characters* are;

It hath a papilionaceous Flower, out of whoſe Empalement ariſes the Pointal, which afterwards becomes a Pod full of roundiſh or angular Seeds; to which muſt be added, the Leaves grow as it were by Pairs, on a Middle-rib ending in a Tendril.

The *Species* are;

1. VICIA *ſativa vulgaris, ſemine nigro. C. B. P.* Common Vetch *or* Tare.

2. VICIA *ſativa alba. C. B. P.* White Vetch *or* Tare.

3. VICIA *ſupina, latiſſimo folio non ſerrato. Tourn.* Low Vetch, with a broad Leaf not ſerrated.

4. VICIA *ſupina, latiſſimo folio ſerrato. Tourn.* Low Vetch, with a broad ſerrated Leaf.

5. VICIA *ſiliquas ſupra infraque terram edens. Tourn.* Eatable Vetch, having Pods both above and below Ground.

6. VICIA *multiflora. C. B. P.* Many-flowered Vetch.

7. VICIA *maxima dumetorum. C. B. P.* Buſh or perennial Vetch.

8. VICIA *ſepium folio rotundiore acuto, ſemine nigro. C. B. P.* Buſh Vetch, with a rounder ſharp-pointed Leaf, and a black Seed.

9. VICIA *vulgaris, acutiore folio, ſemine parvo nigro. C. B. P.* Wild Vetch, with a ſharper pointed Leaf, and a ſmall black Seed.

10. VICIA *perennis incana multiflora. Bot. Monſp.* Hoary perennial Vetch, with many Flowers.

11. VICIA *perennis multiflora, majori flore cæruleo, ex albo mixto. Bot. Monſp.* Tufted perennial Vetch, with a large blue Flower mixed with white.

12. VICIA *perennis multiflora incana, inſularum Stæchadum. Inſt. R. H.* Perennial hoary tufted Vetch of the *Stæchades*.

13. VICIA *ſylveſtris hirſuta incana. C. B. P.* Hoary rough wild Vetch.

14. VICIA *ſylveſtris incana, major & præcox, Pariſienſis, flore ſuave-rubente. Inſt. R. H.* The greater early hoary wild Vetch, with a ſoft red Flower.

15. VICIA *ſylvatica maxima, piſo ſylveſtri ſimilis. J. B.* The greateſt wild Vetch, reſembling wild Peaſe.

16. VICIA *ſylveſtris lutea, ſiliqua hirſuta. C. B. P.* Wild yellow Vetch, with hairy Pods.

17. VICIA *ſerotina perennis, flore luteo, ſiliqua hirſuta. Inſt. R. H.* Late-flowering perennial Vetch, with a yellow Flower, and a hairy Pod.

18. VICIA *ſerotina perennis, flore luteo, ſiliqua glabra. Inſt. R. H.* Late-flowering perennial Vetch, with a yellow Flower, and ſmooth Pod.

19. VICIA *ſylveſtris lutea, cum galea fuſca. J. B.* Wild yellow Vetch, with a brown Standard.

20. VICIA *Cretica multiflora latifolia, flore intenſe purpureo. Tourn. Cor.* Broad-leav'd many-flower'd Vetch of Crete, with a deep purple Flower.

21. VICIA *orientalis multiflora incana, anguſtiſſimo folio. Tourn. Cor.* Hoary eaſtern tufted Vetch, with a very narrow Leaf.

22. VICIA *verna villoſiſſima & incana, flore parvo ſpicato ex purpureo ad ianthinum vergente. Tourn. Cor.* The moſt hairy and hoary ſpring Vetch, with a ſmall ſpiked Flower, from a purple to a violet Colour.

23. VICIA *multiflora ſpicata, floribus albidis, calyce purpureo. Tourn. Cor.* Spiked tufted Vetch, with whitiſh Flowers, and a purple Empalement.

24. VICIA *orientalis multiflora argentea, flore variegato. Tourn. Cor.* Eaſtern tufted ſilvery Vetch, with a variegated Flower.

25. VICIA *orientalis, flore maximo palleſcente, maculâ luteâ notato. Tourn. Cor.* Eaſtern Vetch, with a large pale Flower ſpotted with Yellow.

26. VICIA *multiflora Caſſubica fruteſcens, lentis ſiliqua. Breyn. Prod.* Shrubby tufted Vetch, with Pods like Lentils.

27. VICIA *ſylvatica multiflora maxima. Phyt. Brit.* The greateſt tufted wood Vetch.

28. VICIA *ſegetum, cum ſiliquis plurimis hirſutis. C. B. P.* Small wild Tare, with many rough Pods.

29. VICIA *ſegetum, ſingularibus ſiliquis glabris. C. B. P.* Corn Vetch, or fine Tare, with ſingle ſmooth Pods.

30. VICIA *minima, cum ſiliquis glabris. Inſt. R. H.* The ſmalleſt Vetch, with ſmooth Pods.

31. VICIA *ſive cracca, foliis & ſiliquis longioribus. Bot. Monſp.* Vetch with longer Leaves and Pods.

32. VICIA *minima præcox, Pariſienſium. H. R. Par.* The leaſt early Vetch, with an angular Seed.

The firſt Sort is cultivated in the Fields in divers Parts of *England* for the Seed, which is the common Food of Pigeons: The Method of cultivating them being much the ſame as is practiſed for *Peas*, I ſhall not repeat it in this Place, but refer the Reader to that Article.

The ſecond Sort is a Variety of the firſt, from which it only differs in the Colour of the Flowers and Seeds, which in this Kind are both white; but the Flowers of the other Kind are purple, and the Seeds are black. This may be cultivated as the former.

The third and fourth Sorts are, at preſent, only preſerved in Botanick Gardens in *England*, tho' I believe they might be cultivated in the Fields, as the common Sort, with good Succeſs.

Theſe muſt be ſown in the *Spring*, as *Peas*, but ſhould have a light dry Soil, and do require more Room than the common Sort, for the Plants are apt to ſpread pretty far, provided they like their Situation. They are both annual Plants, which decay ſoon after their Seeds are ripe. Theſe are ſuppoſed to be the *Bean* of the ancient *Greeks*.

The fifth Sort was carried from *Africa* into the *Weſt-Indies* (by the *Negroes*, who are very fond of its Fruit) where it thrives prodigiouſly; and when once well fixed in the Ground, will propagate itſelf very faſt; for ſoon after the Flowers fade, the Pedicle thruſts itſelf under the Surface of the Earth, where the Fruit is perfected; which if not ſought for, and taken up when ripe; will ſoon ſhoot out and make freſh Plants: So that the Perſons who have not been acquainted with this Plant, ſeldom know how and when to look for their Pods, by which Means the *Negroes* generally gather them for their own Uſe. This Plant is alſo an Inhabitant of the *Eaſt-Indies*, and alſo in divers Parts of *Aſia* hath been long cultivated; tho' there ſeems to be no extraordinary Quality in it to recommend it. In *England* it is only preſerved as a Curioſity, and muſt have the Aſſiſtance of a Hot-bed, otherwiſe the Fruit will not ripen.

The ſixth Sort grows wild in divers Parts of *England*, under Hedges, and by the Sides of Woods, where it climbs upon whatever Buſhes are near it; and during the Time of flowering (which is commonly in *June* and *July*) it affords an agreeable Proſpect. This Plant may be cultivated by the Sides of Wilderneſs Quarters, where it may be allowed to climb upon ſome low Buſhes, without which Support it ſeldom thrives well; and in ſuch ſhady Situations it will flower extremely, and continue for ſeveral Years. The beſt Way to propagate it, is by ſowing the Seeds either in *Spring* or *Autumn*, in the Places where they are to remain; for theſe Plants commonly ſhoot their Roots downright into the Ground, ſo that they ſeldom thrive well if tranſplanted.

The ſeventh, ninth and ſixteenth Sorts grow wild in this Kingdom. The ſeventh is very common in ſhady Woods, and on the Sides of Banks under Trees, in moſt Parts of *England*. The ninth Sort is found on *Shotover Hill*, and in ſome other Places in *England*: And the ſixteenth grows on *Glaſtenbury-thorn-hill* in *Somerſetſhire*.

The eighth, tenth, eleventh, thirteenth, fifteenth, ſeventeenth, eighteenth and nineteenth Sorts grow wild in *Germany*, *France* and *Italy*, but are not Natives of this Country. Theſe are all of them abiding Plants, whoſe

Roots continue ſeveral Years; but their Shoots die down in *Autumn*, and freſh ones come out the following *Spring*, ſome of which will riſe to the Height of five or ſix Feet, and trail over Buſhes, or whatever Plants they grow near; ſo that they muſt be ſupported, otherwiſe they will appear very unſightly.

Theſe may be propagated by Seeds, which may be ſown in Drills on a Border of freſh Earth, expoſed only to the Morning Sun. The beſt Time for ſowing theſe Seeds is in *March*, and when the Plants come up, they muſt be kept clean from Weeds; and where they are too cloſe together, ſome of them ſhould be drawn up to give Room for the remaining ones to grow ſtrong. This is all the Culture they require till *Michaelmas*, when their Shoots will decay; at which Time the Roots ſhould be carefully taken up, and tranſplanted where they are deſign'd to remain, which ſhould be under Trees, and in other ſhady Wilderneſs Quarters; where, if they are rightly diſpoſed, they will thrive extremely well, and make an agreeable Variety.

The twelfth Sort grows wild in the *Stœchades Iſles*, from whence the Seeds have been obtained by ſome curious Perſons, who preſerve the Sort for the ſake of Variety; as is alſo the fourteenth Sort, which is found wild in the Neighbourhood of *Paris*.

The twentieth, twentyfirſt, twentyſecond, twentythird, twentyfourth and twentyfifth Sorts were diſcovered by Dr. *Tournefort* in the *Levant*, from whence he ſent their Seeds to the Royal Gardens at *Paris*. Theſe, tho' they are Natives of warmer Countries than *England*, yet will thrive very well in the open Air; ſo may be admitted into Gardens for the ſake of Variety.

The twentyſixth Sort is alſo an abiding Plant, whoſe Shoots decay every *Autumn*, and freſh ones are produced in the *Spring*. This Sort ſhould have a moiſt ſhady Situation, in which the Shoots will riſe five or ſix Feet high, and produce great Quantities of Flowers; ſo will afford an agreeable Variety in ſome obſcure Places, where few better Plants will thrive.

The twentyſeventh Sort grows wild in ſome Woods in the North of *England*, as alſo in *Oxfordſhire*. This is alſo an abiding Plant, which ſhould be treated in the ſame Manner as the former Sort.

As all theſe Sorts of Vetches grow near Buſhes, or under Hedges, on which they climb, and are thereby ſupported from trailing on the Ground, ſo whenever they are brought into Gardens, they ſhould be planted in the like Situation: For if they trail on the Ground, they will run over whatever Plants grow near them, and make a bad Appearance; whereas, if they are planted near any ordinary Shrubs, over which they may be allowed to ramble, their Flowers will appear ſcattering amongſt the Branches of the Shrubs, and afford an agreeable Variety.

The twentyeighth, twentyninth, thirtieth and thirtyfirſt Sorts are annual Plants, which grow too plentifully amongſt the Corn, ſo as to become very troubleſome Weeds in ſome Parts of *England*; therefore ſhould be rooted out in the *Spring*, before their Seeds ripen; for if any of them are permitted to ſtand until their Seeds are ripe, the firſt hot Day after, the Pods will burſt, and caſt their Seeds to a great Diſtance, ſo as to fill the Ground with young Plants in *Autumn*. Theſe Plants always come up in *Autumn*, and abide the *Winter*, during which Time they do not appear as if they would ever become large enough to injure the Crop, amongſt which they grow; but in the *Spring* they will ſend forth many lateral Shoots, ſo as to ſpread to a conſiderable Diſtance, and by their Tendrils will faſten themſelves to the Stalks of Corn, or any other Plants, and thereby greatly weaken them; and ſometimes, where theſe Weeds are in Plenty, and the Corn but weak, they will ramp quite over it, and thereby almoſt deſtroy it. The beſt Time to extirpate theſe Weeds is in *March* or *April*, when, if they are cut up with a Spaddle in dry Weather, they will in a Day or two be effectually deſtroy'd, ſo as not to recover; and if this be repeated two or three Seaſons, it will entirely clear the Land of them.

The thirtyſecond Sort is a very ſmall annual Plant, which grows wild on chalky Hills in ſome Parts of *England*, but particularly near *Greenhith* in *Kent*. It flowers the Beginning of *April*, the Seeds are ripe in *May*, and the Plant ſoon after periſhes; ſo that whoever is deſirous to find it, muſt ſearch for it while it is in Vigour; otherwiſe it is ſo ſmall, that it can hardly be diſcovered. If this Plant is deſigned to be preſerved in a Garden, the Seeds ſhould be ſown early in *Autumn*, that the Plants may get Strength before *Winter*; for when they are ſown in the *Spring*, they ſeldom ſucceed. When they are once eſtabliſhed in a Garden, and their Seeds permitted to ſcatter, they will maintain themſelves better than if ſown by Hand; and will require no other Care, but to keep them clear from Weeds.

There are ſome of the larger Kinds of theſe Vetches, as well worth cultivating in the Fields as the common *Tare*, and will ſerve for the ſame Purpoſes, eſpecially the eighth, ninth and fifteenth Sorts, which grow large, and afford a good Quantity of Seeds. Theſe may all be cultivated in the ſame Manner as the common Sort, and are equally hardy.

The uſual Time for ſowing of Vetches or Tares is in the *Spring*, about the Middle of *February*; but from ſeveral Experiments which I have made, I find it to be a much better Method to ſow them in *Autumn*; for as they are hardy enough to reſiſt the Froſt in *Winter*, ſo they will get Strength early in the *Spring*, and will grow conſiderably larger than thoſe which are ſown in the *Spring*, and will produce a larger Quantity of Seeds, which will ripen early in *Summer*, ſo may be gather'd in before Wheat Harveſt.

The Sorts of Vetches which are cultivated for Uſe in the open Fields, ſhould be ſown in Drills, after the ſame Manner as is practiſed for Peaſe. Theſe Drills ſhould be a Foot and half or two Feet aſunder, that there may be Room for the Houghing Plough to go between them, in order to deſtroy the Weeds, and to earth the Plants. Theſe Drills ſhould be about the ſame Depth as thoſe uſually made for Peaſe, and the Seeds ſhould be ſcattered about the ſame Diſtance in the Drills. Theſe Seeds ſhould be carefully covered as ſoon as they are ſown; for if they are left open the *Rooks* will diſcover them; ſo that where they are not carefully watch'd, they will entirely devour them. Indeed theſe, being ſown in *Autumn*, will be in leſs Danger than thoſe which are ſown in the *Spring*; becauſe there is more Food for *Rooks* and *Pigeons* in the open Fields at this Seaſon; and the Plants will appear much ſooner above Ground. The beſt Time to ſow them is about the Beginning of *September*; for the Rains which uſually fall at that Seaſon, will bring them up in a ſhort Time. Toward the latter End of *October*, the Plants will have obtained conſiderable Strength, ſo ſhould then be earthed up with the Houghing Plough. This Work ſhould be performed in dry Weather, and in doing of it Care muſt be had to lay the Earth up as high to the Stems of the Plants as poſſible, ſo as not to cover their Tops; becauſe this will ſecure them againſt Froſt. The whole Space of Ground between the Rows ſhould alſo be ſtirred, in order to deſtroy the Weeds, which if carefully performed in dry Weather, will lay the Land clean till *March*; at which Time the Crop ſhould be earthed a ſecond time, and the Ground clean'd again between the Rows; which will cauſe the Plants to grow vigorous, and in a little Time they will ſpread ſo as to meet and cover the Spaces; whereas thoſe ſown in the *Spring* will not grow to half this Size, and will be very late in flowering.

Some People ſow theſe Vetches, and when they are fully grown, plough them into the Ground, in order to manure it. Where this is deſigned, there will be no Occaſion to ſow them in Drills at this Diſtance, nor to huſband them in the Manner before directed; but in this Caſe it will be the beſt Method to ſow them in *Autumn*, becauſe they will be fit to plough in much ſooner the following Year, ſo that the Land may be better prepared to receive the Crops for which it is intended. In ſome Parts of *France*, and in *Italy*, theſe Vetches are ſown for feeding of Cattle while green, and are accounted very profitable; but in thoſe Countries Graſs is more ſcarce than in *England*, ſo that I think it would not anſwer to ſow them for this Purpoſe here.

Where theſe Plants are cultivated for their Seeds, they ſhould be cut ſoon after the Pods change brown; and when they are dry, they muſt be immediately ſtack'd; for if they are ſuffered to lie out in the Field to receive Wet, and there comes one hot Day after it, the Pods will moſt of them burſt, and caſt out the Seeds. When the Seeds are threſhed out, the Haulm is eſteemed very good Food for Cattle, and ſome have recommended the Seeds for Horſes, and affirm they are as proper for thoſe Animals as Beans; which, if true, will render them more valuable, becauſe theſe will grow on the lighteſt ſandy Land, where Beans will not thrive; ſo may be a good Improvement to ſome Counties in *England*, where they do not attempt to cultivate Beans.

The perennial Sorts are not proper to cultivate in the Fields, becauſe they are of ſlower Growth than the annual Kinds; for they make but little Progreſs the firſt Year they are ſown, and moſt of them delight in ſhady Places, and to grow under Buſhes on which they can ramp; ſo that when they grow in the open Ground, their Branches trail; and in wet Weather, if they are cloſe together, they will rot. So that the annual Kinds of large Growth are ſuch as ſhould be preferred for ſowing. But of all the Sorts, there is not one ſo good as that with white Seeds.

VINCETOXICUM; *vide* Aſclepias.

VINE; *vide* Vitis.

VIOLA; *vide* Violet.

The *Characters* are;

It hath a polypetalous, anomalous Flower, ſomewhat reſembling the papilionaceous Flower; for its two upper Petals, in ſome meaſure, repreſent the Standard, the two ſide ones the Wings; but the lower one, which ends in a Tail, in ſome meaſure reſembles the Keel; out of the Empalement ariſes the Pointal, which afterwards becomes a Fruit, for the moſt part, three corner'd, opening into three Parts, and full of roundiſh Seeds.

The *Species* are;

1. VIOLA *Martia purpurea, flore ſimplici odoro. C. B. P.* Common purple Violet, with a ſweet-ſcented Flower.

2. VIOLA *Martia major hirſuta inodora. Mor. Hiſt.* Greater hairy March Violet without Smell.

3. VIOLA *Martia inodora ſylveſtris. C. B. P.* Wild *or* Dogs Violet.

4. VIOLA *Martia alba. C. B. P.* White ſweet-ſcented Violet.

5. VIOLA *Martia, multiplici flore. C. B. P.* Double purple Violet.

6. VIOLA *Martia, flore multiplici candido. C. B. P.* Douwhite Violet.

7. VIOLA *Martia, folio eleganter variegato, flore albo.* March Violet, with a beautiful variegated Leaf and a white Flower.

8. VIOLA *Martia, flore rubello.* March Violet, with a reddiſh-colour'd Flower.

9. VIOLA *erecta, flore cæruleo. Mor. Hiſt.* Upright Violet, with a blue Flower.

10. VIOLA *montana lutea grandiflora. C. B. P.* Mountain Violet, with a large yellow Flower.

11. VIOLA *tricolor hortenſis repens. C. B. P.* Panſies, Hearts-eaſe, *or* three-colour'd Violet, *commonly called* Three Faces under a Hood.

12. VIOLA *Martia hortenſis, foliis amplioribus. C. B. P.* Garden March Violet, with larger Leaves.

13. VIOLA *Martia inodora ſylveſtris, foliis mucronatis, oblongis & ſtrictioribus. C. B. P.* Dog's Violet, with oblong and narrow pointed Leaves.

14. VIOLA *Martia ſylveſtris æquatè cærulea, folio & flore minore. Hort. Cath.* Blue wild Violet, with a ſmaller Leaf, and Flower.

15. VIOLA *Martia, multiplici flore [illegible]bello. C. B. P.* March Violet, with a double reddiſh Flower.

16. VIOLA *Martia, multiplici flore ex albo & purpureo variegato. C. B. P.* March Violet, with a double Flower, variegated with white and Purple.

17. VIOLA *Martia multiplex, flore cinereo. H. R. Par.* Double March Violet, with an aſh-coloured Flower.

18. VIOLA *flore pleno maximo. J. B.* The largeſt double Violet.

19. VIOLA *Martia intensè purpurea, flore minore pleno. J. B.* March Violet, with a ſmall double Flower, of a deep purple Colour.

20. VIOLA *paluſtris rotundifolia glabra. Mor. Hiſt.* Smooth round-leav'd marſh Violet.

21. VIOLA *Alpina, folio in plures partes diſſecto. C. B. P.* Alpine Violet, with a Leaf cut into many Parts.

22. VIOLA *Alpina purpurea, exiguis foliis. C. B. P.* Purple Violet of the Alps, with ſmall Leaves.

23. VIOLA *Alpina rotundifolia lutea. C. B. P.* Yellow Violet of the *Alps*, with a roundiſh Leaf.

24. VIOLA *montana pumila anguſtifolia, flore niveo inodoro. C. B. P.* Mountain dwarf narrow-leav'd Violet, with a ſnow-white Flower without Smell.

25. VIOLA *Martia arboreſcens lutea. Tabern. [illegible]n.* Yellow tree-like March Violet.

26. VIOLA *montana tricolor odoratiſſima. C. B. P.* The moſt ſweet ſmelling three-coloured mountain Violet.

27. VIOLA *montana alba grandiflora. C. B. P.* Great flowered white mountain Violet.

28. VIOLA *montana lutea, ſubrotundo crenato folio. Barr. Icon.* Yellow mountain Violet, with a roundiſh notched Leaf.

29. VIOLA *montana cærulea grandiflora. H. R. Par.* Great flowered blue mountain Violet.

30. VIOLA *montana lutea, foliis non crenatis. C. B. P.* Yellow mountain Violet, with Leaves not notch'd.

31. VIOLA *montana tricolor, flore variegato. Inſt. R. H.* Three-coloured mountain Violet, with a ſtrip'd Flower.

32. VIOLA *Hiſpanica fruticoſa longifolia. Inſt. R. H.* Long-leav'd ſhrubby Spaniſh Violet.

33. VIOLA *Pyrenaica, longius caudata, teucrii folio. Inſt. R. H.* Pyrenean Violet, with a long Tail, and a tree-germander Leaf.

34. VIOLA *Ætnica erecta bicolor hirſuta minima elatior ac ramoſior. Hort. Cath.* Upright two-coloured hairy very ſmall Violet of Ætna, taller and more branching.

35. VIOLA *arvenſis, flore toto luteo. C. B. P.* Field Violet, with a Flower all yellow.

36. VIOLA *cærulea maxima, cucumerinis hirſutis foliis, Virginiana. Pluk. Phyt.* The largeſt blue Violet of Virginia, with hairy cucumber Leaves.

37. VIOLA *maxima, cucumerinis hirſutis foliis, Virginiana, flore luteo. Pluk. Alm.* The largeſt Violet of Virginia, with hairy cucumber Leaves, and a yellow Flower.

38. VIOLA *Virginiana, platani ferè foliis, parvis & incanis. Pluk. Mantiſſ.* Virginian Violet, with ſmall hoary Leaves, ſhap'd like thoſe of the Plain-tree.

39. VIOLA *Cretica ſaxatilis lutea odoratiſſima, leucoii foliis. Tourn. Corn.* Rock Violet of Crete, with a very ſweet yellow Flower, and wall-flower Leaves.

40. VIOLA *orientalis montana grandiflora, violacei coloris. Tourn. Cor.* Mountain eaſtern Violet, with a large Flower of a purple Colour.

41. VIOLA *Martia Virginiana minor, foliis longius mucronatis, flore purpureo, inodora.* Small Virginian Violet, with long-pointed Leaves, and a purple Flower without Smell.

The firſt Sort here mentioned is very common in Woods and ſhady Lanes in divers Parts of *England*, and is what ſhould always be us'd in Medicine; though ſometimes the People who ſell theſe Flowers in the Markets, do many times impoſe upon the Ignorant, the Flowers of the ſecond Sort, which are much larger than thoſe of the firſt, and fill up the Meaſure better: but they having no Smell, are very improper for Uſe.

All the eight firſt Sorts are pretty Varieties in a Garden; where, being planted under Hedges, in Wilderneſſes, or other ſhady Places, they will thrive exceedingly, and will want no other Culture than only to keep them clear from Weeds; and in the *Spring*, when they are in Flower, they caſt forth a moſt agreeable Perfume, eſpecially in Mornings or Evenings, ſo that it renders ſuch Places very delightful at that Seaſon.

Theſe may be eaſily propagated by parting their Roots. The beſt Time for which is at *Michaelmas*, that the Plants may take Root before *Winter*, ſo that they may flower ſtronger the ſucceeding *Spring*.

The Double Sorts, and thoſe without Smell, may be admitted for Variety: But the ſingle blue, white, and reddiſh coloured Sorts, are thoſe which ſhould be moſt cultivated; becauſe theſe are equally well-ſcented, in which the greateſt Curioſity of theſe Flowers conſiſts. And theſe all growing wild in *England*, may be eaſily obtained in Quantity from their Places of Growth, by ſuch who are fond of theſe Flowers.

The ninth Sort is preſerved in ſome curious Gardens for Variety, but there is no Scent in its Flowers, ſo that it hardly merits a Place in curious Flower-Gardens.

The tenth Sort produces large yellow Flowers, which continue a long Time: This being a Native of cold mountainous Places, ſhould have a ſhady cool Situation, and is very proper for North Borders, where it will thrive exceedingly, add continue flowering moſt part of the *Summer*. It is propagated by parting of the Roots in the ſame manner as the former.

The eleventh Sort is admitted into Gardens for the beautiful Colours of its Flowers, of which there are a great Number of Varietes, but they have no Scent. This Plant is annual, but will require no other Culture than only to place a few Roots in ſuch Parts of the Garden where you would have them grow, and ſuffer them to ſhed their Seeds, which will come up and multiply faſt enough; therefore you muſt obſerve to reduce them within Compaſs, otherwiſe they will ſpread over the whole Garden. This Plant is placed amongſt the Officinal Simples in the *College Diſpenſatory*.

The twelfth and following Sorts of Violets, are preſerved in ſome curious Gardens for the ſake of Variety. They are all hardy enough to thrive in the open Air in *England*; but thoſe Sorts which are Natives of the *Alps*, and other mountainous Places, muſt be planted in a ſhady Situation, and ſhould have a pretty ſtrong moiſt Soil, otherwiſe they will not thrive.

The twelfth Sort differs from the common Violet, only in having larger Leaves, which may proceed from the Culture, for I have frequently obſerved, when the Roots of Violets have been gathered in the Woods, and brought into Gardens, that their Leaves have been greatly inlarged in one Year; but then they have not been ſo productive of Flowers as before.

The thirteenth, fourteenth, twentieth, twenty-firſt, twenſecond, twenty-third, twenty-fourth, thirty-ſecond, thirty-third, thirty-fourth, thirty-fifth, thirty-ſixth, thirty-ſeventh, thirty-eighth and forty-firſt Sorts, are Plants of no great Beauty, ſo are only preſerved for the ſake of Variety by ſome curious Perſons; but the fifeenth, ſixteenth ſeventeenth, eighteenth and nineteenth Sorts, merit a Place in every good Garden, for the ſake of their double Flowers, which are extremely ſweet. The eighteenth Sort produces very large full Flowers, which are almoſt as large as the double *Cinnamon-roſe*; ſo that they make a fine Appearance, and the Flowers are alſo very ſweet. This Plant ſhould be planted on a ſtrong Soil in a ſhady Situation, where they will thrive and flower much better than in a rich Ground.

The twenty-ſixth, twenty-ſeventh, twenty-eighth, twenty-ninth, thirtieth and thirty-firſt Sorts, are alſo very pretty Plants; ſo may be allowed a Place in a North Border in the Flower-garden, for the ſake of Variety. Theſe are of the Kind of the *Panſies* or *Hearts-eaſe*, but their Flowers are much larger; and as their Roots abide ſeveral Years, ſo they may be propagated by parting of their Roots. The beſt Time for this Work is at *Michaelmas*, that they may be well rooted before *Spring*, otherwiſe they will not flower very ſtrong the following *Spring*.

The thiry-ninth and fortieth Sorts were diſcovered by Dr. *Tournefort* in the *Levant*. Theſe, tho' they are Natives of warmer Countries, yet they will thrive very well in the open Air in *England*. Theſe muſt alſo be planted in a ſhady Border, and in dry Weather they ſhould be often watered, which will continue their Flowers a long time: for as theſe are alſo of the *Panſy* Kind, ſo they in like manner continue to produce new Flowers, from the Wings of the Leaves, for at leaſt two Months, if they are not ſtunted by Drought. The thirty-ninth Sort, having very ſweet Flowers, well deſerves a Place in curious Gardens.

VIORNA; *vide* Clematitis.

VIRGA AUREA; [This Plant is ſo called becauſe the Stalk reſembles a Rod, and its Flower is of a golden Colour] Golden-Rod.

The *Characters* are:

The Leaves are for the moſt part whole, and are placed alternately on the Stalks; the Calix (or Flower-cup) is ſquamous; the Flowers are ſmall, radiated, and of a yellow Colour, conſiſting of many Florets, each of which is furniſhed with an Embryo, which afterwards becomes a Seed, having a downy Subſtance adhering to it: To which ſhould be added, that the Flowers are produced in a long Spike.

The *Species* are;

1. VIRGA AUREA *vulgaris latifolia. J. B.* The common *or* broad-leav'd Golden-Rod.

2. VIRGA AUREA *montana, folio anguſto ſubincano, floſculis conglobatis. Raii Syn.* Narrow-leav'd Mountain Golden Rod, with an hoary Leaf, and conglobate Flowers.

3. VIRGA AUREA *anguſtifolia, panicula ſpecioſa, Canadenſis. H. R. Par.* Narrow-leav'd Canada Golden-Rod, with a ſpecious Panicle.

4. VIRGA AUREA *Canadenſis hirſuta, panicula minus ſpecioſa. Boerh. Ind.* Rough Canada Golden-Rod, with a leſs ſpecious Panicle.

5. VIRGA AUREA *Novæ Angliæ altiſſima, paniculis nonnunquam reflexis. Flor. Bat.* The talleſt New-England Golden-Rod, with a reflex'd Panicle.

6. VIRGA AUREA *altiſſima ſerotina, panicula ſpecioſa patula. Rand.* Talleſt Late-flowering Golden-Rod, with a ſpecious ſpreading Panicle.

7. VIRGA AUREA *Virginiana, foliis anguſtioribus aſperis, panicula minus ſpecioſa. Pluk. Phyt.* Virginian Golden-Rod, with narrow rough Leaves, and a leſs ſpecious Panicle.

8. VIRGA AUREA *rugoſis foliis, Virginiana, panicula florum ampliſſima. Pluk. Phyt.* Rough-leav'd Virginian Golden-Rod, with an ample Panicle of Flowers.

9. VIRGA AUREA *foliis lævibus non ſerratis, panicula ſpecioſa floribus magnis. Flor. Bat.* Smooth-leav'd Golden-Rod, with a ſpecious Panicle, and large Flowers.

10. VIRGA AUREA *Marylandica, ſpicis florum racemoſis, foliis integris ſcabris. Mart. Hiſt. Rar. Plant.* Golden-Rod from Mary-land, with branching Spikes of Flowers, and whole rough Leaves.

11. VIRGA AUREA *Canadenſis, aſteriſci folio. Par. Bat.* Canada Golden-Rod, with a Leaf like Aſteriſcus.

12. VIRGA AUREA *Americana, ſerrata, floribus ad foliorum alas conglobatis. Breyn. Prod.* American Golden-Rod, with ſerrated Leaves and conglobated Flowers coming out from the Wings of the Leaves.

13. VIRGA AUREA *limonii folio, panicula uno verſu diſpoſita. H. R. Par.* Golden-Rod, with a Sea-Lavender-leaf, and the Flowers growing upon one Side of the Stalk.

14. VIRGA AUREA *Noveboracenſis glabra, caulibus rubentibus, foliis anguſtis glabris. Flor. Bat.* Smooth New-York Golden-Rod, with red Stalks, and narrow ſmooth Leaves.

15. VIRGA AUREA *floribus fiſtuloſis, ſenecionis inſtar, foliis anguſtioribus non ſerratis. Hiſt. Oxon.* Golden-Rod, with fiſtulous Flowers, ſomewhat like Groundſel, and narrow ſmooth Leaves.

16. VIRGA AUREA *Canadenſis, foliis carnoſis non ſeratis latioribus. Hiſt. Oxon.* Golden-Rod, with broad-fleſhy, ſmooth Leaves.

17. VIRGA AUREA *Novæ Angliæ, foliis longiſſimis glabris. Flor. Bat.* New-England Golden-Rod, with long, ſmooth Leaves.

18. VIRGA AUREA *latifolia ſerrata. C. B. P.* Golden-Rod with broad ſawed Leaves.

19. VIRGA AUREA *montana, latiore folio glabro. H. R. Par.* Mountain Golden-Rod, with a broad ſmooth Leaf.

20. VIRGA AUREA *montana, latiore folio hirſuto. H. R. Par.* Mountain Golden-Rod, with a broad hairy Leaf.

21. VIRGA AUREA *Alpina, laurinis rigidioribus foliis. Bocc. Muſ.* Alpine Golden-Rod, with ſtiffer Bay-leaves.

22. VIRGA AUREA *major, foliis glutinoſis & graveolentibus. Inſt. R. H.* Greater Golden-rod, with clammy and ſtinking Leaves.

23. VIRGA AUREA *minor, foliis glutinoſis & graveolentibus. Inſt. R. H.* Smaller Golden-Rod, with clammy and ſtinking Leaves.

24. VIRGA AUREA *major, foliis glutinoſis & graveolentibus, gallas ferens. Inſt. R. H.* Greater gall-bearing Golden-Rod, with clammy and ſtinking Leaves.

25. VIRGA AUREA *Virginiana annua. Zan.* Annual Virginian Golden-Rod.

26. VIRGA AUREA *Americana hirſuta, radice odorata. Joncq.* Rough American Golden-rod, with a ſweet-ſmelling Root.

27. VIRGA AUREA *Marylandica cæſia glabra. Hort. Elth.* Smooth Golden-rod of Mary-land.

28. VIRGA AUREA *Americana annua graveolens, flore minimo, foliis conjugatis, & hyperici modo perforatis. Houſt.* Annual ſtinking American Golden-Rod, with a very ſmall Flower, and Leaves growing by Pairs, which are perforated in the manner of St. John's-wort.

29. VIRGA AUREA *Americana, urticæ foliis rugoſis conjugatis & hirſutis, florum ſpicis folioſis. Houſt.* American Golden-Rod, with rough Nettle-leaves growing by Pairs, and the Spikes of Flowers ſet with ſmall Leaves.

30. VIRGA AUREA *Americana fruticoſa, ſalicis folio, floribus quaſi umbellatis. Houſt.* Shrubby American Golden-rod, with a Willow-leaf, and Flowers growing almoſt in an Umbel.

The ſeventeen firſt mentioned are the moſt valuable Sorts which I have yet ſeen in the *Engliſh* Gardens; the greateſt Part of which are Natives of *America*, from whence, it is very probable, there may be many other Sorts brought, ſince theſe Plants do propagate themſelves by ſhedding their Seeds, which is likely to produce new Varieties annually; as do moſt other Sorts of Plants, ſo that there may be no End to their Variety.

Theſe Plants are very great Ornaments in the Borders of large Flower-Gardens, where, by their Succeſſion of Flowering, they afford a very great Pleaſure; for the earlieſt Kinds begin to flower in *June*, which are ſucceeded by other Sorts until the latter End of *October*; and their Flowers being produced, for the moſt part, on long ſpecious Spikes or Panicles, do make a very handſome Appearance, and are very ornamental to Flower-pots, when intermixed with Flowers of different Colours to place in Rooms.

They are all eaſily propagated by parting their Roots in the *Spring*, before they begin to ſhoot, and ſhould be planted in the Middle of the larger Borders in the Flower-Garden: They will grow in almoſt any Soil or Situation, but will thrive beſt in a light freſh Earth, and an open Expoſure, tho' ſome of the hardieſt of them may be placed under Avenues of Trees, where they will continue in Flower a long time, and look very well. The firſt twelve Sorts are ſomewhat hardier than the reſt, and will increaſe very faſt by Off-ſets, which ſome of them ſend forth in very great Plenty, inſomuch, that if they are not carefully dug round at leaſt once in every Year, they will ſpread over the Borders where they are planted, and deſtroy ſuch Plants as ſtand near them. The other Sorts ſhould have a warmer Situation, and a dry Soil: theſe are not ſo apt to ſpread at their Roots as the others, ſo that there will be no Difficulty of keeping them within Bounds.

The firſt Sort here mentioned is ſometimes uſed in Medicine. This grows wild in moſt ſhady Woods in the South Parts of *England*; from whence the Roots may be tranſplanted into a ſhady Part of the Garden, where they will thrive and flower very well.

Theſe are all perennial Plants, which die to the Surface of the Ground every *Winter*, but riſe again the ſucceeding *Spring*: Moſt of them produce their Flowers in *Autumn*, and, if the Seaſon proves favourable, will ripen their Seeds; which, if ſown ſoon after ripe, will come up the following *Spring*, from whence ſome new Varieties may be obtained.

The eighteenth, nineteenth, twentieth, twenty-firſt, twenty-ſixth and twenty-ſeventh Sorts, are abiding Plants, which may be propagated by parting of their Roots, in the ſame manner as hath been directed for the Sorts firſt mentioned. Theſe Plants continue a long time in Flower, and appearing toward the latter Part of *Summer*, when there are few better Sorts in Beauty, are worthy of a Place in every large Garden, eſpecially as they are very hardy, and require very little Care to cultivate them; for they will thrive in the Shade under Trees, and if they are taken up and parted every fourth Year, they will thrive and flower extremely well.

The twenty-ſecond, twenty-third and twenty-fourth Sorts, ſeldom continue longer than two or three Years, ſo ſhould be often renewed. Theſe may be increaſed by parting of their Roots; but the Plants which are thus parted, ſeldom thrive ſo well as thoſe which are raiſed from Seeds; but as theſe Plants do not perfect their Seeds every Year in *England*, ſo the other Method muſt be practiſed to preſerve the Kinds. The beſt Time for this Work is in the *Autumn*, that they may be well rooted before the *Spring*, otherwiſe they will not flower very ſtrong. Theſe Sorts ſhould be planted on a loamy Soil on open Borders; for they will not thrive under the Drip of Trees.

The twenty-fifth Sort is an annual Plant of no great Beauty, which if permitted to ſcatter its Seeds, will become a Weed over the Garden. This Plant is now become a common Weed in the Fields in divers Parts of *England*; but it is generally believed, the Seeds were at firſt blown out of Gardens; for it was originally brought from *America*.

The twenty-eighth, twenty-ninth and thirtieth Sorts, were diſcovered by the late Dr. *Houſtoun* at *La Vera Cruz*. Theſe are tender Plants, ſo will not live in the open Air in *England*. They may be propagated by Seeds, which ſhould be ſown on a moderate Hot-bed early in the *Spring*; and when the Plants are come up, they ſhould be tranſplented into Pots filled with freſh Earth, and then plunged into a moderate Hot-bed of Tanners-bark; obſerving, after they have taken new Root, to admit a large Share of free Air to them every Day when the Weather is warm, as alſo to water them conſtantly every Day, for they naturally grow in moiſt Places. The twenty-eighth Sort, which is an annual Plant, will flower toward the Middle of *June*, and the Seeds will ripen the End of *Auguſt*; when ſome of them ſhould be ſown to come up before *Winter*, becauſe the Seeds will more certainly grow at this Seaſon, than in the *Spring*, and the Plants will grow much ſtronger. The twenty-ninth Sort is a biennial Plant, ſo it rarely flowers the firſt Seaſon; therefore this, and the thirtieth Sort, (which is an abiding Plant) ſhould be removed into the Stove at *Michaelmas*, and placed where they may have a temperate Degree of Warmth in *Winter*, in which they may be preſerved; but they muſt be frequently refreſhed with Water, tho' in very cold Weather it muſt not be given in great Quantities. With this Management the Plants will flower extremely well, and add to the Variety in the Stove.

VISCUM; [ſo call'd, becauſe its Fruit is full of a glutinous Subſtance] Miſleto.

The *Characters* are;

The Flower conſiſts of one Leaf, which is ſhaped like a Baſon, and for the moſt part divided into four Parts, and beſet with Warts; the Ovary, which is produced in the Female Flowers, is placed in a remote Part of the Plant from the Male Flowers, and conſiſts of four ſhorter Leaves; this afterwards becomes a round Berry, full of a glutinous Subſtance, incloſing a plain Heart-ſhap'd Seed.

We have but one *Species* of this Plant in *England*, viz.

VISCUM *baccis albis*. C. B. P. Common Miſleto, with white Berries.

This Plant is always produc'd from Seed, and is not to be cultivated in the Earth, as moſt other Plants, but will always grow upon Trees; from whence the Ancients accounted it a Super-plant, moſt of whom thought it was an Excreſcence on the Tree, without the Seed being previouſly lodg'd there: Which Opinion is now generally confuted from a repeated Number of Experiments.

The Manner of its being propagated is this, (*viz.*) The *Miſleto-Thruſh*, which feeds upon the Berries of this Plant, in *Winter*, when it is ripe, doth often carry the Seeds from Tree to Tree; for the viſcous Part of the Berry, which immediately ſurrounds the Seed, doth ſometimes faſten it to the outward Part of the Bird's Beak; which to get diſengag'd of, he ſtrikes his Beak againſt the Branches of a neighbouring Tree, and thereby leaves the Seed ſticking by this viſcous Matter to the Bark; which, if it lights upon a ſmooth Part of the Tree, will faſten itſelf thereto, and the following *Winter* will put out and grow, and in the ſame manner it may be propagated by Art; for if the Berries, when full ripe, are rubbed upon the ſmooth Part of the Bark of a Tree, they will adhere cloſely thereto, and, if not deſtroy'd, will produce Plants the following *Winter*.

The Trees which this Plant doth moſt readily take upon, are, the *Apple*, the *Aſh*, and ſome other ſmooth-rinded Trees; but I have ſeveral times try'd it upon the *Oak* without Succeſs, for the Bark of that Tree is of too cloſe a Texture to admit the Seeds ſtriking therein; which is alſo the Reaſon it is ſo rarely found upon that Tree: And notwithſtanding the great Encomiums which have been given to the *Miſleto* of the *Oak*, for its Medicinal Virtues, yet I can't help thinking, that it is equally good from whatever Tree it be taken, nor is it poſſible to find this Plant growing in any Quantity upon the *Oak*; ſo that thoſe Perſons who pretend to furniſh the Town with it for phyſical Uſe, do but impoſe upon the World; for it is ſo rarely met with, that whenever a Branch of an *Oak-tree* hath any of theſe Plants growing upon it, it is cut off, and preſerved by the Curious in their Collections of Natural Curioſities; and of theſe there are but few to be ſeen in *England*.

As to what ſome Perſons have aſſerted of the Manner how it is propagated, from Tree to Tree, by the *Miſleto-Thruſhes*, who eat the Berries, and void the Seed in their Dung, upon the Branches of Trees, whereby the Seeds are ſtuck thereon, and take Root into the Bark, and produce freſh Plants, I can by no means agree to; ſince if it were only this way propagated, it would always be found upon the upper Part or the Sides of ſuch Branches, upon which the Dung can only be ſuppos'd to lodge; whereas it is often found upon the under Side of Branches, where it is almoſt impoſſible for theſe Birds to caſt their Dung; beſides, I believe the Stomachs of theſe Birds are too powerful Digeſters to ſuffer any Seeds to paſs intire through the Inteſtines. But I ſhall leave this to ſuch who have Leiſure to make Obſervations in ſuch Places where this Plant abounds, and ſhall add only a ſhort Account of the Method uſed to make Birdlime, which may not be improper to inſert in this Place for the Satisfaction of the Curious.

The *Italians* make their Birdlime of the Berries of *Miſleto*, heated and mixed with Oil, as that made of *Holly-Bark*; and to make it bear the Water, they add *Turpentine*.

That which is commonly uſed with us, is made of the Bark of *Holly*; which they boil for ten or twelve Hours: and when the green Coat is ſeparated from the other, they cover it up for a Fortnight in a moiſt Place, pounded into a tough Paſte, that no Fibres of the Wood be left; then they waſh it in a running Stream till no Motes appear, and put it up to ferment for four or five Days, and ſcum it as often as any thing ariſes, and then lay it up for Uſe. When they uſe it, they incorporate with it a third Part of that Oil over the Fire.

The Birdlime that is brought from *Damaſcus* is ſuppos'd to be made of *Sebeſtens*, their Kernels being frequently found in it; but this will not endure either Froſt or Wet.

The Birdlime brought from *Spain* is of an ill Smell.

The Bark of our *Lantone* or *Way-faring Shrub*, as it is ſaid, will make Birdlime as good as the beſt.

VISNAGA, *Spaniſh* Picktooth.

The *Characters* are;

It is an umbelliferous Plant, with a roſe-ſhaped Flower, conſiſting of ſeveral Petals, which reſt on the Empalement; which afterwards becomes the Fruit, compoſed of two oblong furrowed Seeds. To theſe Notes muſt be added, The Leaves are finely divided like Fennel; and when the Flowers fall off, the Umbel contracts together.

The *Species* are;

1. VISNAGA *ſeu Gingidium. Mor. Umb.* Common Spaniſh Picktooth.
2. VISNAGA *ſeu Gingidium Montis Libani. Munt. Plant.* Greater Toothpick of *Mount Libanus.*

The firſt Sort grows plentifully in the South of *France*, as alſo in *Spain* and *Italy*. The *Spaniards* make uſe of the Footſtalks of the Umbel for Toothpicks, from whence it obtained this Name. This Plant is preſerved in the Gardens of ſome curious Perſons, for the ſake of Variety. It is an annual Plant, and periſhes ſoon after the Seeds are ripe. The Seeds of this Plant ſhould be ſown early in the *Autumn*, that the Plants may obtain Strength before the Froſt. Theſe will endure the Cold of our *Winters* extremely well, provided the Seeds are ſown on a dry Soil; for theſe Plants do not bear tranſplanting very well: therefore the Seeds ſhould be ſown where the Plants are deſigned to remain. In the *Spring* the Plants ſhould be thinned where they come up too thick, leaving them about ſix or eight Inches aſunder; and if they are afterward kept clear from Weeds, it is all the Culture theſe Plants require. In *June* they will flower, and their Seeds will ripen in *Auguſt*.

The ſecond Sort is leſs common in *England* than the firſt: this is found on *Mount Libanus*, and in ſeveral other mountainous Places in the Eaſt Country. The Umbels of this Sort are much larger than of the former, and the Leaves of the Plant are not ſo finely cut. The Seeds of this Sort have been often brought into *England*, from which I have raiſed the Plants, which have grown very well the former Part of the Seaſon; but they have always decayed ſoon after *Midſummer*, ſo that I never could preſerve any of them to flower.

VITEX; [ſo call'd of *vieo*, *Lat.* to *bend*, becauſe its Branches are very flexible: It is alſo call'd *Agnus Caſtus*, becauſe it is believ'd to allay Luſt, for which the *Monks* were wont to uſe it in their Cloyſters; but by the Taſte and Smell, it ſhould rather be a Provocative: It is alſo call'd *Salix Americana*, becauſe its Leaves reſemble thoſe of a Willow] Agnus Caſtus, *or the* Chaſte-Tree.

The *Characters* are;

It hath a Flower conſiſting of one Leaf, which appears as if it had two Lips, the Fore-part is tubuloſe; from whoſe Flower-cup riſes the Pointal, which afterwards becomes an almoſt-ſpherical Fruit, which is divided into four Cells, in which are contain'd oblong Seeds; to which may be added, the Leaves are digitated (or finger'd) like thoſe of Hemp.

The *Species* are;

1. VITEX *foliis anguſtioribus, cannabis modo diſpoſitis. C. B. P.* The Chaſte-Tree, with narrow Leaves.
2. VITEX *latiore folio. C. B. P.* The Chaſte-Tree, with broad ſerrated Leaves.
3. VITEX *ſive Agnus, flore albido. H. R. Par.* The Chaſte-Tree, with whitiſh Flowers.
4. VITEX *ſive Agnus minor, foliis anguſtiſſimis. H. R. Par.* The leſſer Chaſte-Tree, with very narrow Leaves.

The firſt of theſe Plants is pretty common in moſt *Engliſh* Gardens, where a Variety of hardy Trees are preſerv'd; but the other Sorts are leſs common, and only in ſome curious Gardens at preſent. Theſe Plants are all very hardy, and may be propagated by planting their Cuttings early in the *Spring*, before they ſhoot; they require a freſh, light Soil, and muſt be frequently refreſh'd with Water, until they have taken Root; after which they muſt be carefully clear'd from Weeds, during the *Summer* Seaſon; and if the *Winter* proves ſevere, you muſt lay a little Mulch upon the Surface of the Ground between the Plants, to prevent the Froſt from penetrating to their Roots, which would injure them while they are young: Toward the Middle of *March*, if the Seaſon be favourable, you ſhould tranſplant them either into the Places where they are deſign'd to remain, or into a Nurſery for two or three Years, to get Strength; where they muſt be prun'd up, in order to form them into regular Plants, otherwiſe they are very ſubject to ſhoot out their Branches in a ſtraggling manner.

If theſe Plants are plac'd in a warm Situation, and have a kindly light Soil, they will grow to be eight or ten Feet high, and produce their Spikes of Flowers at the Extremity of every ſtrong Shoot in *Autumn*; which altho' of no great Beauty, yet coming late in the Year, and having an odd Appearance, together with the Variety of their Leaves, renders them worthy of a Place in ſmall Wilderneſs Quarters amongſt other Shrubs of the ſame Growth.

They may alſo be propagated by laying down their Branches in the *Spring* of the Year, (in doing of which you muſt be very careful not to break them, for their Shoots are extremely brittle, and very ſubject to ſplit off with the leaſt Violence:) Theſe will take Root in one Year, provided they are water'd in very dry Weather; and may then be tranſplanted out, and managed as was directed for thoſe Plants rais'd from Cuttings.

VITIS; [ſo called from *vieo*, Lat. to *bend* or *bind*, becauſe its Claſpers take hold of the neighbouring Plants] The Vine.

The *Characters* are;

The Flower conſiſts of many Leaves, which are placed in a circular Order, and expand in form of a Roſe; the Ovary, which is ſituated in the Bottom of the Flower, afterwards becomes an oval or round Fruit, which is very full of Juice, and contains many ſmall Stones in each. To which ſhould be added, that the Tree is climbing, ſending forth Claſpers at the Joints, by which it faſtens itſelf to whatever Plant ſtands near it, and the Fruit is produced in Bunches.

The *Species* are;

1. VITIS *ſylveſtris Labruſca. C. B. P.* The Wild Vine, *commonly called* the Claret Grape. This Sort of Grape is pretty well known in *England*; it has a Berry of a middling Size, of a deep black Colour, covered over with a Bloom like a Plum, which may be wiped off; the Juice ſtains of a deep red Colour, and before it is quite dead-ripe, is of an auſtere Taſte; the Bunches are pretty large, but ſhort, having commonly two Side-bunches, or Shoulders, on the upper Part of the Bunch: The Leaves of this Vine are jagged, and change to a deep red Colour before they fall off.
2. VITIS *præcox columellæ. H. R. Par.* This is called in *England* the *July Grape*, but in *France*, *Morillon* and *Vigne haſtive*. This is the earlieſt Grape at preſent known in *England*, for which it is chiefly preſerved, for it is not much eſteemed for its Goodneſs: The Skin is thick, the Juice but very indifferent, and the Berries do commonly grow very thin upon the Bunches. Theſe are of a middle Size, and of a dark, muddy, red Colour.
3. VITIS *Corinthiaca ſive Apyrina. J. B.* The Corinth Grape, *vulgarly called* the Currant Grape: Is an early Ripener, the Berry is ſmall and ſlender, the Juice very ſweet, and hath very little Stone. Of this Kind there are two or three different Colours, as red, black, and tawney. This is the Sort which is brought from the Iſlands near the *Morea*, by the Name of Currants, and ſold by the Grocers of *London*, to put into Puddings, &c.
4. VITIS *laciniatis foliis. Cornut.* The Parſley-leav'd Grape, *vulgo*. This Sort was originally brought from *Canada*, where it grows wild in the Woods; and is preſerved in the Gardens of the Curious, for the Variety of its fine jagged Leaves. This is a pretty large white Grape, and has a ſweet Juice, but not very vinous; the Berries are very apt to grow thin upon the Bunches, unleſs the Vine is pruned ſhort, and left but thin with Wood.
5. VITIS *ſubhirſuta. C. B. P.* The Morillon Taconne, *or* Munier, *i. e.* the Miller's Grape; this is called the *Burgundy* in *England*. The Leaves of this Sort are very much powder'd with white, eſpecially in the *Spring*, when they firſt come out, from whence it had the Name of *Miller's Grape*. It produces middle-ſiz'd black Grapes, which grow cloſe upon the Bunches, and are generally ſhort and thick. This is an excellent Bearer, and a hardy Sort.
6. VITIS *præcox columellæ, acinis dulcibus nigricantibus.* The black Morillon. This is called in *Burgundy*, *Pineau*, and at *Orleans*, *Auverna*. It is a very ſweet Grape, of a middle Size, ſomewhat oval, and of a fine black Colour; the Bunches are ſomewhat longer than thoſe of the former. This makes very good Wine.

7. Vitis *uva perampla, acinis albidis, dulcibus durioribus. Tourn.* The Chaſſelas blanc, Bar-ſur-Aube, White Chaſſelas, *or* Royal Muſcadine. This is a large white Grape, and grows cloſe upon the Bunches, which are alſo very large, and have commonly two ſmall Side-bunches or Shoulders, produced from the upper Part of the Bunch; the Berries, when full ripe, if well expoſed to the Sun, change to a pale amber Colour, the Juice is very rich, and the Fruit is commonly ripe early in *September*.

8. Vitis *uva perampla, acinis dulcibus nigricantibus. Tourn.* The Chaſſelas Noir, *i. e.* the black Chaſſelas. This is very often called the *Black Muſcadine.* The Berries of this are as large as thoſe of the former, the Bunches are commonly larger, and are ſomewhat later ripe; the Juice is very rich. If well expoſed, they bear well, and are ripe toward the End of *September*.

9. Vitis *uva perampla, acinis dulcibus rubentibus. Tourn.* The red Chaſſelas. This is alſo called the *Red Muſcadine.* The Berries of this Sort are a little larger than thoſe of the former, and grow much thinner upon the Bunches, are of a faint red Colour, and the Juice is very ſweet, but later ripe, upon which account it is not ſo valuable in *England*.

10. Vitis *uva perampla, acinis ovatis albidis. Tourn.* The Burdelais, *vulgarly called* Burlake. The Berries of this Kind are very large, of an oval Shape, and grow pretty cloſe on the Bunches, which are ſometimes of a prodigious Size. I have ſeen a Bunch of theſe Grapes which has weighed five Pounds. But they never ripen in this Country, ſo that they are fit for nothing, except *Verjuice*, or to make Tarts.

11. Vitis *acinis albis dulciſſimis, Vitis Apiana. C. B. P. Garidel.* The Muſcat, *or* White Frontiniac. The Berries of this Kind are large, and grow extremely cloſe upon the Bunches, which are very long, and have commonly two Shoulders to them: The Fruit, when ripe, has a rich, muſky Flavour; but it is commonly very late in the *Autumn* before they ripen, and the Berries being ſo very cloſe upon the Bunches, do detain the Moiſture in their Middles, ſo that they commonly periſh· To prevent which, ſome very curious Perſons look over their Vines ſoon after the Grapes are formed, and with a Pair of Sciſſars cut out all the ſmall ones, ſo as to leave the others at a moderate Diſtance, whereby the Sun and Air is eaſily admitted, which diſſipates the Moiſture, and prevents their periſhing, This Sort is a great Bearer.

12. Vitis *acinis rubris, nigricantibus dulciſſimus. Garidel.* The Muſcat Rouge, *or* Red Frontiniac. The Berries of this Kind are of the Size of the former, but grow much thinner on the Bunches; it is higher flavour'd, and when thorough ripe, is the richeſt Grape yet known. But this muſt have a very dry Soil, and a South-Eaſt Aſpect, otherwiſe it ſeldom ripens well in *England*.

13. Vitis *acinis nigricantibus dulciſſimis.* The Black Frontiniac. The Berries of this Kind are leſs than the two former, but are not ſo high-flavour'd; their Juice is ſweet, and they are earlier ripe. This is a good Bearer, but the Grapes upon the ſame Bunch do ſeldom ripen at the ſame Time, ſo that they can't be gather'd in full Bunches, but muſt be pick'd off ſingly as they ripen.

14. Vitis *Damaſcena. H. R. Par.* The Damaſk Grape. The Berries of this Kind are very large, black, and of an oval Form; the Bunches are very large, and the Vine produces vigorous Shoots. This ripens late in *England*.

15. Vitis *præcox, acino rotundo, albido dulci.* The White Sweet-water. The Berries of this Kind are large and white, the Skins are very thin, and the Juice is ſweet: this is very early ripe, but the Berries are apt to be thin upon the Bunches; for it is one of the tendereſt Sorts, when in flower, that I have yet ſeen; ſo that if there happens bad Weather at that Seaſon, they are very ſubject to blight, and being ſo uncertain in bearing, has render'd it leſs eſteemed than it was formerly.

16. Vitis *præcox, acino nigro, dulci & rotundo.* The Black Sweet-water. This is a leſs Grape than the former, it is of a fine black Colour, and grows pretty cloſe upon the Bunches; its Juice is ſweet, and it is early ripe.

17. Vitis *alba dulcis. J. B.* The White Muſcadine. The Berries of this Kind are large, of a white Colour, and the Juice is very ſweet; the Bunches are long, and it is early ripe.

18. Vitis *Allobrogica. Plinii Car. Steph. Præd. Ruſt.* The Raiſin Grape. This is a large oval Grape of a blackiſh Colour, when ripe; the Bunches are very large, and make a fine Appearance, but never ripen well in *England.* I have known ſome Perſons who had a great Quantity of this Sort of Grape, which they commonly cut in the Middle of *October*, with pretty long Stalks to the Bunches, and hung them on Strings, in Rows in their Kitchen, at ſuch a Diſtance as not to touch each other; and about *Chriſtmas*, theſe Grapes would be ſo ripened by the Warmth of the Room, as to eat extremely well.

19. Vitis *acino rubro, duriori ſapore dulci. Garidel.* The Greek Grape. This is a middle-ſiz'd Grape, of a deep red Colour, the Skin is very tough, and the Stones are ſmall; this is by many People called the *Brick Grape.* In a kindly Seaſon, when theſe Grapes ripen well, they make excellent Wine; but it muſt have a good Wall, otherwiſe it will not ripen in *England*.

20. Vitis *pergulana uva perampla, acino oblongo duro, majori & ſubviridi. Garidel.* The Pearl Grape, called in *Provence*, Pendoulau, *or* Rin de Ponſo. This is a large oblong Grape, of a greeniſh white Colour, the Juice has a Mixture of ſweet and ſour, and it is late ripe.

21. Vitis *uva perampla, acinis nigricantibus majoribus.* The St. Peter's Grape, *or* Heſperian. The Berries of this Sort are very large, round, and of a deep black Colour when ripe; the Bunches are very large, and have two Shoulders to them; the Juice is very rich, and a little ting'd with red; the Leaves of this Sort are remarkably jagged, ſo as to be known when there is no Fruit upon the Vines; it is late ripe. I believe this is the ſame Sort which the *French* call *Gros Noir d' Eſpagne*, i. e. *Great Black Spaniſh*.

22. *La Malvoiſe*, i. e. the *Malmſey Grape*; is a middle-ſiz'd Fruit, of a muddy red Colour, its Juice is very rich and ſoft, the Bunches are large, and it is a great Bearer; this ripens toward the latter End of *September*.

23. *Malvoiſe Muſquée*, i. e. the *Malmſey Muſcadine*. This is a middle-ſiz'd Grape, rather long than round, of a rich, muſky Flavour when ripe. This is one of the Sorts of Grapes from which the *Madeira* Wine is made. It ripens late in *England*.

24. The *Red Hamburgh Grape.* The Berries of this Kind are large, and of a reddiſh Colour, covered with a Flue; the Bunches are large, and it is a good Bearer. This ripens toward the End of *September*, and is a fine Grape. It was brought into *England* by Mr. *Warner* of *Rotherhith*, who hath ſupply'd many curious Perſons with it.

25. The *Black Hamburgh*, or *Warner Grape.* This has a middle-ſiz'd Berry, rather long than round, of a fine black Colour when ripe; the Juice is very rich, ſomewhat inclining to a muſky Flavour. This ripens about the Middle of *September*. It was brought into *England* by Mr. *Warner*, with the former.

26. *Raiſin Swiſſe*, i. e. the *Switzerland Grape.* This is preſerved only as a Curioſity; the Fruit of this Kind are ſtriped with white and black, and ſometimes divided into Quarters of thoſe Colours, and many times half the Bunch is white, and the other half black, and ſome entire Bunches are white, and others black, ſo that it appears as if two Kinds had been grafted on the ſame Root. The Fruit is good for little, but Shew, therefore one Plant of this Kind is enough in a Garden.

All the Sorts of *Vines* are propagated either from Layers or Cuttings, the former of which is greatly practiſed in *England*, but the latter is what I would recommend, as being much preferable to the other. For the Roots of *Vines* do not grow ſtrong and woody, as in moſt Sorts of Trees, but are long, ſlender and pliant; ſo that when they are taken out of the Ground, they ſeldom ſtrike out again, but ſhrivel and dry, ſo that they rather retard than help the Plants in their Growth, by preventing the new Fibres from puſhing out; for which Reaſon I had rather plant a good Cutting than a rooted Plant, provided it be well choſen, and there is leſs Danger of its not growing.

But as there are few Perſons who make Choice of proper Cuttings, or at leaſt that do form their Cuttings rightly, in *England*, ſo it will be proper to give Directions for this Work in the firſt Place, before I proceed. You ſhould always make Choice of ſuch Shoots as are ſtrong and well ripen'd of the laſt Year's Growth; theſe ſhould be cut from the old *Vine*, juſt below the Place where they were produced, taking a Knot of the Two-years Wood, which ſhould be pruned ſmooth; then you ſhould cut off the upper Part of the Shoot, ſo as to leave the Cutting about ſixteen Inches long: Now, in making the Cuttings after this Manner, there can be but one taken from each Shoot; whereas moſt Perſons cut them into Lengths of about a Foot, and plant them all, which is very wrong; for the upper Parts of the Shoots are never ſo well ripened as the lower Part which was produced early in the *Spring*; ſo that if they do take Root, they never make ſo good Plants, for the Wood of thoſe Cuttings being ſpungy and ſoft, admits the Moiſture too freely, whereby the Plants will be luxuriant in Growth, but never ſo fruitful as ſuch whoſe Wood is cloſer and more compact.

When the Cuttings are thus prepared, they ſhould be placed with their lower Part into the Ground, in a dry Place, laying ſome Litter about their upper Parts, to prevent them from drying; in this Situation they may remain until the Beginning of *April* (which is the beſt Time for planting them) when you ſhould take them out, and waſh them from the Filth they have contracted; and if you find them very dry, you ſhould let them ſtand with their lower Parts in Water, ſix or eight Hours, which will diſtend their Veſſels, and diſpoſe them for taking Root. Then ſet about preparing the Ground where the Plants are deſigned to remain, (whether againſt Walls or for Standards) for they ſhould not be removed again. But as I intend hereafter to treat in particular about the planting and Management of *Vineyards*, ſo in this Place I ſhall confine myſelf only to ſuch as are planted either againſt Walls or Pales, for eating.

In preparing the Ground, you ſhould conſider the Nature of the Soil, which, if ſtrong and inclinable to Wet, is by no Means proper for Grapes; but where it thus happens, you ſhould open a Trench againſt the Wall, which ſhould be filled with Lime-rubbiſh, the better to drain off the Moiſture, then raiſe the Border with freſh light Earth about a Foot thick, ſo that it may be at leaſt a Foot above the Level of the Ground; then you ſhould open the Holes about ſix Feet diſtance from each other, putting one good ſtrong Cutting into each Hole, which ſhould be laid a little ſloping, that their Tops may incline to the Wall; but muſt be put in ſo deep, that the uppermoſt Eye may be level with the Surface of the Ground: For when there are two or three Eyes left above Ground, as is the common Method uſed by the *Engliſh* Gardeners, they do all attempt to ſhoot, ſo that the Strength of the Cuttings is divided to nouriſh ſo many Shoots, whereas on the contrary, it is all employ'd on one ſingle Shoot, which conſequently will be much ſtronger; beſides, the Sun and Air is apt to dry that Part of the Shoots which remains above Ground, and ſo often prevents their Buds from ſhooting.

Then having placed in the Cutting, you ſhould fill up the Hole, gently preſſing down the Earth with your Foot, and raiſe a little Hill juſt upon the Top of the Cutting, to cover the upper Eye quite over, which will prevent it from drying. This being done, there is nothing more neceſſary, but to keep the Ground clear from Weeds, until the Cuttings begin to ſhoot, at which Time you ſhould look over them carefully, to rub off any dangling Shoots, if ſuch are produced, and faſten the main Shoot to the Wall; which ſhould be conſtantly faſtened up, as it is extended in Length, to prevent its breaking or hanging down. You muſt continue alſo, during the *Summer* Seaſon, conſtantly rubbing off all lateral Shoots which are produced, leaving only the firſt main Shoot; and be ſure to keep the Ground conſtantly clear from Weeds, which, if ſuffer'd to grow, will exhauſt the Goodneſs of the Soil, and ſtarve the Cuttings.

The *Michaelmas* following, if your Cuttings have produced ſtrong Shoots, you ſhould prune them down to two Eyes, (which, tho' by ſome People may be thought too ſhort, yet I am ſatisfied, from ſeveral Experiments, to be the beſt Method): The Reaſon for adviſing the pruning the *Vines* at this Seaſon, rather than deferring it till *Spring*, is, becauſe the tender Parts of thoſe young Shoots, if left on, are ſubject to decay in *Winter*, and imbibe ſome noxious Matter from the Air, which greatly weakens their Roots; ſo that if they are cut off early in *Autumn*, the Wounds will heal over before the bad Weather, and thereby the Roots will be greatly ſtrengthened.

In the *Spring*, after the cold Weather is paſt, you muſt gently dig up the Borders, to looſen the Earth; but you muſt be very careful in the doing of this, not to injure the Roots of your *Vines*; you ſhould alſo raiſe the Earth up to the Stems of the Plants, ſo as to cover the old Wood, but not ſo deep as to cover either of the Eyes of the laſt Year's Wood. After this they will require no farther Care until they begin to ſhoot, when you ſhould look over them carefully, to rub off all weak dangling Shoots, leaving no more than the two Shoots, which are produced from the two Eyes of the laſt Year's Wood, which ſhould be faſtened to the Wall; and ſo from this, until the *Vines* have done ſhooting, you ſhould look them over, once in three Weeks, to rub off all lateral Shoots as they are produced, and to faſten the two main Shoots to the Wall, as they are extended in Length, which muſt not be ſhortened before the Middle of *July*, when it will be proper to nip off their Tops, which will ſtrengthen the lower Eyes. And during the *Summer* Seaſon, you muſt conſtantly keep the Ground clear from Weeds; nor ſhould you permit any Sort of Plants to grow near the *Vines*, which would not only rob them of Nouriſhment, but ſhade the lower Parts of the Shoots, and thereby prevent their ripening; which will not only cauſe their Wood to be ſpungy and luxuriant, but render it leſs fruitful.

At *Michaelmas* you ſhould prune theſe again, leaving three Buds to each of the Shoots provided they are ſtrong, otherwiſe it is better to ſhorten them down to two Eyes, (for it is very wrong Practice to leave much Wood upon young *Vines*, or to lay their Shoots in too long, which greatly weakens the Roots) then you ſhould faſten them to the Wall, drawing each of them out horizontally from the Stem; then, in the *Spring*, dig the Borders as before.

The third Seaſon you muſt go over the *Vines* again, ſo ſoon as they begin to ſhoot, rubbing off all Danglers, as before, and training in the leading Shoots (which this Seaſon may be ſuppoſed to be two from each Shoot of the laſt Year's Wood; but if they attempt to produce two Shoots from one Eye, the weakeſt of them muſt be rubbed off, for there ſhould never be more than one allowed to come out of an Eye). If any of them produces Fruit, as many times they will the third Year, you ſhould not ſtop them, (ſo ſoon as is generally practiſed upon the bearing Shoots of old *Vines*) but permit them to ſhoot forward till *Midſummer*, at which Time you may pinch off the Tops of the Shoots, for if this were done too ſoon, it would ſpoil the Buds for the next Year's Wood, which in young *Vines* muſt be carefully preſerved, becauſe there are no Shoots laid in on purpoſe for Wood, as is commonly practis'd on old *Vines*.

During the *Summer* you muſt conſtantly go over your *Vines*, and diſplace all weak, lateral Shoots as they are produced, and carefully keep the Ground clear from Weeds, (as was before directed) that the Shoots may ripen well, which is a material thing to be obſerved in moſt Sorts of Fruit-Trees, but eſpecially in *Vines*; which ſeldom produce any Fruit from immature Branches. Theſe Things being duly obſerved, are all that is neceſſary in the Management of young *Vines*. I ſhall therefore proceed to lay down Rules for the Government of grown *Vines*, which I ſhall do as briefly as poſſible. And,

Firſt, *Vines* do rarely produce any Bearing-Shoots from Wood that is more than one Year old; therefore great Care ſhould be taken to have ſuch Wood in every Part of the Trees; for the Fruit are always produced upon Shoots which come out from the Buds of the laſt Year's Wood, ſo that is always upon the ſame Year's Shoots. The Method commonly practis'd by the Gardeners in *England*, is, to ſhorten the Branches of the former Years Growth, down to three or four Eyes, at the Time of pruning; tho' there are ſome Perſons who leave theſe Shoots four or five Eyes long, and affirm, that by this Practice they obtain a greater Quantity of Fruit: But this is very wrong, ſince it is impoſſible that one Root can nouriſh forty or fifty Bunches of Grapes, ſo well as it can ten or twelve; ſo that what is gotten in Number is loſt in their Magnitude; beſides, the greater Quantity of Fruit there is left on *Vines*, the later they are ripen'd, and their Juice is not ſo rich. And this is well known in the Wine Countries, where there are Laws enacted, to direct the Quantity of Shoots, and the Number of Eyes that thoſe are to have upon each Root, leſt by overbearing them, they not only exhauſt and weaken the Roots, but thereby render the Juice weak, and ſo deſtroy the Reputation of their *Wine*.

Wherefore, the beſt Method is, to leave the Bearing-Shoots about four Eyes in Length, (becauſe the lowermoſt never produce) and three Buds are ſufficient; for each of theſe will produce two or three Bunches; ſo that from each of thoſe Shoots there may be expected ſix or eight Bunches, which is a ſufficient Quantity. Theſe Shoots muſt be laid in about eighteen Inches aſunder; for if they are cloſer, when the Side-Shoots are produced, there will not be Room enough to train them in againſt the Wall, which ſhould always be obſerved; and as their Leaves are very large, ſo the Branches ſhould be left at a proportionable Diſtance, that they may not crowd or ſhade each other.

In Pruning, you ſhould always obſerve to make the Cut juſt above an Eye, ſloping it backward from it, that if it ſhould bleed, the Sap might not flow upon the Bud: And where there is an Opportunity of cutting down ſome young Shoots to two Eyes, in order to produce vigorous Shoots for the next Year's Bearing, it ſhould always be done; becauſe in ſtopping of thoſe Shoots which have Fruit upon them in *May*, it often ſpoils the Eyes for Bearing; and this reſerving of new Wood, is what the *Vignerons* abroad do always practiſe in their Vineyards. The beſt Seaſon for Pruning of *Vines*, is the End of *September* or the Beginning of *October*, for the Reaſons before laid down.

The Latter-end of *April*, or the Beginning of *May*, when the *Vines* begin to ſhoot, you muſt carefully look them over, rubbing off all ſmall Buds which may come from the old Wood, which do not only produce weak dangling Branches; as alſo when two Shoots are produc'd from the ſame Bud, the weakeſt of them ſhould be diſplac'd, which will cauſe the others to be the ſtronger; and the ſooner this is done, the better it is for the *Vines*.

In the Middle of *May*, you muſt go over them again, rubbing off all the dangling Shoots, as before, and at the ſame time you muſt nail up all the ſtrong Branches, ſo that they may not hang from the Wall; for if their Shoots hang down, their Leaves will be turn'd the wrong Way; which when the Shoots are afterwards nail'd upright, will have their back Surface upward; and until the Leaves are turn'd again, and have taken their right Direction, the Fruit will not thrive: So that the not obſerving this Management, will cauſe the *Grapes* to be a Fortnight later before they ripen. Beſides, by ſuffering the Fruit to hang from the Wall, and be ſhaded with the Cloſeneſs of the Branches, it is greatly retarded in its Growth: Therefore, during the growing Seaſon, you ſhould conſtantly look over the *Vines*, diſplacing all dangling Branches and wild Wood, and faſten up the other Shoots regularly to the Wall, as they are extended in Length; and towards the Latter-end of *May*, you ſhould ſtop the Bearing-Branches, which will ſtrengthen the Fruit, provided you always leave three Eyes above the Bunches; for if you ſtop them too ſoon, it will injure the Fruit, by taking away that Part of the Branch which is neceſſary to attract the Nouriſhment to the Fruit, as alſo to perſpire off the Crudities of the Sap, which is not proper for the Fruit to receive.

But although I recommend the ſtopping thoſe Shoots which have Fruit at this Seaſon, yet you ſhould by no means ſtop thoſe which are intended for bearing the next Year, before the Beginning of *July*, leſt by ſtopping them too ſoon, you cauſe the Eyes to ſhoot out ſtrong lateral Branches, whereby they will be greatly injured. Theſe therefore ſhould be train'd upright againſt the Wall until that time; when their Tops may be nipp'd off, to give Strength to the lower Buds.

During the *Summer* Seaſon, you ſhould be very careful to rub off all dangling Branches, and train up the Shoots regularly to the Wall, which will greatly accelerate the Growth of the Fruit; and alſo admit the Sun and Air to them, which is abſolutely neceſſary to ripen, and give the Fruit a rich Flavour; but you muſt never diveſt the Branches of their Leaves, as is the Practice of ſome Perſons; for altho' the admitting of the Sun is neceſſary to ripen them, yet if they are too much expos'd thereto, their Skins will be tough, and they will rarely ripen; Beſides, the Leaves being abſolutely neceſſary to nouriſh the Fruit, by taking them off, the Fruit is ſtarv'd, and ſeldom comes to any Size, as I have ſeveral times obſerv'd; therefore a great Regard ſhould be had to the *Summer* Management of the *Vines*, where Perſons are deſirous to have their Fruit excellent and duly ripen'd.

When the Fruit are all gather'd, you ſhould prune the *Vines*, whereby the Litter of their Leaves will be intirely remov'd at once, and the Fruit will be the forwarder the ſucceeding Year, as has been before obſerv'd.

Having thus treated of the Management of *Vines* againſt Walls, &c. I come next to the Culture of ſuch as are planted in Vineyards; but as the Number of thoſe in *England* is ſmall, and the Experience of them not very great, ſo I ſhall firſt ſubjoin an Account of their Planting and Managing their Vineyards in *Italy* and *France*, and then ſhall add ſome Obſervations and Experiments of my own. And firſt, I ſhall inſert a curious Account of the Method the *Italians* follow in planting their Vineyards, and making their Wine, which I receiv'd from an ingenious Correſpondent in that Country, who hath ſome Vineyards of his own, and hath been very exact in his Obſervations upon the different Methods now practis'd by the *Italians* in their Vineyards; which is as follows.

The Method of managing their Vineyards, *and making their* Vines *in* Italy.

1. As to the Soil; next to that of *Chianti*, which is in a manner all rocky, they prefer that of the hilly Parts of this Country, which has a warm, ſtony Bottom, with a loamy Superficies; and next to that, ſuch as has a lime ſtone or chalky Bottom, with a reaſonable deep Surface of any good Earth; but in the Plains, where the Wines are nothing comparable to thoſe of the Hills and Mountains, they are forc'd to content themſelves with any tolerably good Sort of Ground, that is neither ſandy nor light to Exceſs, nor too clayey or binding, though a pretty ſtiff Marle does well enough.

2. As to its Expoſure, they chuſe one that is due South, or that inclines to the Weſt rather than to the Eaſt: And in the Plains, they are oblig'd to be contented, as will be here related, with a North one for part of their Vineyards; which they fence, however, if not naturally cover'd with ſome Wood or adjacent Hill, with either a good Hedge or a Stone-wall, againſt the Northern Blaſts.

3. The Manner of preparing the Ground for Planting, differs according to the Situation of it; being perform'd one Way when on Mountains; another when on more moderate Hills; and a different, in ſome reſpects, to that when on a Plain or Level.

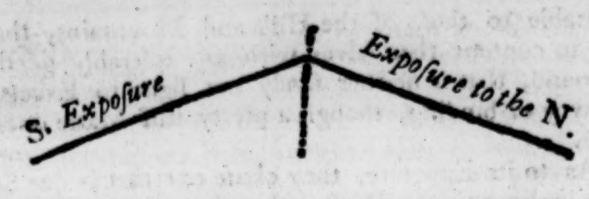
In thoſe Plains which are very mountainous and rocky; as alſo the Hills, where the Bottom of Stone is found near the Superficies, and is hard, they, with the Help of proper Inſtruments, or elſe with Gunpowder, make a Trench of four Feet and a half deep, and three and an half wide, drawing it from Eaſt to Weſt, (and tho' it may be near, yet always ſomewhat under the Summit or Top of the Mountain, to be cover'd from the North Wind thereby;) and with part of the Stones which they raiſe out of the Foundation, they make a dry Wall (*i. e.* without Mortar) juſt below the Trench; about twelve Feet below this they make a ſecond Trench in like manner, levelling the Ground between the Trenches, as well as they can, with Mattocks, Crows of Iron, &c. and ſo proceed till they have finiſh'd the whole Ground they intend to plant.

The Uſe of thoſe little Walls is to keep the little Earth there is from being waſh'd away by impetuous Rains: For the carrying off of which, they make proper Channels at convenient Places; ſo that the whole Plantation, at ſome Diſtance, reſembles a regular magnificent Pair of Stairs. In which Trenches, at about three Feet diſtance one from the other, they plant the Cuttings of *Vines*, ſomewhat ſlanting, about the Depth of two and a half or near three Feet: Which being dreſs'd as hereafter related, and when they come to their Bearing, being kept of an equal Height, make a moſt agreeable Proſpect.

When the Ground is hilly, but not very mountainous, they dig a Trench about four Feet and a half deep, and three and a half wide; and then having thrown the Earth to the Northward, they make a ſecond with the Earth whereof they fill the firſt, and ſo on, one under and cloſe to the other, till they have finiſh'd the Ground they would plant, the laſt ſerving for a Ditch to carry the Water off: Into which at proper Diſtances, they alſo make little Ditches to convey the Water; and having ſo done, and thrown the Earth taken out of the firſt Trench on to the trench'd Ground, and levell'd it ſo as to give it an even proper Declivity, they plant it with the Cuttings of *Vines* in Quadrangles or other Manner, at the Diſtance of above five Feet and a half or more, as they think moſt proper for their Ground: If ſtony, in the manner before related, as practis'd in the Mountains; but if not, then as they do it in the Plains, as will be hereafter deſcrib'd.

When the Vineyard is to be made on a Plain or an exact Level, having ſtak'd the Part out they deſign for Walks, and laid out the Diviſions they intend for *Vines*, their next Care is, that each of them have a proper Declivity, and that there be good Drains to carry the Water off; in order to which, they make the firſt trench exactly in the Middle of the Diviſion, extending from Eaſt to Weſt, of the Depth of four Feet and a half, and near four Feet in Breadth, throwing the Earth taken out of it Northward; when laying at the Bottom Stones, Bruſhwood, Bones, or almoſt any Sort of Rubbiſh to raiſe and drain it, they proceed to the ſecond Trench; with the Earth of which they fill the firſt, and ſo on till they have finiſh'd as far as the ſecond Diviſion extends Southward, laying at the Bottom of every Trench ſuch Rubbiſh as they can get; and then removing the Earth taken out of the firſt Trench over to the South-ſide already trench'd, they proceed to trench in the ſame manner on the North-ſide, as far as the Diviſion extends; when in the laſt Trench there will naturally remain a Ditch (the Side of which ſome very curious People wall with a dry Wall) to carry off the Water, whence they take Care to make proper Drains to carry it away.

This being done, they proceed to level this Piece of Ground, giving each Side thereof its proper Declivity, ſo that it ſomewhat reſembles a Roof that is not ſteep, or, as they here term it, a Mule's Back, bearing the following Figure: And thus they do to preſerve the *Vines* they plant the

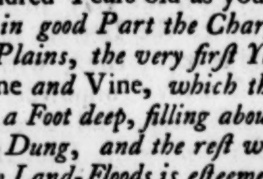


the longer, and to make them render better Wines, whilſt thoſe that are planted on the Flat, and on the Borders of Ditches, where they are ſupported by a ſort of *Poplar-Trees*, and ſerve for the Diviſion of the *Corn-Fields*, though the *Vines* grow to a great Thickneſs, and produce much Fruit, yet they render a Wine that is good for little, and will not laſt above thirty-five or forty Years; whereas what is ſo planted, being tolerably well looked after, holds good for one hundred and forty, or one hundred and fifty, and in *Chianti* they will laſt above three hundred Years, they there accounting thoſe of one hundred Years old as young *Vines*.

N. B. *To defray in good Part the Charge of this expenſive Culture, thoſe in the Plains, the very firſt Year, ſow a Hole of* Melons *between* Vine *and* Vine, *which they make about ten Inches diameter, and a Foot deep, filling about three-fourths of it with good macerated Dung, and the reſt with fine good Earth, (of which that left by Land-Floods is eſteemed the beſt) in which they put about fifteen or twenty Seeds; which being come up, before they put out the domeſtick Leaf, they nip the Tops of all but two or at moſt three of the ſtrongeſt Plants, which they leave to bear Fruit, and order accordingly. After which they plant* Cauliflowers, *or* Brocoli *of* Cauliflowers; *and this they alſo do in the Hills ſo trenched; but in the Mountains* Melons *do not well in the Trenches; but* Beet-Root *is often produc'd, and* Cauliflowers.

The Ground being ſo ordered, where the Vineyard is in a Plain, or on the Hills, they proceed to mark it out with Lines, according to the Diſtances they would plant at, endeavouring to do it in Rows about three Feet *Vine* from *Vine*, and about four, or four and a half, from Row to Row, but for the moſt part in a Quadrangular manner, at the Diſtance of about four Feet one from the other, drawing Lines lengthways and athwart: In the Croſs they plant the Cut of a *Vine* in the following manner:

Having an iron Crow of an Inch or better diameter, a little pointed at the End, they therewith make an Hole directly down about three Feet and a half deep; then being provided with an Inſtrument, they call a *Crucciolo*, having an Handle of Wood like that of a large Augar, and the Body of Iron four Feet long, and better than half an Ich in diameter, at the End of which there is a Nich ſomething like an Half-moon, making this Figure, they, after twiſting the End of the Cutting, put it therein, and ſo force it down to the Bottom of the Hole, where they then leave it, and afterwards fill up the Vacancy with fine ſifted Earth or Sand, obſerving to tread the Earth cloſe to the Plants, which otherwiſe (unleſs it be ſtiff Land) is often inclinable to be looſe and dry, eſpecially if Rain does not ſoon follow their Planting; and it is incredible how many *Vines* three Perſons can in this manner plant in one Day, *viz.* upwards of Two thouſand.



As the Cuttings are of a good Length, there generally remain about two Feet or better of them above the Ground, when planted, and ſometimes more. When, as it frequently happens, they find the Earth ſhallow, ſo that in the trenching they arrive at prime Rock, or a cold bleakiſh Clay, at the Depth of about three Feet, and therefore they trench not lower, they plant the Depth of two and a quarter, or two and an half Feet; ſhallower than which they never plant, and even then, if the Bottom be Clay, they will do but little; and if rocky, are apt to ſuffer in the *Summer* by dry hot Weather, (tho' if once they ſtrike their Roots in the Rock they do well enough) and yield the beſt Wine that is made in the Plains, which, however, tho' planted with the ſame Sort of *Vines* as thoſe of the Mountains, and even of Cuttings brought from thence, never produce near ſo good Wines as thoſe that grow there, notwithſtanding the *Grapes* ripen three Weeks, if not a Month, ſooner.

N. B. *This Tillage and Plantation is performed at any time between* November *and* March, *in dry, but not froſty Weather, ſince then the frozen Earth in working being naturally thrown into the Bottom of the Trench, where the* Vines *are to make their principal Roots, it retains ſuch a Frigidity, that they will thrive but badly in it; which will be the Caſe alſo if the Ground be laboured too wet: wherefore this Trenching or thorough Tillage is generally performed in* February, *after the Severity of the Froſts is over, and may be planted at any time between that and* April; *whilſt as for the Cuttings, they are obſerved to be beſt when planted as ſoon as cut off in the dreſſing: but if that Conveniency is not to be had, they may be brought from any reaſonable Diſtance, their Cut-Ends only being tyed up, and covered from the Air with Moſs, Straw, or the like; or if from a greater, with ſome Earth about them, and may be kept, burying the Cut-Ends in the Ground, till ſuch time as they can be us'd: But juſt before this is done, it is proper to put them in Water for twelve Hours or more, ſince that will influence them to ſtrike Root the better.*

It is not of much Importance, that the Cuttings be from the beſt ſort of Grapes, *though that is beſt, if eaſily to be had, but may be from any* Vines *in the Neighbourhood that thrive well; for afterwards, when they come to their Bearing, you may with little Trouble, ingraft them with Cuttings from* Vines *of the Sorts you deſire; and theſe will bear ſome Fruit the very Year they are ingrafted, and moſt abundantly the next; beſides, that the Foot of the* Vine *or* Stock *will receive Benefit by this Operation.*

5. The Plantation having been made in the manner before related, the firſt Culture of it is performed different Ways; which, as one of them has been practiſed but of late Years, they may be termed the Old and the Modern.

According to the *Old Way*, about a Month after the Planting, when they begin to ſhoot, they cut off the Tops of the Plants juſt above the ſecond Eye that is above the Ground, and ſo let them remain, and ſhoot out at Pleaſure, only after the *Melons*, &c. (which, as is ſaid before, are planted or raiſed in the Vacancies) are gathered, they dig, and ſow, at proper Diſtances, the Ground with *Beans*, *Kidney-Beans*, *Turnips*, *Beets*, or the like, and let the *Vines* ſhoot and grow at Liberty till the third Year, (that is, when they have been planted three Years compleat); then opening the Earth about each Plant in *March*, or towards the Beginning of *April*, to the Depth of about a Foot, they, with their Hands, clear away the ſuperficial Roots, and then throw in two Handfuls of good half-conſum'd Sheeps Dung, or elſe of Lupines that have been parboil'd; after which, with a ſharp Inſtrument (either a Bill or ſtrong Pruning-knife) and a ſteady Hand, they cut off the Head of the Plant juſt below the loweſt Shoot, which is ſometimes a Finger or two under Ground, rubbing the Part cut over with ſome of the contiguous Earth; and then upon its ſhooting, take the principal Shoot, (gently cleaning away the reſt) and fix it with a green Bulruſh to a ſmall Stick, to keep it, when tender, from being broken by the Winds, and ſo let it remain till the next Dreſſing Seaſon: when having prun'd it, leaving but one Eye, they put a Stick that is ſomething more ſubſtantial, of between three and four Feet long, to ſupport it from time to time, tying the Shoot to it till the Month of *July*, before the Entrance of the Dog-days; at which time they nip off the Head of it, which checks its Luxuriancy, and renders the Fruit, which it will then begin to have in ſmall Bunches of nine or ten *Grapes* each, better and larger, tying the Remainder of the ſaid Shoot to the Stick: In the next Year they order it in the ſame manner, and ſo on till the ſeventh Year after planting, when it begins to give Fruit to purpoſe; and then, at Dreſſing, they generally leave but one Head on the moſt vigorous Plants, and only two Eyes on that, and ſtake them with ſubſtantial Stakes of better than an Inch diameter, and near ſix Feet long, one of which, or more, goes into the Ground, (of which thoſe made of wild *Cheſnut*, the Coppices of which they cut once in ſeven or eight Years, for reſiſting both Wet and Dry, are accounted the beſt): and when they begin to ſhoot, they tie them to theſe with the ſmall Twigs of *Broom* or *Oyſters*, and ſo viſiting them frequently in the Courſe of the *Summer* to keep them ty'd, as alſo to nip off luxuriant Branches, they let them remain till the Dog-days are over; when they clear them of ſome of their Leaves, that the Fruit may ripen the better.

N. B. *In Dreſſing them after the ſixth Year, if they have made more Shoots than one, as moſt of them will have done, they, as before, cut them all away, unleſs they have Occaſion with them to ſupply the Places of ſome contiguous Plants that have miſcarryed; and in moiſt, warm Weather they lay thoſe Shoots down better than a Foot under the Ground, carrying the Heads of them where they deſign; and this they term* Propagation: *The beſt of the Shoots that they cut off from their* Vines *of ſeven Year* *old or older, they either reſerve for any new Plantations that they are to make, or to ſell, at about nine Pence* Sterling *per Hundred.*

In Dreſſing from the ſeventh Year forward, they reſerve the loweſt Head they can, provided it be vigorous, and endeavour to keep their Vines *as low as may be, for the Fruit to enjoy the warm Reflexion of the Earth after the Sun-beams are gone off from it, to ripen it, and give it Life and Vigour; but not ſo as to let the Ends of the Bunches touch the Ground, or be ſo near to it as that they might be daſh'd therewith by the Rains, ſince that would be apt to rot the* Grapes*; whilſt in* Chianti *(where the* Vines*, though moſt abundant in the Product of their Fruit, are not ſo laviſh in their Shoots, but are eaſily kept in good Order, by a Hand that is tolerably ſkilful) it is incredible how exactly even the* Vines *are kept, about the Height of four Feet from the Ground, which contributes to the making the beautiful Proſpect before-mentioned.*

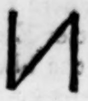
The Modern Way is as follows:

A Month or thereabouts after Planting, when the young Plants begin to ſhoot, they prune them juſt above the firſt Eye that remains out of the Earth, whereat, when they (as they naturally will) have made their Shoots, towards the Beginning of *June*, and ſo that they can diſcern which, of the ſeveral they put out, are the ſtrongeſt, and appear the moſt thriving, they carefully and gently, with the Thumb, rub off all of them, except one which they judge to be the ſtrongeſt, and, for the moſt part, the neareſt the Ground; which Diligence they renew every eight or ten Days, or oftner, if the Weather chance to be wet, taking away all the new Shoots, which they will abundantly make, ever leaving only the principal Shoot; which, that it may not be prejudiced by the Winds, or the Feet of the People, (who frequently, during the Progreſs of the Melons ſown between them, muſt go to nip off the running Branches, and cultivate them, and who at the ſame time with great Convenience, do this work about the Vines) they gently tie, as ſoon as it is well capable of it, to a ſmall Stick; and if, as it often happens, it proves very luxuriant, they nip off its Top: And this rubbing off of the young Shoots they continue 'till the Month of *October*, (though unleſs there be frequent Rains, there will, about the Beginning of *Auguſt*, be few Shoots to eaſe them of) whilſt ſometimes the principal Shoots will bear Fruits in ſmall Bunches of five or ſix Grapes each; but as they are always late, ſo they will not ripen: Wherefore, that the Strength of the Plant may not be leſſened or impaired thereby, they generally crop them off, after which they let the *Vines* remain 'till pretty early in the *Spring*, when the intermediate Crop of *Cauliflowers* or *Brocoli* of *Cauliflowers*, is taken off; then, in the Month of *February*, they open the Earth about the Foot of each Plant, and clear it of its ſuperficial Roots, and manure it in the Manner before deſcribed in the Cultivation of thoſe the *old Way*: The third Year they dreſs the Shoot ſo as to leave but one Eye upon it; and afterwards digging all the Ground in the intermediate Spaces, to requite the Expence of Culture, they ſow a Sort of Kidney-Beans, which not riſing above a Foot in Height, or ſcarce ſo much, does not prejudice the young *Vines*; to which they now give ſomewhat more ſubſtantial Sticks, whereto they continue to tie them, as alſo to rub off any new Shoots that they make, viſiting them for that End; as alſo to crop off the laviſh Tops of the Shoots, only three or four times in the *Summer*, and the next Year, in Dreſſing, they beſtow ſubſtantial Sticks on them, whereto they tie them with Broom-twigs, or ſmall Oſiers, when they begin to be in a pretty good State of Bearing, producing two or three pretty large Bunches of Grapes, which (as thoſe of the antecedent Year) ripen well, but come not to the full of their Bearing 'till the fourth or fifth Year: However, they anticipate thoſe ordered the other Way three or four Years; and this is withal the ſurer Way of the two; ſince in cutting off the Heads of the others, many are loſt; whereas this Way, few, if any, fail.

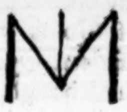
N. B. *What is before ſaid of a* Vine*'s coming to its full Bearing, is only to be underſtood in reſpect to the Quantity of the Fruit, a little more or leſs; for as to the Quality, it is generally eſteemed to be meliorating 'till the twentieth Year, (being duly cultivated) and the Wines coming from it richer and better; and in* Chianti *they mix not with their Grapes thoſe of the Product of* Vines *of a leſs Age than fifteen or ſixteen Years, and pretend they are always meliorating for fifty Years.*

The *Vines* being, by one or other of thoſe Methods, brought to a full Bearing-State, they muſt be annually dreſs'd, according to the Vigour of the Plant, and duly ſtak'd.

In Dreſſing, to thoſe of moderate Strength and Vigour, they leave but one eye, or at moſt two; and to the moſt ſtrong and vigorous, but three or four at the very moſt; and then they tie them not as they do when they are but one or two, but fixing another leſs ſubſtantial Stick in the Ground near the main one, to the Top of which, for its better Support, they tie it with an Oſier; they bend down and fix the Head thereto in the following Form:



And ſometimes when they find ſome one of a very extraordinary Vigour, and that has two good Heads, they leave them both, and diſpoſing of one in the manner juſt before related, the other, having fixed another Stick on the other Side of the principal Stake, and tied it thitherto, they in the like manner bend down the Tie thereto, when it comes to form the following Figure:



This done, they continue from time to time to bind the new Shoots to the Stakes, and to nip off the Tops of them, when too luxuriant, 'till towards the time of Ripening; when the Dog-Days are paſt, they diſburthen them of ſome of their Leaves, to expoſe the Fruit, then turning Colour, more to the Sun, and to accelerate the Ripening of it.

N. B. *What is ſaid above in relation to the leaving more than one Head, and the ordering thereof, only relates to ſuch as are in Vineyards on the Plains and Hills; for in the Mountains, as their Stakes are ſtronger and thicker, they affix ſome Wood-work to them, on which Frame they run two, and ſometimes three Heads, making the Shape of a Wheel.*

Here alſo it may be proper to obſerve, That all Landlords of Vineyards, at letting them, ever reſerve to themſelves the Privilege of viſiting them at their Pleaſure, to ſee if they are duly dreſſed, and not more Eyes left to a Vine *than there ought to be: For it is poſſible, in three Years Time, only by Pruning, to ſpoil the beſt Vineyard that is, paſt almoſt the Power of Art to recover it, and at the ſame time make it yield much Wine: For it is but leaving, inſtead of one or two Eyes, five or ſix, and of three or four, eight or nine, and it will be reduced unto ſo weak and exhauſted a State, and the* Vines *ſo run into Wood, that it will be paſt Recovery; and the only Method is to cut the* Vines *down a Foot or ſix Inches under Ground, and rear up a new Shoot, which, beſides the Time that will be loſt in ſo doing, will hardly, after all, prove effectual. And this Manner of pernicious Pruning the* Italians *call a* Laſcia Podera*, which, in* Engliſh*, is* Quit-Farm*; which is a proper Term enough.*

As for the Time of Dreſſing *Vines*, if it may properly be ſo called, there is nothing wherein thoſe People differ more; ſome performing it immediately after the Grapes are gathered, as in *Carignano* and *Val d' Arno*; others do it at all times as their Conveniency permits, and the Seaſon is mild and open, (leaving their youngeſt *Vines* 'till the laſt) from *November* to *March*; and in *Chianti*, as the Region is colder, and their *Vines* late to move, they do it late in the Month of *March*, and even to the Beginning of *April*. Others again do it at twice, in *November*, when they leave an Eye extraordinary, and in *March* they cut off that extraordinary Eye; which laſt Method ſeems to be the beſt; though to have Cuttings for any new Plantation, it can only properly be done in *February* or *March*.

As to Sowing in their Vineyards they alſo differ as much. In *Chianti*, they leaving a Space of about three Feet from their *Vines*, from thence to the low Wall, many ſow Wheat, and though the Soil ſeems to be little elſe but Stones, and ſuch as only can be worked by a Mattock, yet it bears prodigious Crops, thirteen or twenty for one: Others again, in that Space, will only ſow the low Sort of *Kidney-Beans*, *Lentiles*, and ſuch low Plants: And others again will not ſow any, the leaſt thing at all, as in the general they do not in the Vineyards on the Hills; but in the Plains, after the Heads of their *Vines* are riſen ſo high, as to be higher than the Tops of Beans, they make no Difficulty, between every Row of *Vines*, to ſow a Row of them, as the moſt Scrupulous do not, to ſow late in *April*, a Row of low *Kidney-Beans*; whilſt ſome of late, laying two Rows of *Vines* into one, whereof, with ſtrong Stakes and Canes, they make a ſort of Eſpaliers, and in the Middle (that is between Row and Row) being near four Feet from each, plant a Row of *Artichokes*, which, they ſay, being well dung'd in their proper Seaſons, Part of the Nouriſhment going to the *Vines*, does them more Good than Harm.

As for the Seaſon of digging their Vineyards, they all agree, that the later it is done in the Year, the better it is; wherefore, in the Places where they ſow nothing, they let that Work alone 'till the latter End of *April* or Beginning of *May*, when, according to the Nature of the Ground, they do it with the Spade or Mattock. And again, the more eſpecially to kill the Weeds, and to forward the Ripening of their Grapes, they ſtir it with a ſtrong Hough or Mattock, and, where they can, with a Spade, in the Dog-Days; but in ſo doing, they take a moſt particular Care that they touch not any of the Roots of the *Vines*; for that, if it did not kill them, would at leaſt make them wither and ſpoil their Fruit.

As for manuring their Vineyards, in all Parts, when they are in a bearing Condition, they practiſe it but once in five or ſix Years, when they open the Earth about the Roots, and taking away the ſmall ones, which then may have made towards the Superficies, they throw in an handful or two of Sheeps Dung, or of that of Goats or Deer; or if any of theſe are not eaſily or in ſufficient Quantity to be had, then, of parboil'd Lupines, which although agreeable to the *Vine*, yet being of little Subſtance, muſt be the oftner repeated, every three Years at leaſt; when they cover it again: and this they perform in the Months of *October* and *November*, that the *Winter* Rains falling thereon, may make it deſcend to the utmoſt Fibres of the Roots, and afford them Nouriſhment.

7. The Seaſon for gathering the Grapes, and making the Vintage is very uncertain, depending upon the Weather that has been the preceding *Spring* and *Summer*, which makes it ſooner or later 15 or 20 Days in *Chianti*; when the Seaſon has been good, they begin to cut their Grapes about *Michaelmas*, and in the Plains a Week or ten Days ſooner. In this they every where govern themſelves according to the Ripeneſs of their Grapes, and the Proſpect of the Weather, aiming to have a perfect dry Seaſon to do it in.

8. The Grapes being of a due Ripeneſs, and the Weather warm and dry, as ſoon as the Sun or Wind has dry'd up the Dew that was on them, they cut them, and put them into Piggins, and carry them, if at a Diſtance, on Mules, or if near, between two Men, to the Wine Fat, and then either bruiſing them to Maſh, in the ſaid Piggins, with a Club, throw them directly therein, or elſe into a thing reſembling a very large Hopper, with a Grate lengthwiſe; then Boards being placed over the Fat, a Lad with his Feet treads them out, the Juice, Husks, Stones, and Stalks all paſſing through the Grate into the Fat, and ſo they continue to do till the Fat (which uſually contains from four to five Tuns, ſometimes eight, ten, nay, as far as fifteen, or twenty in ſome large Vineyards, in which there are ſometimes ſeveral of them) is full, when immediately, or ſometimes in a few Hours before they fill it, it will ſet a boiling, which raiſes the Husks, Stalks, and Stones to the Top, and theſe make a thick Cruſt: and thus it continues boiling for many Days, more or leſs, according to the Strength of it, till it be fit to be drawn off, which is to be diſtinguiſhed by the Palate wherein the greateſt Skill in making Wine conſiſts. The Low Wines of the Plains are ready in about ten Days, thoſe of the Hills in about fifteen, of the Mountains in *Chianti* eighteen or twenty, and ſometimes more, in the Haſtening or Retarding whereof the Weather has ſome Share; ſo that when they are near ready, they taſte them every eight Hours.

N. B. *The more the Wines boil, the drier they will be, the Colour deeper; and the leſs the ſweeter and paler: and what is ſaid above, is to be underſtood of Red Wines, which are the chief Produce of this Country. Whilſt to make their ſtrong White-wines or Muſcadines, they gather their Grapes carefully, and lay them three or four Days, or more, in the Sun, taking Care to carry them within Doors, or under Shelters in the Night-time, that ſo no Dew may fall on them.*

And when they are put into the Fat, they let them boil but little, five or ſix Days at moſt, and then put them into the Caſk, ſhifting them from one Caſk to another, twice or thrice, to make them become fine; and for the Verdea *or* White Florence, *as it is called, they draw it off from the Fat almoſt as ſoon as it begins to boil, and has raiſed the Cruſt; and then letting it boil in the Caſk into which they have drawn it, thirty-ſix Hours, or, at moſt, two Days; they ſhift it into another, and ſo in a few Hours into a third and fourth, to check and prevent its Fermentation, which gives it the Sweetneſs it has; but then it is never perfectly fine, though ſome People both in* Italy *and* England, *eſpecially among the Women, are very fond of it.*

N. B. *Thoſe Grapes at the End of the Bunches are weaker in Quality, as well as leſs ripe, than thoſe that grow nigher to the Stalk; and therefore ſome extreme curious Perſons, to make a ſmall Quantity of very choice Wines, do cut them off, and make a Wine by itſelf, which is much inferior to that which is made of the upper Part of the Bunch. This Practice, though attended with Trouble, may be recommended for a larger Parcel, in ſuch Years as the Grapes are badly ripe, to have ſome Wine, at leaſt, in Perfection.*

N. B. *Thoſe Perſons who value themſelves on making the beſt Wines, and endeavour to keep up the Reputation of their Vineyards and Cellars, in cutting their Grapes, leave the unripe, or thoſe that are infected with Rottenneſs together, till the laſt, and with them make a Fat or more, by themſelves, of* Vin Scauro, *or* Refuſe Wine, *which ſerves for common Uſe; for which alſo they mix Water with the Bottom of their Fats, and the Husks,* &c. *and do make a pleaſant, briſk Drink, much preferable to Water-Cyder; but the Weather once coming in warm, turns it eager and undrinkable.*

When any Wines are boiling in the Fat, it raiſes a Warmth in the Room, which is accounted good in many Diſtempers, eſpecially for ſuch as have a Weakneſs in any of their Limbs, to put them into a Fat of boiling Wine; and the Husks, &c. *that come out of the Fat, are eſteemed very good for the like Purpoſe.*

9. When the Wines are found to be ready, they proceed to draw them off, which are now properly called *Wines*, (before which they are termed *Moſto*, i. e. in *Engliſh*, *Wort*) for which Purpoſe, within three or four Inches of the Bottom of the Fat, there is a Cock fix'd therein; when in ſmall Barrels they carry and put it into the large Buts, which in *Chianti*, hold, ſome of them, ſeven or eight Tuns, but generally two or three Tuns, made of thick Cheſnut, the Staves being better than an Inch and a half thick, and more than twice as high as they are long, which they never waſh; but having left a Gallon or two, or, it may be, three or four, of Wine in them, when they draw it off the *Spring* or *Summer* before: When they are about filling them again, to clear them out, they ſend in a Lad at the Door, which is made in the Head of the Caſk, to do it with a Spunge, and to waſh it with ſome new Wine; and this without wiping off any of the *Argol*, which they think preſerves the Wine the better.

In which Caſks, which laſt many Years, (and have *Argol* in them of the Thickneſs ſometimes of three or four Inches) they let them remain till they have an Opportunity of ſelling them, taking Care to keep them full quite to the Bung, with a wooden Stopper. This is what they practiſe in *Chianti*, where the beſt Wines are made, and whence, from thoſe Buts, they are drawn into Flaſks, and carried, at the Expence of about a Crown for a Mule Load, to *Florence*, in order for Exportation; but in other Places they draw them off into leſs Caſks, of which Wines, except ſome *Carniguano's*, and thoſe of *Val d' Arno*, few or none are exported, but ſerve for the Conſumption of the Country: Some of theſe have a pleaſant Flavour and Briſkneſs, tho' of no great Body, many of which will not keep the *Summer* over, except in cool Cellars, in the Places where made; ſuch is the nice Nature of this Country Wines in general. Nor are the choiceſt *Chianti's* exempt: For at two Seaſons of the Year, the Beginnings of *June* and *September*, the one when the Grapes are in Flower, and the other when they begin to ripen, ſome even of the beſt Wines are apt to change, eſpecially at this latter Seaſon: not that they turn eager, but take a moſt unpleaſing Taſte, which renders them unfit, not only for Drinking, but even to make Vinegar of; and is called the *Settembrine*. And what is moſt ſtrange, is, that one Caſk drawn out of the ſame Vat ſhall be infected, and another not; but be perfectly good, and yet both have been kept in the ſame Cellar too.

As this Change happens not to Wine in Flaſks, though that will turn eager, I am apt to attribute it to ſome Fault in filling the Caſk, which muſt always be kept full, which either by letting alone too long, till the Decreaſe be too great, and the Pan or Scum that there naturally is on all Wine, thereby being too much dilated, is ſubject to break, or elſe being broke by haſty filling up, gives it that vile Taſte of a rotten *Vine* Leaf.

But againſt this there is a very ſtrong Objection, that this Defect ſeizes the Wine at a particular Seaſon, in *September*, over which if it gets, it will hold good for many Years.

So the Caſe is worthy the Enquiry of the Naturaliſts, whilſt it is evident, at leaſt for the firſt Year after it is made, Wines in general are, more or leſs, affected by the Circumſtances wherein the *Vines* or Grapes at that time are; and if they get well over the time of the Grapes flowering, will keep good till that of their beginning to ripen.

As for the Time that the Wines are fit to drink, the poorer Sort of People drink that of the Plains almoſt as ſoon as drawn off; but from the 11th of *November* may be ſaid to be its proper Seaſon.

Thoſe of the Hills are a very pleaſant Drink about *Chriſtmas*, and during the *Spring*; but till *June* the *Chianti's* are not eſteemed to be fit for drinking, tho' they are fit for Exportation in Butts in *December*; and in the Flaſks and Cheſts about the Beginning of *February*: If ſooner ſhipped off in that Manner, tho' apparently fine, there will be a Sediment in the Flaſks.

The Art of Brewing Wines (further than the throwing into each great Butt, the Quantity of two or three Hatfuls of the choiceſt Grapes they had preſerved, and laid on Mats in the Sun for that Purpoſe, which were picked from the Stalks, and are eſteemed proper for their Wines to feed on, and which they call *Governo*) was not known in *Chianti*, (tho' the Hoſts here practiſed ſomething like it, mixing the ſmall Wines of this Country with the ſtrong ones of other Parts; and fining their White-wines with Iſinglaſs, Whites of Eggs, Lime, and the like; and were thought to put Allom into their Red Wines to preſerve them, and promote a Thirſt in their Gueſts) till on the breaking out of the firſt *French* War, an *Engliſh* Merchant from *Bourdeaux* came into theſe Parts, with a View to accommodate the Wines which were made in the beſt Parts of *Chianti*, and were naturally of a true bright Ruby, with a pleaſant Flavour, and a ſilky Softneſs, to the *Engliſh* Palates, then in love with the deep-colour'd rough Clarets; who inſtructed them firſt in the making of black Wines, with the *L'Abruſco* or *Wild Grape*; which being mixed with the *Chianti's* gave them a deeper Colour, and a rougher Taſte; and being liked in *England*, gave the firſt Occaſion to great Quantities being ſent thither every Year in Caſks: In the making of which, the ſaid Gentleman was the firſt that inſtructed them; for before, their Caſks were, as above related, very unweildy. This put them alſo (their being a Demand for their Wines) upon increaſing and enlarging their Cultivations, and making ſome of them in ſuch Places, as the Expoſition was not very proper for; as alſo to cultivate in Vineyards the ſaid *L'Abruſco*, or *Wild Grape*, and which certainly was the moſt proper to mix with their other Grapes in the Vat, boiling them together. So all ſucceeded pretty well, till the Year 1607, when the Vintage proving very bad, and there being a great Demand of their Wines for *England*, by mixing the low Wines with the high ones of *Chianti*, which that Seaſon were not very good, they brought theſe Wines into ſuch a Diſreputation, that they have never been able to regain their Credit, tho' they have ſince, many times, had thoſe that are good.

Whether it be that the Taſte of the People is run upon *Portugal* Wines, or ſome other Cauſe, they have never been able, as I ſaid, to recover it ſo as to have any conſiderable Quantity exported in Caſks from theſe Parts; and the Perſon that firſt directed the Affair, had the Diſſatisfaction to ſee his Project miſcarry, after it had in a manner ſucceeded, and himſelf reaped conſiderable Benefit thereby.

At preſent, therefore, what goes for *England* is chiefly in Cheſts, and no more black Wines, as uſed to be formerly, and theſe are ſent juſt as they are made; but ſtill in *Chianti*, as they have Cultivations of the *Bruſco* Grape (which, however, is much different from the *wild* one, and becomes much larger and more generous) they continue to mix them with their other Grapes, which gives the great Colour as well as a Roughneſs to their Wines, and is agreeable enough to the *Engliſh* Taſte.

Having thus acquainted you with what I know and can learn, in relation to the making and managing of Vineyards, and the Wines they produce, it remains for me to add an Evil, that, beſides the ordinary ones of Hails, Storms, and Froſts, attends the Cultivation of *Vines* in *Chianti*, and the Parts contiguous; for in the Plains there is no ſuch Thing; and that is, a very ſmall Kind of a blackiſh, or very dark-green Caterpillar, which in the Month of *May* attacks the young Shoots of the *Vines*, when the Grapes are in Embryo, and deſtroys them; for which, however, they have a moſt certain Remedy, which is, to make a little Ring of Birdlime round the Foot of each *Vine*, about eight Inches above the Ground, which none of theſe noxious Inſects (which, I preſume, proceed from the Earth, and are not brought in the Air, as ſome of the like are thought to be, though theſe come generally with an Eaſterly dry Wind) being able to paſs, moſt effectually does the Buſineſs; and as they in that Region come almoſt every Year, the Trouble of ſo providing againſt them is become habitual to the Cultivators.

The Manner of making Wine in Champaign, *and how it may be propagated in other Provinces, to bring it to Perfection.*

Wine is ſo delicate a Liquor, and an Aliment ſo proper to give Strength, and to preſerve Health, if uſed with Moderation, that one may very well wonder, that in moſt of the Provinces of *France*, they make it with ſo much Negligence, in all thoſe Places where it might be excellent.

The *Champenois* are exempted from this Reproach, and, whether it be from a Delicacy of Taſte, or a deſire of making an Advantage of their Wines, or a Facility in rendering them better, they have been always more induſtrious to make them more exquiſite, than thoſe of the other Provinces of the Kingdom.

It is true, it is ſcarce ſixty Years ſince they have ſtudied to make pale Wine, which is very near white; but before, their red Wine was made with more Care and Neatneſs than any other of the Wines of the Kingdom.

I ſhall not enter upon the ancient or modern Diſpute, as to the Preference between the Wines of *Champaign* and *Burgundy*; I ſhall content myſelf with taking Notice of all that the People of *Champaign* have invented, to give the Fineneſs and Agreeableneſs to their Wines; and by the Obſervations that may be made therefrom, it will be eaſy to ſee that the ſame may be imitated in other Provinces, ſo as to come pretty near that Lightneſs and Exquiſiteneſs.

If theſe Eſſays ſhall give Hopes of Succeſs for the future, the Wines of thoſe Provinces might be brought to Perfection by Degrees where they might be delicious, and where they are but too common, becauſe they have never ſtudied to give them that Fineneſs.

In order to have the Wine excellent, the *Vines* ought to be well expoſed to the Sun, eſpecially to the South; and alſo on the Decline, or in the manner of a little Hill, rather than on a Plain. *Vines* ſhould be well choſen, and ſhould be ſuch as generally produce none but ſmall black Grapes: The Bottom of the Soil ſhould be good; a little ſtony, and not naturally moiſt. The Grain of the Soil of *Champaign* is very fine, and has a ſingular Quality that is not found in the other Provinces.

As theſe Kinds of Lands are light, there is Occaſion to dung them from time to time, and to lay on new Earth. But the Dunging ought to be very ſparingly done; too much of it will render the Wine ſoft and inſipid, and apt to be ropy. It ought to be commonly Cow-dung, becauſe that is not ſo hot as Horſe-dung: In ſtrong Lands it may be mingled with Horſe-dung and Sheeps-dung, provided that the Horſe-dung be ſo rotten that it may be reduced to a Powder, and that there be but one half as much of the Cow-dung, otherwiſe it would burn the *Vines*. Let it be laid in a Trench or Pit, and mix one Layer of Dung and another of new Earth, and let it lie and rot during a whole *Winter*; and towards the Month of *February*, take from thence half a Baſket for every *Vine*, eſpecially for each new Plant, to help them to puſh forth. It is ſufficient for a Vineyard to be dunged once in eight or ten Years, or an eighth or a tenth Part every Year.

After the Dung has been carried, the *Vines* ought to be opened round about, and a little Trench to be made round the Foot of the *Vine*, and to be buried there at a proper Time.

Divers Perſons leave it there many Weeks before they bury it, but this is not the beſt Way; for the Air, the Cold or the Sun, will be apt to diſſipate the moſt ſubtil Subſtance of it; but when it is neither too cold nor too hot, it may be left open eight or ten Days, to exhale its ill Savour, eſpecially the Dung of Sheep.

They give to a *Vine* four ordinary Dreſſings, according to their Seaſons; but it is proper to take Notice of one Thing, which is ſcarcely obſerved in *Champaign*, which is, that they cut their *Vines* in the Month of *February*, and even in *January*; inſtead of which, they ought never to begin to cut them till after the 14th of *February*: When they are cut before, they puſh forth ſooner, and are expoſed to Injury, and are ſometimes killed, if any Hoar-froſts come preſently after they have been cut. But when they ſtay till after the 14th of the Month of *February*, there is no Danger of their being injured by the Froſts.

The Covetouſneſs of *Vignerons* leads them to undertake the Cultivation of more *Vines* than they can well manage; and for this Reaſon they cut their *Vines* in *January*, which does an infinite Injury to them, and to the greateſt Part of Plants, which they are ſenſible of for many Years.

In *Champaign* they cultivate two Sorts of *Vines*, which they call the *High Vines* and the *Low Vines*. The *High Vines* are ſuch as they leave to grow in thoſe Places that are leſs fine, to the Height of four or five Feet: The *Low Vines* are thoſe which they do not ſuffer to grow above three Feet high; theſe they interr, or *ravale*, according to the Country Term, every Year, ſo as to leave but a little of the End to appear, which is repeated annually.

The *High Vines* produce plentifully, and give often ſeven or eight Pieces of Wine an *Arpent:* The *Low Vines* produce but little; but then the Wine is much more delicate: They often do not give above two Pieces of Wine an *Arpent*, oftentimes leſs, ſeldom three, but much ſeldomer four.

In order that the Wine may be the finer, all the *Vines* which give the white Grapes muſt be taken away, and thoſe alſo that give the large black Grapes; but one need not pluck theſe up, but graft them.

But ſometimes theſe Grafts will not ſucceed; which being obſerved, they muſt be plucked up, and new ones that have a Root, ſet in their Room, which they chuſe out of the Nurſeries, that are common in the Country. They ordinarily purchaſe theſe Plants for a Piſtole a thouſand.

A private Man, that has a great many *Vines*, may make himſelf Nurſeries.

Theſe Plants that have a Root are put into the Earth, in the Middle of a great Hole, about a Foot deep, which they make with a Stake, or ſtrait Mattock, or Pick-axe; and theſe produce ſooner than the others which have no Root: A Plant that has a Root begins to give Wine, a little, the third Year, indifferently the fourth and fifth, and in abundance in the following Years, and ſo for above ſixty Years.

Theſe new Plants ought to be dunged the ſecond Year, and in the ſixth Year, and afterwards in the eighth and tenth Year, as other *Vines*.

It will be to the Purpoſe, every Year, to pull up Part of the old Plants, which take up Room, and produce little or nothing; and by this Means a Vineyard will be conſtantly renewed, as one may ſay, and in a perfect good Condition.

When there are Dews or Humidities, in *May*, *June* and *September*, the *Vignerons* muſt not be ſuffered to enter the Vineyards in a Morning; for the Dews of theſe Months are commonly very cold, if the Sun do not draw them up; which burns the Leaves of the *Vines* which it touches before they are drawn up.

It is very eſſential not to enter the Vineyards at the Time when there is Hoar-froſt, or Showers attended with Froſt, for this will certainly kill the *Vines*.

The Vineyards muſt be weeded now and then, and if there be any Beetles, which are pernicious Animals to Plants, they muſt be picked off, and put into Sacks, and burnt at ſome Diſtance from the Vineyard, and the Aſhes buried.

About the End of *June*, and alſo of the Month of *May*, according as the Vineyard is advanced, it is neceſſary to cut off the End of each Twig, that the Plant may grow no more in Height, and that it may convey all its Nouriſhment to the Grapes: It is enough, if it have two Feet and an half, or three at moſt, above the Ground; all the reſt is to be cut off, as muſt alſo the Tops or Ends of the young Shoots, which proceed from the Bottom or Sides of the Stocks. This ought to be done twice or thrice, or four times in a *Summer*, according as the *Vines* put forth, more or leſs, in certain Years.

In the Seaſon, they put a Prop to every *Vine*, to ſupport it; they ought to be choſen, as much as may be, of Oak, and to procure them of the Quarter or Heart thereof, if you are willing to go to the Charge of it. Theſe will laſt above twenty Years, and when they are once made ſharp, they will always keep ſo; for when they begin to rot, they periſh equally throughout, and remain always pointed: The others laſt ſcarce four or five Years; and the Maſters muſt have an Eye over the Servants when they ſharpen them yearly, that they do not cut them too much, and make them too ſhort, and that they do not break a great many that might ſerve; for oftentimes in cutting off that which is rotted, they cut off two or three Inches of that which is ſound, or that which is good, which prejudices it as to Duration. They call theſe Props, *Foot Props*.

When a Vineyard has been cultivated and managed for the Year, after the accuſtomed Manner, and the Vintage-time approaches; when they have made Choice of and prepared a new Caſk that will contain it; and when the Preſs has been waſh'd, cleans'd, and greas'd, you muſt be very watchful to find when the Grapes are come to Maturity. For if the Grapes are too ripe, the Wine will not be ſufficiently ſtrong; if they are too green, it will be hard, more difficult, and longer before it is fit to be drank.

In the Provinces of *Languedoc* and *Provence*, the Grapes have too large Stones; they have too many white ones, they ſuffer them to be too ripe, which gives them over-much Liquor; they let their Stocks grow to be too old, and do not renew them often enough. They are planted, for the moſt part, upon too good Bottoms, or too moiſt, and have not an Aſpect of the Sun good enough.

To make an excellent Wine of the firſt Preſſing, having firſt well examined the Maturity of the Grapes, you ought to endeavour not to gather them but on Days that are very dewy, and in hot Years, after a little Rain, when you can be ſo happy as to have it; as the Grapes are not ripe till towards the End of *September*, and ſometimes the Beginning of *October*, Dew is rarely wanting in Vintage-time. This Dew gives the Grapes a Flower or *Farina* on the Outſide, which they call *Azur*, and inwardly a Freſhneſs, which cauſes that it does not heat very eaſily, and that the Wine is not colour'd.

It is very lucky, if there chances to be a miſty Day in dry Years, which now and then happens: The Wine is not only thence more white and delicate, but the Quantity is by much the greater, being augmented by near one fourth Part: A private Perſon who has but twelve Pieces of Wine, in gathering his Vintage in a Morning which has the Sun without Dew, will have ſixteen or ſeventeen if the Morning be miſty, and fourteen or fifteen if it has no Miſt, but yet has a good Dew: The Reaſon of this is, that the Dew, and, above all, the Miſt, renders the Grapes tender, ſo that the Whole, in a manner, turns into Wine.

The Wine produc'd from the Grapes that have not been warm'd the Moment they are cut, will ſtill remain much paler; whereas when the Sun has warm'd the Subſtance of the Grape, it will become more red by the Motion of the Parts; but the Quantity will be leſſen'd either by reaſon of Tranſpiration, or becauſe the Rind has been thicken'd and harden'd by the Sun, whereby it yields its Juice with more Difficulty. This, Experience hath taught, is of ſo much the more Concern, by how much the more certain it is.

They agree in *Champaign*, that the Wine which they call *River Wine* is ordinarily paler than that of the *Mountains*, but they do not give the Reaſon for it. I believe the Vineyards that are near a *River* enjoy all the Night a freſh Air, which the *River* exhales; whereas the Vineyards of *Mountains* don't reſpire, during the Night, that Warmth, which proceeds from the Exhalations of the Earth, and it is that which makes the Colour more or leſs; alſo when the Years are very hot, they cannot, either to thoſe of the *River* or of the *Mountains*, warrant the Colour; and when the Years are cold, neither the Wines of the *Mountains*, nor thoſe of the *Rivers* are colour'd: the Reaſon is the ſame, becauſe the Wines of the *Rivers* are more ſoft, forward, and ſooner fit for drinking, than the others that are harder, more heady and later fit: They call the Wines of the River, *Auvillé*, *Ay*, *Epernay*, *Cumieres*, *Pierry*, as *Fluery*, *Damery*, *Vanteüil*, and others; but *Verzenay*, *Sillery*, *St. Thierry*, *Mailly*, *Rilly*, and ſome others are of the *Mountains*; theſe latter Wines keep as well as the firſt, and, in good Years, they keep equally well in Bottles for five or ſix Years.

They gather not all the Grapes without Diſtinction, neither, at all Hours in the Day, but they chuſe the ripeſt and blueſt; thoſe are the beſt, and make the moſt exquiſite Wine, whoſe Berries grow not too cloſe together, but are a little ſeparated, whereby they ripen perfectly well: For thoſe that are cloſe join'd together, never ripen throughly: They cut them with a ſmall crooked Knife, with as much Neatneſs, and as little of the Tail as they can, and they lay them very gently on the Baſkets, ſo as not to bruiſe one Grape.

With thirty Grape-gatherers they will run over a Vineyard of thirty Arpens in three or four Hours, to make one firſt Preſſing of ten or twelve Pieces.

In wet Years, great Care ſhould be taken not to put any Grape that is ſpoil'd into the Baſkets; and at all times you muſt be very careful to cut away the rotten Grapes, or thoſe that are bruis'd, or quite dry'd up; but you muſt never ſtone them.

They begin the gathering of Grapes half an Hour after Sun-riſing; if the Sun is not clouded, and it is a little hot, about nine or ten o'Clock they leave off gathering, and make their *Sac*, which is one of the firſt Preſſing; becauſe after this Hour the Grape being warm, the Wine will be of a red Colour or Teint, and will be a long while very heady.

Upon theſe Occaſions they get a great Number of Gatherers, to be able to make up a *Sac* for a Preſſing in two or three Hours: If it be overcaſt, they may gather the whole

Day, becauſe the Grape will preſerve its Freſhneſs upon the Stock.

The Gatherers and the Preſſers ought to take great Care that the Grapes be neither foul nor heated when they are preſs'd; and alſo, that the Grapes have their Flower under the Preſs.

When the Preſs is near the Vineyard, it is eaſie to prevent the Wine from having a Colour, becauſe the Grapes may be carry'd gently and neatly in a little time; but when they are two or three Leagues off, they being oblig'd to ſend the Grapes in Caſks, and in Carts, to preſs it as ſoon as may be, it is hardly to be avoided but that the Wine will be colour'd, except in very moiſt and cold Years.

This is a certain Principle, that when the Grapes are cut, the ſooner they are preſs'd, the more pale and delicate is the Wine; for by how much the more the Wine ſtands upon the *Marc*, the redder it is; ſo that it is of great Importance to haſten the Gathering of the Grapes, and Preſſing of them.

The Preſſes of *Champaign* are very commodious; the particular Perſons that have many Vineyards of their own, have them in or near the ſame Vineyards: In ſmall Places the Preſſes are *Bannaux*, which are of different Sizes and Faſhions. An exact Deſcription of theſe ſeveral Preſſes will be inſerted in the Article of *Wines*.

The ſmall ones are about ſeven Feet and a quarter, the middle ones about ten or twelve, the large ones fifteen or eighteen; the leaſt, which they call *Etiquets*, coſts ſeven or eight hundred Livres; the ſecond, which they call a *Cage*, or a *Teiſſons*, about two thouſand Franks; the large ones a thouſand Crowns, and ſometimes more, according as the Wood is cheaper or dearer in certain Places: In *Languedoc* and *Provence*, where Wood is ſcarce, theſe Sort of Preſſes coſt a very great Price, and but few Perſons are in Circumſtances to be at the Charge of them.

When the Grapes have been put under the Preſs or on the *Marc*, they put three great Rods or Poles of ten or twelve Inches round upon them one at either End in Length, and the third in the Middle on the ſame Side: Theſe at the Extremities ſerve to deſcribe the Lines which they ought to follow with their Cutting-ſhovels, in cutting the *Marc*, the Subſtance ſqueez'd on two Sides: After the Cut is made, they lay upon theſe Poles, and on the Grapes, Planks of the Size of the Preſs; and upon theſe Planks half Beams of eight or nine Inches ſquare, which they call *Moyaux*, at a Foot diſtance one from the other; they put four or five Rows of theſe *Moyaux* acroſs one upon another, which elevates it with the Bag about four or five Feet; and they let down upon the Whole three or four great Beams of an immenſe Weight, which are plac'd in the Middle of the Preſs acroſs, and borne up at one End by two ſtrong Side-beams, which are ſunk fifteen or twenty Feet into the Ground, and which are faſten'd to the Baſes which croſs them; at the other End there is a *Cage*, as they call it, or a Wheel with a Skrew to raiſe or lower theſe great Beams upon the *Moyaux*, and thus to preſs the Grapes: Then they preſently raiſe, by the Means of a Skrew, the End of the Trees on the Side of the Wheel or of the *Cage*, which lowers the other End of the Cheeks or Side-Beams; then they drive with a great Mallet two or four great wooden Quoins between the Notch which is in the Side-beams or Cheeks, and theſe Beams are alſo lower'd to keep them in their Poſition, and to prevent them from riſing; and after this they lower the other End by the Aid of the Skrew, which ſerves alſo raiſe it.

They uſe in theſe Preſſes, large Steel Shovels about a Foot in Breadth, and one and a half in Depth, very heavy and ſharp at the Bottom, to cut the *Marc* of the Grapes eaſily at the four Sides.

The firſt time they lower the great Beams upon the Grapes, they call the Wine that runs out, the *Wine* of *Goute*, becauſe it is the fineſt and moſt exquiſite in the Grape: This Wine is very thin, and has not Body enough; they call this firſt Preſſing *l'Abaiſſement:* This muſt be done with a great deal of Dexterity and Briſkneſs, that the Beams may be rais'd immediately, to ſend back to the Middle inſtantly the Grapes which are ſlipp'd to the Sides all round about, to preſs them briſkly the ſecond or third time. They call theſe two other Lowerings of the Beams, the firſt and ſecond Cutting: They muſt be done in leſs than an Hour, if you would have the Wine very pale, becauſe Time is not to be given to the Grapes to heat, nor the Liquor to remain upon the *Marc*.

They ordinarily mingle the Wine of the *Abaiſſement*, or Lowering with that of the firſt and ſecond Cut; and ſometimes, but very rarely, with that of the third, according as the Years are more or leſs hot, and thence they call a Wine of the firſt preſſing, Fine.

Some preſerve one or two *Carteaux* of the firſt Taſte, which is that of the Lowering, by itſelf; but it is too ſmall or thin, and has not a ſufficient Body for Wine.

There are ſome ſkilful Perſons who pretend, that the Lowerings of the Wines ought not to be mix'd but with thoſe of the firſt Cut, becauſe that is much more delicate than that of the ſecond and third; and that beſides, there is time enough to mingle them afterwards, if they are found to be too fine, and pale enough, and the rather, becauſe there is no Remedy if it be done at the firſt.

At every Cut they raiſe the great Beams, and they take away all the *Moyaux* with the Planks, and the Rods that are immediately upon the Grapes, or upon the *Marc*; with theſe Steel Cutting-Shovels they cut the *Marc* on four Sides, and they caſt down with their wooden Shovels that which is cut, and they ſpread it even all over the Square to the End, that it may not diſperſe ſo eaſily; that is to ſay, in thoſe Preſſes which they call *Etiquets*; they take Care that the Wheel which is upon the Middle may be made to bear, eſpecially upon the Rammer, over all the Breadth, in ſuch manner that the Bag may be equal.

Inſtead of the Preſſes, [a *Cage*] or *Teiſſons*, as the Beams bear more upon the Side of the Wheel than on the Sides of the Corners, there muſt needs be more of the *Marc* when the Bag is placed ſloping toward the Wheel than toward the Side of the Quoins, as will be eaſily comprehended by viewing the Deſcriptions of the different Preſſes. It is alſo to be obſerv'd, that every time they cut the Grapes or the *Marc*, they tie up the Bag, becauſe it has always a certain Elevation, in ſuch Sort that it is one-third leſs at the End than at the Beginning.

The ſecond Cut is more plentiful than the Lowering and the firſt, becauſe the Grapes begin to be well bruiſed, and they do not ſlip ſo much to the Sides.

The Wine ſtrains from the Preſs into a Punchion, having the Head ſtav'd out, or ſome other large Veſſel prepar'd for the Purpoſe, and ſunk into the Ground on the Foreſide to receive it; it appears to be drawn a little upon the Red, but it loſes this little of its Colour, according as it is boiling, and as it clarifies itſelf in the Tun; and it remains perfectly white, eſpecially when they have preſſed the two firſt Cuts with much Diſpatch; but principally when they have gather'd the Grapes during the Dew, or in a ſhady Time. Altho' theſe Wines are white, they call them grey, becauſe they are made only of black Grapes.

If the Year be hot, and the Wine of the third Cut has a Colour, it muſt be mingled, not with that of the foregoing, but with that of the fourth, and ſometimes, though but very rarely, with that of the fifth. They are not in ſo much Haſte for theſe Cuts as for the firſt; they make an Interval of a good half Hour between the one and the other: The Wine that comes thence has more of Colour than this, which they call the *Partridge's Eye*; or, the *Wine of the Cut:* It is a ſtrong Wine, pleaſant, fine, good for an Ordinary, but is better when it is old.

When the Wine of the fourth Cut is too deep, they don't mingle it with Wine of the Cut, but they obſerve to mingle it with Wine of the fifth, ſixth, or ſeventh Cut, which they call *Wine of the Preſs*, which is two red, pretty hard, but fit for Houſhold-drinking: But when they are not in haſte, they leave an Interval of an Hour and a half between every one of the three laſt Cuts; as much to give time to the Wine to ſtrain inſenſibly, as to give the Preſſers time to ſleep, or to reſt themſelves; for the Fatigue is very great, they being oblig'd to carry it on Night and Day for about three Weeks. The Preſſers of *Champaign* preſs the Grapes ſo hard, that after they have done, the *Marc* is as hard as a Stone: They put this *Marc* into old Caſks, with the Heads out, and they ſell it to People, who draw from it an *Aqua Vitæ* of a very bad Taſte, which they call the *Aqua Vitæ* of *Aixne*; but it is good for a great many Purpoſes.

Thoſe who have many Vineyards, alſo make two, three, or four firſt Preſſings of fine Wine, by chuſing always the moſt delicate and ripeſt Grapes for their Firſts: Theſe are always much ſuperior the one to the other for Goodneſs and for Price; ſo that if the Wine of one of the firſt Preſſings ſells for ſix hundred Livres a *Queüe*, that of the ſecond will not ſell for above four hundred and fifty, and that of the third two hundred and fifty, although all the Wines are of one and the ſame Vineyard.

In every firſt Preſſing there are ordinarily two-thirds of fine Wine, one half third of Wine of the Cut, and one half third of the Wine of the Preſs: Thus one *Cuvée* of five or ſix Pieces of Wine will conſiſt of nine or ten of Fine, three or four of *Taille*, and two or three of the Preſs.

Of the common Black Grapes, which remain after one ſecond or third *Cuvée*, they make one with thoſe that are not very ripe, and which they call *Verderons:* They make of the Whole a Wine pretty high colour'd, which they ſell to the Country People, or that ſerves for their Domeſticks: They alſo leave theſe Grapes two whole Days in a great Tub, before they preſs them, to the End that the Wine may be the redder; and they mingle all that comes from the different *Tailles* of this Vintage.

The white Grapes don't come into this *Cuvée*; they leave them upon the Stock till towards *All Saints-Day*, or ſometimes till towards the eighth or tenth of *November*, at which time the Mornings are cold, to make of it a *Vin-Bourra*, as they call it, (*i. e.* a new and ſweet White Wine, that has not work'd) which they ſell while it is quite hot.

This Wine is ſtill the better when the Grapes have borne the white Froſts of *October* and *November*, or at leaſt very cold Mornings: A little Rottenneſs in theſe Grapes does no Harm; you need only take Care to give the Wine leave to throw out the Filth by the Ferment, and purify.

This White Wine may be mingled with the Wine of the *Taille*, if you will, if you have not an Opportunity of ſelling it preſently after it is boil'd. This makes a very good Wine to drink, is pretty pale, and has a good Body.

All theſe fine Wines ought to be put into a new Caſk, as alſo ſhould thoſe of the *Taille*; but the Red Wines, the Green, and thoſe of the Preſs may be put into an old Caſk, but it ought to be a good one.

You muſt never do the Tuns over with Brimſtone; you ſhould only waſh them in common Water, a little time before they are fill'd, and give them time to drain well: Some Handfuls of Flowers or Peach-leaves may be mingled with the Water; and they pretend that this will do the Wine good.

In *Champaign* they rarely put it in any thing but Pieces [*Carteux*] and Cades.

The *River* Meaſure is different from that of the *Mountains:* The Pieces of the *Rivers* contain about two hundred and ten *Paris* Pints (a *Paris* Pint is equal to an *Engliſh* Quart) the *Carteau* an hundred and ten; the Pieces of the *Mountains* contain about two hundred and forty Pints, at the leaſt two hundred and thirty *Paris* Meaſure, and the *Carteau* an hundred and fifteen or an hundred and twenty.

They mark regularly, with Chalk, every Piece and every *Carteau*, which denotes the firſt, ſecond or third *Cuvée*; the Wine of the Cutting, of the Preſs, the White Wine and the Green; they alſo write the Name of the Vineyard from whence the Grapes came.

Some few Years ſince, ſome private Perſons in *Champaign* have attempted to make Wine as red as that of *Burgundy*, and they have ſucceeded pretty well as to the Colour; but, in my Opinion, theſe Sorts of Wines do not come up to thoſe of *Burgundy*, in that they are not ſo ſoft, nor ſo agreeable to the Palate: Nevertheleſs many Perſons call for theſe Wines; and ſome eſteem them the beſt.

And as thoſe Grey Wines are a little fallen, there was made, the laſt Year, a great deal of Red in *Champaign*. Theſe Wines do well for *Flanders*, where they are frequently ſold for thoſe of *Burgundy*.

Of all theſe Wines, there is none better for Health, nor more agreeable to the Palate than the Grey Wine of *Champaign*, of the Colour of a *Partridge's Eye*, or the Wines of the two firſt *Tallies* of a firſt Preſſing in pretty hot Years.

This Wine has a Body, a Tartneſs, a Headineſs, a Balſamickneſs or Perfume, a Quickneſs and Delicateneſs, that exceeds all the moſt exquiſite ones *Burgundy*.

And that which ſhould engage one to drink it, is its Lightneſs, which makes it ſtrain and paſs quicker through the Body than any other Wine in the Kingdom. It is a Miſtake to be of Opinion, that the Wine of *Champaign* can give the Gout. I have ſcarce ever ſeen one gouty Perſon in this whole Province; and there need be no better Proof.

To make good Wine in *Champaign*, the Black Grapes ought to be gather'd in the Heat of the Day; Care is to be taken to chuſe them well, and not to mingle with them the Grapes of the Vine-Arbour, nor the Green ones, or thoſe that are partly rotten; to let them be two Days in one Tub, where the Liquor grows red by the Heat that it contracts there: Some Hours before it is put into the Preſs, it ought to be trampled with the Feet, and the Juice to be mingled with the *Marc:* Without this, the Wine will not be of a ſufficient Redneſs. If it be let ſtand more than two Days in the Tub, it will taſte too much of the Stone. If it be mingled with the Wine of the Preſs, it will be too thick, too hard, and too unpleaſant.

If they would continue to make good Red Wine in *Champaign*, they muſt trample the Grapes as in *Burgundy*, and leave them for three, four or five Days in one Tub: But as the Red Wine of *Champaign* never equals the Goodneſs of that of *Burgundy*, the Reputation of the grey Wines will ſink in a ſhort Time, and the Publick will inſenſibly loſe the Reliſh of it, and this will bring an infinite Detriment to the Province.

The Wine of the firſt Preſſing being finiſh'd, and the Veſſels marked, they ſet them in a Row in a Cellar or Court-yard. Thoſe who have a great deal of Wine, and are good OEconomiſts, take great Care to gather the Scum that comes out of every Veſſel, while the Wines ferment, by the means of a kind of Tin Funnel, made bending downwards, which lets the Scum fall into a wooden Bowl, which is placed between two Caſks; they afterwards put theſe Scums into the Wines of the Preſs: but, nevertheleſs, there are but few that uſe this Piece of OEconomy.

They let theſe Grey Wines ſtand to ferment in the Caſks ten or twelve Days, becauſe theſe Wines throw out their Ferment ſo much the more or leſs ſlowly, by how much they have more or leſs Warmth, or as the Years are more or leſs hot.

After the Wine has done fermenting, they ſtop up the Veſſels at the great Bung-hole, and leave on the Side forward an Opening, about the Bigneſs of a *French* Farthiny, by which one may put in his Finger; this they call *le Broqueleur:* And they ſtop this up ten or twelve Days after, with a wooden Peg of about two Inches long, for the more readily taking out and putting it in.

All the while the Wines are fermenting, the Veſſels are to be kept almoſt full, to give them an Opportunity of caſting out all that is impure. In order for this they muſt be filled up for three Days, within two Fingers of the Bung; after they have been bung'd up, they muſt be filled up every eighth Day, at the little Hole, for the Space of two or three Weeks more; and after that, once a Day for fifteen Days during one Month or two; and after that once every two Months, as long as the Wine remains in the Vault, if it be there for Years.

When the Wines have not Body enough, or are too green, as it often happens in moiſt, cold Years, and when they have too much Liquor, as in hot and dry Years; three Weeks after the Wines have been made, they muſt be rolled in the Caſks five or ſix Turns, to mingle them well with the Lees, and this muſt be continued every eight Days, for three or four Weeks; this Mingling of the Lee with the Wine being repeated, will ſtrengthen it, ſoften it, ripen it, and render it more forward, and make it fit to drink in as ſhort time as if it had been tranſported from one Place to another.

Theſe Wines muſt be let ſtand in the Cellar till towards the tenth of *April*, when they carry them down into the Vault; but as ſoon as it begins to be cold, they are to be carryed up again into the Cellar: It is of Conſequence to be obſerved, upon this Subject, that the Wines ought always to be in cool Places, and never to ſuffer the Heat. And as the Vaults are cool in the *Summer*, and warm in the *Winter*, as ſoon as it begins to be hot, the Wines muſt be carryed down, whether they be in Pieces or in Bottles, into the Vaults; and when it begins to be cold, they muſt be carryed up into the Cellar.

There has been nothing better invented and more uſeful than the Manner of Drawing off Wines. Certain Experience convinces, that it is the Lee that ſpoils Wines; and that they are never better nor more lively than when they have been well drawn off, whether you would Bottle it or keep it in the Pieces: It ought always to be drawn off out of one Veſſel into another, at leaſt twice into another Veſſel well waſhed, leaving the Lee in the former.

You ſhould draw off the Wines the firſt time towards the Middle of *December*; the ſecond towards the Middle of *February*, and to fine them in *March* or *April*, eight Days or thereabouts before you bottle it. For every Piece of Wine you muſt have of Iſinglaſs, that is the whiteſt, of the Weight of a Crown of Gold, weighing two Deniers fifteen Grains, or ſixty three Grains. They take ſo many times the Weight of a Crown of Gold as they have Pieces of Wine to draw off, they put this Quantity of Iſinglaſs in one or two Pints of the ſame Wine in a Bucket for a Day or two, to give it time to diſſolve; others put it in a Glaſs, or a Pint of Water, according to the Quantity, in order to haſten its diſſolving, which is always difficult to be done; ſome mix it in a Chopin or Pint of Spirit of Wine, or excellent *Aqua Vitæ:* When the Iſinglaſs is grown ſoft, they handle it well to divide it, and diſtribute it; then, when the Parts begin to ſeparate, they put in the Bucket or the Veſſel in which this Diſſolution is made, ſo many Pints of Wine as they have Caſks or Pieces to draw off; then they handle the Iſinglaſs well again, and paſs it through a Strainer, the Holes of which ſhould be very ſmall: They often pour in of the ſame Wine to dilute it well; and when there remains nothing in the Strainer, they paſs all the Liquor over again through a Linen-Cloth, and ſqueeze it very well, and afterwards they put one good Pint or leſs into each Caſk, and half into each *Carteau*.

They ſtir the Wine in the Piece with a Stick about the Middle, without ſuffering the Stick to go any lower. It is ſufficient to ſtir the Wine for the Space of three or four Minutes.

A certain private Perſon has newly contrived a quicker Method of diſſolving this Iſinglaſs: After it has been ſteeped one Day in Water, he melts it in a Skillet upon the Fire, and reduces it to a Ball, like a Bit of Paſte, and afterwards puts it into the Wine, where it diſtributes itſelf with leſs Difficulty. After what manner ſoever it be diſſolved, Care ought to be taken, not to put in too much Liquor, and not to put more than a proportionable Quantity of Water or Wine to that of the Iſinglaſs.

The Iſinglaſs works its Effect ordinarily in two or three Days; tho' ſometimes it does not clarify the Wine in ſix or eight; but nevertheleſs you muſt wait till the Wine is clear before you change the Veſſel. In the Winter the Seaſons are oftentimes ſo improper for this, that there is a Neceſſity of putting Iſinglaſs a ſecond time into the Piece, but then you muſt not put in more than the Quantity before mentioned: But when it freezes, or the Weather is clear and cold, the Wine will clarify itſelf perfectly well, and in fewer Days: It has a Colour more lively and brilliant, than when it is fined and drawn off in faint, moiſt Weather.

As ſoon as the Wines are clear, they are to be drawn off, and the Veſſels changed. Four or five new Caſks are ſufficient to draw off two or three hundred Pieces of Wine; for when they have empty'd one Piece, they take out the Lee, and put it into the old Caſks, waſh it, and it ſerves to draw off another into it.

Nothing is more curious than their Contrivance in *Champaign*, to ſhift their Wines without diſplacing their Caſks. They have a Leathern Pipe, like a Gut, four or five Feet long and about ſix or ſeven Inches in Circumference, well ſew'd with a double Seam, that the Wine may not run through: There is at both Ends a Cannon or Pipe of Wood, about ten or twelve Inches long, and about ſix or ſeven in Circumference at one End, and about four at the other: The great End of each Pipe is ſet in a Leathern Pipe, and well bound with ſtrong Twine on the Outſide, that the Wine may not run out: They take out the Bung that is at the Bottom of the Tun that they would fill, and drive the Wood of the Pipe in with a wooden Mallet, which they beat upon a Sort of Chin-cloth, that is to each of theſe Pipes, which being rais'd about two Inches from an Inch or leſs of the great End, and which loſes itſelf inſenſibly in going towards the ſmall End; they ſet a large Syphon of Metal below the Caſk they would empty, and alſo put into this Syphon the ſmall End of the other Pipe of Wood, which is faſten'd to the Leather Pipe, and afterwards open the Syphon; and without the Help of any Perſon, almoſt the half of the full Veſſel paſſes into the empty one by the Weight of the Liquor; and when it is come near the Level, and will run no longer, they have Recourſe to a Kind of Bellows, of a very particular Conſtruction, to force the Wine from the Caſk they would empty, to paſs into that they would fill.

Theſe Kinds of Bellows are about three Feet long, and a Foot and half broad; and are made and ſhaped in the common Manner to about four Inches of the ſmall End; but from this Diſtance the Bellows have three or four Inches in Breadth. In the Inſide of this Place, the Air paſſes only through one great Hole of an Inch bore: Near this Hole, on the Side of the ſmall End of the Bellows, there is a Piece of Leather, like a Tongue or Sucker of a Pump, which is faſten'd there, and lies cloſe againſt the Side of the Hole and the Mouth, when the Bellows is lifted up to take in the Air, that the Air which has paſſed once through this Hole, and which has entered into the Caſk, cannot return back into the Bellows; which takes not back a new Air, but by thoſe Holes below to fill it again.

The End of the Bellows is different from that of others, being cloſely ſhut up with a Nozle of Wood of a Foot long, which is jointed in, glued, and very ſtrongly faſtened by good Pegs at the End of the Bellows, to conduct the Air downwards: This Nozle is round and thick without, about nine or ten Inches in Circumference at the Top, and diminiſhes inſenſibly towards the ſmall End, that it may enter conveniently into the Veſſels by the Bung-hole, and alſo to ſhut it up ſo cloſe that the Air can neither get in nor out any Way.

This Nozle enters for this Purpoſe two Inches, near the Level at the End of the Bellows, and is made in a half Round at the Top, that it may be beaten in with a Wooden Mallet, and forced into the Caſk: There is, about two Fingers Length below the upper End of this Nozle, a Hook or Brace of Iron of a Foot long, paſſing thro' an Iron Ring, which is faſtened with Nails to the Nozle, in order by this Hook to faſten the Bellows to the Hoops of the Caſk, without which the Force of the Air would drive the Bellows out again by the Bung-hole, and the Operation of emptying the broached Veſſel would not be performed.

The Mechaniſm of theſe Bellows thus deſcribed is eaſy to be conceiv'd: The Air enters by the Holes below in the common Manner: It advances towards the End, according to the Degree that the Bellows are preſſed: There it meets with a Pipe that cauſes it to deſcend downwards; but to hinder it from riſing up again, as it would do, when the Bellows were opened to give it a new Air, there is in this Space a Sucker or Tongue of Leather, which, as has been ſaid, is the Inſide of the Hole at about three or four Inches from the End of the Bellows which ſhut up the Hole according as you would have it take in again a new Air; this new Air puſhes ſtill gently, in preſſing the Bellows in the Pipe, becauſe this Tongue opens according as it is forced by the Air; thus there continually enters a new Air into the Caſk, without being able to get out, becauſe it finds itſelf cloſe ſtopped by the ſame Pipe that carries the Air into it, and the Tongue hinders it from getting up again.

The Force of this Air, which continually puſhes in, preſſing ſtrongly the Bellows, preſſes equally the Superficies of the Wine over the whole Length of the Piece, without cauſing the leaſt Agitation in the Wine; and the Force cauſes it to paſs down in the Pipe of Leather, and from thence into the other Caſk that is to be filled, where it riſes, becauſe the Air is driven towards the Bung-hole, which is open.

The Bellows puſh all the Wine in the Caſk to about ten or twelve Pints, or thereabouts; which is known when they perceive the Wine to hiſs in the Syphon; at which Time they take from the two Caſks the two Pipes that have been forced into them, and which are joined together by the Leather Pipe, and nimbly ſtop up the Hole at the Bottom of the Piece with a Bung of Oak made round, a little ſloping, and drive it with a Mallet: From the other Caſk that has been emptied, they pull out the Cannon or Pipe of Wood from the Fountain of Metal, and leave it to drain gently ſome Pints of clear Wine into a Veſſel that receives it.

They obſerve attentively, every Moment in a clear Glaſs, if the Wine be neat; and when they perceive but the leaſt Thing, without waiting till it appears foul, they ſtop the Fountain, and take it away immediately, and turn out into a Bucket that little Wine that remains in the Piece: That clear Wine which has drained out of the Fountain, they put into the Caſk that they have been filling: They uſe for this Purpoſe a Funnel of Tin, the Tail of which is above a Foot long, to the End that the Wine that paſſes through it, may not cauſe any Agitation in that of the Piece; and that there may not any Filth paſs into the Wine, there is, towards the Bottom of the Funnel, a Tin Plate pierced thro' with ſmall Holes, which prevents any Thing groſs from paſſing thro' into the Piece.

They put together into a ſeparate Caſk all the Remainders of the empty Pieces; preſently after they have emptied one, which they do in leſs than half an Hour, they waſh it with a Bucket of Water, let it ſtand to drain ſome Moments, and they fill it with another that is to be drawn off.

After the Wine has been emptied out of one Veſſel into another the firſt Time, they draw it off a ſecond Time, at the Time we have before-mention'd: Sometimes they are oblig'd to do it a third Time, to give it a lively Colour, if it has it not already; but four Days before they change the Caſk they give it a *Frizure*, as they call it, and put in it one third Part of ordinary Iſinglaſs.

The moſt experienced Perſons ſhift their fine Wines out of one Veſſel into another, as often as they change its Place, as well when they carry it down into the Vault, as up into the Cellar, according to the different Seaſons: I have known when, in four Years Time, they have drawn it off twelve or thirteen times; and they pretend, that this is that which preſerves and ſuſtains the Wine, and that it has been the finer and more delicate.

Their Opinion is, That the Wine is continually forming a fine Lee, which gives it the Colour; and that to preſerve it of a good White, it muſt be often ſhifted out of one Veſſel into another, if it be not put into Bottles; and that there is no Reaſon to fear that the Wine will be weakened by this Means, becauſe the oftener it is removed, the oftener you give it a new Vigour; and the oftener it is drawn off, the more lively and brilliant is the Colour.

And although I have ſaid, they ſhould not brimſtone their Caſks, they do not fail to uſe a Match of Brimſtone the firſt

Time that they change the Veſſels; they mingle a Piece of thick Linen Cloth in the melted Brimſtone, and they cut off a Bit for each Caſk of fine Wine about the Bigneſs of one's little Finger, and one as big again for every Piece of common Wine; they light it, and put it under the Bung of the Piece that they empty, before they have Recourſe to the Bellows; according as the Wine deſcends, it draws along with it a ſmall Scent of the Brimſtone, which is not very ſtrong, ſo as to make it perceiveable, and that only leaves what will give it a Livelineſs of Colour: The ſame may be done the ſecond Time, when they change the Caſk, if it has not taken the Scent the firſt Time, otherwiſe it ought to be drawn off the ſecond Time without a Match, to cauſe it to loſe the Scent of the Brimſtone, which it ought never to have.

The Wines that are thus clear and fine, keep well in the Caſk for two or three Years, and hold their Goodneſs in the Vaults and Cellars, but eſpecially the Mountain Wines that have a good Body: Thoſe of the *River* loſe their Quality in Wood, and they ought to be drank in the firſt or ſecond Year, or elſe they muſt be put into Bottles. This Wine will keep very well four, five, or ſix Years in Glaſs Bottles.

The Uſe of round Bottles is very common in *Champaign:* They having Plenty of Wood in the Province, have there ſet up very good Glaſs-houſes, which they ſeldom make Uſe of but in making theſe Bottles, which are about ſix Inches high, and four or five in the Neck. Theſe Bottles contain ordinarily a *Paris* Pint, or half a Glaſs leſs. They ſell them commonly for twelve or fifteen *Francs* a hundred. They have a certain Quantity in every Houſe. Before they enter upon a Piece of Wine to drink, they put it into Bottles, well waſh'd and drain'd, in order to have the Wine of one Piece equally good.

When they have a mind to draw off a Piece of Wine into Bottles, they put a little Syphon of Metal into the Cask, which is bent downwards to ſtrain it into the Bottle, under which there is a Tub or Bucket to catch the Wine that ſhall run over. They ſtop up every Bottle carefully with a good well-choſen Cork that is not Worm-eaten, but that is ſolid and cloſe. Theſe Sorts of fine Corks coſt fifty or ſixty Sols an hundred. There cannot be too much Care taken in the chuſing Corks, leſt the Wine ſpoil in ſome of the Bottles, when the Corks are defective; therefore great Care ſhould be taken in the chuſing them, when you would draw off fine Wines into Bottles, whether it be for keeping, or to be ſent abroad.

When Bottles are uſed that have been made uſe of before, they ſhould be waſhed with Leaden Shot and a little Water, to fetch off the Filth that ſhall remain on the Bottom of the Bottles; but it is much better, in the room of them, to uſe ſmall Nails, becauſe they perfectly take off all that which ſticks to the Glaſs.

When all the Bottles, that ſuffice to empty one Caſk, are filled, they tie the Mouth of the Bottle over to the Neck with a ſtrong Packthread; and if it be a fine Wine, they commonly ſeal it with *Spaniſh* Wax, that the Wine may not be changed, nor the Bottles, by the Domeſticks; and ſome Perſons have their Coats of Arms made on the Bottles, which does not enhance the Price above thirty Sols *per Cent.*

When all the Bottles are well ſtopp'd, ty'd down and ſeal'd, they ought to be ſet either in a Vault or Cellar, upon Sand two or three Fingers Depth, and laid ſide-ways, leaning againſt one another; when they are ſet upright, they form a white Flower upon the Wine at the Top, in the ſmall empty Space that is between the Top of the Mouth of the Bottle and the Wine; for the Bottles ought never to be filled up to the Top, but there muſt be left a ſmall empty Space of about half an Inch between the Wine and the End of the Cork.

If this was not done, the Wine would ſet a working in the different Seaſons of the Year, and break a great Number of Bottles; and it does, notwithſtanding, break a great many, in ſpite of all the Caution that can be taken; and more eſpecially when the Wine has a great deal of Heat, or is a little tart.

In ſome Years the Wine grows ropy in the Bottles, even in the Vaults, ſo as to rope when it is pour'd out, as if it had Oil, ſo that it cannot be drank. This is a Malady that ſeizes the Wine that has ſtood ſeveral Months without being removed from one Place to another: If it be ſet in the Air, it will loſe more of its Ropineſs than it will if left in the Vault: It will recover itſelf in eight Days, if ſet in a very airy Granary, better than it will oftentimes do in ſix Months in a Vault.

When one is obliged to drink a ropy Wine, if he ſhake the Bottle ſtrongly for the ſpace of half a Quarter of an Hour, and then uncork it immediately after he has done ſhaking it, the Bottle being inclin'd a little on the Side, will caſt out preſently half a Glaſs of Froth or Scum, and the reſt of the Wine will be drinkable, whereas otherwiſe it would not be ſo.

For about twenty Years laſt paſt, the Guſt of the *French* has been determined for a frothy Wine, and this they uſed to love, as one may ſay, even to Diſtraction. They have begun a little to come off from that for the three laſt Years. Their Sentiments are much divided as to the Opinion of this kind of Wine: Some believe that it proceeds from the Force of the Drugs that they put in it, which makes it froth ſo ſtrongly: The others attribute it to the tartneſs of the Wines, becauſe the greateſt Part that do froth are extremely tart: Others attribute this Effect to the Moon, according to the times in which theſe Wines are bottled.

It is true, there are a great many Wine Merchants, who ſeeing the great Fondneſs that there is for their frothy Wines, oftentimes put in Alom, Spirit of Wine, and Pigeons Dung, and a great many other Drugs, to make it froth extremely; but it is certain, by Experience, that the Wine froths when it is any Time bottled from the Vintage to the Month of *May:* There are ſome who pretend, that the nearer the Vintage-time the Wine is produced, when it is bottled, the more it froths. Many do not agree to this Opinion; but nothing is more certain, than that there is no Time in which the Wine froths more, than about the End of the ſecond Quarter of the Month of *March*, and this always happens towards the *Holy Week*. There does not need any Artifice at all, one may always be ſure to have Wine perfectly frothy, when it is bottled from the 10th to the 14th of the Month of *March*; of this there is ſuch reiterated Experience, that it cannot be doubted.

It is good to know, that the Wine does not froth preſently after it is put in Bottles. It muſt be at leaſt ſix Weeks, and ſometimes ſix Months before it froths well. If it is to be tranſported, you muſt give it near a Month of the Vault, eſpecially in the *Summer*, to recover its Remove.

But as Wines (eſpecially the Mountain Wines) are not ordinarily bottled in the *Holy Week*, becauſe they are then too green, or have too much Hardneſs, eſpecially if the Year has been cold and moiſt, or too much Liquor expreſs'd, if the Year has been hot: the moſt ſure and advantageous Way to have exquiſite Wine, that is perfectly frothy, is not to bottle it till the Riſe of the Sap of *Auguſt*. It is certain by Experience, that it froths exceſſively when it is bottled from the 10th to the 14th of *Auguſt*; and as it then loſt either the Tartneſs or Greenneſs of its Liquor, one may be aſſured in either Bottles to have the ripeſt and moſt frothy Wine.

There has been another Experiment try'd, which is, not to bottle the Mountain Wine till the *Holy Week* of the ſecond Year, that is, eighteen Months after the Vintage; and it has been found, that it froths ſufficiently, but leſs by half than that which has been bottled in the Riſing of the Sap of *March* the Year before.

It is not believ'd that the River Wine, which has a leſs Body than that of the Mountains, can froth ſo much in the ſecond Year.

When one would have Wine that will not froth at all, it ſhould be bottled in *October* or *November*, the Year after the Vintage: If it be bottled in *June* or *July*, it will froth ſlightly; though but a little, if any thing at all.

To find in the Wine of *Champaign* all the Merit that it ought to have, it ſhould be taken out of the Vault not above half a Quarter of an Hour before it is drank, and it muſt be put into a Bucket, with two or three Pounds of Ice; the Cork ſhould be opened, and put in again lightly; which, if it be not done, the Wine will break the Bottle, or will not grow cool if it were not unſtopped, and it would evaporate itſelf, if it remain'd quite open. When the Bottle has been half a Quarter of an Hour in this Ice, it muſt be taken out, becauſe the Ice would otherwiſe chill it too much, and make it loſe its Briſkneſs. This Wine will be excellently good, and of a delicious Flavour, when it has been a little affected by the Ice; but great Care muſt be uſed that it may not be either too much or too little.

As theſe Wines, eſpecially thoſe of the ſame Year, work continually in the Vaults and Cellars, and ſtill more in Bottles than in the Pieces, according to the different Seaſons, and the divers Impreſſions of the Air, it ought not to be ſurpriſing, if the ſame Wine, eſpecially the new, oftentimes appears different in Taſte. We find a Wine potable in *January* and *February*, which will ſeem hard in *March* and *April*, becauſe of the riſing of the Sap, which agitates it more; the ſame Wine in *June* and *July* will appear intirely ſoft, and in *Auguſt* and *September* we ſhall find it hard again, which one ſhall not be able to perceive any Thing of during the preceding Months, becauſe the riſing of the Sap in *Auguſt* will put the Parts in a great Motion. This Effect Motion will have on the River Wines of the Year; but oftentimes the Wines of two Years from the Mountains will appear more mellow, more or leſs exquiſite, more or leſs forward, according to the different Motions it has received by the different Impreſſions of the Air, which will vary more ſenſibly in the different Seaſons of the Year.

There ought to be a very great Attention to keep the Wine continually in cool Places; nothing does it more Hurt than Heat: It is therefore of the greateſt Importance to have good Cellars, and excellent Vaults. No Part of the World has ſo good Vaults as thoſe in *Champaign*, which is the Reaſon it is ſo difficult to find any where elſe ſo good Wines as thoſe of this Province.

Thoſe who would lay up a Stock of Wine, and are able to keep it two or three Years, or whoſe Buſineſs it is to ſend it into other far diſtant Provinces, or to foreign Countries, ought to chuſe the Mountain Wine; for as it hath more Body, it will better bear Tranſportation, than thoſe of the River; and beſides, the *Engliſh*, the *Flemings*, the *Dutch*, the *Danes*, and the *Swedes* deſire theſe ſtrong Wines that can bear the Tranſportation, and hold good for two or three Years, which the River Wines will not do.

The moſt noble River Wines are thoſe of *Auvillers*, *Ay*, *Epernay*, *Pierry*, *Cumieres*: Thoſe of the Mountain are, of *Sillery*, *Verzenay*, *Taiſſy*, *Mailly*; and above all, thoſe of *St. Thierry* have the moſt Reputation. The laſt has for a long Time had the greateſt Name, and been the moſt called for; and one may venture to ſay, that it comes nothing behind the beſt Wines of *Champaign*.

By all the Obſervations which have been made on what is practiſed in this Province, in cultivating and ordering the *Vines*, and in fining off the Wines, in bottling and carrying them up and down into Cellars and Vaults, and from Vaults to Cellars, it will be found that even Perſons of good Taſte, in the Provinces of *Burgundy*, *Berry*, *Languedoc* and *Provence*, who are yet very curious and delicate in making Wines, eſpecially for their own Tables, know not ſo well how to bring it to Perfection, as thoſe who are accuſtomed to make it in this Province; for though their Wines have not the Tartneſs of thoſe of *Champaign*, yet they are able to make them more clear, fine and light. They might therefore try if they would not be preſerved better in drawing them off from their Lee, than in letting them lie on it, according to their uſual Cuſtom, which ſome are of Opinion is abſolutely wrong. They ſhould chuſe and pick, in the Freſh of the Morning, their fineſt black Grapes, and thoſe whoſe Berries adhere the leaſt together, becauſe they are the ripeſt; and they ſhould obſerve to leave as little Stalk to them as may be; and with regard to preſſing, which they are uſually faulty in, they ſhould immediately, as ſoon as carry'd, trample every Load of Grapes ſucceſſively as they are brought in; and collecting the firſt, muſt put it in new Caſks of a leſs Size; and when they have finiſhed treading the Remainder of each Carriage, they ſhould put them into the common Vats; but let them not remain there ſo many Days as they are generally uſed to do, that ſo their common Wines may be thinner and leſs ſtrong. By this Management, they might make four, five or ſix Pieces of fine Wine, more or leſs, according as they ſhall find it good; and then they ſhould take the ſame Care as has been ſaid thoſe of *Champaign* do: And if they would be content now with a leſs Produce, they would have a far greater Quantity the following Years, and would be continually bringing it to a ſtill greater Perfection, as they improved more and more in Experience. In thoſe Countries where they can conveniently have Preſſes, they ſhould make them.

Their Wines would be more delicate, more light, and leſs colour'd by this Attention, and with half the Fining, would be better for Tranſportation, in drawing them from the Lee, and eſpecially if they are put into Bottles.

There are ſome Diſtricts or Cantons in the South Provinces of the Kingdom, where the Earth is very fine, which would produce exquiſite Wine: It would not, indeed, have the Tartneſs as thoſe of *Champaign* have, but then it would have another very pleaſing Flavour that thoſe have not.

All theſe Obſervations which we have made will be of great Uſe to thoſe Perſons who would improve their Wines, or deſire to drink delicious Liquor. But ſuch Perſons muſt remember, that they ought above all this to ſtudy to have good Vaults; and thoſe which are cooleſt in the *Summer*, and warmeſt in the *Winter*, are ever the beſt.

It may ſeem to many Perſons in this Country, that we have been too prolix in the Account we have given; but theſe Obſervations are not deſigned for thoſe who are acquainted with the Practice already; but for ſuch Perſons as are wholly ignorant of theſe Things, and who are ſo far from taking any Pains in the ordering their Wines, that it is a Pain to them to conceive the greateſt Part of thoſe Things which I have taken Notice of, to be neceſſary; and who cannot be perſuaded but that they obſerve every Thing requiſite to the proper Management of Wines as exactly as thoſe of *Champaign* do.

Nothing is ſo aſtoniſhing as the Indifference there is in the remote Provinces, where Wine is ſo abundant, both in the Culture of the Vineyards, and the Choice of the *Vines*, as alſo in the Manner of Making, and the Management of the Wines. The Want of Preſſes ought not to be allow'd as a juſt Excuſe for their not making their Wines entirely white: But of this anon.

They practiſe nothing in *Champaign* which may not be perfectly imitated in other Places; the drawing off the Wines, the Manner of fining them, and putting them in Bottles, *&c.* is all equally poſſible, and alſo eaſy. Many Perſons might enrich themſelves, if they would ſet themſelves about it, with the Help of theſe obſervations, and of thoſe they might make themſelves, to bring their Wines to Perfection; and inſtead of ſelling them for one or two *Sols per* Pot, as they ordinarily do, they might ſell them for upwards of eight or ten. They would have the Satisfaction of augmenting their Income, and ſee their Wines ſought after, and they would be able to ſell them not only at Home, but alſo to tranſport them into foreign Countries; becauſe their Situation is more favourable to ſend them by Sea than that of the *Champaignois*, who are obliged to tranſport theirs upon Waggons, and by Rivers, into *Germany*, and the fartheſt Parts of the North.

Perhaps ſome Criticks will object the Difference of Climates, which will not permit the ſame Culture of the ſame Plants, which by their different Qualities do require particular Managements. This Way of Reaſoning might have Place, if I had pretended to ſpeak to a People who ſtudied to order their *Vines* with great Attention, and to give them a Fineneſs; but I have it chiefly in View, as I have had in collecting theſe different Obſervations, to inſtruct thoſe People who are entirely ignorant of the Method uſed in thoſe Countries where they are accuſtom'd to make excellent Wines, as well by reaſon of the Goodneſs of the Lands, and the Warmth of the Climate, as by the Induſtry of thoſe who inhabit them.

In *Champaign*, where their Grapes do not ripen but with Difficulty, becauſe their Country is cold, they make the pale Wines, and the white, the Wines truly grey, which are a little colour'd, and the Velvet Wines: Why can't they make all theſe Sorts of Wines in *Berry*, in *Burgundy*, in *Languedoc*, in *Provence*, &c.?

The Warmth of the Climate will not permit Wines to be made perfectly white with black Grapes; they will have a little Colour, and they will not thence be leſs exquiſite than thoſe they have made theſe fifty Years in *Champaign*, and, in the main, are better in Taſte, and better for Health than thoſe Wines that are perfectly white, which cannot be uſed but after Dinner.

The whole of my Intention in publiſhing this Collection of my Remarks, is to oblige thoſe who deſire to be able to give a greater Agreeableneſs to the Wines that they make for their own drinking, and to animate thoſe who have hitherto thought that a greater Excellence cannot be given to the Wines in their Diſtricts or Cantons, to take more Pains to bring them to Perfection; which will contribute greatly to raiſe the Value of the Commerce of Wines in the remote Provinces.

A DISSERTATION *on the Situation of* Burgundy, *and the Wines that it produces. By Mr.* Arnoux.

The Town of *Beaune* is the Centre of *Upper Burgundy*; it is ſituate in a Territory the moſt fertile and ſerene in *France*; it is all round encompaſſed with Cities, among which is *Autun*, the ancient Capital of the *Gauls*; *Dijon*, the Capital of the Dutchy of *Burgogne*, *Nuis*, *St. Jean de Leaune*, *Verdun*, *Seuree* or *Bellegarde*, *Chalon* on the *Saone*, *Arnay le Duc*, *Sanlieu*, *Flavigny* and *Semeur*. *Beaune* is placed almoſt in the Middle of theſe Towns, which are not above eight, nine, twelve, twentyone, or twentyfour Miles at the fartheſt, to be, as it were, a Nurſe to them all, in diſtributing plentifully amongſt them the Liquors which it produces.

All the Learned are agreed unanimouſly, that it is the ancient *Bibracte* of which Mention is made in *Cæſar*'s Commentaries, in theſe Terms; *Poſtridie ejus Diei*, &c.

Cæſar not having above two Days Proviſion for his Army, and not being above thirteen Miles at the moſt from *Bibracte*, the biggeſt, richeſt and moſt fertile City of the *Heduans*, thought proper to march thither to procure Proviſions for his Troops, and that is the Reaſon he quitted his way to *Switzerland*, and came to *Bibracte*. *Com. Cæſ. Lib. de Bel. Gal.*

Cæſar ſays, in another Place, That *Bibracte* among the *Celti* of the *Heduans*, is the largeſt and moſt fruitful City of the *Gauls*, and that which has the greateſt Authority among the *Heduans*, in which he called a Council of war, iſſued Laws, and where he paſſed the *Winter* with his Troops. He ſays alſo, That this Town is ſituate at the Foot of a Hill, and that it is not far from the Town of *Autun*. All this appears true, as well from the Fertility of the Country as its Situation and its Diſtance from *Autun*, which is not above twentyfour Miles.

Nevertheleſs, *Bibracte* having been the Theatre of many Wars, and having been ruined by ſeveral Sieges, *Beaune* has been built upon its Ruins, and has taken its Name of *Bellona*, becauſe its Inhabitants were always trained up in Military Diſcipline; and afterwards in *Latin* was named *Bellona*, and ſince that *Belna*.

The ſeveral Wars which have ravaged this Country, have not left any Monuments of this Antiquity ſo worthy of a Remark, as are to be ſeen in the precious Remains of that Sort in the Town of *Autun*.

And if I might be permitted to make here a ſmall Digreſſion, I would entertain the Reader with the Antiquities which I have view'd during the long Reſidence which I made there.

The fineſt Piece of Antiquity that is to be ſeen there, is an Amphitheatre of a vaſt Extent, the Traces and Footſteps of which, although worn by Time, are yet remaining in a Semi-circle, and do extend a full third Part of a Mile in Length; there are to be ſeen the Caverns, where the Lions, Tygers, and other fierce Beaſts were ſhut up: And there are ſtill Parts of the ancient Walls remaining, which ſhew that the Circumference of this Town was ſix or ſeven Miles; the Place, which is in the Middle of the Town, is four times as big as the Square of *St. James*'s, where the Troops are exerciſed in Arms, and which is called the *Field of Mars:* The Tomb of *Divitiacus*, which is of a round Form, comes out of the Ground like a ſhapeleſs Lump, and ſuddenly growing narrower towards the Top, appears as if broken. This Maſs, which has neither going in or out, is elevated on a riſing Ground, worn out by Time, and appears like a Block; the Sand, the Lime, and the Stones are become all the ſame, by the Rains and the Air which have calcined them: This Pyramid has ſubſiſted above two thouſand Years.

There remain of this ancient City two Gates, which have held out obſtinately againſt Time that conſumes all that Mortals would eternize: The one, raiſed upon four maſſy Piles, encircled with Baſs Reliefs and Hieroglyphicks, forms three Centres crowned in one Range of Architecture of fluted Stones, which are all of an extraordinary Height, in which no Joints nor Cement can be perceived. There alſo yet appears one half Part of the Temple of *Janus*, the Mount and the Foreſt of the *Druids*, the Mount *Joüy*, or *Jupiter*'s Mount; and in digging the Earth but never ſo little, or in ploughing, there are found Urns and Medals.

But to return to the Town of *Beaune:* This Town cannot pretend to glory in theſe ancient Remains of Antiquity, which the Air conſumes, and Time reduces to Duſt; it only glories in its good Wines, which every Year brings to the Citizens new Riches: However, it has been within an Age paſt a ſtrong Place, and is ſtill ſurrounded with a large Ditch which runs into the River *Burgoiſe*; this takes its Source at about half a Mile from one of its Hills. It is alſo encompaſſed with a Rampart, flank'd with ſome Towers, and five great Baſtions; the Ditch, which encompaſſes the Town, is above a Mile and an half in Circumference: The Citizens there enjoy almoſt continually a pure Air, and a clear Sky, being equally about an hundred Leagues off from the *Mediterranean* and the *Ocean*. The Waters are, as one may ſay, in Suſpenſe, when it is about to determine its Courſe: There is alſo a great Body of Water in its Neighbourhood, which is ſeen in all the Charts of *France*, under the Name of the *Pond of long Extent*. It is the Opinion of ſome Perſons, that this partakes of the Waters of both Seas.

This Town can count fourteen or fifteen thouſand Inhabitants, of which the fourth Part are employ'd in cultivating the Vineyards; another fourth Part in careleſsly exerciſing ſome Profeſſions that they are ignorant of; and the other half in enjoying the Pleaſures of a ſoft, idle and delicious Life. The Gout and Sickneſſes are baniſh'd from theſe Walls. From theſe Hills, that produce ſuch exquiſite Wines, iſſue out Fountains of Ice, and little Rivers as clear as melted Cryſtal. Theſe Waters iſſue out from the Earth in a Line oppoſite to the Perpendicular, bubbling up, and puſhing out of the Earth on high Globes of Rock-cryſtal, which keep their ſpherical Figure till they are at the Superficies.

The Purity and Lightneſs of theſe Waters are the Cauſe that they here eat the lighteſt and beſt Bread in *France*. The Cattle are not ſo large nor fat as thoſe of *England*, but they have a more delicious Taſte. The Game there is moſt delicious; but above all, thoſe who inhabit the Hill, where grow *Thyme* and *Marjoram*, and in ſome Places *Broom:* And in the Month of *September*, a little Bird, bigger than a Linnet, and ſmaller than a Lark, comes to furniſh the Inhabitants of theſe Hills with the moſt dainty Diſh which can come to a King's Table: This is the *Wheatear*, which comes out of the Wood, when the Grapes are ripe; they get among the Vineyards, and fatten themſelves with the Grapes, which they pick with their ſharp-pointed Bills, from which they ſuck the Juice, and with which they make themſelves downright drunk. This Bird comes into the Vineyards ſmall and lean, and in a little Time grows fat to the very Extremity of its Wings, to that Degree, that they cannot fly above eight or ten Paces, by reaſon of the Weight of that Bulk which they have acquired upon the Vine-branches: So that, in order to render them light to fly, they ought to take the Counſel of *Horace*, which he makes the Weaſel give the lean Fox, that had entered thro' a ſtrait Hole into a Barn of Corn;

> *Macra cavum reptes arctum, quem macra ſubiſti.*

It is pretended, and I do believe, that this little Bird is the moſt delicious Diſh in *Europe*; I have ſeen a great many in *England*, and alſo kill'd them out of Curioſity; but as they have not the ſame Liquor and the ſame Feed that they have in *Burgundy*, they have nothing of the ſame Taſte.

Beaune is remarkable for the Magnificence of its Hoſpital, which was there founded and built by Chancellor *Rolia*. *Philip* the Good, Duke of *Burgundy*, being informed that his chief Miniſter had attempted ſo great a Work of Piety and Charity, laugh'd, and ſaid, ſince his Chancellor had done ſo much for the Poor in his Life-time, it was but juſt that he ſhould lodge them, and feed them after his Death.

The Hills of *Upper Burgundy* which produce the Wine, the only Wine which one can or ought to call *Burgundy* Wine, do not extend farther than from *Dijon* to *Chalon* upon the *Saône*; yet we ought not to reckon thoſe Vineyards to be in Perfection but from *Chambertin* to *Chagni*, about twenty-four Miles in Extent: For the *Vines* at *Dijon* and *Chalon* do not enjoy thoſe Climates which produce thoſe Wines that are fit to be tranſported into *Great-Britain*, the Circles of the *Empire* and the *Low Countries*, as thoſe which are confin'd within the Limits, that I ſhall mention as exactly as I can, without being apprehenſive of paſſing under any Cenſure upon this Account.

The ſame Row of Hills in the ſame Situation, and having the ſame Aſpect of the Sun, extends itſelf almoſt as far as *Lyons*, and all thoſe little Mountains are wholly cover'd with *Vines*; but the lands are leſs fine, and leſs light at *Chalons*; are heavier at *Tornus*, and coarſer at *Macon:* This alters the Form of the Productions of theſe little Hillocks, which, notwithſtanding they have the ſame Arrangement, and the ſame Situation, produce ſo different Liquors.

All thoſe little Vallies are link'd one to the other to the Eaſt Aſpect of the Sun, and form the Figure of an unbent Bow, and have oppoſite to them a Row of Mountains of the like Figure, but a great deal higher, which appear or ſeem to join them, although they may be fifteen, twenty, thirty, and ſome ſixty Leagues off, and forming an oval Figure, contribute to make the fineſt Proſpect in the World. This Oval muſt have more than one hundred and fifty Leagues in Circumference.

From theſe Hills of *Beaune* all the oppoſite Mountains are ſeen, and they are thoſe of *Switzerland*, the *Franche Compté*, and Mount *Jura*, of which *Cæſar* ſpeaks, at this time call'd *Mount St. Claude*, thoſe of *Savoy:* Beyond theſe is a frightful Void, and of an immenſe Length, and Mount *St. Bernard* riſes into the Clouds, always cover'd with Snow in the moſt violent Heats of the *Dog-days*; and although it be ſixty-five Leagues off from *Beaune*, it is ſeen diſtinctly without the Help of any Glaſs which ſhall bring it nearer to the Spectator's Eye.

This perfect Oval forms a Plain of the ſame Figure, to which theſe Mountains that environ it, ſeem to ſerve for Walls and Ramparts: This vaſt Plain is water'd by the

Saône, which *Cæſar* calls *Arar*; and by the *Doux*, which he calls *Alduaſdubis* in his *Commentaries*, which has its Source at the Foot of Mount *Jura*, paſſes by *Beſançon* and by *Dole*, and caſts itſelf into the *Saône* at *Verdun*: There are alſo a thouſand pretty Rivers and Streams, which, after many Turnings and Windings, loſe themſelves in the *Saône*.

This great Plain, which is at the Centre of the Continent, is ſo even, that the *Saône* which runs through it, by its gentle Courſe, deceives the Eyes of thoſe who look upon it, it being difficult to diſcover which Way its Stream glides; *Cæſar* himſelf was ſurpriz'd at it, as he declares in *Lib.* I. of his *Commentaries*.

The *Saône* is a River that ſeparates the *Heduani* and *Sequani* (i. e. *Bourgogne* from the *Franche Comté*) and flows into the *Rhone* with an incredible Gentleneſs, that one cannot diſtinguiſh by the Eye which Way its Waters run.

This is a vaſt Plain, ſo fertile and even, that all the Kings of *France* are wont to aſſemble their Armies there, when they have a Mind to ſhew the Encampment of all their Troops to the Queens, and the Ladies of the Court.

Behind the firſt Row of Hills that produce ſo good Wines, there is nothing to be found but Hills and Vallies: The Hills that are the leaſt diſtant, are all planted with Vineyards, and theſe Situations are call'd *Backward Hills*: In the hotteſt Years, when the Rains are leſs frequent, the Grapes there make a very good Wine, but it never has the Perfume of the Wines produc'd by the forward Hills.

The Plain of this Oval is in part cover'd with Wines, fertile in all Sorts of Grain, embelliſh'd with vaſt Meadows, where a thouſand Streams play in their different Windings, adorn'd with fine Foreſts inhabited with Stags, Wild Boars, and, above all, with Roe-bucks, which are there very delicious, and agreeably furniſh the Gentry with the Divertiſements of Hunting.

A great Part of theſe Lands are planted with Trees in Form of Orchards, which produce without Culture excellent Fruit, which when they have been once grafted, it is enough, the Sun and the Earth do the reſt: The *Peach-Trees*, which throughout ſympathize with the *Vine*, do there make upon the Banks a fair Foreſt; and the Branches of theſe Trees grow thinly, and the Leaves being narrow, they don't hinder the Sun from darting his Rays on the *Grapes* to ripen them: The *Peaches* which they produce are of a Figure and a Colour that would not anticipate one in their Favour; nevertheleſs, when one has taſted of them, it ſeems to the Palate to be a Fruit made of Wine and Sugar.

It ought not to be forgotten, that when the Sun is riſen above the Mountains of *Savoy*, there is a Proſpect of the Hills of *Burgundy*, where it ſhines during the whole Day; and in ſetting behind the Hills of *Beaune*, darts its Rays upon the Mountains of the *Franche Compté*, which lie oppoſite to it, and there, in going down, ripens very excellent Wines, as thoſe of *Arbois*, which are ſo well known throughout *Europe* for their Excellent Qualities.

Before I begin to ſpeak of the Quality of the Wines of *Beaune*, it will be proper to give an Account of the Manner in which they there cultivate their Vineyards, and make their Wines: For altho' *Burgundy*, by the Goodneſs of its Soil, and its Expoſure to the Riſing Sun, does naturally produce delicious Grapes, yet the Manner of cultivating their *Vines*, and of making their Wine, contributes much to its Goodneſs.

During the *Winter*, the *Vignerons* employ themſelves in examining the Earth of their Vineyards; and by ſome Loads of Earth conveniently laid, which they carry thither, they fatten the Places which appear to be worn out, and ſeem to require Aſſiſtance to produce the better Grapes, which happens, however but very ſeldom. Then they take Notice of thoſe Places which are void of *Vines*, whether they are declining by Age, or do not appear to promiſe Grapes; and they make large Trenches from a Foot and a half to two Feet and a half long, and a Foot deep: If the Earth is too lean, they put in half a Foot of good Earth, and ſometimes a little old well-rotted Dung, but generally ſpeaking, they put in nothing at all; and taking one or two Branches, they bend them down into each Trench, and cover them afterwards intirely with the proper Earth of the Vineyard, in ſuch manner that you may ſee the two Ends of the *Vine-branch* bent come out of the Earth; to wit, that by which it holds by the *Vine*, and that of the other End which comes out of the Trench where they have bent it, about three or four Finger Lengths. They make a great many of theſe Trenches in a Vineyard, that they may be always ſupplied with young *Vines* that will produce a good Plenty of Grapes: For it ought to be obſerved, that this *Vine-branch* bent down in a Semi-circle in this Trench, which is a Shoot of the preceding Year, having its Pores open, takes in two Sorts of Nouriſhment; the one from the *Vine* to which it is united, and the other from the Trench in which it has been bent, in which it takes Root. Theſe are what they call *Provins* or *Layers*.

They produce abundance of Grapes, which are commonly firſt ripe, well nouriſhed, large and well reliſh'd, but their Juice is not ſo good as that of the Grapes of the old *Vine*: The Phyſical Reaſon is, that the nouriſhing Juice has not been ſo well filtred in paſſing through thoſe Layers, whoſe Pores are very open, as in paſſing through the Pores of the old *Vine*, whoſe Pores are more cloſe and leſs ſpungy.

They dig with a Spade the Vineyard ordinarily three times a Year, that is, about the End of *February* or Beginning of *March*, when they give it the firſt time; and it is in this Month of *March* or about the End of *February* that they prune their Vineyards.

And in this conſiſts the Addreſs and Skill of the *Vigneron*, for he ought to make a right Choice of thoſe fine Branches that he is to prune, and of the Joint where he is to cut the Shoot, as well as that which he is to cut intirely off.

See here what I have ſeen practiſ'd by the *Vignerons*. Of four or five Sprigs, the Shoots of a Year, belonging to the ſame Stock or *Vine*, they leave but one or two of the beſt made, which they cut off to the third or fourth Joint at moſt.

The ſame they practiſe on the *Vines* on the Hills, which produce the fineſt Wines; for as to the *Vines* on the Backſide, or of the Plain, they cut them to the ſecond or the firſt Knot, for theſe *Vines* put forth too many Twigs: But as this is an Art of which it will be difficult to give the Precepts, becauſe the manner of cutting the *Vines* is different, according to the Ground, the Nature of the *Vine*, its Quality, Expoſition, and Nearneſs to the Sun, I will go on with my Diſſertation.

When the *Vine* is cut, they place *Vine* Props, to which, to the Height of half a Foot above the Earth, they bind the Branches of the *Vines* in an horizontal Manner; and afterwards, when the Buds or Eyes are open'd, and have put forth Shoots in Length about a Foot and a half, they embrace them, that is to ſay, they bind them to the Props which ſuſtain the *Vines* which produce them. Theſe Props are of the Height of three or four Feet, and the Thickneſs of an Inch, are ſtruck into the Ground without any Arrangement or Order, at the Diſtance of a Foot more or leſs the one from the other, according as the Vineyard is more or leſs furniſh'd with *Vines*.

Nevertheleſs the End of the Shoots which are there bound horizontally, as one may ſay, look all to the ſame Side.

This Manner of placing the Props without Order, is of great Conſequence, that is, that one Branch may not be covered by the Shadow of another but as little time as may be; and that if the Root comes to ſome Grapes, they may not be able to communicate it to others. This Manner is contrary to that of the *Engliſh*, who plant their *Vines* in Hedges; and thence it is that the one hinders the Sun from ſhining upon the other, and of Conſequence that hinders the Ripening of the Grapes.

That is the moſt dangerous Seaſon for the *Vine*, and the moſt delicate, when there has been a North Wind, and that has caus'd a ſmall white Froſt: If the Sun comes to appear in the Morning, it dries and burns all the young Leaves, the Buds and the Grapes, after the ſame manner as if Fire had been there.

It is for this Reaſon that the Friars in *Burgundy* have recourſe to Prayer at this Time more than at any other; and that after there has been calm and cold Nights, the ſuperſtitious Peaſants run to the Churches, and ring the Bells with all their Might. Whether it be that they imagine that God has any regard to this Work of Religion, or that the Agitation that they make in the Air, may, in ſome ſort, warm the Air again, or change the Wind: But however it be, they do at this Time ring the Bells with ſuch Violence, that there is no ſleeping: During which Time, the Prieſts and Monks are buſy in reading in the Churches the Paſſion of our Saviour, according to the Goſpel of St. *John*; and for this Occupation, they make a Collection among all the Preſſes at the Time when they make their Wine, and every *Vigneron* is oblig'd to give them a certain Quantity of Wine, and that by an Order of Parliament at *Dijon*.

When the Vineyard has eſcap'd the Danger of the Froſt, they dig afreſh; and this they call [*biner*] the digging of the Vineyard the ſecond time; after which the Grapes ſoon begin to flower, which ſpread a ſweet Savour all over the Country; and is the Time when all the Wines which are in the Tuns in the Vaults, though never ſo deep, if they are upon their Lee, without having been drawn off or clarify'd, rify'd, work, ferment, grow thick, and cover their Superficies with ſmall white Flowers like Snow; a Thing difficult to be explain'd by Philoſophers, in this Queſtion, in Phyſicks, when they demand *Utrum detur actio in diſtans?*

It muſt be obſerved, that all the *Vines* of the good Hills of *Burgundy*, paſs from their Flowers to the Grape; that is to ſay, that the Flower of the Grapes change into Berries in the Space of twenty-four Hours; and if during that Time, there happens a cold Fog, or a cold Rain, their Flowers, inſtead of turning to Grape, fall, and the ſecond Peril is no leſs dangerous than the firſt, when that happens: The Term that they make uſe of to expreſs it, is, to ſay the *Vines* are [*coulè*], *i. e.* drop their Grapes.

At the End of *June* or Beginning of *July*, is the Time when the *Vine* changes from the Flower to Berries; after which, the *Vine* has nothing to fear but the Hail, or a too great Drought. Aſſoon as ever the *Vignerons* ſee the leaſt Cloud to riſe upon the Horizon, and the Air ſeems to threaten the leaſt Storm, they have Recourſe to their Prieſts and their Bells, and their *Pater-noſters*, which they would not recite but for Fear that the People would riſe againſt them if Hail ſhould happen during that time that they were not at their Prayers.

The Reaſon that they are ſo much afraid of the Hail in *Burgundy* is, becauſe the Vintage is all the Dependance of the Inhabitants; and that the Grapes being ſmitten by this Scourge, give to the Wine, in ſome meaſure, the ſame Taſte and the ſame Scent which Lightning ſpreads on the Places where it falls, a Scent which is impoſſible to take away.

As to Drought, it is not only to the Bells, or to the Prieſts that they have Recourſe, but to one or two Stone-Buſts in two Villages about ſeven or eight Miles from the Town of *Beaune*; one of which Idols is known, and worſhipped under the Name of *St. Revereen*, and the other under the Name of *St. Marguerite:* They aſſemble together, and go in Proceſſion to ſearch in Triumph for this Stone, which they carry ſolemnly to a Church in the Town. All the Prieſts go in Proceſſion, followed by the Pariſhioners of which they are Curés, and they offer their Incenſe and their Prayers, rub their Books and their Chaplets againſt theſe extraordinary Figures; and oftentimes it happens to rain in this Conjuncture, which does not a little contribute to keep up this Superſtition in the People.

It is in *July* that they dig the Vineyard the third time; this they call *Thirding*. There are many Years in which they dig their Vineyards the fourth time, and this is in the Month of *Auguſt* that they give it this fourth Digging; but they take great Care to dig the fourth time when the Seaſon is not too hot or dry; or on the contrary, to defend the Grapes from the Heat of the Sun, they let the Graſs grow in the Vineyards; this ſhades them, and hinders the Vapours of the Earth from burning the Grape.

A Month before the Vintage, the Magiſtrates of *Beaune*, accompanied with many experienced Judges and Perſons of Probity, make three Viſits to examine the Maturity of the Grapes; and at this third Viſit and Examination, they decide the Day of gathering the Vintage. No private Perſon dares to cut in his own Vineyard one ſingle Baſket of Grapes upon Pain of Confiſcation and a conſiderable Fine; for if it were permitted to each particular Perſon to gather his Vintage according to his own Fancy, and his particular Opinion, and according to his Taſte, there would be Wines too green ſent abroad into other Countries, to the Diſhonour of *Burgundy*, and to the Diſcredit of the Wines.

And alſo for Fear that any Vapour ſhould ſpread itſelf over the Vineyards, for fifteen Days before the Vintage, they take Care not to burn any Straw or Hemp-ſtalks in the Streets, leſt the Smoak ſhould give any bad Taſte to the Grapes.

The Grapes being come to Maturity, the Magiſtrates give Notice a few Days before by a Trumpet to the Town, of the Time they have appointed and fixed for gathering the Vintage. *Volnet* begins firſt, a Day before *Pomard*, and afterwards all the little Hills gather their Vintage indifferently, for after the Town of *Beaune* has gathered their Vintage one ſingle Day, the Vintage is opened for all the other Vineyards on the Side of *Burgundy*. It will be ſeen by-and-by why *Beaune* decides the Vintage of *Volnet* and *Pomard*. It will ſcarce be believed, that all the Hills from *Chamberry* to *Chagny* ſhould have their Vintage gathered in the Space of four or five Days; and alſo it is ſcarce credible, what a vaſt Number of *Mountaineers* from every Part come to labour in this Work.

They gather the Vintage, perhaps, (and my Conjecture is founded upon more than twenty-five Vintages, which I have ſeen made) more than two thouſand [*Queües*] Tuns of Wine upon theſe Hills; and the *Queüe*, which is always divided into two Punchions, ſometimes into four Feuillettes, and very rarely into eight Cabillons, contains five hundred Bottles of Wine, or, to ſpeak more exactly, four hundred and forty Pints *Paris* Meaſure.

It will be proper here to obſerve, that in this great Extent, the Vineyards produce but one kind of Grapes, which they call *Noirons*; the Berries of which are black when they are ripe, and quite round: The Plain and the Backſides produce only a ſort of Grape, of which the Berries are bigger and a little longer, which they call *Gamet*.

Thoſe who would make excellent Wines, never cut the Grapes till after the Sun has dryed up the Dew which has fallen in the Night-time; for this Moiſtneſs, although it be but a rarefy'd Air, cools the Grapes, which being caſt into the firſt Vat, ſuſpends, and oftentimes hinders the Fermentation. Thoſe covetous Perſons that are more deſirous of the Quantity than the Quality, uſe not theſe Precautions; but, on the other hand, thoſe who would make excellent Wines, do not put into the ſame Vat any Grapes but thoſe of the ſame *Vine*; but almoſt all the particular Perſons who have an hundred Perches of Vineyard in different Cantons, mingle their Grapes the one with the other, becauſe the ſtrong helps the weak, and the good mends that which is worſe; and, in a Word, that they may make the Vat the larger. The Choice of the Cantons from whence the Wine is produced, depends on the Diſcernment that the Courtiers or Commiſſioners ought to have, when they taſte the Wines that they would ſend into other Countries, and that which the *Engliſh* Gentlemen ought to recommend to their Commiſſioners who furniſh them with Wine for their drinking.

The Grapes being put into the fermenting Vat, throw up a great Scum, which, by the Agitation, make to the Ears a continual trembling a little cluttering, and ſpread abroad ſuch a Scent, that is capable of intoxicating, and perfumes the Houſes, and ſpreads itſelf all over the Town.

They do not let the Grapes lie ſtill in the Vat; they ſtir them and diſturb them: The Labourers trample them briſkly three different times, for the Space of two Hours each time. And to give a clear Idea of the Manner of treating the Grapes in the Vat; aſſoon as they begin to ferment in the Vat, they tread them for two Hours at the leaſt; ſix Hours after they tread them again for as long time as before; and ſix Hours after that they tread them the third time; and after that they put them under the Preſs.

It muſt be obſerved, that the Grapes of *Volnet*, of *Pomard* and *Beaune*, being fermented in the Vat in the Field, cannot be let ſtand above twelve or eighteen Hours there; thoſe of *Pomard* a little leſs; thoſe of *Beaune* ſo long, or a little longer, according to the Delicateneſs of the Ground, and the Heat of the Grapes: For there are Vineyards behind the Hills of *Beaune*, the Grapes of which don't begin to ferment till after they have been eight or ten Days in the Vat. *Note further*, That to give a Colour to the Wine, this depends on the Time more or leſs that it is left in the Vat. As for Example, The Wines of *Volnet* have the Colour of a Patridge's Eye. This is the Cauſe they do not leave the Grapes of this Ground but a very little time in the Vat; and if they ſhould let them be there but a little longer than they ought, the Wine would loſe its Delicacy, and would taſte of the Grape-ſtone or the Stalks.

After the Grapes have been, according to their Quality, more or leſs time in the Vat, and have been trodden, there ſwims over a Liquor that they call *Surmôu*. They have Caſks of ſix-ſcore Pots, or half Hogſheads of ſixty Pots ranged upon Chantiers, or Stillings for Hogſheads, into which, by equal Portions, they caſt in this firſt Running; and afterwards they put the Grapes that remain on the Preſs, when the *Surmôu* has been drawn off: And when theſe have been well preſs'd, all the Liquor that comes from them is equally diſtributed into thoſe Pieces where they have already put the unpreſs'd Wine: And then they open the Preſs, and afterwards with a Planer they cut the preſſed Marc three or four Fingers thickneſs round about, and put the Parings in the Middle, and afterwards preſs it again; then they cut it again, and preſs it the third time; and all the Liquors of theſe different Preſſings are equally diſtributed into the Tuns till they are full.

Upon which it ought to be obſerved, that the unpreſs'd Wine is the moſt light, delicate, and leaſt colour'd Liquor; that which comes of the firſt Cut of the Preſs the moſt racy, and that which comes from the ſecond and third Cut of the Preſs is more hard, red, and green; ſo that theſe three Sorts of Qualities, being united, make a Wine much better, more durable, and better coloured.

All theſe Pieces or Tuns being full, they leave the Bung open, and the Wine in a Fury, ſhakes and agitates itſelf in ſuch a manner, that it ſends all over the Cellar Fumes that will intoxicate, and which are in ſuch Motion, that a lighted Candle being carried thither will be extinguiſhed: And if this Wine be put in an Eſſay, and be ſhaken a little with the Hand, and you ſtop the Neck with your Thumb, the Eſſay will break in a thouſand Pieces.

In *Burgundy*, that which they call an Eſſay, is a little round Bottle, in Length about three or four Inches, and about two in Circumference, which grows leſs all of a ſudden at the Top, in order to form a little Neck open, having a little Rim to receive the Wine and the Cork.

The Wine having caſt its Fire and Scum out of the Casks, eight Days after they fill them up again, and ſtop them up with a *Vine* Leaf, which they ſpread over the Bung: And leſt the Vapours of the Wine ſhould move this Leaf out of its Place, they lay a little Stone upon it to keep it down; becauſe if they ſhould put upon it a Seal or a Bung, the Wine not having Air, would puſh the Head of the Casks out: Five or ſix Days after they ſeal it, and near the Bung they bore a Hole, and ſtop the Hole which the Gimlet has made in the Tun with a little Bit of round pointed Wood, which they call a Faucet, which they take out from time to time to let the Spirits evaporate; which Precaution prevents the Wine from burſting the Veſſel.

This is the Time when at *Beaune* are to be ſeen the Merchants from all the Corners of *Europe* who come to ſecure the beſt Vats for their Kings, Princes and Maſters.

The Commiſſioners and their Wine Conners prove the Wines although they are not yet drinkable. The Commiſſioners are the publick Managers, to which all thoſe who would have the Wines of *Burgundy*, addreſs themſelves either by Letters or in Perſon. Theſe are the Judges, which from time out of Mind, from Father to Son, have certain Experience of all the Vats; who know the Climates, Cloſes and the Cantons from which they are produced, and all the good Cellars; to whom it is ſufficient to write what Quantity of Wine one would have, and of what Diſtrict or Canton one would have it of, and provided they have the Purchaſe-money paid in the Space of the current Year, one may be ſure to be well ſerv'd.

Theſe Managers having received all the Commiſſions from private Perſons, go to the Citizens, and fill their Eſſays of the different Vats which they find in good Cellars; and with the Tickets that they tie to the Neck of every little Bottle, or the Name of the Vat, with the Quantity of the Pieces of Wine which they contain, they carry them to their Houſes, and let them be unſtopp'd; they examine and attend them carefully, and by the different Changes, Taſte and Colour, they ſee the future Colours and Qualities of the Wines that are in the Tuns from which the Eſſays are taken. They alſo make yet another Proof with the Wine which is in the Eſſays: They take Glaſſes, upon which they put a ſinking Paper, which they ſpread, and which juts out over the Glaſſes, and preſs their Finger to make a Concavity; which may contain a fourth Part of a Glaſs of Wine: The Liquor paſſes by little and little and filtres through the Paper, and ſtrains Drop by Drop in an impreceptible manner into the Glaſs which receives it. By the Sight of the Wine which paſſes through this Paper, they make good Conjectures founded upon a long Experience, concerning the deſtinated Taſte, of the Colour, and the Laſtingneſs of the Colour of the Wines they have proved.

The Commiſſioners having made their Purchaſes according to the Orders which they have received from their Correſpondents and Merchants, they make Preparations to ſend them according to their Orders: And as to the Price of the Purchaſe, they cannot deceive any Perſon without running great Riſques: For if they ſhould make thoſe which ſend for theſe Wines pay more for them than they can buy them for in the Cellar, they would expoſe themſelves to Hanging by Arret of the Parliament of *Burgundy*, who have made a Law for the aſſuring the Fidelity of Commerce of thoſe Wines; which Orders, that the Commiſſioners ſhould take one *Sol per Livre* for as much as comes to ſixty *Livres*; and and for what exceeds this Sum, they ſhall not take more than ſix *Deniers per Livre*. Thus a private Perſon who ſhall receive for ſix hundred *Livres* of Wine *French* Money, ſhall pay three *Livres* to the Commiſſioner, for what he ſhall have ſent above ſixty *Livres*; and for the five hundred and forty which are over and above, for which he is to pay the Commiſſioner, he ſhall not demand more than ſix *Deniers per Livre*, which will be the Sum of twelve *Livres* ſix *Sous*; which being added to the three *Livres* above, make the Sum of fifteen *Livres* ten *Sous*; a Sum which would amount to twelve or thirteen Shillings, according to the Exchange: And for this ſmall Profit, the Commiſſioner is oblig'd to advance his Money to the Citizens of whom he buys the Wines; and that too, when he does not receive his Payment from the Perſons to whom they are ſent, as it ſometimes happens: And the Commiſſioner that ſhall be convicted of taking more, whether by Books or other Proofs, will be puniſhed, as has been ſaid above.

The Commiſſioners having purchaſed and proved their Wines, according to the Orders they have received, they cauſe the Tuns to be new hooped, and put Bars ſurrounded with Pins of Wood of the *Aſpen* Tree, and mark them with the Town Mark: And it ought to be obſerv'd, that no other Country has a Right to imitate or counterfeit their ſecond hooping; and for the greater Surety, they put upon every Cask the Fire-mark, which is a B on the Top, two Inches in Length, with the Cypher of the Year in which the Casks were ſent from *Beaune* to go to any other Place.

Theſe are the Precautions that are taken at *Beaune*, by which the Wines that come from thence cannot be miſtaken: A Caution otherwiſe not very neceſſary, ſince they manifeſt themſelves ſo plainly by their Delicacy and their Superiority above all other Wines in the Univerſe: They are beſides very beneficial and proper to eſtabliſh and to preſerve Health; in this ſurpaſſing the Wines of *Champaign*, which flatten the Taſte, and grate the Palate; but which weaken and extenuate, enervate, and render dull, as one may ſay, the moſt healthful Bodies; and which alſo according to ſad Experience, and the Writings of the Learned, which I have read, breed the Gravel, the Gout, and the Stone.

After having given an Account of the Situation of the Town of *Beaune*, and the Hills which produce the Wines of *Burgundy*; after having related the Manner of cultivating their Vineyards, and of making their Wine; of proving it; of chuſing it; of buying it, I ſhall, next, explain the different Qualities of the Wines which theſe divers Hills produce: And in order to this, I ſhall divide what follows into three ſmall Articles. I ſhall treat firſt, of the forward Wines; ſecondly, of the Wines *de Garde*, or for keeping; and therein I ſhall treat of White Wines, and ſhall conclude in giving Inſtructions for the different Methods that are to be us'd in bringing the Wines of *Burgundy* to *London*, and will adviſe how the *Beaune* Wine may be ſent to *London* in Bottles.

The firſt Article of the Wines of Primeur *or the Forward Wines.*

We call that the Wine of *Primeur*, which will not keep good more than one Year, or that can be kept but a few Months in the ſecond Year.

The firſt Wine of *Primeur* grows at *Volnet*, which is a Village ſituated about three Miles from *Beaune*, upon a Deſcent of a Mile in Height at leaſt, and two Miles in Length on the Side which is expoſed to the Riſing Sun: This Village, as well as *Pomard*, have their Dependance on the City of *Beaune:* Since the Citizens have been their Lords, as I have ſaid before, theſe two Plots of Vineyards, have been oblig'd to receive the Law of their Vintages from the Magiſtrates and Sages named for this Purpoſe.

This Hill produces the fineſt, moſt lively, and moſt delicate Wine of *Burgundy*. The Bunches of Grapes of the Vineyards of *Volnet* are very ſmall as well as the Berries; the Branches riſe ſcarce above three Feet high through the whole Year; the Grapes of it are ſo delicate, that they won't bear the Vat more than twelve, ſixteen, or eighteen Hours; for if they be ſuffer'd to ſtand longer, they would take the Taſte of the Stalk.

This Wine is in Colour a little deeper than the Eye of a Partridge, it is full of Fire, ſtrong, light, it is almoſt all Spirit; it is, in ſhort, the moſt excellent of all *Burgundy*, which by reaſon of its Violence is not traded in; but its intoxicating Quality is ſoon diſſipated. The Duration of this Wine is from one Vintage to another, tho' it periſhes at the Beginning of the Dog-days; after which it changes its Colour, and is turned, but yet I doubt not but that it would keep longer in very cold Vaults. The fineſt of their Vats is drawn from a Canton of Vineyards, that is call'd *Champan*.

Pomard is the ſecond Plot of Vineyards of the *Primeur*: It is ſituate between *Volnet* and *Beaune*, not quite ſo high as the firſt, and a little higher than *Beaune*. It produces a Wine that has a little more Body than the preceding, and it is of the Colour of Fire, and has a great deal of Perfume and Balſam: It will hold good ſome Months longer than that of *Volnet:* It is more merchantable, and better for Health: If it be kept above a Year, it fattens, ropes, it waſtes, and becomes of the Colour of the Skin of an Onion. The beſt Vat is that of *Commaraine*, that will ſometimes keep eighteen Months, but that is according as the Year is.

The City of *Beaune* contains one very conſiderable Plot of Vineyards; it contains only four Hills, which are about four Miles in Length from *Pomard* to *Savigny*. The firſt of theſe Hills is called *St. Deſire*, the ſecond the *Montée Rouge*, the third *Les Greves*, and the fourth the *Fountain of Marconney*. Theſe different Soils produce Wines which participate of thoſe of *Volnet* and *Pomard*, without the Faults of them; they have a little more Colour, many good Qualities, and Laſtingneſs.

The Wines of *Beaune* laſt ſome more, and ſome leſs, but they don't laſt above two Years; they are ſweeter, more agreeable, and more merchantable than the two preceding, and much better for Health. The Colour of theſe Wines is not equal, becauſe that depends much upon the Manner of making them; or that they let it remain more or leſs Hours in the Vat, according as the Climate is more or leſs delicate where it is made. There are in theſe four Hills certain incloſed Cantons, which are in great Reputation. The *Feves*, the *Cras*, the *Greves*, as alſo the *King's Incloſures*, are very delicious.

Aloſſe is the fourth Vineyard of the *Primeur*: It is ſituated upon the Declivity of a Hill about three Miles from *Beaune*. This Valley is an Aſcent ſo gentle, that one can ſcarce perceive that one aſcends till one has come to the Top of it. This little Village produces Wines of an extreme Delicacy: They are leſs briſk than the former, but of a Taſte more flattering: The Colour is a little more ſoft, and leſs ſparkling, but fine; and, like the Hill that produces it, the Wine is too little elevated, and too much declining: It partakes neither of the Firmneſs nor of the Stiffneſs of the Wines of the Height of the Hills: It has all the Tenderneſs, nothing of the Hardneſs, and of conſequence is ſubject, in a little while, to grow ropy, and to take the bad Quality of Sweetneſs; nevertheleſs it is ſent to foreign Countries, but it requires much Choice and Judgment.

Pernand, which is between the laſt Vineyard and the grand Vineyard of *Savigny*, is of a greater Extent, but is of ſmall Account, the Wines being not very delicate: They are of the Quality of the precedent Vineyards, but harder and firmer, becauſe they are produced upon a Hill that is higher and ſteeper. There are ſome Vats very delicious, and theſe go into other Countries, but under the Name of *Beaune* Wine.

Chaſſagne is not very conſiderable for its Extent, but is of greater Reputation for its Wines. This, in my Opinion, would be more fit for *England*, becauſe it would better bear Carriage by Land and Sea. It is extremely ſtrong, full of Fire, and heady. It is commonly tart, which renders it more durable than the others: But if Perſons have Skill and Leiſure to bottle it in the proper Time, and to drink it when its Tartneſs begins to fall, it is one of the nobleſt Wines in the World. If I had the Office of providing the King's Wine, I would go into *Burgundy* to chuſe it; and in chuſing the Wine of this Climate I ſhould be likely to ſucceed. This is the only Wine one may leave in Bottles without Fear of its growing ropy, or changing its Colour, or growing eager, or turning. The longer you keep it, the better it is.

It is more balmy and nouriſhing, but nevertheleſs you may not preſcribe above three Years for the Bounds of its Duration. It will be fit for drinking at the End of the ſecond Year; ſometimes it laſts four Years, when the Vintage has been very good.

This is in the Rank of Wines in the *Primeur*, though its Duration is a great deal longer.

Savigny is a great Extent of Ground between *Beaune* and *Pernand*, ſituated in a Valley formed by the Separation of the two Mountains. As the Hills that compoſe this Vineyard are open to the riſing Sun by a great Space; and as they are ſhut up as they approach to the ſetting Side, they participate of the Rays of the Sun on one Side obliquely, and on the other directly. This Soil produces excellent ſtrong, racy Wines, which have both Body and Delicacy, when they have been drawn out into Bottles; but they muſt be viſited now and then, ſo as not to let ſlip the Time when they ſhould be drank. This would be a very good Wine for *England*; it will keep as well, and better than *Chaſſagne*: It is not ſo delicate nor ſo briſk, but it is more oily, and very good for Health.

Auxey is pretty near of the ſame Situation, in a Corner between two Hills, which open themſelves to *Mulſault*, or as far as *St. Romain*, where may be ſeen high Mountains crowned with very high Rocks. This Vineyard produces Wines more red and ſtronger than thoſe of *Savigny*, but they have not the Reputation of them. Theſe Wines have more Body than the preceding, and ought to be the Drink of all thoſe Gentlemen that would not ſhorten their Days by drinking thoſe heady ſparkling Wines, an Exceſs of which is ſo dangerous.

The ſecond Article, of the Wines de Garde, *or thoſe which will keep a great while.*

Nuis is a very ſmall Village, about nine Miles from *Beaune*, in the Road to *Dijon*. The Territory of this Village contains between four and five Miles in Extent. All thoſe Gentlemen that love the moſt delicate and healthful Drinks, have the Wines of the Hills of *Nuis* for their Tables: Theſe Wines are at firſt very rough, ſharp and tart: They require to be kept till their ſecond, third, fourth and fifth Year; and when their Roughneſs and their Hardineſs is gone, their Tartneſs being fallen, there comes in their Place a Perfume and Balmineſs very delicious. They are of a deep Velvet Colour, and yet neat and brilliant. *Lewis* the XIVth drank no other Wine.

The Cloſe of *Vougeot* is ſituated a League from *Nuis* on the Side of *Dijon*; it appertains entirely to the Monks of the famous Abbey of *Citteaux*, built between the *Saône* and this Hill. The Wine which it produces, comes nearer to that of *Chaſſagne* than to any other. It is very excellent, and is drank in foreign Countries.

Chambertin produces, to my liking, the moſt valuable Wine of all *Burgundy*. It is ſituated between *Dijon* and *Nuis*. It contains the Qualities of all the other Wines, without their Faults. This is what one may forget without Fear. I have drank it ſix Years after it has been produced, and it poured troubled and thick into the Glaſs, but grew clear immediately, and by its Motion recovered its Spirits, and a Colour the moſt lively and neat: And they alſo ſell it as dear again as the other Wines of *Burgundy*. It was ſold the laſt Vintage but one for forty, and fortytwo Pounds, *Sterling*, the *Chantier*, when the Wines of *Volnet*, *Pomard*, and *Beaune* ſold for not above twenty Pounds, *Sterling*, a *Queüe*, which contains, as I have ſaid before, four hundred and eighty *Paris* Pints.

The third Article, of White Wines.

Before I begin to treat on White-wine, it is proper to let you know that it is made from a maſculine Kind of Grape. This has two Qualities that the Grapes of the other Colour have not. The firſt is this: That if the Vintage be late, and that the white Froſts and great Cold come, it reſiſts the Hoar-froſts, while the black Grapes grow ſour, wither'd and ſhrivelled immediately.

The ſecond is, that as ſoon as theſe white Grapes are cut, they muſt be put into the Preſs without entering the Vat, and without being trod as the black Grapes are; for if they were put there, they would give only a livid, ruddy, yellowiſh Liquor. I thought myſelf obliged to acquaint the Publick with that.

Muſſault is, after *Beaune* and *Nuis*, the largeſt Vineyard of *Burgundy* in Extent; its Wines are generally approved in *Germany* and the *Low Countries*, and throughout all *France*; I know not whether they are ſo in *England*, or not. The Wines which this Soil produces, in all hot and dry Years, are delicious, ſparkling, agreeable, warm, and beneficial; they are not dear, and if they were well choſen, they would be an Honour to *England*, and a Pleaſure to thoſe that drank them. When they are kept above a Year and half, they ſometimes grow yellow and eager.

Puligny is a Vineyard next to *Muſſault*, but much more in the Plains, which produces the beſt White-wines; they are, within a very little, of the ſame Quality with the Wines of *Muſſault*, but their Fame is not divulged, and the Name is almoſt unknown.

Aloſſe, of which I have ſpoken in the Article of the firſt Wines, produces alſo excellent Wines.

Morachet is a little Plot of Ground between *Chaſſagne* and *Puligny*, in the Plain, which is in the Poſſeſſion of one Vein of Earth, which renders its Soil wholly of the ſame Kind; it produces a White-wine the moſt curious and moſt delicious in *France*; there is no Wine of *Cote-Rotie*, *Muſcat*, nor *Frontignan* that equals it. It produces but a very ſmall Quantity, and it ſells very dear; and in order to have a ſmall Quantity of it, it ought to be beſpoke a Year before; becauſe this Wine is always beſpoke before it is made. But great Caution is to be taken not to be deceived, for the neighbouring Vineyards of this Cloſe partake a little of the Quality, and oftentimes paſs for *Morachet*, and therefore it will be abſolutely neceſſary to have a faithful Correſpondent. This Wine has thoſe Qualities that neither the *Latin* nor the *French* Tongue can expreſs: I have drank of it ſix or ſeven Years old, and am not able to expreſs its Delicacy and Excellence.

I am now going to treat concerning all the Vineyards of the *Upper Burgundy*; thoſe who have paſſed the grand Road that leads from *Dijon* to *Lyons*, the Length of the Hills, will do Juſtice to my Exactneſs; and I deſire thoſe that have not been there, to believe that this Relation is agreeable to Truth.

I have an hundred times heard Boaſting of the Wines of many Hills near *Auxerre*, to which they give the Name of the Wine of *Burgundy*: It is true, thoſe Hills are in *Burgundy*, but they are ninety Miles diſtant from the true Hills, of which I ſpoke juſt now, which only produce theſe Wines of *Burgundy* which are in Reputation, and which they drink after two Manners, by the Noſe and by the Mouth, either both at once, or ſeparately; both at once, in that when one drinks them, the Pleaſure which he has in the Smell vies with the Reliſh it has on the Palate; and ſeparately, ſo that a Perſon that has been uſed to drink it, may know whether it be the true *Burgundy* or not by the Smell or ſweet Odour. The good Taſters taſte it by their Noſe, before they put it to their Mouths; and all the other Climates of *Burgundy*, as thoſe of *Chablis* and *Auxerre*, have no ſuch Quality as the true Wines of *Burgundy* have, altho' they are really made and produced there.

It remains for me to relate how theſe Wines may be brought to *England*. It has always been the Cuſtom to bring thoſe Wines from *Burgundy* in their Caſks; but as the Carriage is long, and there is oftentimes a Riſque run, ſo the Carriers, as well by Land as by Sea, are not always faithful; for notwithſtanding all the Precaution that can be taken to hinder them from drinking the Wine, they will always find out Stratagems to do it. If it be packed up in Caſks, with Straw and Linen Cloths, this is but a feeble Obſtacle to their Induſtry. And for all this Precaution, if the Caſk happens to leak by the way, this will be at the Peril and Loſs of the Purchaſer. If theſe Wines be put into double Caſks, this Precaution will have no better Succeſs than the foregoing, and is expoſed to the ſame Riſque; and the Caſks at the Vintages are a great Prejudice to theſe delicate Wines, becauſe this gives the full Scope to the Spirits to evaporate; and of conſequence they will cauſe a great Diminution of the Quality of the Wine.

It ought to be brought in Bottles from *Beaune* to *London*: For this Purpoſe ſome Agent, who buys the Wines by Order of the Perſon, ſhould be addreſſed to, to draw it out into Bottles, and to ſend it in Caſes into *England*. Theſe Caſes being filled, need but be carried by Land above ninety Miles to *Auxerre*, where they may be embarked on the River *Yone*, which paſſes into the River *Seine*, and from thence to *Paris*, and afterwards to *Roüen*, where are Veſſels which paſs very often to *London*.

If one would have them come from *Beaune* to *Calais* by Land, that will alſo be eaſy; for there are Carriers that go thither very frequently, who would go very willingly, provided they could have Caſes enough to load their Waggons.

The Agents of *Beaune* would alſo be very well pleaſed to bottle the Wine that they were ordered to buy, provided their Correſpondents would give Orders for enough to make a Carriage: As for Example, if two or three Perſons would join to give Orders for a thouſand Bottles, this would be a compleat Carriage: And as thoſe of *Volnet* draw their Wine into Bottles at the End of *December*, a Perſon that would have five hundred Bottles of *Chaſſagne* or *Nuis*, ought to join with another that would have the like Quantity. The Agent might bottle up theſe Wines a Year after the Vintage, either more or leſs; and the Purchaſers might receive the Wines of *Burgundy* exquiſite and delicious; and in like Manner all other Wines that they have a Mind to have. As to the Price of the Wines of *Beaune*, *Volnet*, *Pomard*, *Chaſſagny* and *Nuis*, it is pretty near equal, or at moſt the Difference is not very great. A *Queüe* of *Volnet* Wine contains four hundred eighty *Paris* Pints, which will make five hundred Bottles, and will coſt in the Country, ſome Years, ten, twelve, fourteen, or eighteen, and at moſt twenty Livres *Sterling*. The Carriage may coſt to *Calais* twelve or thirteen Livres; and afterwards from *Calais* to *London* a very ſmall Matter: So that taking the Years one with another, the deareſt Wine of *Burgundy*, except that of *Chambertin*, which is the deareſt, would ſcarce, in *London*, ſtand in fourteen or fifteen Sols a Bottle, the Entry not being reckon'd in.

The Method of making Wine in Provence.

The Delicateneſs of the Taſte of Grapes is not always a certain Proof of their Goodneſs for making Wine: It is not always with theſe Grapes ſo agreeable to the Taſte that the beſt Wines are made: We ſhould not be ſurprized that our Wines are not the moſt exquiſite, ſince we do not obſerve any Rule in the Choice of the Grapes, which ought to be done.

It is certain, that the Juice of Grapes of different Kind, cannot but produce a confuſed Mixture, which ſuffers divers Alterations in the Caſks, by the different Fermentation, which the ſulphureous Particles of the Grapes excite there, by which they ſuffer themſelves to be very eaſily opened at the Approach of the Heat. This is what happens to Wines which have been made of a Mixture of many Kinds of wild Grapes. Experience informs us, that Wine drawn from ſuch Grapes is very ſubject to ferment and grow foul, as ſoon as the Heats of the *Spring* begin to approach, which does not happen in the *Winter*, when the Coldneſs of the Air holds it, as it were, bound and embaraſſed by the ſulphureous Particles of the Wine. It is the ſame Thing in the Juice of the Grapes called *Claretos*, *Plan Eſtrans*, *Pignoulets*, &c. when they are mingled in too great a Quantity with the others. The common Fault of our Wine is, that they cannot be kept the Year throughout; they are apt to grow foul, or turn, as it is called, upon the leaſt tranſport.

The greateſt Part of our Citizens believe it to be the Fault of the Soil, principally the Vineyards planted in the Places where Plaiſter or tranſparent Stone is made, under which is contained all that Extent of Ground, which begins from *R. P. Capucins*, as far as *Aguilles*, which they commonly call *Payblanc*, i. e. *White Country*. But how many Vineyards have we planted in different Soils, that are ſubject to the ſame Vice? It is generally agreed, that the Soil which they call [*Gres*] Grey, is the beſt for Vineyards: Nevertheleſs, it is found, that the Quarter of *Molieres*, of *Repentance de Barret*, of *Montaiguez*, are not exempt from this Vice. I am of the Opinion, that it proceeds from the Mixture of too great a Quantity of different Sorts of Grapes. I cannot deny, after Experience, but the Nature of the Soil, the Culture, and the Dung they uſe, contribute very much to this Vice, which is what I ſhall hereafter examine into.

Therefore it is neceſſary to know what Grapes are fit to make good Wine, that may be in a Condition to be kept without being foul, or turning, and how to make it.

It is very true, that a Perſon cannot make from one Vineyard a great Quantity of Wine, that ſhall be at the ſame Time good in Quality. A Vineyard ought to be planted on thoſe high Grounds or Hills which are expoſed either to the South or the South-weſt.

And the Soil ought to be a Sort of brown, or approaching to it. Thoſe which we call *Arpielo*, *Malauſene*, *Saveon*, are Soils which are ſcarce proper to nouriſh Stocks that will produce Grapes for making good Wine. The Vineyards which are round about the *Peres Auguſtines Reformez*, commonly called *Saint Pierre*, are planted in a Soil of *Saveon* aforeſaid, very unfit for producing Grapes of a delicate Reliſh, or for making good Wine.

The Entrance into the Territory of *Tholonet*, is, for the moſt Part, a Soil which our Country People call *Malauſene*; and alſo the Wines that they produce are none of the beſt.

Thoſe Grapes ought to be choſen which grow upon Stocks that are planted in a Soil ſomewhat rocky.

After the Culture, it is very certain that good Wine cannot be drawn from Grapes that have too much Nouriſhment, and of which the Sap has not attained the laſt Degree of Concoction or Ripeneſs.

Thoſe which we call *Ollieros*, which are commonly dunged, and which they cultivate with Pains, do give a great Quantity of Grapes, but their great Nouriſhment is an Obſtacle to their making good Wine. Thoſe which we call *Open Vineyards* are to be preferred to them.

We ought alſo to prefer the Grapes of old Vineyards to thoſe of young ones. The proper Vineyards for making good Wine, are thoſe which have been planted twentyfive or thirty Years; the older they are, the more proper they are for making good Wine; and till the Vineyard has been made ſeven or eight Years, good Wine ought not to be expected from it.

As to the Choice of Grapes, we ought to mix ſome of the beſt Sorts that we have. Theſe Kinds are, of the White Grapes, the *Aragnan*, the *Reudeillat*, the *Peſeau Blanc*, the

Eſtrany, the *Uni*, the *Aubré*. Of the Black, the *Catalan*, the *Bouteillan*, the *Uni Negré*. The Muſt that is drawn from theſe Grapes ought to ferment in the Vat at leaſt three Weeks; when the Huſks muſt be ſeparated from the Muſt. It is a common Error in this Village, not to let the Wine ferment long enough.

It ought to be noted, that the Proportion which ſhould be kept between the Quantity of theſe Kinds is different, according to the Deſign of which every one has of keeping theſe Wines.

The Black Grapes, and above all the *Catelan* and the *Bouteillan* ſhould make more than half the Quantity of all the reſt.

Thoſe that deſire to have a Wine of a deeper Red, ſhould take a greater Quantity of black Grapes, and ought to let them ſtand a longer Time in the Vat, if they have Occaſion to change the Wine from time to time.

They make white Wine of the Grapes they call *Aubier*, *Uni*, *Roudeillat*, *Aragnan*, *Pignolet*. If they would have Wine proper to keep in the Heat of the *Summer*, they ought to uſe none but *Uni*, *Aubier*, and *Aragnan*.

No body is ignorant that we have Wines that are made but of one Species of Grapes; as that of *Muſcat* Wine, and *Claret*: For the firſt, they make Uſe of *Muſcats*, as well white as red; for the ſecond, of the Grapes they call *Clareto*.

They keep theſe Grapes with us during the whole *Winter*, and ſome part of the *Spring*, hanging upon a Beam in a Room. All ſorts of Grapes are not fit for keeping; thoſe Kinds that are call'd *Pendoulans*, or *Rin de Panſe*, *le Land de Poüere*, *le Verdau*, are the beſt for this Purpoſe; the *Aragnan*, and *Eſtrani*, are ſo likewiſe; alſo the *Clareto*, the *Muſcat* and the Red *Uni*: The *Barbarox* and the *Eſpaguin*, the *Taulier* and the *Roudeillat* will not keep ſo long. They ought to be gather'd full ripe, and before the Rains, and to chuſe none but thoſe that grow upon old Stocks.

They alſo preſerve thoſe Grapes to make what the *Latins* call *Uvæ Paſſæ*; not becauſe dry'd in the Sun, but becauſe they are expos'd to the Sun hanging: They call them in *French* dry'd Grapes: The *Provencials* call them *Panſes*. They make uſe of none but Grapes commonly call'd *Rin de Panſe* or *Pendulem*, or of *Rin Panſe Muſcat*, to make the beſt *Panſe*. They alſo make uſe of the Grapes which are call'd *Aragnans*, which is the moſt common *Panſe* in the hotteſt Places.

They alſo make uſe of the Grapes call'd *Roudeillats*, and the *Plan Eſtrani*. The Grape which we call the *Land de Poüere*, is not made uſe of with us for this Purpoſe; altho' I have been inform'd that they are uſed in hot Countries near the Sea-coaſts. They make their *Panſes* with us after the following Manner: They tie the Grapes in a String, and put them upon another String at both Ends; then they plunge them into a boiling Lye, in which they mingle a little Oil, until the Grapes ſhrivel, and afterwards expoſe them to the Sun for ſix or ſeven Days, and then they lay them in Rows in Caſes, or in what we call *Eſcortins* or *Couſins*, preſſing them gently.

No body is ignorant that the Juice of Grapes fermented in the Vat, and made into Wine, is a Liquor ſo precious and delicious, that it furniſhes us with a medicinal Aliment, and an alimental Phyſic; the Virtue of which is perceiv'd both in the Body and Spirit. It is not without Reaſon that it is call'd *Lac Senile*, i. e. *Old Mens Milk*, &c. and *Fomes Ingenii*, the *Tinder of Wit*; by *Homer*, &c.

Wine is different in Virtue and Delicacy of Taſte. The Difference proceeds for the moſt part from the different Nature of the Grapes with which it is made, the different Degree of their Maturity, and the Diverſity of the Soil where the Vineyards are planted; and alſo the different Culture of the Vineyards, and the Preparation of the Wine; to which may be added, the Difference of the Climates, according to the greater or leſſer Degree of Heat.

The *Romans*, as we learn from *Pliny*, were very curious in ſearching after the moſt excellent Wines; all their Differences conſiſted in the Places where they were made: As the *Setinum*, the *Cæcubum*, the *Falernum*, the *Gauranum*, the *Fanſtianum*, the *Albanum*, the *Surrentinum*, the *Maſſicum*, which were the moſt delicate Wines of *Italy* in the Time of *Pliny*. Among the Wines of *Greece*, they eſteem'd the *Maronean*, the *Thaſian*, the *Cretan*, the *Coan*, the *Chian*, the *Lesbian*, the *Icarian*, the *Sinyrean*, &c. Their luxurious Taſte carry'd them in Search of the Wines of *Aſia*, as that of Mount *Libanus*, and others, as may be ſeen in *Pliny*.

It is to be noted, that the *Romans* had their moſt excellent Wines from *Campania*, which is now call'd *Terre de Labour*, a Province of the Kingdom of *Naples*. Thoſe of the other Parts of *Italy* did not come near theſe laſt in Point of Excellency: The *Falernian*, the *Gauranian* and *Maſſic* were made from Vineyards planted on the Hills round about *Mondragon*, at the Foot of which paſſes the River *Garigliano*, antiently call'd the *Iris*. The *Cæcuban*, which differs nothing from the *Falernian* but in Age, (this is that which the *Latins* call the Length of Time which the Wines are able to preſerve their Strength) was produced in the *Terre de Labour*, as were the *Fundanum* and *Amyclum* near *Gaeta*, the *Sueſſanum* of *Sueſſa Pometia*, a Maritime Territory of the Kingdom of *Naples*; the *Calenum* about the Town of the *Terre de Labour*; and alſo many others, which that Province furniſhes the City of *Rome* with.

Theſe Wines, which are very excellent in their Nature, acquir'd rather by Age than by Art, a Degree of Perfection to which none of the other common Wines of *Italy* can attain to.

The laſt, which the *Greeks* call *Oligophora*, and the *Latins* *Tenuica* and *Paucifera*, are very eaſily preſerv'd by the Cold, or rather by a freſh Air, and grow eager by Heat. Alſo thoſe which the *Greeks* call *Polyphora*, or *Multifera* and *Vinoſa*, become more vigorous and ſpirituous by the Heat.

The Grapes of which the firſt are made, abound in crude Phlegm; the ſulphureous Parts of the Muſt are more dilated: The laſt, on the contrary, are drawn from Grapes that are more ripe; of which the Muſt or the ſulphureous Parts which compoſe it, are concentred and fix'd by the Evaporation of the humid Parts which dilate it. To this may be added, the abundance of the Sulphur of theſe laſt, which is the Cauſe of the true Strength of theſe Wines; and it is by being open'd that they acquire this Spirituouſneſs. It was only to procure this Opening, that the Antients invented the preparing theſe Wines in the manner I am going to expreſs.

Pliny informs us, That in the Year 633, from the Foundation of *Rome*, they lodg'd their Tuns full of Wine in Places cover'd, which were expos'd to the North, ſuch as we now call Cellars.

On the contrary, thoſe Caſks which were fill'd with vigorous and ſpirituous Wine, ſuch as *Polyphorum*, were ſet in an open Place, and expos'd to the Rain and the Sun, and all the Injuries of the Weather: Thoſe which contain'd Wines of leſs Strength, were kept under Covert: Thoſe which were full of a weak Wine, were put into a hollow Place, and cover'd with Earth.

Galen, in his Book *de Antidot. Chap.* III. and in the *Treatiſe of Vines*, that is aſcrib'd to him, remarks very much to the Purpoſe, That the Wines of the firſt Order, or *Polyphora*, were preſerv'd two or three Years in theſe cold Places; but if they let them lie there too long, they grew eager, if they did not remove them to warmer Places; as they us'd to practiſe in *Aſia* before the *Romans* had any Knowledge of it; and it was by this Means that the People of *Aſia*, as well as the *Romans* and *Greeks*, attain'd to the Art of making Wines keep ſo long.

The moſt antient *Epocha* of the Preparation of theſe Wines among the *Romans*, (as *Pliny* ſays) was about the Year of *Rome* 633. This Author, who liv'd a long time after in *Veſpaſian*'s Time, aſſures us, That theſe Wines had been kept for the Space of an hundred Years, and that they grew thick to the Conſiſtence of Honey; ſo that they could not be drank without mingling them with Water.

He alſo adds, *Quo generoſius eſt vinum, eo magis vetuſtate craſſeſcit*; *i. e.* By how much more generous the Wine is, by ſo much the more it grows thick by Age: The ſame that is ſeen in our Days in the *Spaniſh* Wines.

This Thickneſs of the Wines, of which I am ſpeaking, is leſs extraordinary than that of the Wines of *Aſia*, of which *Galen* ſpeaks in his Book of *Reſpiration*; which being inclos'd in large Flaſks, and ſuſpended near the Fire of their Chimnies, acquire, by the Evaporation of the Humidity, the Hardneſs of Salt. What *Ariſtotle* ſays of the Wines of *Arcadia*, expos'd to the Fire and the Smoak, is yet more ſurprizing: *Ita exſiccatur in utribus, ut deraſum bibatur*; *i. e.* So dry'd in the Bottles, that it is ſcrap'd off to be drank: It was ſo ſolid, that they were forc'd to ſcrape the Flaſks to drink it, and could not drink it without diluting it with Water.

The *Romans* prepar'd their Wines after the following Manner: They took the Muſt that had run from the Grapes that had been trod; they put them into a wooden Vat, of which the Staves had been bound together by Hoops or flexible Bands.

After the Wine had been fermented all the time neceſſary for ſeparating the groſſeſt Impurities, they drew it out of the Vat to put it into the Caſks; where it continu'd to ferment; and to aſſiſt the Depuration, they mingled as much Plaiſter, or Chalk, or Clay, or Powder of Marble, or of Pitch, or of Salt, or of Roſin, or of Lee of new Wine, or of Sea-water, or of Myrrh, or of Aromatick Herbs, as they judged neceſſary; every Country having its particular Mixture. And this is what the *Latins* call *Conditura Vinorum.*

They left the Wine in the Caſks until the *Spring* following; alſo many left them till the ſecond or third Year, according to the Nature of the Wine and the Country; afterwards they drew it out, to put it into Earthen Veſſels, which they did over on the Inſide with melted Pitch, and mark'd on the Outſide the Name of the Place from whence the Wine was made; and that of the *Roman* Conſuls, in whoſe Conſulate it was made. The *Latins* call'd this changing of the Wine from Caſks to Earthen Veſſels, *Diffuſio Vinorum*, or *Vina defundere.*

They had two different Sorts of Veſſels; the one the *Amphora*, and the other the *Cadus*. *Pancirollus* and others ſay, The *Amphora* was of a ſquare or cubic Figure; as to the Contents, Authors are not agreed, but moſt ſuppos'd they held about eighty Pounds of Liquor. This Veſſel was contracted at the Neck. After it was fill'd with Wine, they ſtopp'd the Mouth cloſe with Cork. The Cade was of the Figure of a Pine-Apple, which is ſuppos'd to contain half as much more as the *Amphora*. Theſe Veſſels being ſtopp'd, were carried into a Room expos'd to the South, ſituated in the higheſt Story of the Country-houſe where the Wine had been prepar'd. This Place was call'd *Apotheca.*

It was to diſſipate the ſuperfluous Humidity of the Wine, that they expos'd theſe Veſſels to the Heat of the Sun, and of that of the Fire, and of the Smoak, which has given to this Place the Name of *Fumarium*, becauſe of the Smoak which was gather'd by the Funnel, through which the Smoak of the Fire was carried off, when it was lighted below.

Theſe Wines could be kept for two hundred Years, and would, as has been ſaid, arrive at the Conſiſtence of Honey; during which, *Adhuc Vina ducentis fere annis jam in ſpeciem redacta mellis aſperi, etenim hæc natura vini in vetuſtate eſt*, ſays *Pliny*, Lib. xiv. cap. 4. So that it is troubleſome to drink this Wine becauſe of its Thickneſs; and in order to render it drinkable, they diluted it with warm Water, to give it a Fluidity, and afterwards they paſſed it through a Strainer; and this they call'd *Saccatio Vinorum*, as *Martial* ſays,

Turbida ſollicito tranſmittere Cæcuba ſacco.

It is true, they had other Wines of the ſame Nature, which they did not paſs through a Strainer; as the *Maſſicum*, which they only expos'd during a Night to the Air, to procure a Fluidity and Depuration; as *Horace* ſays, *Lib.* ii. *Sat.* 4.

Maſſica ſi cœlo ſupponas vina ſereno,
Nocturnâ, ſi quid craſſi eſt, tenuabitur aurâ,
Et decedet odor nervis inimicus: at illa
Integrum perdunt lino vitiata ſaporem.

This luke-warm Wine had been very diſagreeable to drink, if they had not cool'd it with Ice or Snow, whether in mingling it with the Wine, or ſetting the Bottles in Ice: The moſt Luxurious mingled the Snow with the Wine, and paſſed it thro' a ſilver Strainer, which *Paulus* the *Juriſconſult* calls *Colum Vinorum.*

Of the Method of Planting Vineyards in Orleans.

Of the Diſtance that may be given to the Ridges, and to the Paths when a Vineyard is planted. The different Kinds of Plants. Of planting between, and of plucking up old Vines, *and planting again.*

The Rows ought not to be open'd till after the Ground that is deſign'd to be planted has been mark'd out; to the end that a Length and Breadth proportionable and uniform may be given to all the Ridges and Paths, as much as the Ground to be planted will permit. And foraſmuch as the *Vine* receives its Nouriſhment in the Ridge, it will be proper to give it ſome Inches in Breadth more than to the Paths.

The moſt common Practice is to allow five Feet in Breadth for the Ridge and for the Path when red *Wines* are planted, eſpecially the *Auvernats*, whoſe Branches ought always to be train'd-in pretty long. This is the beſt Method for this Sort of *Vines*: And the Plants ought to be planted two Feet three Inches diſtant one from another. Some do not exactly obſerve this Diſtance, they allow but four Feet and an half for a Ridge, and for a Path.

There are alſo ſome that allow but a Foot and an half Diſtance between each Plant, when the Ridge and the Path have no more Breadth than that which I am about to mention; but the *Vines* of theſe Plants planted ſo cloſe together, ought, of Neceſſity, to be twiſted circularly; and as their Roots will, in a few Years, run one into another, the *Vines* will not laſt ſo long; beſides, they will require to be a little oftener and more plentifully dung'd than thoſe that have been planted at a greater Diſtance.

There are ſcarce any but *Vignerons* which allow ſo little Breadth to their Ridges and their Paths, and who plant their *Vines* ſo near one to the other, becauſe they are often renewing their *Vines*, from whence they have always young ones, which gives them Occaſion to have their Lands trenched; from whence they gain'd more Advantage than the Citizens, who might therefore do the ſame.

Others, on the contrary, allow near ſix Feet for the Breadth, and ſometimes more for the Ridge and the Path, but this certainly is greater than is poſſible to dig or cultivate between the Stocks; which is the beſt Manner of performing this Work. And when they dig otherwiſe, they will have a great deal of Trouble to work to the Middle of the Ridge, which nevertheleſs ought to be as well digg'd as the reſt.

But the *Vignerons* of *Burgundy* do not work ſo far; when the Ridges are ſo large, they content themſelves to touch but lightly the Middle of theſe Ridges, and they dig the Rows of Plants a little leſs. It is then advantageous for the Citizens not to give ſo much Breadth to the Ridges.

Thoſe *Vignerons* that purchaſe Vineyards which have the Ridges ſo wide, pluck them up oftentimes, that they may be able to plant others there, where they allow much leſs Breadth for the Ridges and the Diſtance between the Plants, without concerning themſelves about the *Vines* laſting the leſs while.

But the Citizens ought to follow a better Method, which is to give five Feet for the Breadth of the Ridge and the Path, and two Feet three Inches for the Diſtance between each Plant, eſpecially when one plants *Vines* of *Auvernat*; becauſe being furniſh'd with Layers, the Ridge muſt neceſſarily be larger, and the Plants at greater Diſtance the one from the other, that they may find more Nouriſhment, and that the Shoots of the *Vines* may be extended the better.

A Vineyard planted after this Manner will laſt longer, will defend itſelf better againſt the *Winter*'s Froſts, will produce finer and better Fruit, which will ripen better, and of conſequence make better Wine; and alſo the *Vignerons* of *Burgundy* would find their Account in planting of their *Vines* in this manner, in that they would have fewer *Vines* to tie, to prune, and to diſbranch, &c. becauſe there are a great many fewer Plants in thoſe whoſe Ridges or Paths are wide, and the Plants leſs crowded; and for this Reaſon there would be but few *Vignerons* but would be of this Opinion.

When I ſay, that when one plants *Auvernats*, they ſhould have five Feet in Breadth for the Ridge and the Path, and two Feet three Inches Diſtance between each Plant, I ſpeak of thoſe *Vines* planted in a very good Bottom of Earth, becauſe they will laſt many Ages, being renewed after the uſual Manner.

For as to thoſe Lands where one is obliged to renew the Vineyard in about twenty or five and twenty Years, it will be ſufficient to allow four Feet and a half for the Breadth of the Ridge and the Path, and twenty Inches for the Diſtance between each Plant; becauſe this *Vine* will not laſt a very long time, by reaſon the Roots will grow large and ſpread far in the Earth in ſuch a manner that they would injure one another. I ſuppoſe nevertheleſs this Land to be paſſably good for otherwiſe the Breadth of the Ridge and the Path muſt be greater, and the Diſtance between each Plant, or the Vineyard, muſt be the oftener dung'd.

The *Paillots* are almoſt all compos'd of two Ridges, which contain four Rows; to which they allow nine Feet in Breadth, to the end not only to hinder the too great Heat of the Sun from ſcorching the *Vines*, that are planted in a Land that is of a burning Quality, (for it is only in ſuch Lands that they make *Paillots*) but alſo in order to provide that the Plants may receive the more Nouriſhment, and that the Rain which falls may not ſo eaſily drain away, but may remain a long time upon thoſe Lands that can never have too much of it; and it is for this Reaſon, that one is oblig'd to plant there before *Winter*.

Theſe *Paillots* are planted as the other Vineyards, where they allow four Feet and an half for the Ridge and for the

Path, and as one *Paillot*, and its Path has ordinarily but nine Feet and a half of Breadth, ſo their Plants are diſtant the one from the other, pretty much the ſame as thoſe *Vines* planted after the Manner I am about to ſpeak; which may be eaſily underſtood by the Quantity of Plants which there are in the Vineyards, planted after theſe different Manners.

They faſhion theſe Plants of the *Paillots* as thoſe which are planted in Ridges; and the Year after they have been planted, they join two together, which form a *Paillot*. It is requiſite that the Land which one deſigns to plant with *Paillots*, be diſpoſed as that which is planted in Ridges.

There are three Sorts of Plants; thoſe from Cuttings, from Layers, and the old *Vines* that are pluck'd up to be replanted.

The two firſt Kinds are very well known by *Vignerons*, and the third but very little; but they are never the worſe for that, as I ſhall make appear in the following Articles.

The Cutting is a young Shoot of the Year that has no Roots: They always leave at Bottom a Knot of the Wood of the preceding Year. Theſe are the moſt commonly us'd. They give it no other Management, than to cut off the * Claſpers and the Tops at the ſame time that they take 'em off from the *Vines*, and lay them down in the Earth in a Bundle, when they cut them before *Winter*, and cannot plant them till the *Spring*.

This Plant is good, and commonly ſucceeds when it has been well choſen, being planted in Lands well diſpos'd, and well cultivated; but yet there is an Inconveniency in uſing it, and that when it is to be planted in Lands that are naturally moiſt, or that retain the Water: If it be planted early and there fall cold Rains in great abundance, the Plant ſoaks in the Water, and the Skin or Rind comes off, and it periſhes inſtead of taking Root: And if it be planted too late, and the great Heats and Droughts overtake it before it has put forth Buds that are paſſably ſtrong, it is ſcorched; wherefore it is better to make uſe of the ſecond Species of Plants, not only in theſe Sorts of Lands, but all others.

The Layers are the long Shoots of *Vines* of three Years Growth, which have ſmall Roots, and are better, and leſs liable to fail. Theſe may be planted at all times, and in any kinds of Land, provided they are ſuch as don't retain the Water. In this caſe, it were better to wait till *March* to plant them, or at leaſt till the Ground appears healthful, for we ſhould never plant in Ground which is very wet.

Before the Layers are planted they ought to be prun'd, that is, to cut off a few of their Roots; and when they are weak at the Place where they were bent, theſe muſt not only be cut, but alſo the other Branches or Spurs, leaving that which has the moſt and ſtrongeſt Roots.

The Layers are a great deal leſs ſubject to ſoak in the Water than the Cuttings; becauſe having Roots before they were planted, they make new ones ſooner than thoſe which have none.

It is true, theſe Layers are more rare than the other, but it is an eaſy matter to render them common enough, becauſe one may have whole Acres of them: And all the Precaution that is neceſſary for it, conſiſts in making Layers, when they are well grown, from the Shoots.

Theſe may be planted in two different Places, either in ſome Piece of Land deſigned ſolely for this Purpoſe, or in the Middle of each Ridge, at the Time that a Vineyard is planted.

If they be planted in a particular Piece of Ground, they muſt be laid in Rows betwixt the *Vines*, and there ſo, that betwixt each Row and the Shoot there may be a ſufficient Diſtance, that the Shoots may not hurt one another, and that the *Vigneron* may have Room to paſs between them when he is trimming them; for he muſt hough them three times a Year, to hinder the Weeds from growing about them and choaking them, and depriveing them of Part of their Nouriſhment. Theſe may be taken up at the End of two or three Years, according their Strength.

This Portion of Ground is a Sort of Nurſery, ſince the Gardeners make them, that they may have Plants to plant in thoſe Places where they are wanting.

I am alſo of the Opinion, that it is the Prudence of a Citizen to have on his Eſtate (eſpecially ſince the Cuttings do not take Root but with Difficulty) a Place where he may always have Layers in as large a Quantity as he pleaſes or ſhall ſuffice for all thoſe that ſhall not ſucceed, at leaſt if they be not well choſen, and which require a particular Care in their Cultivation.

I ſhall conſider, at the End of the following Article, after what manner we ſhould plant the Layers in the Ridges.

It is for the Intereſt of a Citizen to order his Affairs ſo that his Vineyard may be always full of Plants, to the End that it may produce a good Quantity of Wine, becauſe it often happens, notwithſtanding all the Precaution that can be taken to keep a Vineyard well furniſhed, that it will want to be ſupplyed, by reaſon of the Quantity of Plants that die from time to time; and becauſe one cannot always ſupply their Places by the Means of Layers; and becauſe ſometimes there will not be Wood enough upon the *Vines* that are near for that Purpoſe, and that it would not be proper to make uſe of the Top of the Shoot for ſeveral Reaſons that might be given; and therefore it will be proper to place Plants between the others.

Some *Vignerons* will ſay, that it is very rare that theſe middle Plants ſucceed in a Vineyard where they are planted. To which it may be anſwered, That it is true, that a middle Plant may not ſucceed, when the Earth has not been well prepared before the Planting, or when it has no other Management but of the Vineyard in common; but 'tis very certain that it will ſcarce fail, if Care be taken, after the Vintage, to pluck up the dead Shoots, to open the Earth to a good Depth before *Winter*, not only to the End that it may mellow, but alſo that the *Vines* may not be damaged in cutting off Part of its Roots, by which it would greatly be weaken'd, if it were not done before the *Spring*; and if in every Hole were put a Basket of freſh Earth, or about the twentieth Part of a good Scuttle-full of well-rotted Dung, eſpecially when the Plant is ſet in ſtony, clayey or gravelly Ground; for if it were too hot, it might burn the middle Plant, or breed Vermin, which would gnaw the Plant and kill it; alſo to tie the *Vine* after ſuch a manner that its Shoot may not hurt the middle Plant, and, in fine, to clear round oftener than the *Vine*, in caſe it has need; for it will be difficult for it to take Root, if the Weeds choak it: And this is the Reaſon, that among the Works relating to *Vines*, where, as often as the Weeds appear, it is convenient to hough amongſt all the Shoots that have been newly planted, it is always beſt to give this ſmall Stirring immediately after Rain.

I have ſeen among *Vines* very ſtrong in Wood, and of an hundred Years of Age, a middle Plant very ſtrong to the third Eye, and which always continued to do well; and I can affirm, that theſe *Vines* are planted in as ſtrong Lands as any are in our Plot of Vineyards. Now if the middle Plant does well there, as it is certain it does, we may take it for granted, that it will ſtill do better in thoſe Lands which are light: And hence it is, that there is not any Land where one may not plant it, or where it will not ſucceed.

Perhaps the *Vignerons* may ſay, that a middle Plant will be worth nothing among young Vines, becauſe theſe puſh with ſo much Force, that their Shoots would choak it.

I agree that it may ſometimes ſo happen; but then this is a Proof, that the Year following there will be found in this Vineyard Wood enough to make Layers there: In like manner, it would be uſeleſs to ſet a middle Plant, becauſe it is more likely to fail, and becauſe it will not produce Fruit ſo ſoon as the Layers, which produce it the ſame Year in which they are made.

This Reaſoning is more juſt than the Conſequence that they would draw from thence; that is to ſay, that it would be uſeleſs to plant a middle Plant: For if a *Vigneron* ſhould have the Malice every Year to cut off the Wood of the Vineyard, which might ſerve for the making the Layer, and not ſet a middle Plant there, the Vacancy that would be there, would never be fill'd; and this is the Reaſon that a middle Plant ſhould every Year be ſet in the empty Places, to the End that they may be filled out with the Layers. But this middle Plant doing well in the Vineyards of the *Vignerons*, I cannot ſee any good Reaſon that it would not ſucceed equally in thoſe of the Citizens, where the Plants are commonly planted at a greater Diſtance one from another than in the Vineyards of the *Vignerons*, where the middle Plant does very well.

The Plant of old Vineyards, or rather the old *Vines* alſo plucked up to be replanted, is yet another Species of Plant, which, without doubt, appears to the *Vignerons* a Novelty which ſurprizes them, becauſe it is not in their Practice, that is to ſay, in their Heads.

But the Method that I propoſe will not thence be the leſs good in itſelf, and will not fail to ſucceed; provided that the Earth, which is deſigned to be replanted with theſe old *Vines*, has been well prepar'd, and if what I ſhall direct be exactly obſerved.

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* *Druges*; i. e. the young Suckers or dangling Shoots, which uſually puſh forth after they have rubb'd off the Buds of the *Vine* at the Height of the great Props. Theſe *Druges* begin to puſh ſometimes long before they are rubbed off, and often produce Grapes; theſe ſeldom ripen, becauſe they do not flower till towards the End of *July*. Theſe *Druges* do ordinarily proceed from thoſe *Vines* that puſh with a great deal of Force and Vigour.

It frequently happens that one has old Vineyards, of which the Plants are not equally good; and where there is ſo great a Quantity of Plants wanting, that inſtead of filling it by Layers, Shoots, or middle Plants, the void Space that is there will cauſe one to determine rather to pluck them up, becauſe the *Vignerons* have an ill Opinion of the Layers and Shoots, and they will ſay, that theſe Plants ſet between will not ſucceed.

The beſt Method that a Citizen can take on this Occaſion, is to pluck up a Vineyard when he finds it in this Condition. But as it is the Cuſtom to allow the *Vigneron* all the Wood for his Labour of plucking it up, becauſe they think the Wood is good for nothing but to burn, I would give them to underſtand, that they may make a great Advantage of it.

I ſuppoſe, in the firſt Place, that theſe old *Vines* are of a good Kind. In the ſecond Place, that, if there are any Shoots of a bad Kind, Care has been taken to cut them down to the Ground ſome time before the Vintage, or ſome Years before one pluck up theſe *Vines*, to the end that they may not be confounded with thoſe that are reſerv'd to be replanted.

In the third Place: If the Land where one would replant theſe old *Vines* has been well prepar'd; or in caſe one has a Mind to replant the ſame in the Ground from whence they have been pull'd up, and if it has been plentifully dung'd:

All things being prepared, there needs no more but to know after what manner theſe old Plants plucked up, are to be cut before they are replanted.

Before this Sort of Plant is put into the Ground, the Roots muſt be cut with a Hatchet, eſpecially the biggeſt, and only leave two Knots of this great Root below the Stock, and at the Top the largeſt and youngeſt Shoots, provided that they are ſound and healthful: Then in planting of them, the two Knots of the old Root muſt be buried, in caſe that it has large ones; if not, the large Stock only down to the Place where the Shoots are produced, ſo that the young Wood may be two or three Inches covered: And in caſe it be too far from the Stock, you muſt make the End of the Shoot that is on the Side of the Stock go as far as the Row, and lay it ſloping, in caſe it be too long.

It ought always to be ſo ordered, that what young Wood there is bury'd, which comes out of the Ground, be cut near to the Superficies only ſome Weeks before the *Vine* begins to puſh.

When this old *Vine* has been replanted, it ordinarily makes new Roots at the End of the old; and when it fails to puſh at this Place, as it ſometimes happens when it is too old, it infallibly makes new ones at the young Wood that has been buried; and this old Root and the Stock rot ſome Years after the *Vine* has been replanted.

In the firſt Year this Plant puts forth a Shoot above four Feet in Height, and alſo produces ſome Grapes which are pretty good, and ripen very well, when Care has been taken to cut off the Shoot at the proper Time.

The ſecond Year, it gives more Wood and more Fruit, provided that it be cut low. And in the third or fourth, at the lateſt, one may have a full Vintage from it. I have ſeen in one Place, in this Vineyard-Plot great Pieces of old *Vines* replanted after the aforeſaid manner, which have, at the third Bud, not only fine Fruit, and a ſufficient Quantity of it, but even, to the fourth ſo well condition'd, that one might take thence a Plant without hurting the Wood which ought to be kept to ſerve for the *Vine*.

Nevertheleſs, theſe Lands which I ſpeak of are not better than thoſe of this Vineyard-Plot, for they are in the Pariſh of *Boigni*, and are not accounted any better than theſe are; which makes me believe, that old Vines planted in good Lands would bear better there.

If there were any Reaſon to fear, leſt the young Wood buried would ſoak in the Water, &c. in caſe that it were planted before *Winter*, it may be deferr'd till *Spring*; and then they muſt not fail to prune the Plant at the ſame time that it is put into the Ground, or ſome Days after.

Nevertheleſs, I believe that one may plant this old Plant at any time, and in any ſort of Ground; becauſe thoſe that I have ſeen, which had been newly planted, have done very well in moiſt Lands.

But not to run too great a Hazard, the Experiment may be made after the Manner I propoſe, only upon ſome Ridges.

But ſome may ſay, To what Purpoſe ſhould we bury an old Stock, which has often two Knots of the old Root, and one Stem? Would it not be better to plant none but young Wood of theſe old *Vines*, or to leave only the young Wood on one Part of the Stem?

I anſwer, That this laſt Method is not to be abſolutely rejected, becauſe, perhaps, it may ſucceed. Nevertheleſs, that which I propoſe being the more certain, becauſe it is founded upon Experience, and the other yet has not, it ought the rather to be follow'd; for this old Root, this Stock or Stem, let it be as big as it will, is not ſo uſeleſs as may be imagined, becauſe it ſerves for a Reſerve to keep in the Sap, and thence furniſhes this young Wood, until it has made ſufficient Roots where it has been buried, whence the new Roots are produced indifferently; for I have ſeen of them produced both from this old Wood, and the new that has been buried.

I am of Opinion, that there is Reaſon to doubt, whether one Part of a Stem can produce the ſame Effect, becauſe it being ſlenderer, it contains much leſs of the Sap than a Stock joined to ſeveral Joints of old Wood, united in an entire Stem.

Of the Time and different Manners of planting a Vineyard.

Lands being of different Natures, there ought alſo to be different Times of Planting.

In Lands that are ſandy or full of Flints, as thoſe of *Olivet* and *St. Meſmin*, and others, the Bottom or Soil of which does not retain the Water, one may plant and interplant after the Leaves of the *Vines* are fallen, until the Beginning of the Severity of the *Winter*, without being under any Apprehenſion of the Plants not ſucceeding; becauſe theſe Sort of Lands never retaining the Water, are always wholſome at the Bottom, and therefore the Plants ſet in them will ſucceed.

They do not ordinarily plant in the Lands of *Olivet*, of *St. Meſmin*, &c. whole Pieces of *Vines* entire in the Places where they have been already, becauſe the Cuſtom is, not to pluck up in theſe Lands thoſe Plants that they find good, either as to Wood or Kind.

As for myſelf, I have always found that theſe different Stools mixed among very ſmall ones, make a Groteſque Figure in one and the ſame Piece of Land, and could never approve of this ridiculous Method.

I think it would be much better to lay down theſe Shoots of *Vines*, as Layers, or to pluck them up, and plant them again elſewhere; or to plant them in the ſame Place, cutting them after the Manner as is done to old *Vines*, which are replanted after they have been plucked up, as may be ſeen in the foregoing Article. But this laſt Method appears to me to be not ſo good as the firſt, which is, to make Cuttings of the Branches which remain upon the *Vines* that have been plucked up.

In ſtrong Lands, or ſuch as retain the Water, one ought not to plant but in the Month of *May*, or elſe the Beginning of *June*, becauſe it is not eaſy to make a *Vine* take Root in theſe Sorts of Lands, the Years being often very hot and dry, or very rainy, which are equally to be feared, in reſpect to the Plant ſet in them.

When the Rains are frequent and cold, the Plant imbibes the Water in the Earth; and when the Seaſon is too dry, its Bark burns towards the Surface of the Earth. It is eaſy to remedy, or rather prevent this ſecond Inconvenience, as will be made appear in the following Article. But as to the firſt one cannot do it; for it is very difficult to foreſee the Time when it ought to be done. A Plant ſo imbibing is abſolutely dead, paſt Recovery, and ſo there is no Remedy.

And as in an Eſtate of but a ſmall Extent, it often happens that the Lands are of different Natures, and that of Conſequence the Plants of one certain Species will not do well but in one Part of theſe Lands, and will ſucceed ill in another; and that the Seaſons are different from one another: And ſince they too often happen to be either too hot or too cold, or too rainy, and that the Kinds of the Plants are good or bad, according to their Nature, and that of the Ground on which planted, and the Diſpoſition of the Seaſon, I am of Opinion, to be more certain not to plant any Plants but what will ſucceed, and to have always ſome Vintage to gather, that it will be proper to plant ſeveral Kinds of Plants, according to the Lands they will agree beſt with, eſpecially if we be not very ſure that one Species of Plant will do better than all others: In ſuch Caſe, we ſhould plant none but that which may ſucceed there.

When I ſay, that it is often advantageous to have different Kinds of Plants in a certain Extent of Land, I do not mean that you ſhould put many Kinds of Plants in one and the ſame Ridge, or in one and the ſame Row, as is common for *Vignerons* to do, when they plant Vineyards for thoſe who are obliged to make but one Sort of Wine of all Sorts of Grapes, which nevertheleſs they would have paſſed for pure *Auvernat*, altho' there is not in it, perhaps, above a third Part; but I mean, that in every different Kind of Land, there ſhould be planted but one Kind of Plant, to the end that, every Kind being ſeparate, we may, in the Time of Vintage, eaſily make ſuch Wine as we deſire, which will be very difficult, if all the different Species of Plants be planted confuſedly one among another; fot there will ſcarce be found among the Vintage, Gatherers, either Men or Women, ſuch as have Skill enough to diſtinguiſh them; and beſides, if they had, it would be a Loſs of Time.

Thoſe Citizens who would have on their Eſtates nothing but *Auvernat*, ought to watch their *Vignerons* while they are planting; for they have the Trick of mixing the hard *Samoreau* and *Gois*, and other bad Kinds.

And when a Citizen would make good Wine, he ought to examine whether the Grapes be come to their full Ripeneſs, and he is obliged to leave the bad Grapes that are not ripe, which the *Vigneron*, ſome Time after, does not fail to take for his own Drink, to meliorate it, or to make Wine or Rape: But to remedy this Inconvenience, a Citizen ought to look over his Vineyards ſome Days before, to ſee whether his Grapes are equally ripe, and to take Notice which are leſs than the others, and which are not ſo good, and he ſhould cut thoſe *Vines* down to the Surface of the Ground; and the following Year he ſhould give Order to his *Vigneron* to ſupply their Places by the Means of Layers or Cuttings.

A Vineyard may be planted after two Manners, either upon the even Ground or in open Rows.

In planting upon the even Ground, when the Land has been levelled and marked out, they make a Hole with a Spade to put in the Plant; but it ought nevertheleſs to be ſuppoſed, that this Land has been prepared and well trenched.

The Manner of planting a Vineyard in open Rows, is almoſt the only one in Uſe in the *Orleannois*, and is, without Contradiction, the beſt; in that it is certain, that in planting in this Manner, the Earth has been opened and removed even to the Bottom, which by this Means will become better furniſhed, and the Roots of the *Vine* will be capable of ſpreading themſelves.

The beſt Time to plant Cuttings which have been bundled and buried in the Ground, is, when the Rind ſwells, which may be known by a Kind of Protuberance, which riſes round about the Wound, and alſo by the Buds being juſt ready to open; and that the Cuttings may not dry too much, they ought to be kept for ſome Time in a Veſſel full of Water, and not to be taken from thence, but as they are planted; for if the Heat ſhould ſhrivel thoſe that are planted, they will not ſo readily take Root, and many of them might die.

For this Reaſon it is better to plant a Vineyard in a rainy, moiſt Seaſon, or at leaſt cloudy, than when it is too hot, or there is a too drying Wind.

The beſt Manner to lay down the Shoot of a Plant, is to put the End that is to be placed into the Ground on the Side of the Ridge, to the end that it may be able to ſtrike out Roots from all the Buds or Eyes on both Sides, and and that it may have Nouriſhment from the whole Breadth of the Ridge, on which the Earth ought to have been removed.

Some *Vignerons* of the Citizens lay down the Shoots of the Plant, not according to the Breadth of the Ridge, as it ought to be, but the lengthwiſe of the Row, that is to ſay, all the Length of the Path; and I can't ſee the good Senſe of this Manner of Planting: I believe thoſe that do it, do it more out of Malice than Ignorance. Alſo the Wound of the Cutting of the Plant ſhould be laid down ſide-wiſe to the Bottom of the Trench. When the Plant is laid down, and they would cover it, the large Clods of dry Earth ſhould not be put immediately upon the Sets; for the Heat will eaſily penetrate through the Vacuities that it finds there, and dry the Plant, and hinder it from taking Root: For this Reaſon great Care ſhould be taken to put the fineſt Earth, that has been moſt ſtirred, and is moiſt, and to preſs it down well with the Foot, to the end that the Plant being preſſed on all Sides, and planted on a ſoft, moiſt Earth, it may ſtrike Root the more readily and ſurely, than if it takes the Air at any Place where the Earth does not touch all the Buds or Eyes where it forms Roots.

There muſt alſo be one good Bud at the Superficies of the Earth, becauſe this is that by which the *Vine* muſt put forth.

For in the greateſt Part of this Vineyard-plot, the Cuſtom is to plant a Vineyard no other Way but by Ridges; one Ridge is compoſed of two Rows, and when four of them are joined together, or only three of them, the Name of *Ridge* changes into that of *Paillot*, as may be ſeen at *Olivet* and *St. Meſmin*, and in the Places where the Vineyards are formed after this Manner.

There are alſo found ancient *Paillots* of eight Rows, which gives Reaſon to believe, that ſometimes they planted upon the flat Ground in theſe Sorts of Lands, that is to ſay, had neither Paths nor Ridges.

They commonly make uſe of two different Utenſils of Iron, to make the Hole where they put the Cutting of the Plant, either a Spade or a large Kind of Pick-axe. The firſt is the moſt proper to make good Work, provided the Earth be wrought the whole Length and Breadth of the Ridge, and alſo the Depth that the Plant is laid, that is to ſay, as far as the Hollow of the Earth.

When they make uſe of the ſecond Utenſil, it is commonly with a Deſign to make bad Work; for the lazy *Vignerons* content themſelves in making a Hole to put the Cutting of the Plant in, without digging the reſt of the Ground.

But by this laſt Way of Planting, it often happens, that the young Roots of the Plants, finding nothing but a hard Earth, into which they are not able to penetrate, it is impoſſible that they ſhould be able to extend themſelves as they would do, in a Land that has been expoſed to the Air, Froſts, &c. by the good Digging that has been given it, when the Ridge has been dug with the Spade the whole Length.

This ill Manner of Planting with the Pick-axe, retards a Vineyard from four to five Years, and oftentimes the greateſt Part of it dies: But this ought not to be ſurpriſing, for this Land not having been turned topſy-turvy, nor expoſed to the Air and to the Rains, which furniſh the Salts neceſſary to Vegetation, it is impoſſible it ſhould ſucceed, eſpecially when it has not been often and plentifully dunged.

Although the Ridges are ordinarily compoſed but of two Rows, nevertheleſs there ought to be planted a third about the Middle of each Ridge, according to the Proportion of the Planting; and if one has not Plants enough to finiſh intirely this third Row, the ſame Year that the Plantation is made, it may be done the Year following.

It is very neceſſary to have this third Row, for it ſerves to fill thoſe Places where the Plants are wanting in the Rows.

When one has a Deſign to plant a Vineyard under great Trees, or in Places more ſubject than the others, to the Froſts of the *Spring*, or to Blighting, &c. he muſt, in thoſe Lands proper for *Auvernats*, put the black *Formente*, becauſe they will better reſiſt the Accidents that often happen to a Vineyard, and will produce more Fruit; and when a little Wood is left, its Fruit will ripen as well as the *Auvernat*, of whatſoever kind it be.

It is true, the black *Formente* has little of the good Quality of the fine Wines, and for this Reaſon it ought to be planted apart, and not to mingle it with the *Auvernat*; for it is better to have Regard to the Quality than to the Quantity of the Wine.

Among the White Vines one may plant the white *Auvernat* of the *Low Country*; this Plant produces Wine ſufficiently good, provided it be ſet in a Land agreeable to it.

It will be proper for thoſe who have many Acres of Vineyards to improve, to have one Part of young, and one Part old; becauſe if one Year prove contrary to the one, it may be favourable to the other; and then neither will the *Vigneron* be ſo hurried in the Seaſon of Pruning them, nor will the Maſter be ſo embarraſs'd when he gathers his Vintage; for if his Vines were all young or all old, he will be oblig'd to gather them both at the ſame Time, if they have been planted in a Place where the Soil is of the ſame Nature.

Of the Care that ought to be taken of Plants.

To do this that the Plants may ſucceed, it is not ſufficient that the Plant be well choſen, the Land well prepared where it is to be planted, and the moſt convenient Time taken for Planting it, but there are ſtill many things to be obſerved.

In the *firſt* Place, the Plant ought to be pruned eight or ten Days before it begins to put forth, becauſe then the Buds being pretty large, it is eaſy to diſtinguiſh the Good from the Bad; which ought always to be done in ſuch manner, that one good one may be at the Superficies of the Ground; and when it is found that that which has been left doth not put forth in its Time, you muſt ſoftly with the Hand unearth the Cutting unto the firſt good Bud, that it may be expos'd to the Air, and may put forth the more eaſily; for if the Bud be not cleared of the Earth, the Cutting may rot therein; and a great Failure will be avoided in uſing this Precaution.

Secondly, To water the Plants, and that ſeveral times, when the Heat is violent and continual. The firſt time when they are planted, and when the Ground appears dry, and the Seaſon diſpos'd to be windy; the ſecond, eight Days after: in caſe that the Heat continues, one may give to each Plant three Pints of Water, and this ſhould be poured equally upon every Part of the Plant.

The firſt Time the Plant is watered, it is good to do it when it is not above half covered with Earth, to the Bud, that that Part which is loweſt may be freſh and moiſt, that it may take Root the more eaſily.

Theſe Plants ſhould not be watered with any but Rain-water, which is the moſt natural to all Plants; but if that is not to be had, that of Ponds, Ditches, and Marſhes ſhould be uſed; but if inſtead of this Water there be uſed that which runs into a Pit from a Dunghill, it will have a very good Effect, for that is well furniſhed with Salts, and conſequently very proper for Vegetation.

It is true, it will be difficult to have enough of this for a large Extent of Ground, but it ſhould always be uſed where it can be had.

The Excellence of this Water will ſoon appear, by the Strength with which the Plant that has been watered with it will put forth.

The moſt proper Time to water, is in the Evening, towards the ſetting of the Sun, and the Day following in the Morning, you may lay ſome Mulch upon the Ground: This will hinder the Earth from chapping, and the Heat from penetrating too far into the Earth, where the Plant has been planted; for it will have more Need of Freſhneſs and Humidity, than of Heat and Dryneſs, eſpecially 'till ſuch time as it has taken Root, which may be known by its budding out.

Some look upon this as an unneceſſary Precaution, as to the Watering the Plants; but yet I am of Opinion, that there ought to be a Diſtinction made between freſh, moiſt Lands, where Watering may not be neceſſary; but it muſt be uſed to thoſe which are dry and burning, eſpecially when the Planting is done in the *Spring*, and ſometimes ſo late, that the Drought ſurprizes the Plants before they have taken Root. It is true, Planting is ordinarily performed before *Winter*, in ſuch Lands.

Thirdly, When the Plant begins to put forth, and the Heat is not too violent, you ſhould give it ſome labouring, eſpecially ſoon after Rain. In order to give them this Labour as it ſhould be, there muſt never be ſuffer'd among theſe Plants any Legumes; particularly Great Gourds, Peas, Beans, Turnips, Leeks, and eſpecially Cabbages, which will infect and impoveriſh the beſt Lands in a little time.

Of the Damage that Fruit-Trees *do to* Vines.

If Trees planted round about Vineyards don't fail to hurt them, as has been before remarked, there is no doubt but that they will prejudice them much more, when they are planted in them.

And altho' ſome Advantage may be made of Fruit-Trees, nevertheleſs they ſhould never be planted in Vineyards, becauſe they never do better than when they are alone, and well cultivated; and for this Reaſon nothing but Vines ſhould be planted in them, eſpecially not Peaches or wild Quince-Trees; which ſhould rather ſerve for Hedges, than to make Profit of; for theſe Trees planted in a Vineyard, eat and dry the Earth as far as they reach, and the Grapes that are under them have always leſs Taſte, and ripen with more Difficulty than the other; becauſe theſe Trees ſhade them, and hinder them from enjoying the Heat of the Sun, and the beneficent Influences of the Heavens.

And beſides, when the Seaſon of the Maturity of theſe Fruits approaches, and alſo oftentimes before that Time, the *Vignerons*, their Wives, their Children, *&c.* fling at the Pear-Trees, Props which they pluck from the Vineyard, which cannot be done without breaking a great many Shoots, and the Props bruiſing the Grapes, and ſpoiling the fallow Ground all round about theſe Trees, by trampling it.

If a Perſon will have Trees in his Vineyard, he ſhould plant none but *Winter* Fruit, becauſe theſe are commonly not gather'd 'till after the Vintage, then there would be fewer Inconveniencies to be feared; but yet it would be better to plant them any-where elſe than in the Vineyards.

Walnut-Trees ought never to be planted in a Vineyard; for they are the moſt prejudicial of all.

The Oſier alſo does great Injury to Vines, and eſpecially when it has a large Stock; becauſe being very large, the Roots muſt alſo neceſſarily be large, and extended in Proportion, which without doubt is prejudicial to Vines; for thoſe which are near to theſe Stocks, have commonly ſlender, corrupted Wood, and bear very little Fruit, and that bad-condition'd.

Of the Gathering the Vintage.

The Vintage of the *Auvernats* being the moſt precious of all thoſe which we have to make in this Plot of Vineyards; in order to have good Wine, we ought to attend the Maturity of the Grapes.

And as there are certain Soils, where the Grapes having been cut a little too green, are too much fermented in the Vat, and others, on the contrary, cut very ripe, are but little fermented, which keep the better; it is abſolutely neceſſary, that thoſe who have thoſe Vineyards do carefully apply themſelves to be acquainted with the Quality of their Ground.

But one may ſay in the general, of all the good *Auvernats* of this Country, that they ought to have always one Point of Green when they are gather'd, particularly when the Year has been hot, and the Lands where they grew have been fat, or very much dunged: For it is not ſufficient, when one would have good Wine, to cut the Grape in its Degree of Maturity, but he muſt take a fit Seaſon to do this in: as thus; one ought neither to begin nor continue to gather when it rains, though many are not very ſcrupulous as to this Point; for they ſay, the Wine will ſell never the worſe for it.

I own that it may ſometimes happen ſo, but it ought to be allow'd me, that it has a bad Quality. One ought alſo to ſee to it, that the Dew that falls often very plentifully in this Seaſon, be intirely diſſipated, and that there be no Dew either upon the Grapes or the Leaves of the Vines; for it is found by Experience, that for the little Quantity of Water there is in this Sort of Wine, it loſes a great deal of its Quality.

Therefore the Seaſon cannot be too fine for cutting the *Auvernats*, for this Reaſon; in a great many Vineyard Plots in this Kingdom, as in *Burgundy*, and other Places, where the Wines have ſo great Reputation, they don't gather their Vintage, but during the fineſt Part of the Day; that is to ſay, the Gatherers begin their Work very late, and leave off ſome Hours before Sun-ſet, and the Wine is the better for it.

It is true, that ſometimes it is good to wait for the falling of the Rains; but this ought to be ſome Weeks, or at leaſt many Days before the Vintage, and not in the Time of Gathering.

As for Example: When no Rain has fallen for a long Time, and the Grapes have been ſo ſhrivell'd by the Heat, that there is ſcarce any thing but Grape Stones, and a tough, thick Skin; if one ſhould gather them then, they would yield but very little Wine, and alſo it might turn to a Tartneſs, as it happened for the moſt part, to the Red Wines of the Year 1718, which were extraordinary hot and dry.

So then we ought not to gather the Grapes ſo ſoon as the Rain that we have waited for is fallen, becauſe the Grapes ought to have Time to have the Advantage of it, which may be known when the Berries grow large, and fall upon the Ground.

As to the other plants red or white, they may be gather'd with leſs Precaution; but they muſt always have their Degree of Ripeneſs, according to the different Lands on which the Vineyards are planted.

When there are found among the *Auvernats*, Vines whoſe Grapes do not appear to be ſufficiently ripe, or of a different Kind from the reſt, theſe ought to be left, that they may grow riper; and theſe muſt not be put but in the laſt Vat, or be mingled with the other Wine of a worſe Quality: This cannot but render it the better, as well as the *Auvernat*, becauſe it will be finer; for it will be the more worth in having a little the leſs, and not to be made with any thing but *Auvernats*, and alſo thoſe well-condition'd.

Becauſe there are green Grapes that the Vintagers ought not to gather and mingle with the others; they ſhould be expreſly forbid to put into their Baſkets, either thoſe that are green or rotten, for the one would make the Wine eager, and the other give it a rotten Taſte; which two Faults are equally to be avoided.

Of the Wines made in Orleans.

For a long Time, at *Paris* and other Places, there have been thoſe who have endeavoured to decry the Wines of our Vineyard Plots, eſpecially the Red Wines. In the mean time it is obſervable, that thoſe who ſpeak of them with the greateſt Contempt, can't do without them, but procure them as they did formerly, either to put off their weak Wines, without Colour, or that have ſome other Faults, and alſo to preſerve the fineſt, moſt delicate, and moſt celebrated.

For the Wines of *Burgundy* are no ſooner brought in, than they mix them with our Wines, to drink them, ſo long as they laſt; and there is this to be ſaid of our Wines, that there is not one ſingle Wine-Merchant at *Paris*, who has not our Wines in his Vaults, not only for mixing with others, which are much meaner, but for ſelling without any Mixture: For tho' they have much Strength, yet, for all that, they do not fail to ſell them pure, as well for their Tables as their Offices, to thoſe that have the Curioſity to drink a Wine that is good, natural, and without Sophiſtication.

The Rapes which are yearly made, and the great Quantity of Wines, both Red and White, which they are ſo ſolicitous to purchaſe a long Time before they are made, in order to tranſport them from *Paris* into *Flanders*, *Holland*, and *England*, and as far as the *American* Iſlands, where they drink good to the very laſt Drop, are, in my Opinion, ſufficient Proofs, that our Wines are not ſo contemptible as they would repreſent them.

For it muſt be own'd, that if they had not ſuch good Qualities, or if they had any Fault, they would not come in Search of them ſo far, and would not take ſuch Care to furniſh themſelves with them in time.

Some ſay, that our Wines being harſh, red, and too violent, they are not ſo agreeable to be drunk, and that thoſe that drink them to any Exceſs, find themſelves incommoded, which never happens to them when they drink the ſame Quantity, or even a greater, of the Wines of *Champaign* and *Burgundy*, and many other Vineyard Plots of the Kingdom.

I anſwer, that theſe pretended Faults are the real Qualities of our Wines, and thoſe are what cauſe them to be ſought ſo much after, for this very Colour and Harſhneſs (provided that it be not too much fermented in the Vat); for this ſerves to give a Quality to other Wines that are weak, which would never be vended to any Advantage without being mixed with others.

Beſides, if the Harſhneſs of them, which they ſometimes have, be their Fault, this is not always ſo, 'tis but accidental, and may be prevented, by letting them remain leſs Time in the Vat.

As for the Inconvenience that thoſe are ſenſible of, that drink too much of it, it is a very eaſy Thing for them to remedy that themſelves; they need only drink leſs of it, and then it would not incommode them.

As for Example: *Aqua vitæ* is not drank in ſo great a Quantity as Wine, nor a ſtrong Wine as a weak one; when the Wine is very ſtrong, they ought to drink Water with it, or drink leſs of it, then it would nouriſh a Perſon, inſtead of wearing his Body, or ſtupifying his Spirits. Thus, when one is ſenſible of any bad Effects from our Wines, it is not from their Quality that they proceed, but from their Quantity, which People know not how to uſe rightly.

If any of our Wines are undrinkable, this will not be always, but only for a Time; becauſe, if theſe Wines which have ſo much Harſhneſs, Colour and Strength, are not good to drink at one Time, it is certain they will be good at another, according to the Degree that they have been fermented in the Vat.

But this Fault is not in the Wine, ſince it needs nothing to be done to it, but to give it leſs of the Vat. It is alſo a great Advantage to our Vineyard Plots, that there they can make good Wine fit to drink as ſoon as it is made, and which alſo will hold good many Months, nay, many Years after: Thus, when ſometimes they ferment but a ſhort Time ſome of our Wines, and leave others there to force, this contributes, I confeſs, to render them very harſh; but this Harſhneſs, inſtead of taking away their Quality, only ſuſpends it, ſeeing that they become good after a certain Time.

Such are the Wines of *Gallinois*, of *Neuille a Bois*, of *Acheres*, &c. which do not become fit to drink till fifteen or eighteen Months after they have been made; yet they there make, off Hand, Wine that may be drank a Month or two after it has been tunned; but then this Wine is not drank in its Perfection: For the beſt of the Wines of theſe Places are ſuch as have been fermented in the Vat: In all Likelihood, the Lands where theſe Vineyards are planted require it. That which I call fermenting in the Vat, is the letting them ſtand eight or ten Days therein, and ſometimes more, but they muſt have as much Time as is neceſſary, to the end that their Harſhneſs may go off.

It is true, we don't always buy Wine with Intent to keep it long; but it is as true, that ſometimes we would have what will keep a long Time. The having much of the Vat then does not take away the Quality from theſe Sorts of Wines, ſince it only ſuſpends it; as I ſaid before.

Whatſoever ill-founded Prejudice may be taken up againſt the Wines of our Vineyard Plots, it muſt nevertheleſs be allow'd, that we have the Advantage over the greateſt Part of other Wines; that we are able to make them ſuch as we would have, and ſuch as are demanded; that is to ſay, a delicate Wine fit for preſent drinking, red without being harſh, a little hard, and ſometimes a great deal, and yet without loſing its Quality; and thus we are able to make a Wine equally good to drink thro' the whole Courſe of the Year, and alſo for many Years after.

But on the contrary, is it not a great Fault in certain Wines, in that they cannot be kept good for the Space of one Year? For one of theſe Tuns is ſpoiled before it is half empty; alſo the ſame Accident happens to it, when being full, the Heats ſurprize it before they have put it into the Vault, for theſe Wines don't ſpoil but when they are delicate, weak, and when they have been ſcarcely tunned; and if they ſhould be tunned any more, they would become harſh, and entirely loſe that little Quality they have in the Vat.

There are in this Kingdom many Vineyard Plots, the *Vines* of which have this bad Quality; and yet theſe are the Wines that are ſo much boaſted of, which will not keep the Year without ſpoiling, if they were not preſerved by ours, which have more of the Quality than they.

But if thoſe who put ſo great a Slight upon our Wines, ſhould ſay we do not know how to make them, they would reaſon more juſtly than they do, when they would have us to believe that our Wines are not good; for they ought to allow that they are good in themſelves; and we ſhall agree, that if there is any Fault in them, it is by Accident, ſince it only proceeds from the Manner of making it.

Then it muſt be ſaid, that the Wines of *Orleans* are good, but that they make them ill: And then there is nothing more wanting, but to avoid the Faults in the Manner of making, and that is what I am going to treat of.

We have in this Plot of Vineyards ſo many different Sorts of Soils and Plants, that it would not be eaſy to give a Direction for the Manner of making the Wines from each of them: I can only ſay in the general, that in order to make good Wine, the Soil ought to be proper for the *Vines*, well expoſed to the Sun, on a gentle Declenſion from the North to the South, rather dry than moiſt, that the Plants ſet there be of a good Kind and well choſen; that the Vineyard be rather old than young; never dunged, or but very little, but rather earthed, and always well wrought, and in the proper Times to work them; and that the Grapes have a certain Degree of Ripeneſs before they be cut; and that they be tunned after they have been trodden, when one would make Wine that ſhould have a Colour, and not for preſent drinking.

It is certain, that when all theſe Things concur, it will be eaſy to make good Wine: But there are yet other Things to be obſerved, of which I ſhall ſpeak in the following Part of this Article.

They make in this Plot of Vineyards, as well as in many others, both red Wine and white. I ſhall ſpeak firſt of the red, and afterwards of the white, of which there are a few Things to be ſaid.

The beſt and moſt precious Wines of all that are made in this Plot of Vineyards, is the *Auvernat*. Of this there are ſix Species, *viz.* the *Auvernat Teint*, the *Black*, the *Red*, the *Grey*, and two Kinds of *White*; which are the *White Auvernat* of *Solers*, and that of the *Low Country*.

The *Auvernat Teint* is the reddeſt, and as it has alſo the Quality, it gives the Colour and the Body to the other *Auvernats*, and prevents them from growing ropy; and when it is mingled with the red only, they ought to let it remain in the Vat a little while, eſpecially in thoſe Years that there is Reaſon to believe the Wine will take as much Colour as they would it ſhould have, or where it grows on a Soil where the Wine has always been accuſtom'd to have Colour enough by being tunned but a little.

Some pretend, that one Quart, or thereabouts, of the Wine [*de Teint*] of the Tincture, or of [*gros Noire*] the large black, to a Vat of fifteen Puncheons of red *Auvernat*, will have a good Effect.

I own that it will give it a fine Colour, without rendering it harſh, provided it be not tunned too long; but as this *Teint*, or this *gros Noire*, have no Quality but that of giving it the Colour, I am of the Opinion that the *Auvernat Teint*, which is very red, ſubſtantial and vinous, produces a better Effect: But it requires only to put more of that of the *Teint* than of the *gros Noire*, becauſe the *Auvernat* colours a great deal leſs than thoſe two Kinds of Grapes.

The riper both the one and the other are, the more Wine they yield, and the more Colour they have; and for this Reaſon they ought never to be gathered but when they are in their perfect Maturity.

The *Auvernat Teint* ought not to be planted indifferently in all Sorts of Lands, becauſe it will not do well in all; and for this Reaſon, thoſe who would have them, ought at firſt to plant but a few, to ſee if they will ſucceed in their Lands: Alſo Care muſt be taken not to mingle them with others in planting, that one may the better know what Quantity we ſhould put into every Vat, which will be difficult to do, if they were planted confuſedly with other *Auvernats*, or red Plants, to make thence good mix'd Wine.

Although the *Auvernat Teint* is a very good Grape of itſelf, yet it muſt be owned, that if too much of it be put into the red *Auvernat*, it will alter the Quality of it; for the laſt Wine is never better than when it is made without any Mixture of other Grapes; and it has ordinarily as much Colour and Strength as it ſhould have, not only to maintain itſelf by itſelf, but alſo to put off other Wines of a leſs Quality.

But then I ſuppoſe, that this red *Auvernat* grew upon good Lands; for there are ſome which of themſelves do not give enough to the Wines that they produce: In this Caſe it is good to plant the *Auvernat Teint*.

It is true, that this Wine being mixed, will not be ſo fine, as if it were only the pure red *Auvernat*; but then again, it will maintain itſelf better: And when one would make an *Auvernat*, which has a ſtrong Tartneſs, and a good Flavour, without having any Colour, you muſt put to the red *Auvernat* about the ſeventh Part of the *Melier*, or of good white *Auvernat*, ſuch as now grows in the Vineyards of *Blois*: But that one may be able to make this Mixture, it is neceſſary that this *Melier*, or white *Auvernat*, be ripe at the ſame Time as the red *Auvernat*.

A Wine made after this Manner, is ſo excellent, and ſo diſguiſed, that it is made to paſs for pure *Burgundy* Wine, and is ſold at *Paris* and other Places as ſuch in wickered Bottles: The beſt Wine-conners are there deceived every Day.

The *Auvernat*, without Diſtinction, is red; they alſo name it from its Skin, which is brown, becauſe its Colour is not of ſo deep a red as that of the *Auvernat Teint*, and becauſe it is deeper than the *Grey Auvernat*, which is almoſt quite white, and that too when it has been tunned very much. This Kind of red *Auvernats* is the moſt common among the black *Auvernats*, and one of the beſt Wines that grows in this Plot of Vineyards.

The [*Auvernat Noir*] *Black Auvernat* is very uncommon in this Country, and known by few Perſons; its Berry is rounder than the other *Auvernats*; its Skin is as black as Jet, and that is the only Thing that it is known by: There is alſo another Species of it, which ſome *Vignerons* call the *Auvernats* of *Touas*; it differs nothing from the red, but in that its Wood is very big, as well as its Fruit. The Grape is long and well filled; and it were to be wiſh'd, that this Kind was not ſo ſcarce in this Country, for it is the fineſt, and one of the beſt that we have.

The *Grey Auvernat* is neither white, nor black, nor red, but of a grey or pearly Colour when at the greateſt Maturity. But ſome have made this Obſervation, that in certain Lands this Colour becomes black in about twelve or fifteen Years after the planting of theſe *Vines*; but nevertheleſs without loſing their Quality. The Change of the Colour does not come univerſally. I have ſeen Vineyards very old, that did produce the *Auvernat* of this Quality.

This Grape having a very good Taſte, makes alſo an excellent Wine, and, I am of Opinion, the beſt of all the *Auvernats*; but it is good to give it a little of the green, eſpecially when it grows in very good Lands, becauſe this Wine having a very good Body, its Greenneſs falls by little and little, which at the ſame time augments its Strength; and it is the green that they give it that ſuſtains it, and hinders it from growing ropy; for theſe Wines that are not tunned, or that are but a little fermented, are very ſubject to be ropy, at leaſt if the *Vines* do not grow in flinty Lands; nevertheleſs they are ſometimes ſubject to be ſo in ſuch Lands, but indeed not ſo much as the others.

When this *Grey Auvernat* has been made off-hand, or when it has been tunned but a very little while, and it is once gone from this Vineyard Plot, and is denominated by a borrow'd Name, it is an eaſy Matter to make it paſs for ſuch a Wine as is deſired, whether it be ſold as it is, or whether it be mingled with others of a higher Colour. But this Mixture muſt be made in ſuch Manner, that the Quantity of the *Grey Auvernat* be not abſorb'd by the Red that is mix'd with it.

It is not proper to let the Place be known, where a Wine, made after this Manner, is gathered; for if it were known that this Plot of Vineyards of *Orleans* produced it, there would need nothing more to make it loſe all its Merit in the Opinions of thoſe who ſuffer themſelves ſo eaſily to be prejudiced againſt our Wines. When this Wine is made without any Mixture, then one perceives all the good Quality; and when it is cut with the *Auvernat Teint*, it is indeed leſs fine, but it keeps the longer, and is not ſo ſubject to grow ropy. And when the Red *Auvernat* is mingled with theſe two other Species of *Auvernat*, this makes one of the beſt Wines that can be drank, and it will keep without Harſhneſs, becauſe this Grey *Auvernat* has a Fund of Delicacy which allays the Harſhneſs of the *Auvernat Teint*, and this by its Firmneſs ſuſtains the other, and makes it keep the longer.

Many *Vignerons* do not know at all, and others feign that they do not know, the true Grey *Auvernat*; and the one from Malice, and the other thro' Ignorance, confound it with a certain Plant, which they call *Grey*, or the *Miller's Wife*; but this is a black *Formente*, or *Bourguignon*, which is nothing of an *Auvernat*.

This Plant is one of the leaſt that is in this Vineyard Plot, yet many plant it, becauſe it produces a great deal of Wine, and becauſe it reſiſts the Froſts of the *Spring-time*, and the other Accidents that happen to Vineyards, better than other *Auvernats*. And this is the Reaſon, one may ſay, that this Plant is a true Drudge; and it is without doubt for this Reaſon, that thoſe who have it, always gather more Wine than others who have it not; but as the Quality of the Wine is not in this great Quantity, it is ſeldom that this Wine comes too good; for five or ſix Months after it has been made, it grows flat, tart, without Colour, and alſo is ſpoiled, by reaſon it is not put into a good Vault before the firſt Heats of the Spring of the Year, becauſe oftentimes the firſt Clap of Thunder turns it. Nevertheleſs the Merchants furniſh themſelves with this Wine, becauſe it is cheaper, and has a certain Headineſs, which the *Auvernat* has not, unleſs it be two or three Months after it has been made.

In planting this wretched Plant we have found out the Secret of ſpoiling the beſt Places of this Vineyard Plot. As for Example: About forty or fifty Years ago, the Wines of *Paroiſſe* and *Bou* were very much in Requeſt; but ſince that Time almoſt all the Vineyards in this Territory have paſſed out of the Hands of the Citizens, and fallen into thoſe of the *Vignerons*, who commonly do not regard any thing ſo much as the Quantity, and therefore have indiſcreetly planted ſo many Vines of this black *Formente*, that now the Wines of this Place are much neglected, and ſought for elſewhere.

But nevertheleſs we are not to believe that our Soil has changed its Nature, as ſome Perſons falſly imagine: without doubt it is ſtill the ſame; and to render this that I ſay the more certain, if we taſte the Wines of thoſe who have nothing but the pure *Auvernat* in their Vineyards, I am ſure we ſhall find them as good as the beſt *Auvernats* of this Vineyard Plot.

If the greateſt Part of the Wines of this Place are not ſo good as they ought to be, it ſhould not be attributed to the Ground, which cannot change, but to the bad Plants that have been planted there: and it is to be fear'd, that in Proceſs of Time the ſame Inconvenience may happen to other Places, whoſe Wines have at this Time a great Reputation, becauſe they have effectually a good Quality; and they will keep it, as long as the Citizens ſhall not have the Itch of planting the wretched black *Formente*.

It may be ſaid, that many Commiſſioners and Wine-Merchants have given Occaſion to thoſe who deſtroy or renew their Vineyards, to plant there the black *Formente*, becauſe they would not always acknowledge the different Quality of Wines by the Difference of the Price.

This, I ſay, has been the Reaſon that determined the Citizens, as well as the *Vignerons*, to regard the Quantity more than the Quality of the Wines. But they are much to be blam'd for this, becauſe they thereby depreciate their Eſtates; for they muſt needs know, that in thoſe Years when there is abundance of Wines, as frequently is the Caſe, a Search is always made after thoſe that are beſt; and ſo the Wines which are found to have the Quality are ſold, and thoſe that have it not are left in their Hands.

Of

Of making Wine in Orleans.

The Grapes being cut and carried from the Vineyard to the Preſs, they tread them either in a Scuttle, which they place there, or in a Vat when the gathering of the Vintage is finiſhed; or, in fine, they caſt them into a Trough of a Wine-Preſs to be bruiſed. Alſo ſometimes they carry them directly to the Preſs; but this is when they would make Wine fit for preſent drinking, and that it is not fermented in the Vat at all.

Thoſe who make uſe of a Scuttle to bruiſe their Grapes, can't poſſibly tread the Grapes well, or at leaſt they will be a long Time in doing it, and have a great deal more Trouble, in that they are obliged to raiſe up with all their Strength, the Puncheons that they tread, to caſt them into the Vat with the Marc, in order to work it all together.

The Manner of bruiſing the Grapes in the Vat when it is fill'd, is much worſe than the firſt; in that notwithſtanding all the Precaution that can be taken, and whatever Time is allow'd to endeavour to do this Work well, it is abſolutely impoſſible it ſhould ſucceed well; for when the Wine has been tunned as much as it ought, and they have put it on the Preſs with its Marc, there will be a Part of the Grapes that have not been half bruiſed, and this cauſes the Marc to yield leſs Wine, and there is not all the Colour that it might have, and therefore the Grapes ought never to be bruiſed this Way when it can be done otherwiſe.

But if this is a Loſs to the Citizens, not to draw from the Marc all the Wine which it ought to yield, if all the Grapes had been well bruiſed; yet it affords an Advantage to the *Vigneron*, in that his Drink will be ſo much the better.

As there is an Inconvenience in treading the Grapes, either in a Scuttle or a Vat, as I ſhall make appear, it will be better to make uſe of a Trough for a Wine-Preſs; this is, without Contradiction, the beſt way to bruiſe the Grapes.

And beſides, a Wine-Preſs Trough will ſerve for four Panners, when the other will not ſerve for two, if they make uſe of a Scuttle; for according to the Meaſure that the Grapes are bruiſed in the Wine-Preſs Trough, the Wine falling into the Vat does not riſe above the Grape, by which it may be more eaſily known whether the Grapes have been well or ill trod before the Marc is turned into the Vat; or it is a great deal more eaſy to puſh it with the Foot, when the Trap Door of this Trough is lifted up, than to lift it up thence with bodily Strength, as they are obliged to do, when they tread in a Scuttle.

This Trough ought to be ſet in a kind of Litter, and placed upon or over the Vat; but when the Covering of the Structure where the Preſs is, is low, it muſt be placed over the Middle of the Preſs without a Litter; then there will be a little more Trouble, becauſe it muſt be emptied into the Vat with a *Bucket* or Scuttle; but this is no great Matter, there are Hands enough to do this Work.

The Grapes having been trodden, as before, the Marc may be thrown into the Vat, either with the Grape and Skins, or ſeparated the one from the other: This depends on the Manner after which one would make the Wine.

When the Grape is tunn'd with the Skins and the Wine, it may produce two different Effects, the one of which will be good, and the other bad.

When it has been tunn'd a conſiderable Time the Wine is leſs green, leſs ſubject to be ropy, and better for keeping, than if it were done off-hand, or fit for preſent drinking.

But if the Grape be tunn'd too much, it takes from it much of its Quality, becauſe it leaves a Harſhneſs, which renders it not fit for drinking for above a Year in certain Lands, and in others it never loſes the Taſte of the Grape-Stone; and when with this Exceſs of the Vat it has a Colour as red as Ox Blood, it is a Wine which they call *Groſſier* or *Matin*; and it is commonly ſaid it is better to keep than to drink.

When a Wine has this Fault, one cannot render it drinkable, but by mingling it with good dry new White-Wine.

Then it is this Exceſs of the Vat that renders our Wines hard, and makes them diſ-eſteemed without any Diſtinction, altho' all our Wines are not made after this Manner. But it is an eaſy Matter to avoid this Fault, which renders our Wines contemptible.

There are thoſe who tun the Grape-Stone with the Skin, and would give to their Wine only that Degree of the Vat, which it ought to have, not to be ſtrong, do draw it out from time to time by a Pipe, or by ſome little Hole which they make in the Vat; but this I do not approve of, for Reaſons to be given in the following Article.

Others make uſe of a Vine-prop, or ſome other Piece of Wood, which they thruſt into the Vat, from whence they draw it out quick, and let it drop into a Glaſs, where they examine if it have Colour enough, and if it makes a Circle of Scum, and boils and bubbles, which they call *faire la roüe*: Others watch till the Marc is riſen to ſuch an Height, and make a Judgment by that.

As for my ſelf, I am of the Opinion, that it would be a ſurer Way to thruſt one's Hand a pretty Way into the Vat, (which I ſuppoſe to be rais'd and to have been work'd) to take from thence a handful of the Mark, and to put it to one's Noſe, as the Dyers do, to judge of the Diſpoſition of their Vats; then one may know if the Wine be made, and if it has Colour enough.

When it ſmells ſweet, you ſhould let it work a little longer in the Vat until it has loſt that Smell, and has a ſtrong Scent that affects the Noſe: then it ought to be taken; for one Quarter of an Hour at moſt is ſufficient to force it.

A Wine taken in its proper Degree of the Vat will never taſte of the Grape-ſtone, it will be always fit to drink, and alſo will keep good for many Years.

I agree alſo, that the Wine that has been tunned too much, becomes tart and harſh, and that that is what takes away its Quality; and as it is the Grape-ſtone and not the Skin that cauſes this Tartneſs and Harſhneſs, the Means to prevent this Inconvenience, is in being very careful as to the Degree of the Vat that is given to the Wine.

But as one may often be deceiv'd in giving it too much or too little of the Vat, I think the ſureſt Way would be, to ſtone the Grapes when they are trampled, before they are put into the Vat.

This Work would not be ſo much Trouble as it may be imagined, for one Stoner would ſuffice to employ one Treader, let him tread as faſt as he can.

When the Grapes are bruiſed in a Wine-preſs Trough, ſeveral may employ themſelves in ſtoning: One Method of doing it is, to put them into a Basket plated, &c. about ſix Feet long, four Feet broad, and ten or twelve Inches high: And that this may not be any Incumbrance, it may be plac'd about the Middle of the Preſs, and have two Men to ſift and ſeparate the Skins from the Grape-ſtones.

I find that a Cribble is much more convenient, for it takes up leſs Room, and there needs but one Man to work above, and the Work will be as eaſily or more eaſily done.

I have ſeen many of theſe Cribbles; but that which I am going to deſcribe, appears to me to be the moſt commodious.

The Cribble for ſtoning the Grapes ought to be made with Braſs-wire, becauſe that is more pliant, and does not ruſt ſo much, and laſts longer than Iron-wire. The Holes ought to be an Inch in Breadth, almoſt of an octagonal Figure; it is work'd upon two Hoops join'd together, the one upon the other: and when it is finiſh'd, it is to be cover'd with a third Hoop or Band, that is about four Inches high.

As the Marc is in falling, and the Wine being preſſed out, and that it is caſt in the Height of the Cribble, they put under it, to ſuſtain it, a Band of Wood or little Hoop two or three Fingers high, which goes round at the Bottom of the Cribble, and beſides this, four Iron Bars of the Thickneſs of a little Finger, becauſe if they were broad, the Skins of the Grapes would reſt there, which would hinder the other from paſſing.

It is proper to put theſe Iron Bars in ſuch a manner, that two of the four may ſuſtain the other two, and that they be all of the ſame Length.

The Ends ought to croſs the two Hoops, and to cover the third, and they muſt be join'd to many Places of the Trellis with a Braſs Wire, which may be double or treble.

The Wood of the Hoop ought to be notch'd in two Places over againſt one another, and about an Inch in Depth, and three in Breadth, according to that of the Staves upon which it is to be plac'd; and theſe Staves ſhould be plac'd upon a Scuttle reſting upon the Vat, above which they tread the Grapes.

It is alſo proper that theſe Notches be plated with Iron, and that they have two Handles or Graſps of Iron pretty thick and round, to prevent the hurting the Hands of him that manages the Cribble, becauſe it is weighty, and there is Occaſion to remove it from Place to Place.

This Cribble may be about a Foot in Height, eight or nine in Circumference, and an Inch in Thickneſs at the Top, and ſomething more at the Bottom, becauſe of a Band of Wood that is plac'd round about to ſuſtain the Trellis, as I have ſaid before.

The Treader having bruiſed the Grapes, inſtead of puſhing the Maſs in the Vat with his Foot, as is done when he would tun the Grapes with the Skin, it is taken either with a Bowl or a Pail, or with the Hand, and put into the Cribble; then the Stoner ſeparates the Marc, as well as he can, the Skin from the Stone, and caſts the latter into a Veſſel that ſtands near him: and when that is fill'd with the Grapes, they carry it to the Middle of the Preſs in a Pail, or in a Baſket, and from time to time empty into the Vat (to which the Stoner is very near) the Skins and the Wine which are in the Veſſel above, which has been ſtoned.

The Buſineſs of the Vintage-Gatherers being finiſhed, they put the Marc and all the Stones that are upon the Middle, and they lower the Plank to draw from thence the Wine that is found there.

Some give it another Bruiſing, but I believe very unprofitably; for that can't get out much Wine; and alſo that which they get from theſe Stones has nothing but a Harſhneſs, but nevertheleſs one may, becauſe there is a little of it, mingle it with the other, that is in the Vat.

One Marc of Grapes, which one may reckon ten *Poinçons*, may yield about fifty Pints of Wine or thereabouts. This depends upon the Size of the Grapes, and the Heat which has been during the Time of the Vintage-gathering.

The Wine being boil'd with its Skin, it will be neceſſary to obſerve, from time to time, if it have Colour enough; and if it be ſufficiently made, to be taken off: and when it is found that it is not yet red enough, the Marc muſt be thruſt down in the Vat in order to give it the Colour, and never to be forc'd: You may alſo cover the Vat with a coarſe Linen Cloth double, and put the Board of the Preſs upon that, in caſe one is apprehenſive that it will loſe a Part of its Strength.

It is not the ſame, when the Stone is left to tun with the Wine, becauſe it can eaſily force; whereas this Inconvenience never happens when the Grapes have been ſton'd: For this Reaſon it ought always to be done; one is ſure to have Wine well made, and ſuch as may be kept many Years without ſpoiling, according to the time that it has been left to ferment.

And if all our Red Wines were made in this manner, we ſhould not have occaſion to ſay, as it hath been ſaid for a long time, that our Wines are harſh and coarſe; for it muſt be agreed, that it is nothing but the Stone that gives it this bad Quality, which is, however, accidental, ſince I have offered a Method to remedy it, which may eaſily be put in Practice.

Many Citizens complain, that the Merchants won't give a greater Price for the Wine whoſe Grapes have been ſton'd, than for that which has not; but, in the mean time, it is better: It does indeed coſt ſomething more in making it after this manner, in that it takes up more Time in preſſing.

Upon this Account many Citizens have diſcontinued the ſtoning their Grapes; but I do not approve of that: we ought to ſpare nothing to make good Wine; and I am perſuaded that there will always be found Merchants reaſonable enough not only to make a Diſtinction between a Wine, the Grapes of which have been ſtoned, and that which has not, not only by their Taſte, but in the Price too.

As the Grapes that are fermented without their Stones, are ſubject grow ropy, it is good to prevent this Inconvenience in gathering them before they come to their full Maturity, and to give them but little Fermentation; it can then never be too thick, becauſe the Grape-ſtone not being there, it is impoſſible it ſhould force it.

During the Time that the Wine is working in the Vat, one may pierce the Casks, and put into each of them about a Pint of Water; it ſhould be boiling hot, or at leaſt very hot: This will purify the Veſſels, and render them more tight.

The Hole of the Bung being well ſtopped aſſoon as the Hot Water has been put in, it ſhould be ſhaken and turn'd on all Sides, to be able to ſee if it has Vent in any Place.

Some pretend that this hot Water will take away the Taſte of the Casks; but I very much doubt of this.

In order to make this Experiment, it is requiſite that one be firſt ſure that the Cask has any bad Taſte.

When the Casks have been ſeaſon'd and drain'd as dry as may be, they muſt be plac'd upon the Stilliers, and there ſet firm with Stones or ſome other Thing, to hinder them from rolling while they are filling.

The Baſket that is hung up by Means of a Prop to receive and hold the Grapes and Skins which fall from the Middle of the Preſs into the Wooden Pipe, ought to be well cloſ'd up to hinder the Stones from going into the Casks when they are filling, becauſe when the Wine boils, it caſts out the Scum, the Lee, the Skins and the Stones, in order to purify it ſelf, and ſometimes a ſmall Quantity of theſe is ſufficient to ſtop intirely the Holes of the Casks.

But to prevent this Accident, one may nail, at the ſmall Hole at which the Wine runs down, a ſmall Lattice of Braſs Wire, of which the Holes muſt be very fine: then there would but a few of the Skins paſs, and no Stones, and the Baſket, which is very troubleſome when one would empty the Pipe, would be uſeleſs.

One may yet, for the greater Security, have another Grate, and faſten it with Nails above the Socket on the Inſide of the Funnel; but this Grate muſt be raiſ'd three or four Fingers, to the End that the Skins may not hinder the Wine from paſſing.

Before the Marc is begun to be put upon the Middle of the Preſs, I ſuppoſe the Preſs to be in ſuch Condition that nothing is wanting of all the Utenſils that are neceſſary; for it would be an Imprudence to have at this very Moment any wanting that is neceſſary for the making of a Marc.

It is true, one may borrow of a Neighbour what one may want, but it may ſo happen that they may be uſing the Things at the ſame time, and that would be a great Diſappointment.

The Screw being the moſt brittle and moſt neceſſary Part belonging to a Preſs, a Maſter ought always to have one in reſerve, ready to be put in, in Caſe of Need.

In like manner, the Feet of the Beams ſhould be examined ſome time before the Vintage, that they be not rotten, for that is the Place they commonly fail in; and when this happens, it is not ſo eaſy to remedy it as it is to remedy a broken Screw.

In order to make the Beams of a Preſs laſt a long time, when they are good of themſelves, it ought to be ſo contrived that they may always have the Air under the Middle of the Preſs, eſpecially at the End of theſe Pieces there ought not to be either any Marc or Earth, and therefore it ſhould be hindred from falling there.

Some make a ſmall Piece of Brick-work round each of theſe Beams, and that is the beſt Precaution that can be taken to make them laſt a long time.

After the Preſs has been put in Order, and that the Wine has had its Degree or Time in the Vat, that it ought to have, or they can give it, it muſt be put upon the Middle of the Preſs.

When it is at a great Diſtance from the Vat, they make uſe of a Scuttle or Baſket, or if it be near, of a Pail: which they let drain upon a Board which bears at one End upon the Vat, where it is faſtened with a Nail or other Thing, and the other upon the Middle of the Preſs: This Board ſhould be bordered on both Sides with Ledges, ſtrait and well joined, and about an Inch in Height, to hinder what drains out of the Baſket from running on the Ground.

A Piece of Wood, with a Hollow or Channel about an Inch deep, would be much better than this Board with Ledges, for they can't be with Eaſe ſo cloſely joined, but that the Wine will find ſome Chinks to run out at, which will not be in this Wood thus hollowed.

Some, in order to empty their Vats the more eaſily, put in a Pipe, through which they draw the Wine clear through a little Bucking-tub made for this Purpoſe; out of which they take the Wine in a Pail or Pannier, to empty it into the Casks.

For this Purpoſe the Vat muſt be ſet high on a Stilling or Gauntry, and the Earth hollow'd at the Place where the Pipe is plac'd.

Before the Wine is drawn off clear, you muſt always begin to take off the Cover of the Vat, in order to prevent the Wine from forcing: and this muſt be done in ſuch a manner, that he who empties has not the Trouble of lifting it up ſo high to put it in the Scuttle or the Meaſure.

I own, that this Manner of emptying a Vat is very commodious; I ſhall, in the following Article, ſpeak of the Inconveniency that may happen thence.

The Marc being placed on the Middle of the Preſs, they cover it with a Board, with Bolſters, Cuſhions and Bags or Pillows: There muſt be two Rows of theſe laſt, and ſometimes three, when the Marc is thin, becauſe by how much leſs the Screw appears, by ſo much leſs it is in danger of breaking; and as the Marc ſhall be thick, according as they have ordered it, there muſt be ſome Rows of the Bags retrenched; for it is ſufficient that there is a certain Diſtance between the Wheel and the Screw, which would not be ſo if the Marc were very thick, or there were many Sacks.

There is no need to put the Ring of the Rope into the Hook before the Wheel has been lower'd on the Bags, and that you have examin'd if all is made even, and that none of the Bags are remov'd.

Before you begin to lower the Wheel upon the Bags, the Screw ought to be well greas'd above the Nut of it, and alſo below, when it touches the Bags.

They alſo greaſe that Part of the Screw that was within the Nut-ſcrew before they have brought it down to the Point where it ought to be; for the firſt Operation after the Plank of the Axle-tree has been let down, and before the looſening, the Screw muſt be ſoap'd on the Places where it has had none.

White dry Soap, without Oil, is the beſt for greaſing the Screw: When Oil is mingled with the Soap, that draws the Rats, who gnaw the Screw, and it occaſions a Gum or thick Subſtance, which makes it go hard when they preſs the Marc.

The Trendle ought alſo to be plac'd at a reaſonable Diſtance from the Middle of the Preſs upon the Nave of the Wheel; and being well rubb'd with Hog's Lard, the Trendle will turn the better: Others make uſe of an Iron Crow, which at leaſt produces as good an Effect as the Nave.

When the Staves or Rammers are rather long than ſhort, and that the Trendle is pierc'd with an Height agreeable to a Man of a middle Stature, they will have the more Force to preſs the Marc.

After the Plank has been let down, and the Troughs fill'd to a Pannier, or thereabout and they have afterwards added the Wine that comes from theſe Preſſings, they give the firſt Squeezing, which ought to be follow'd by three others in a ſhort time, becauſe the *Auvernat* having in it much Fire, its Marc would dry quickly, and yield much leſs Wine, if there were much Time between theſe Preſſings.

It is not enough to greaſe the Screw of the Preſs the firſt Operation before the Balance is let down, when it is a Wheel-preſs; it ought to be done from time to time, eſpecially when the Screw is perceiv'd to be rough, or ſcreaks in the Nut when the Trendle is turn'd.

Some, before they give the Marc the laſt Operation, *barbager*; that is to ſay, they work it, or prick it with an Inſtrument of Iron, but without touching the Sides, becauſe they chuſe to hinder it from falling on the Middle. They pretend that this little Squeezing makes the Marc yield about two Pints of Wine the Puncheon.

I have never made the Experiment; but this is ſeldom practis'd but in the Marcs of White Wine, becauſe they are thicker, and not ſo hot by much as thoſe of *Auvernat*.

The laſt Operation or Preſſing being given, you may wait twelve or fifteen Hours for raiſing the Marc, that it may have Time to drain; and they ſeldom raiſe it ſooner, except they want the Preſs for making other Wine.

Altho' the Wine that comes out of one Vat is the ſame, yet they give it two different Names: The one they call *Unpreſs'd Wine*, and the other the *Wine of the Preſs*.

The firſt is that which comes from the red or white Grapes, when they have been trod, whether they have been tunn'd or not; and the ſecond is that which comes from the Marc after the Preſſing. As this laſt has always a great deal more Colour and Harſhneſs than the firſt, they mingle them together, to the end that they may make an equal Wine; and if they do not do this, they would have one Part of the Wine of the ſame Vat too delicate and weak in Colour, and the other too red and too harſh, which would not be fit for the Merchants, who are for an equal Wine.

When I ſay the Wine ſhould be equal, I mean only that of one Vat, and not of one whole Cellar; for as all the Wine that one buys can't be all ſpent at the ſame time, and that the Merchants ſearch ſometimes for Wine high coloured and a little firm; and ſometimes for a Wine more delicate and fit for preſent drinking, therefore it is, in my Opinion, the Prudence of a Citizen to have Tuns of different Degrees of Colour and Firmneſs, that the more delicate may be drank firſt, and the firmeſt ſome Time after, or the Year following; for moſt Perſons love old Wine better than new.

But it is yet more advantageous for a Citizen to have Wine that is rather a little firm than too delicate, becauſe if that be not ſold quickly, it may grow ropy or be ſpoiled; when, on the other hand, that which is well mixed will keep a great while, and he may ſell it a long Time after.

It is true, the Merchants often ſlight, or rather ſeem to ſlight and reject a Wine that has been but little fermented; but it is very often nothing but a little Chicane that thoſe make uſe of who are employ'd to purchaſe Wines, to buy them the cheaper; therefore we muſt give them leave to ſay what they will; but always give the Wine ſomething of the Tun, becauſe if it be not ſold at firſt, it will at laſt: whereas, when it is made for preſent drinking, it muſt be ſold as ſoon as may be, and perhaps under Price.

Some Perſons out of Thriftineſs, or rather ſordid Covetouſneſs, fearing to loſe a little Wine, never intirely fill their Caſks till the Wine has caſt forth its greateſt Fire, that is, they won't make it boil till it has no Force left; and there being only one Pannier full of Wine put into the Caſk the next Day, or two Days after it has been filled, that has not the Force to warm it again ſufficiently to make it boil.

This way of managing Wine is very wrong for it cauſes all its Excrement to remain at the Bottom of the Caſk, which augments the Lee, and often contributes to the ſpoiling the Wine, and to keep it for a long Time foul, which therefore the Merchants reject.

It would be much better to fill it preſently up to the Bung with the Preſſurage, or with what has been preſs'd, which is taken from the Preſſings that they give to the Marc, becauſe the Caſks being always full, the Wine purifies itſelf the more, and becomes clear in leſs Time, and of Conſequence is more palatable, and may be ſold ſooner.

It is not enough to fill the Caſks up to the Bung the firſt time that the Wine is put into them; they ought to be fill'd many times; that is to ſay, as ſoon as the Boiling is over, Wine muſt be put in to excite it to boil; and the ſame Thing is to be done the next Day, and afterwards for eight or ten Days every other Day.

The Neceſſity there is of filling the Caſks as ſoon as the new Wine has been put into them, is proved by the Accident that happen'd to the Wines in the Year 1718, when the Seaſon was too hot and too dry during the Months of *July* and *Auguſt*.

The Wines were then ſo extreme hot as to boil very low in the Caſks, ſo that many, who had neglected to fill them at firſt up to the Bung, had their Wine turn'd ſour; which did not happen to thoſe who had uſed the Precaution of filling them to the Bung, and keeping them full: and for this Reaſon, thoſe who have many Tuns of Wine, ought always to take of the laſt they have made to fill all thoſe Puncheons of the other Tuns; and when a Perſon has but one, he muſt put of Wine in a Caſk call'd a *Gueulebée*, to fill thoſe Puncheons as far as to the Bung, as ſoon as the Wine has done boiling; then the Wine that remains muſt be put into the Caſks or *Gueulebée*, or into a very cloſe Veſſel, for fear of its evaporating or loſing its Spirit.

I will ſay, by the bye, that many deceive themſelves in making Wine theſe hot Years, for they let it ferment but a little, becauſe it boils as ſoon as it is trod; but this is but a falſe Boiling, which comes rather from the Fire that is in the Grape, than from the working in the Tun; therefore it ought to be tunned a conſiderable Time. It is in ſuch Years the Grapes ſhould the rather be ſtoned, and that the Wine ſhould be ſufficiently fermented.

It is true, there is ſome Inconvenience in filling the Caſks up to the Bung the firſt time the Wine is put in, becauſe it is impoſſible not to loſe ſome of it, for it will mix with the Scum and the Lee which comes out at the Bung; but this Inconvenience may be remedied, by ſetting Gutters above the Bung, and Pans or Veſſels of Wood under the Gutters, to receive all that which comes out.

And whereas ſome pretend that Lead communicates an ill Taſte to the Wine, it is the ſureſt way to have them of Tin, in ſuch manner, that nothing but the End of the Socket may enter into the Hole of the Bung; for if the Hole be made larger than that the Socket may play within it, the Gutter will be uſeleſs, becauſe the Wine would run out between the Wood and the Socket.

There muſt alſo be a Veſſel call'd *Gueulebée*, to empty theſe Veſſels in as they fill, and it ſhould be covered with a thick double Linen Cloth, and cloſed or faſtened all round about with a Hoop to hinder the Wine from growing flat.

The Lee deſcends by little and little to the Bottom of the Caſks, where it is joined with the Scum, which there falls together, and is incorporated with it.

Some Days after, the Wine being grown clear, they take away the Veſſel, and the Lee remains at the Bottom. This Wine may be put in a Veſſel by itſelf, without mingling with the Wine which is in the Caſks out of which it came. Some ſay this collected Wine is the more fine and ſtrong; but others ſay to the contrary: They may ſay what they will, but it is always true, that this Wine is very good, provided it has been kept very cloſe in the Veſſel where it was collected.

And I believe that one might, without any Scruple, make uſe of it for filling the Wine: But as to this, you need not conſult either the Merchants or the *Vignerons*; ſince the one have not Judgment or Sincerity enough, and the other are too much intereſted: And I ſpeak with a Knowledge of the Matter, founded on the Experience I have had many times, and without any Intereſt but that of the Publick.

Thoſe who from a covetous Temper will not be at the Charge of procuring theſe Gutters and Veſſels to receive the Wine of the Caſks while they are boiling, have no Skill in it; For the Wine which they would ſave by this means, would make amends intirely the firſt Year for the Expence they would be at in procuring them.

Others, that are afraid that they ſhall not ſell their Wine, ſay, that the Merchants have always an Opinion in favour of that Wine, of which the two Sides of the Bung of each Caſk are filled with Scum as far as the firſt Bands or Circles; and that they have a quite contrary Opinion of thoſe where it does not appear.

It is true, that formerly they did mind this, and their Opinion might be well grounded, becauſe they never made uſe of theſe Gutters: But at this Time their Opinion is alter'd; for they are perſuaded, that theſe Gutters being in uſe, a Caſk may have caſt out all the Scum without its appearing at the Sides of the Bung, becauſe it falls into theſe Veſſels that are ſet to receive it; and likewiſe, that all the Wine that is there is well mingled.

Beſides, it is an eaſy matter for a Merchant to know if there be much Lee in the Caſk, for he needs only to pierce it into the Lee, that is to ſay, at the Bottom, about two Fingers of the Notch of the Caſk where the Head-pieces come in.

The Wine having caſt out all its Scum, it will be proper to taſte all the Caſks into which it has been put, to the end, that if any one be found that has a bad Reliſh, to apprize thoſe of it who have furniſh'd them, that he may put all the bad ones to his own Account.

Some ſay, that St. *Martin's-day* being paſs'd you cannot oblige the Merchants, who have furniſh'd the Wine, to take that again which has been ſpoil'd in the Caſks, becauſe they ſay it is the more difficult to remedy it: Others pretend, that the Merchants are anſwerable three Months after the Caſks have been fill'd, provided they have not been remov'd from off the Stillings.

When the Wine has done boiling, it muſt be cover'd with the largeſt Side of the Bung, to hinder it from evaporating: And eight or ten Days afterwards it muſt be fill'd full, and bung'd up.

Some make uſe of Bungs about half a Foot long, becauſe they can take them away without daubing the Caſks with the Scum. But I am of the Opinion, that broad Bungs are better, and to make two Holes on the Side, the one about the Bigneſs of a little Foſſit, the other about the Bigneſs of ones little Finger, that a Tin Funnel may be put in, having in it a Piece of Tin ſoldered about two Inches from the End; the Holes of which may be as big again as thoſe of a Tobacco-Grater, to the End, that when one uſes it to fill the Caſks, neither Stone, nor Skin, nor Kernels, nor Lee, may paſs; The great Hole ſerves for the putting in of a Funnel, and the other to give Vent for the Caſks during the Time the Wine is pour'd in them.

This little Hole ought to be made at the Time that the Caſks are bored, to put in the Wine with the great wooden Funnel; for if the Socket does exactly fill the Bung-hole, the Caſk would fill but very ſlowly, if it had not Vent given it by the little Hole.

When it is done after this manner, the Tuns are not daub'd with the Scum; it is not diſturb'd, as is done in ſtriking to beat in the Bung, and the Wine will have leſs Vent.

You muſt be ſure to fill the Wine every fifteen Days after it has been bunged, until towards St. *Andrew*'s Day; you are not to meddle with it any longer till after the Severity of the *Winter* is over, which commonly happens towards the Middle of *February*, becauſe the Froſt may make it ſwell.

The *Auvernat* is not the only red Wine that we have in this Vineyard-plot; there are alſo other Wines made that have the ſame Colour, but are of a different Quality.

There is, for Example, the *Bon Lignage*, or the *Good Wine*, and that which is made of all Sorts of Grapes. As to the firſt, it is made up of the Red *Auvernat*, the Teint, the Grey, the White, the tender *Samoireau*, the *Melier*, and all the beſt Sorts of red Grapes.

The ſecond is compoſed of all Sorts of Grapes, good and bad, but more of the latter than the former; whence it is eaſy to be comprehended, why the one has leſs of the Quality than the other; and as this ſecond is generally ſpent in the Country, they make it all Manner of Ways, either fit for preſent drinking, or firm, or hard, according to the Occaſion they have for it, and the Quantity they are to provide. As to the other, they don't fail to make it, and often ſend it to *Paris*.

All theſe Sorts of Grapes are not gathered with the ſame Care as the red *Auvernat*, which cannot bear the Water, nevertheleſs the Wine is the better, when the Grapes with which it is made are cut in a Seaſon that is rather hot and dry than cold and moiſt.

We have in ſome Places of this Vineyard-plot, three Sorts of red Wines, which bear the ſame Name, which nevertheleſs they diſtinguiſh the one from the other; There is the tender *Samoireau*, the hard, and the *Fourchu*, which have all three different Qualities.

The tender *Samoireau* does very well in the Lands of the *Olivet*, *St. Meſmin*, and *Clery*, where it is more plentiful than any where elſe. They make of it a particular Wine, which will keep a long time, provided it have no Mixture, and that they give it but little of the Vat; this renders it firm, and prevents it from growing ropy.

This Grape may be mingled with the red *Auvernat*, becauſe they both ripen at the ſame time. The *Samoirean* gives the Colour to the *Auvernat*, it ſuſtains it, and cauſes it to keep a long Time; but you muſt put but a ſmall Quantity, for fear of altering, or entirely abſorbing the Quality of the *Auvernat*, which after it has loſt, it alſo loſes its Name, and is no more regarded, but as a good *Vin de Lignage*, or one compoſed of all Sorts of Grapes, which is vulgarly called *Vignerons Auvernat*, very different from that of the Citizens, which is in a Manner pure *Auvernat*. When one would render this *Vin de Lignage* yet better, he may put to it a fourth Part of good *Melier*.

The hard *Samoireau* is a little higher colour'd than the tender: when it has but its proper Degree of the Vat, they may mix one or two Puncheons of white, and a little leſs, when they tun it; they ſhould alſo, when it may be done, take a *Melier* of a better Kind, for this Wine has not much Fire. When it is pure, and it has paſſed the Year, that Quality diminiſheth; it is then proper to make uſe of Rapes, not of Chips or Shavings, but of Corn, without putting Grapes to it, as ſome do, for that renders it hard and diſagreeable to drink.

It is ſufficient to put a third Part, or at moſt a half of the Seeds into a Puncheon; and after that, they fill the Wine up to the Bung. They make uſe of theſe Rapes to put off the Grounds or Bottoms of Wine, and the weak Wines, which they alſo mingle ſometimes with them; the third Kind of *Samoireau*, of which I ſhall ſpeak, renders them the better for keeping.

The *Samoireau Fourchu* is the beſt of the three Kinds; this is proper to give the Colour to the others, and to ſuſtain thoſe that are weak, and to reſtore thoſe that have any Defect.

In order to know the Colour, they caſt ſome of it againſt a Wall; and according to the Impreſſion it makes, they judge of the Effect it will produce.

One ſingle Puncheon of that will colour ſix of white, and ſometimes more, according as the Seaſons are hot, and the Quantity of the Wine that the Vineyard has yielded: This Wine is not only good to drink, when it is taken in Time, but it ſerves for a Remedy againſt the Dyſentery and other Maladies. Its Marc is good againſt Rheumatiſms.

This Plant has a Virtue that is not found in any others, becauſe the longer it is kept the better it is: For it is better for drinking at the End of twelve or fourteen Years, than one or two Years after it has been made.

Some put it in Bottles, but it keeps equally as well in Caſks, provided Care be taken to keep them always full, and to obſerve that the Caſks don't want Hoops; and it will be proper to put on ſeveral Iron Hoops at each End.

The Wine, the Marc, and the Wood, or rather the Aſhes of this Plant, have alſo a great many other Properties, which I ſhall not relate.

The Time of gathering theſe two Species of *Samoireau*, comes much later than that of the firſt; that ripens at the ſame Time with the *Auvernat*.

The Territory of *Mardic* is the moſt proper for theſe Plants, and that which produces the moſt of it, (I mean of the hard and *fourchu Samoireau*) there is of it at *Bou* and *Checi*, and but a very little in any other Places of this Vineyard-plot.

As the *Fourchu* never produces more Wine than when it is a little old, many, eager to enjoy the Fruit of their Labours and their Expences, have not Patience to wait ſo long, and therefore they pull up thoſe of them they have, and can't reſolve to plant them when they have them not.

Nevertheleſs this is a precious Plant, and one may judge of it by the Effects that it produces, and by the Price which it bears, for it is commonly ſold for double the Price of the beſt Wines of this Country: And I don't know but that thoſe who deſtroy them, and thoſe that don't raiſe them, will repent it one time or other.

As there is not much to be ſaid of the Manner of making White-wine, and having taken Notice of it at the Beginning of this Article, I ſhall ſay but little of it particularly.

Altho' there are many Kinds of white Grapes, yet they make, as one may ſay, but two Sorts of Wine of them; the one is the moiſt, the other is dry Wine.

The firſt, ſuch as the *Muſcat*, or the *Gendin* of *St. Meſmin*, thoſe of *Marigny*, of *Rebrechein*, and other neighbouring Places, may be look'd upon as the moſt precious, in that they bring the Money into the Kingdom, rather than the dry Wines; for they ſend them into *Holland*, *Flanders*, *England*, &c. To render this Wine the better, they don't content themſelves to ſee that the Grapes have their perfect Maturity, and be half rotten; they wait oftentimes till the Froſt has taken them, to have the Wine which they call *Bouru*, and in ſome Years they defer the Vintage until the 15th or 20th of *November*, and it is then ſometimes ſo cold, that the Iſicles hang upon thoſe Grapes that periſhed, ſo that they are obliged to carry Fires into the Vineyards in great Pans, to warm the Gatherers.

It is true, that thoſe who tarry ſo long before they gather, have a great deal leſs Wine than others; but then at the ſame Time it is much better, and ſells a great deal dearer; ſo that I believe it comes much to the ſame, or very near the Matter.

The Wines of which I am ſpeaking, although ſweet of themſelves they have nevertheleſs not always the ſame Degree of Liquor; this depends upon the Condition of the Seaſon, that is to ſay, by how much the *Summer* and *Autumn* is the hotter, the Wine has the more Liquor, and it has a great deal leſs when the Seaſon is the contrary.

What I ſay is ſo true, that the Seaſon having been very hot in the Year 1719, the ſweet Wines themſelves had abundance more Liquor than ordinary, and kept good more than a Year; alſo the dry Wines of many Places were ſweet and clear.

Some red Wines were alſo very ſoft, (which is very rare) and held good till the Month of *February* in the Year 1721. It is true, they were thick, and that they did not become clear till the Time that they loſt their Sweetneſs, which alter'd their Strength.

The Softneſs of the white Wines being over, they were nevertheleſs good; but as there remains a certain Flavour, which pleaſes the Palate of moſt Perſons, it is beſt to ſell them, and ſpend them as ſoon as may be.

One may know by Experience, that good Grapes almoſt always make good Wine. Among the white Grapes, without Contradiction, the beſt are the *Melier* and the white *Auvernat* of the *Low Countries*; as the white *Formentes*, or *Bourguignons*, the *Maledeueaux*, the *Framboiſes*, the white *Gois*, &c. make a Wine, which is better to throw away than to drink; yet Vineyards of the *Vignerons* are ſtuffed with theſe wretched *Vines*, becauſe they yield more Wine, and for the moſt part better reſiſt thoſe Accidents that happen to a Vineyard; for theſe People have no Regard to any Thing but the Quantity, which is the Reaſon that they do not ordinarily ſell their Wines to that Advantage as the Citizens do.

The white Grapes cannot be gathered too ripe, becauſe the riper they are, the more Wine they produce, and their Rottenneſs does not give it any bad Taſte; but when it is begun before they come to their full Ripeneſs, they are ſubject to grow yellow; yet Regard is to be had to thoſe Lands of which the Wine is ſubject to grow ropy.

For this Reaſon, when they are gathered, it is good that the Grape has a little Greenneſs, to the end that the Wine that comes from them may be able to keep dry, to which the white *Auvernat* of the *Low Countries*, and the green *Melier* contribute very much; the laſt hinders the Wine from being ropy, and the firſt makes it clear; and for this Reaſon it is good to plant of it with the *Melier*, becauſe at the Time of gathering they may be both mingled together, and make a Wine without any Fault.

One ought to endeavour not to gather the white but when the Weather is fair, a rainy Seaſon is not ſo favourable; for one ought never to mingle Water with the Wine that one makes, though ſome are not over-ſcrupulous as to this Point; it is true, the Inconvenience is not ſo great in reſpect to the *Auvernats*; but that ſhould not hinder one from always endeavouring to make good Wine; and for this Reaſon it is beſt to gather the Vintage in a dry, hot Time.

As the white Wine is not tunned, when they bring the Grapes in Panniers from the Vineyards, they empty them directly on the Middle of the Preſs, where they trample them with their wooden Shoes; the broadeſt and ſmootheſt are the moſt proper for this Work.

The Grapes ought to be trod immediately, that is to ſay, every Pannier as they bring them from the Vineyard, otherwiſe the Wine would be yellow, and this Colour is diſagreeable to the Sight, and ſtill more to the Palate, and conſequently gives the Wine a bad Quality.

According as the Grapes are preſſed on the Middle, and that the Pipe fills, they empty it to fill the Puncheons or the Quarter Puncheons to a Pail full, or thereabouts, according to the Largeneſs of the Caſk wherein it is put; to make it boil, they fill them up to the Hole of the Bung with the Wine which comes from the two firſt Preſſings, and that which remained in the Pipe before they gave the two firſt Squeezings; and that which the others yield, ſerves to put into the Wine when the firſt Boiling begins to be diminiſhed.

One ought always to give to the Marc, whether it be white or red, four Preſſings, without taking in the Lowering of the Beam, that is to ſay, that it ought to be cut four Times.

Some give it the third Working, with an Iron Gripple in the Middle of the Marc, and they leave all round about half a Foot in Breadth, to keep in that which is wrought; and at the fourth Preſſing they cut the Border that they left, and put it back upon the other.

They pretend that a Marc ſo ordered yields the more Wine. As the Marc of white Wine is the more thick, and has leſs Fire than the *Auveraat*, it does not dry ſo preſently; for this Reaſon there ought to be longer Times between theſe Squeezings.

They give them theſe commonly in the Night-time, becauſe they do not lower the Beam, but when the Day's-work is finiſhed, when the Men who are to work the Marc have ſupped.

When the white Wine is cold, it muſt be filled up and bunged, and kept always full, at leaſt if it be not in the Depth of *Winter*; for when this Kind of Wine is emptied, it becomes yellow in moſt Countries; but when this happens, it is eaſily remedied, either by ſtirring it with a Stick of Hazel cleft into four, which is put in at the Bung-hole, or in ſhaking briſkly the Puncheon, which they leave ſometimes on the Bung, to the End that the Lee that deſcends thither, and afterwards is mixed again when the Caſk is turned up, will take away the Yellowneſs.

This ſecond Method ſeems to be the beſt; for beſides that the Wine does not take Wind, it is alſo done in a great deal leſs Time; for one is not obliged to unbung and bung again every Caſk; for they may be filled up with a ſmall Tin Funnel.

For ſome Years laſt paſt they have made Rapes of white Wines, from which they do not reap any great Advantage: They make uſe of them to mix with the coarſe, harſh red Wines, and that have but little of the Quality. In the mean Time, this fits the meaner Sort of People, who have not a very nice Taſte, in that it pleaſes their Palates, and is ſold cheap.

It will not be to any Purpoſe to name the Places of this Plot of Vineyards, which produce the beſt white Wines; for the Merchants don't take the Pains to make a Diſtinction between the Wines which have much of the Quality, from others that have leſs; beſides, they are many times deceived; for ſome Citizens, who have a great many Houſes of Wines in different Places, after the Vintage is over, they ſend that Wine they have made in one leſſer Vintage, to be added to that of another that is much better; and ſo a Merchant thinks that all the Wine he buys is from the ſame Place, when it is not.

I do not approve of this Practice of the Citizens; for a Merchant who would have Wine of one certain Place, will not be prepared to manage that which he ſhall have from another; becauſe thoſe different Wines will not produce the ſame Effects, with the Management he ſhall uſe to them; and no Perſon ought to be deceived.

When the Vintage, either of red Wines or white Wines, is finiſh'd, the Preſs ought to be taken Care of, that the Rats don't gnaw the Screw of it. It ſhould be rubbed with Garlick, the Smell of which thoſe Animals can't endure: It is alſo good to cover it with ſome old Caſks, to hinder any Filth from falling on the Screw, which can't be kept too clean.

Concerning Rapes, *or* New Wines.

Rapes have unhappily, for a conſiderable Time, been in uſe in theſe Vineyard-plots; and therefore I ſhall give ſome Account of them.

They make here three Sorts of Rapes in Vineyards.

The one is made of ſtoned Grapes: When they have put a Third or Half into a Puncheon, they tread them down, either before or after they have filled it with Wine. Some make it with Cuttings mingled with Grapes only, or with whole Grapes: But I do not approve of this Manner; for all the Wine which is put upon theſe Rapes always taſtes of the Grape-ſtone; and for this Reaſon it is better to take it away, and not to leave any Thing but the Grape, or at leaſt to take away the Stalk of the Grape.

The Troughs being opened, they lay upon the Bottom a Bed of Cuttings, and after that a Bed of Grapes, and this they do till the Troughs are almoſt full; but it muſt always be done in ſuch a Manner, that there muſt be a Layer of Cuttings upon each Bottom, or at each Head, to the End that the Wine may be the better drawn off, by the Means of a Tap, and after they have bored the Caſks, they fill them with Wine.

Thirdly, They make a Rape of Cuttings only, without any Mixture of Grapes.

The two firſt Sorts of Rapes are ſcarcely ſpent but in the Country, I mean, in this Vineyard-plot.

Nothing is more effectually uſeful in a Family, or that one may make uſe of for putting off Low-wines, or the Bottoms, and to give Colour and Strength to the Wines that want them, as I have ſaid in the preceding Article: but none but the beſt Grapes ought to be uſed for this Purpoſe, ſuch at the *Samoireau*, rather the *hard* or *fourchis* than the *tender*, the *Auvernat*, *teint* or *red*, a little of the *large black*, or of the *teint*; for if theſe two laſt have not Strength, they have much leſs of the Colour, and render the Wine marrowy or ſubſtantial.

Theſe Rapes muſt be well boiled, and three or four Months after this has been done, that is to ſay, after the *Winter*, they muſt be cleared or purified: Forty or fifty Pints may be drawn out of a Puncheon, and be put immediately into Wine that has leſs Colour, but is very near of the ſame Strength; for the Rape ought not to be too ſoon weakened, nor the Wine too often mixed with it.

The Wine being once upon the Stillings, ought not to be removed: This is the Reaſon why the Caſks in which it is to be put, be of Wood that is well choſen and barred, having a double Hair-cloth at each End.

This Precaution muſt be uſed at the Time when they are ſold, or before they are removed from the Place where they are made, or in putting them into Vaults: For theſe Rapes of Cuttings are made rather to be conſumed in other Countries than in our own.

They make uſe of this at *Paris*, and other Places, to put off the bad ſmall Wines, which would never ſell but for theſe Rapes; for without this, I know not what the *Pariſians* would do with their wretched, ſmall, tart Wine, which their Vineyards of the *French* Country produces them.

This Wine is ſo pitiful, eſpecially in rainy, cold, moiſt Years, that it is not able to ſuſtain itſelf, and is ſpoiled before it is vended.

The Cold takes from it that little Quality that it has, and the Heat turns it; ſo that every Thing is contrary to it; and one may ſay, the beſt of theſe Wines are ſuch as have neither good or bad Quality.

Therefore one would chuſe to pull up the greateſt Part of the Vineyards that are about *Paris*, becauſe they produce ſuch poor Wine, that to make them paſs, there is an abſolute Neceſſity to have Recourſe to theſe Rapes.

Of Vineyards in England.

There have of late Years been but very few Vineyards in *England*, tho' they were formerly very common, as may be gather'd from the ſeveral Places in divers Parts of *England*, which yet retain that Name; as alſo from ancient Records, which teſtify the Quantities of Ground which were allotted for Vineyards, to Abbeys and Monaſteries, for Wine for the Uſe of the Inhabitants: but as to the Quality of the Wines which were then produced in *England*, we are at preſent ignorant; and how theſe Vineyards were rooted up, and became ſo generally neglected, we have no very good Accounts left. Whatever might be the Cauſe of this total Neglect in cultivating *Vines* in *England*, I won't pretend to determine; but ſuch was the Prejudice moſt People conceived to any Attempts of producing Wine in *England*, that, for ſome Ages paſt, every Trial of that kind has been ridiculed by the Generality of People; and at this Day very few Perſons will believe it poſſible to be effected.

Indeed if we judge only by the Succeſs of ſome modern Eſſays made near *London*, where ſmall Vineyards have been planted a few Years paſt, there would be no great Incouragement to begin a Work of this kind; becauſe the Produce of very few of theſe Vineyards has been ſo kindly as were to be wiſh'd: but however, this ſhould not deter others from making farther Trials, eſpecially when they conſider the many Diſadvantages which moſt or all of theſe Plantations are attended with: For, firſt, there is ſcarce one of them placed upon a proper Soil and Situation for this Purpoſe; and, ſecondly, there is not one which is rightly planted and managed, as I ſhall preſently ſhew: And how can we expect Succeſs from Vineyards under theſe Diſadvantages, when even in *France* or *Italy* they would ſucceed little better, if their Management were not directed with more Judgment? I ſhall therefore humbly offer my Opinion, which is founded upon ſome Trials I have ſeen made, and from the Inſtructions which I have received from ſeveral curious Perſons abroad, who cultivate Vineyards for their own Uſe and that of their Friends, and who have been very exact in obſerving the ſeveral Methods in Practice amongſt the *Vignerons* of thoſe Countries; from whence it is hoped, that the Prejudice which moſt People have againſt a Project of this kind, will either be removed, or at leaſt ſuſpended, until Trials have been judiciouſly made of this Affair.

The firſt and great Thing to be conſidered in planting Vineyards, is, the Choice of *Soils* and *Situations*; which if not rightly choſen, there will be little Hopes of Succeſs; for upon this the whole Affair greatly depends. The beſt Soil for a Vineyard in *England*, is ſuch whoſe Surface is a light ſandy Loam, and not above a Foot deep above the Gravel or Chalk, either of which Bottoms are equally good for *Vines*: but if the Soil is deep, or the Bottom either Clay or a ſtrong Loam, it is by no means proper for this Purpoſe; for altho' the *Vines* may ſhoot vigorouſly, and produce a great Quantity of Grapes, yet theſe will be later ripe, fuller of Moiſture, and ſo conſequently their Juice not mature, nor well digeſted, but will abound with Crudity, which in fermenting will render the Wine ſour and ill-taſted; which is the common Complaint of thoſe who have made Wine in *England*.

Nor is a very rich, light, deep Soil, ſuch as is commonly found near *London*, proper for this Purpoſe; becauſe the Roots of theſe *Vines* will be inticed down too deep to receive the Influences of *Sun* and *Air*, and hereby will take in much crude Nouriſhment, whereby the Fruit will be render'd leſs valuable, and be later ripe, which is of ill Conſequence to theſe Fruits, which are known to imbibe a great Share of their Nouriſhment from the Air, which, if replete with Moiſture, (as is commonly the Caſe in *Autumn*,) muſt neceſſarily contribute greatly to render the Juices leſs perfect: therefore great Care ſhould be had to the Nature of the Soil upon which they are planted.

The next Thing neceſſary to be conſidered is, the Situation of the Place; which, if poſſible, ſhould be on the *North* Side of a River, upon an Elevation inclining to the *South*, with a ſmall gradual Deſcent, that the Moiſture may the better drain off; but if the Ground ſlopes too much, it is by no means proper for this Purpoſe: but if at a Diſtance from this Place, there are larger Hills which defend it from the *North* and *North-weſt* Winds, it will be of great Service; becauſe hereby the *Sun*'s Rays will be reflected with a greater Force, and the cold Winds being kept off, will render the Situation very warm. Add to this, a chalky Surface (which if thoſe Hills do abound with, as there are many Situations in *England* which do,) it will ſtill add to the Heat of the Place, by reflecting a greater Quantity of the *Sun*'s Rays.

The Country about this ſhould be open and hilly; for if it be much planted, or low and boggy, the Air will conſtantly be filled with moiſt Particles, occaſion'd by the plentiful Perſpiration of the Trees, or the Exhalations from the adjoining Marſhes, whereby the Fruit will be greatly prejudiced, (as was before obſerved.) Theſe Vineyards ſhould always be open to the *Eaſt*, that the Morning Sun may come on them to dry off the Moiſture of the Night early, which by lying too long upon the *Vines*, does greatly retard the ripening of their Fruit, and renders it crude and ill-taſted: And ſince the Fruit of *Vines* are rarely ever injured by *Eaſterly* Winds, ſo there will be no Reaſon to apprehend any Danger from ſuch a Situation; the *South-weſt*, *North-weſt*, and *North* Winds being the moſt injurious to Vineyards in *England*, (as indeed they are to moſt other Fruit,) ſo that, if poſſible, they ſhould be ſheltered therefrom.

Having made Choice of a Soil and Situation proper for this Purpoſe, the next thing to be done is, to prepare it for Planting. In doing of which, the following Method ſhould be obſerved: In the *Spring* it ſhould be ploughed as deep as the Surface will admit, turning the Sward into the Bottom of each Furrow; then it ſhould be well harrow'd to break the

Clods, and cleanſe it from the Roots of noxious Weeds: and after this, it muſt be conſtantly kept plough'd and harrow'd for at leaſt one Year, to render the Surface light, and hereby it will be rendered fertile by imbibing the nitrous Particles of the Air, (eſpecially if it be long expoſed thereto before it is planted:) Then in *March* the Ground ſhould be well plough'd again; and after having made the Surface pretty even, the Rows ſhould be mark'd out from *South-eaſt* to *North-weſt*, at the Diſtance of ten Feet from each other; and theſe Rows ſhould be croſs'd again at five or ſix Feet Diſtance, which will mark out the exact Places where each Plant ſhould be placed, ſo that there will be ten Feet Row from Row, and five or ſix Feet aſunder in the Rows, nearer than which they ought never to be planted. And herein moſt People who have planted Vineyards, have greatly err'd, ſome having allowed no more than five Feet Row from Row, and the Plants but three Feet aſunder in the Rows: and others, who think they have been full liberal in this Article, have only planted their *Vines* at ſix Feet Diſtance every way, but neither of theſe have allow'd a proper Diſtance to them, as I ſhall ſhew: for, in the firſt Place, where the Rows are placed too cloſe, there will not be Room for the *Sun* and *Air* to paſs in between them to dry up the Moiſture, which being detain'd amongſt the *Vines*, muſt produce very ill Effects. And, ſecondly, where the *Vines* are placed in exact Squares, ſo near together as ſix Feet, there can be no Room for the Current of Air to paſs between them, when their Branches are extended on each Side, and ſo conſequently the Damps in *Autumn* will be entangled and detain'd amongſt the *Vines*, to the great Prejudice of their Fruit. For ſince the *Autumns* in *England* are often attended with Rains, cold Dews, or Fogs, ſo all proper Care ſhould be taken to remove every thing which may obſtruct the drying up the Damps which ariſe from the Ground.

The skilful *Vignerons* abroad are alſo ſenſible how much it contributes to the Goodneſs of their *Vines* to allow a large Space between the Rows; and therefore where the Quality of the Wine is more regarded than the Quantity, there they never plant their *Vines* at leſs than ten Feet Row from Row, and ſome do allow twelve. It was an Obſervation of *Bellonius*, almoſt two hundred Years ſince, that in thoſe Iſlands of the *Archipelago*, where the Rows of *Vines* were placed at a great Diſtance, the Wine was much preferable to thoſe which were cloſe planted; and this he poſitively affirms to be the Caſe in moſt Countries where he had travelled. Indeed, we need not have Recourſe to Antiquity for the Truth of ſuch Facts, when we are daily convinced of this Truth in all cloſe Plantations of any kind of Fruit, where it is conſtantly obſerved, that the Fruits in ſuch Places are never ſo well colour'd, ſo early ripe, nor ſo well flavour'd as thoſe produced on Trees, where the Air can freely circulate about them, and the Rays of the Sun have free Acceſs to the Branches, whereby their Juices are better prepared before they enter the Fruit.

Having thus conſider'd the Diſtance which is neceſſary to be allow'd to theſe Plants, we come next to the Planting: but in order to this, the proper Sorts of Grapes ſhould be judiciouſly choſen; and in this Particular we have egregiouſly erred in *England*; all the *Vineyards* at preſent planted here, are of the ſweeteſt and beſt Sort of Grapes for Eating, which is contrary to the general Practice of the *Vignerons* abroad, who always obſerve that ſuch Grapes do never make good Wine, and therefore, from Experience, do make Choice of thoſe Sorts of Grapes, whoſe Juice, after fermenting, affords a noble rich Liquor; which Grapes are always obſerved to be auſtere, and not by any means palatable. This is alſo agreeable to the conſtant Practice of our Cyder-makers in *England*, who always obſerve, that the beſt Eating Apples make but poor Cyder; whereas the more rough and auſtere Sorts, after being preſs'd and fermented, do afford a ſtrong vinous Liquor. And I believe it will be found true in all Fruits, that where the natural Heat of the Sun ripens and prepares their Juices, ſo as to render them palatable, whatever Degree of Heat theſe Juices have more, either by Fermentation, or from any other Cauſe, will render them weaker and leſs ſpirituous. Of this we have many Inſtances in Fruits; for if we tranſplant any of our *Summer* or *Autumn* Fruits, which ripen perfectly in *England* without the Aſſiſtance of Art, into a Climate a few Degrees warmer, theſe Fruits will be mealy and inſipid: ſo likewiſe if we bake or ſtew any of theſe Fruits, they will be good for little, loſing all their Spirit and Flavour by the additional Heat of the Fire; and ſuch Fruits as are by no means eatable raw, are hereby render'd exquiſite, which, if tranſplanted into a warmer Climate, have, by the additional Heat of the Sun, been alſo altered ſo as to exceed the moſt delicious of our Fruit in this Country.

From whence it is plain, that thoſe Grapes which are agreeable to the Palate for Eating, are not proper for Wine; in making of which, their Juices muſt undergo a ſtrong Fermentation. Therefore ſince we have in *England* been only propagating the moſt palatable Grapes for Eating, and neglected the other Sorts, before we plant Vineyards we ſhould take Care to be provided with the proper Sorts from Abroad; which ſhould be choſen according to the Sort of Wines intended to be imitated: tho' I believe the moſt probable Sort to ſucceed in *England* is the *Auvernat* or true *Burgundy Grape*, (which, whatever ſome Perſons may pretend, is, at preſent, very rare, if to be found at all in *England*, moſt People taking the *Munier Grape* for the *Burgundy*:) This Sort of Grape is moſt preferred in *Burgundy*, *Champaign*, *Orleans*, and moſt of the other Wine Countries in *France*; and I am inform'd, that it ſucceeds very well in ſeveral Places to the North of *Paris*, where proper Care is taken of their Management: ſo that I ſhould adviſe ſuch Perſons who would try the Succeſs of Vineyards in *England*, to procure Cuttings of this Grape from thoſe Countries; but herein ſome Perſon of Integrity and Judgment ſhould be imploy'd to get them from ſuch Vineyards where no other Sorts of Grapes are cultivated, which is very rare to find, unleſs in ſome particular Vineyards of the Citizens, who are very exact to keep up the Reputation of their Wines; nothing being more common than for the *Vignerons* to plant three or four Sorts of Grapes in the ſame Vineyard, and at the Time of Vintage to mix them all together, which renders their Wines leſs delicate than in ſuch Places where they have only this one true Sort of Grape. And here I would caution every one againſt mixing the Juice of more Grapes than one Sort, which will cauſe it to ferment at different Times, and in different Manners.

The Cuttings being thus provided, (for I would always prefer theſe to Layers, or rooted Plants, for the Reaſons given at the Beginning of the Article *Vitis*,) about the Beginning of *April* is the beſt Seaſon for Planting; when it will be proper to put the lower Ends of the Cuttings in Water about three Inches, ſetting them upright for ſix or eight Hours before they are uſed; then at the Center of every croſs Mark already made by a Line, to the Diſtance the *Vines* are deſigned, ſhould be a Hole made with a Spade or other Inſtrument, about a Foot deep: into each of which ſhould be put one ſtrong Cutting, placing it a little ſloping, then the Hole ſhould be filled up with Earth, preſſing it gently with the Feet to the Cutting, and raiſing a little Hill to each about three Inches, ſo as to juſt cover the uppermoſt Eye or Bud, which will prevent the Wind and Sun from drying any Part of the Cuttings, and this upper Eye only will ſhoot, the under ones moſt of them will puſh out Roots; ſo that this Shoot will be very ſtrong and vigorous.

After they are thus planted, they will require no other Care until they ſhoot, except to keep the Ground clear from Weeds, which ſhould be conſtantly obſerved: but as to Watering, or any other Trouble, there will be no Occaſion for it, notwithſtanding what ſome People have directed; for in *England* there is no Danger of their miſcarrying by Drought. When the Cuttings begin to ſhoot, there ſhould be a ſmall Stick of about three Feet long ſtuck down by each, to which the Shoots ſhould be faſten'd, to prevent their breaking or lying upon the Ground, ſo that as the Shoots advance, the Faſtening ſhould be renew'd, and all ſmall lateral Shoots (if there are any ſuch produced) ſhould be conſtantly diſplaced, and the Ground between the *Vines* always kept clean. This is the whole Management which is required the firſt *Summer*.

But at *Michaelmas*, when the *Vines* have done ſhooting, they ſhould be pruned; for if they are left unpruned till *Spring*, their Shoots being tender, (eſpecially towards their upper Parts) will be in Danger of ſuffering, if the *Winter* ſhould prove ſevere.

This Pruning is only to cut down all the Shoots to two Eyes; and if after this is done, the Earth be drawn up in a Hill about each Plant, it will ſtill be a greater Defence againſt Froſt.

At the Beginning of *March*, the Ground between the *Vines* ſhould be well dug, to looſen it, and render it clean; but you ſhould be careful not to dig deep cloſe to the *Vines*, leſt thereby their Roots ſhould be cut or bruiſed; and at the ſame Time the Earth ſhould be again laid up in a Hill about each Plant; but there muſt be Care taken not to bury the two young Eyes of the former Year's Shoot, which were left to produce new Wood.

At the Beginning of *May*, when the *Vines* are ſhooting, there ſhould be ſome Stakes fix'd down to the Side of each Plant, which muſt be ſomewhat taller and ſtronger than thoſe of the former Year; to theſe the two Shoots, (if ſo many are produced) ſhould be faſten'd, and all the ſmall trailing or lateral Shoots ſhould be conſtantly diſplaced, that the other Shoots may be ſtronger; and the Ground ſhould alſo be kept very clear from Weeds, as before.

At *Michaelmas* theſe *Vines* ſhould be pruned again, in the following Manner: Thoſe of them which have produced two ſtrong Shoots of equal Vigour, muſt be cut down to three Eyes each; but ſuch which have one ſtrong Shoot and a weak one, the ſtrong one muſt be ſhortened to three Eyes, and the weak one to two; and ſuch *Vines* which have produced but one ſtrong Shoot, ſhould be ſhortened down to two Eyes alſo, in order to obtain more Wood againſt the ſucceeding Year.

In the *Spring*, about the Beginning of *March*, the Ground between the *Vines* ſhould be again dug, as before, and two Stakes ſhould be placed down by the Side of all ſuch *Vines* as have two Shoots, at ſuch Diſtance on each Side of the Plant as the Shoots will admit to be faſten'd thereto; and the Shoots ſhould be drawn out on each Side to the Stakes, ſo as to make an Angle of about forty-five Degrees with the Stem; but by no means ſhould they be bent down horizontally, as is by ſome practiſed; for the Branches lying too near the Earth are greatly injured by the Damps which ariſe from thence, but eſpecially when they have Fruit, which is never ſo well taſted, nor ſo early ripe upon thoſe Branches, as when they are a little more elevated.

In *May*, when the *Vines* begin to ſhoot, they muſt be carefully look'd over, and all the weak dangling Shoots ſhould be rubb'd off as they are produced, and thoſe Shoots which are produced from ſtrong Eyes, ſhould be faſten'd to the Stakes to prevent their being broke off by the Wind. This Management ſhould be repeated at leaſt every three Weeks, from the Beginning of *May* to the End of *July*; by which means, the Shoots which are train'd up for the ſucceeding Year will not only be ſtronger, but alſo better ripen'd and prepared for Bearing, becauſe they will have the Advantage of *Sun* and *Air*, which is abſolutely neceſſary to prepare their Juices; whereas if they are crouded by a Number of ſmall dangling weak Branches, they will ſhade and exclude the Rays of the Sun from the other Shoots, and ſo by detaining the Moiſture a longer time amongſt the Branches, occaſion the Veſſels of the young Wood to be of a larger Dimenſion, and hereby the crude Juice finds an eaſy Paſſage thro' them; ſo that the Shoots in *Autumn* ſeem to be moſtly Pith, and are of a greeniſh immature Nature; and whereever this is obſerved, it is a ſure Sign of a bad Quality in the *Vines*.

The Soil alſo ſhould be conſtantly kept clean; becauſe if there are any Vegetables, (either Weeds or Plants of other Kinds) growing between the *Vines*, it will detain the Dews longer, and by their Perſpiration occaſion a greater Moiſture than would be if the Ground were intirely clear; ſo that thoſe who plant other Things between their Rows of *Vines*, are guilty of a great Error.

At *Michaelmas* the *Vines* ſhould be pruned, which Seaſon I approve of rather than the *Spring*, (for Reaſons given already;) and this being the third Year from planting, the *Vines* will begin to produce Fruit; therefore they muſt be pruned accordingly. Now ſuppoſe the two Shoots of the former Year, which were ſhortened to three Eyes, have each of them produced two ſtrong Branches the *Summer* paſt, then the uppermoſt of theſe Shoots upon each Branch ſhould be ſhorten'd down to three good Eyes, (never including the lower Eye, which is ſituate juſt above the former Year's Wood, which ſeldom produces any thing except a weak dangling Shoot;) and the two lower Shoots ſhould be ſhorten'd down to two good Eyes each; theſe being deſign'd to produce vigorous Shoots for the ſucceeding Year, and the former are deſigned to bear Fruit: but where the *Vines* are weak, and have not produced more than two or three Shoots the laſt Seaſon, there ſhould be but one of them left with three Eyes for Bearing, the reſt muſt be ſhortened down to two, or if weak, to one good Eye, in order to obtain ſtrong Shoots the following *Summer*; for there is nothing more injurious to *Vines* than the leaving too much Wood upon them, eſpecially while they are young, or the overbearing them, which will weaken them ſo much, as not to be recovered again to a good State in ſeveral Years, tho' they ſhould be managed with all poſſible Skill.

In *March* the Ground between the *Vines* ſhould be well dug, obſerving not to injure their Roots by digging too deep near them; but where there are ſmall horizontal Roots produced on or near the Surface of the Ground, they ſhould be pruned off cloſe to the Place where they were produced; theſe being what the *Vignerons* call Day Roots, and are by no means neceſſary to be left on: And after having dug the Ground, the Stakes ſhould be placed down in the following Manner: On each Side of the *Vine* ſhould be a Stake put in at about ſixteen Inches from the Root, to which the two Branches, which were pruned to three Eyes each for Bearing, ſhould be faſten'd, (obſerving, as was before directed, not to draw them down too horizontally;) then another taller Stake ſhould be placed down near the Foot of the *Vine*, to which the two Shoots, which were pruned down to two Eyes, ſhould be faſten'd, provided they are long enough for that Purpoſe; but if not, when their Eyes begin to ſhoot, theſe muſt be train'd upright to the Stakes, to prevent their trailing on the Ground, or being broke by the Wind.

In *May* the *Vines* ſhould be carefully look'd over again, at which Time all weak lateral Branches ſhould be rubb'd off as they are produced, and thoſe Shoots which ſhew Fruit, muſt be faſtened with Baſs to the Stakes to prevent their being broke, until they are extended to three Joints beyond the Fruit, where they ſhould be ſtopp'd: but the Shoots which are deſigned for Bearing the following Seaſon, ſhould be kept trained upright to the middle Stake; by which Method the Fruit-Branches will not ſhade theſe middle Shoots, nor will the middle Shoots ſhade the Fruit; ſo that each will enjoy the Benefit of *Sun* and *Air*.

This Method ſhould be repeated every Fortnight or three Weeks, from the Beginning of *May* to the Middle or latter End of *July*, which will always keep the Shoots in their right Poſition, whereby their Leaves will not be inverted, which greatly retards the Growth of the Fruit, and by keeping the *Vines* conſtantly clear from horizontal Shoots, the Fruit will not be crouded with Leaves, and ſhaded, but will have conſtantly the Advantage of Sun and Air equally, which is of great Conſequence; for where the Fruit is covered with theſe dangling Shoots in the *Spring*, and are afterwards expoſed to the Air, either by diveſting theſe of their Leaves, or elſe diſplacing their Branches intirely, as is often practiſed, the Fruit will become hard, and remain at a perfect Stand for three Weeks, and ſometimes will never advance afterwards, as I have ſeveral times obſerved; therefore there cannot be too much Care taken to keep them conſtantly in a kindly State of Growth, as the *Vignerons* abroad well know, tho' in *England* it is little regarded by the Generality of Gardeners, who, when their Grapes ſuffer by this Neglect, immediately complain of the Climate, or the Untowardneſs of the Seaſon, which is too often a Cover for Neglects of this Nature. And here I can't help taking Notice of the abſurd Practice of thoſe who pull off their Leaves from their *Vines*, which are placed near the Fruit, in order to let in the Rays of the Sun to ripen them; not conſidering how much they expoſe their Fruit to the cold Dews, which fall plentifully in *Autumn*, which being imbibed by the Fruit, do greatly retard them: beſides, no Fruit will ripen ſo well when intirely expoſed to the Sun, as when they are gently ſcreened with Leaves; and by the pulling off theſe Leaves which are abſolutely neceſſary to prepare the Juices before they enter the Fruit, the groſs Parts of which are perſpired away by the Leaves, the Fruit muſt either be deprived of Nouriſhment, or elſe ſome of the groſs Particles will enter with the more refined Parts of the Juice, and thereby render the Fruit worſe than it would otherwiſe be, were the Leaves permitted to remain upon the Branches: for if the weak dangling Shoots are conſtantly diſplaced as they are produced, the Fruit will not be too much ſhaded by the Leaves which are upon the bearing Branches.

When the Fruit is ripe, if the Stalks of the Bunches are cut half thro' a Fortnight before they are gathered, it will cauſe the Juice to be much better, becauſe there will not near ſo great a Quantity of Nouriſhment enter the Fruit, whereby the watery Particles will have Time to evaporate, and the Juice will be better digeſted. This is practiſed by ſome of the moſt curious *Vignerons* in the South of *France*, where they make excellent Wine. But if after the Fruit be cut, it is hung up in a dry Room upon Strings, ſo as not to touch each other for a Month before they are preſs'd, it will alſo greatly add to the Strength of the Wine; becauſe in that Time a great Quantity of the watery Parts of the Juice will evaporate. This is a conſtant Practice with ſome Perſons, who inhabit in the *Tiroleze* on the Borders of *Italy*, where is made a moſt delicious rich Wine, as hath been atteſted by Dr. *Burnet* in his Travels; and I have heard the ſame from ſeveral Gentlemen, who have travelled that Road ſince.

But with all the Care that can poſſibly be taken, either in the Culture of the *Vines*, or in making the Wine, it will not be near ſo good while the Vineyard is young, as it will be after it has been planted ten or twelve Years; and it will be conſtantly mending, until it is fifty Years old, as is atteſted by ſeveral curious Perſons abroad, as alſo by the moſt ſkilful Wine-coopers at home, who can tell the Produce of a young a young Vineyard from that of an old one, after it is brought to *England*, by the Colour of the Wine. The Difference is very eaſily accounted for, from the different Structure of the Veſſels of the Plants, thoſe of young *Vines* being larger and of a looſer Texture, do eaſily admit of a larger Quantity of groſs Nouriſhment to paſs thro' them; whereas thoſe of old *Vines*, which are more woody, are more cloſely conſtricted, and thereby the Juice is better ſtrain'd in paſſing thro' them, which muſt conſequently render it much better, tho' the Grapes from a young Vineyard will be larger, and afford a greater Quantity of Juice: ſo that People ſhould not be diſcouraged, if their Wines at firſt are not ſo good as they would wiſh; ſince afterward, when the Vineyard is a few Years older, the Wine may anſwer their Expectation. As to the Fermenting and Managing the Wine, that is treated of particularly under the Article of *Wines*, to which the Reader is deſired to turn.

The Vineyard being now arrived to a bearing State, ſhould be treated after the following Manner: Firſt, In the Pruning, there ſhould never be too many Branches left upon a Root, nor thoſe too long; for altho' by doing of this, there may be a greater Quantity of Fruit produced, yet the Juice of theſe will never be ſo good as when there is a moderate Quantity of Fruit, which will be better nouriſhed, and the Roots of the Plants, not ſo much weaken'd, which is found to be of ſo bad Conſequence to Vineyards, that when Gentlemen abroad let out Vineyards to *Vignerons*, there is always a Clauſe inſerted in their Leaſes to direct how many Shoots ſhall be left upon each *Vine*, and the Number of Eyes to which the Branches muſt be ſhorten'd; becauſe were not the *Vignerons* thus tied down, they would overbear the *Vines*, ſo that in a few Years they would exhauſt their Roots, and render them ſo weak, as not to be recover'd again in ſeveral Years, and their Wine would be ſo bad, as to bring a Diſreputation on the Vineyard, to the great Loſs of the Proprietor.

The Number of Branches which the *Italians* do generally agree to leave upon a ſtrong *Vine*, are four; two of the ſtrongeſt have four Eyes, and the two weaker are ſhorten'd down to two Eyes each; which is very different from the common Practice in *England*, where it is uſual to ſee ſix or eight Branches left upon each Root, and thoſe, perhaps, left with ſix or eight Eyes to each; ſo that if theſe are fruitful, one Root muſt produce near four times the Number of Bunches which the *Italians* do ever permit, and ſo conſequently the Fruit will not be ſo well nouriſh'd, and the Roots will alſo be greatly weaken'd; as is the Caſe of all Sorts of Fruit-trees, when a greater Number of Fruit is left on than the Trees can nouriſh.

The next Thing is, conſtantly to keep the Ground perfectly clean between the *Vines*, never permitting any ſort of Plants or Weeds to grow there: The Ground ſhould alſo be carefully dug every *Spring*, and every third Year ſhould have ſome Manure, which ſhould be of different Sorts, according to the Nature of the Ground, or which can be moſt conveniently procured.

If the Land is ſtiff, and inclinable to bind on the Surface, then *Sea-ſand* or *Sea-coal* Aſhes are either of them very good Manure for it; but if the Ground be looſe and dry, then *Lime* is the beſt Manure for it. This muſt be ſpread thin upon the Surface of the Ground before it is dug, and in digging ſhould be buried equally in every Part of the Vineyard. Theſe are much preferable to any Sort of Dung for *Vines*; ſo that it will be worth the Expence to procure either of them: and as they do require manuring but every third Year, ſo where the Vineyard is large, it may be divided into three equal Parts; each of which may be manured in its Turn, whereby the Expence will be but little every Year; whereas when the whole is manured together, it will add to the Expence, and in many Places there can't be a ſufficient Quantity procured to manure a large Vineyard in one Year.

This Digging and Manuring ſhould always be perform'd about the Beginning of *March*, at which Time all the ſuperficial or *Day-Roots*, as they are call'd, muſt be cut off; but the larger Roots muſt not be injured by the Spade, &c. therefore the Ground cloſe to the Stem of the *Vines* muſt not be dug too deep. After this is done, the Stakes ſhould be placed down, one on each Side the *Vines*, at about ſixteen Inches from their Stems, to which the longeſt Bearing-branches ſhould be faſten'd, and one Stake cloſe to the Stem, to which the two ſhorter Branches ſhould be train'd upright, to furniſh Wood for the ſucceeding Year.

In the *Summer* they muſt be carefully look'd over, as before, rubbing off all weak dangling Shoots, and training the good ones to the Stakes regularly, as they are produced, and thoſe of them which have Fruit, ſhould be ſtopp'd in *May*, about three Joints beyond the Bunches; but the upright Shoots, which are deſign'd for Bearing the following Year, muſt not be ſtopp'd till the Beginning of *July*, when they may be left about five Feet long; for if they are ſtopp'd ſooner in the Year, it will cauſe them to ſhoot out many dangling Branches from the Sides of the Eyes, which will not only occaſion more Trouble to diſplace them, but alſo will be injurious to the Eyes or Buds.

N. B. All this *Summer*-Dreſſing ſhould be perform'd with the Thumb and Finger, and not with Knives; becauſe the Wounds made by Inſtruments in *Summer* do not heal ſo ſoon as when ſtopp'd by gently nipping the leading Bud, which if done before the Shoot is become woody, it may be effected with great Eaſe, being very tender while young.

When a Vineyard is thus carefully dreſs'd, it will afford as much Pleaſure in viewing it as any Plantation of Trees or Shrubs whatever, the Rows being regular; and if the Stakes are exactly placed, and the upright Shoots ſtopp'd to an equal Height, there is nothing in Nature which will make a more beautiful Appearance; and during the Seaſon that the *Vines* are in Flower, they do emit a moſt grateful Scent, eſpecially in a Morning and Evening, and when the Grapes begin to ripen, there will be a freſh Pleaſure ariſing in viewing of them.

But as the Beauty of Vineyards ariſes from the regular Diſpoſition of the Branches of the *Vines*, ſo great Care ſhould be taken in their Management, to train them regularly, and to provide every Year for new Wood to bear the ſucceeding Year; becauſe the Wood which has produced Fruit, is commonly cut quite away, after the Fruit is gather'd, or at leaſt is ſhorten'd down to two Eyes, to force out Shoots for the next Year, where there is not a ſufficient Number of Branches upon the *Vine*, of thoſe train'd upright; ſo that in *Summer*, when the *Vines* are in Perfection, there ſhould be ſix upright Shoots train'd for the next Year's Wood, and three or four Bearing-branches, with Fruit on them; more than theſe ought never to be left upon one *Vine*, for the Reaſons before given.

N. B. The *Auvernat*, or *True Burgundy Grape*, is valued in *France* before any other Sort, becauſe the Fruit does never grow very cloſe upon the Bunches, ſo that they are more equally ripen'd; for which reaſon it ſhould alſo be preferr'd in *England*; tho', in general, theſe Sorts are moſt eſteem'd with us that have always cloſe Bunches, which is certainly wrong; for it may be obſerv'd, that the Grapes upon ſuch Bunches are commonly ripe on one Side, and green on the other, which is a bad Quality for ſuch as are preſs'd to make Wine.

I ſhall now ſubjoin a few Sorts of *Vines* which are preſerv'd in ſome curious Gardens, more for the ſake of Variety than the Value of their Fruit: Theſe are,

1. VITIS *ſylveſtris Virginiana. Park. Theat.* The wild Virginian Grape.
2. VITIS *vulpina dicta, Virginiana alba. Pluk. Alm.* The Fox Grape, *vulgo*.
3. VITIS *alba dulcis, foliis variegatis.* The blotch-leav'd Vine.
4. VITIS *alba dulcis, limbis foliorum argentatis.* The ſtrip'd-leav'd Vine.
5. VITIS *quinquefolia Canadenſis ſcandens. Tourn.* The Virginian Vine *or* Common Creeper.

The firſt and ſecond Sorts do grow in great Plenty in the Woods of *America*, where, I have been inform'd, are many other Sorts, ſome of which do produce Fruit very little inferior to moſt of our fine Sorts which are cultivated in *Europe*; notwithſtanding which, it is generally thought impoſſible to make Wine in *America*; but this, I dare ſay, muſt proceed from a Want of Skill, rather than any bad Quality in the Soil or Climate: ſo that inſtead of planting Vineyards on their looſe rich Lands, (as hath generally been practiſed by the Inhabitants of thoſe Countries) if they would plant them upon riſing Ground, where the Bottom was rocky or hard near the Surface, I dare ſay they would have very good Succeſs; for the great Fault complain'd of in thoſe Countries, is, that the Grapes do generally burſt before they are fully ripe, which muſt certainly be occaſion'd by their having too much Nouriſhment; therefore, when they are planted on a poorer Soil, this will be, in part, remedied. Another Cauſe of this may proceed from the Moiſture of the Air, (occaſion'd by the Perſpiration of Trees, &c.) which being imbibed by the Fruit may break their Skins. This, indeed, can't be prevented until the Country is better clear'd of the Timber; but however, this ſhould caution People not to plant *Vines* in ſuch Places where there are great Quantities of Woods, becauſe of this Effect which it hath on the Grapes. But to return.

Theſe two Sorts of *Vines* are preſerved in the Gardens of thoſe who are curious in Botany; but I have not ſeen either of them produce Fruit in this Country. Theſe may be propagated by Layers, which will take Root in one Year, and may be taken off and tranſplanted in the *Spring* where they are to remain, which ſhould be againſt a warm Wall; becauſe if they are expoſed to much Cold in *Winter*, they are often deſtroy'd, eſpecially while they are young.

Their Pruning and Management is the ſame with any other Sorts of Grapes, but only they ſhould have fewer Shoots, and thoſe ſhorten'd down very low, otherwiſe they will make very weak Shoots, and never arrive to any conſiderable Strength, ſo will not be capable of producing Fruit.

The two Sorts with ſtriped Leaves are alſo preſerved by thoſe who are curious in collecting a Variety of Plants. Theſe may be propagated as the other Kinds of Grapes, but are tender, and ſo muſt have a warm Situation, otherwiſe they will not thrive; nor do the Cuttings of theſe take Root ſo readily as thoſe whoſe Leaves are plain: but as there is no very great Beauty in theſe Plants, ſo they are ſcarcely worth cultivating, unleſs for Variety.

The fifth Sort was originally brought from *America*, but from its Hardineſs, and being eaſy to propagate, is become as common as if it were a Native of this Country.

This Plant is chiefly planted in ſmall Gardens near *London*, where it endures the Smoke better than moſt other Plants; and being a rampant Grower, is planted againſt high Walls and Buildings, which it will cover ſooner than any other ſort of Plant, and in *Summer* will look green, which is what the Inhabitants of *London* are greatly pleaſed with. The Branches of this Plant will ſometimes ſhoot twenty or thirty Feet long in one *Summer*, and do ſend forth Roots from their Joints, whereby they faſten themſelves to the Building where they are placed; ſo that they do not require much Trouble to ſupport them.

The only Culture they require, is to cut out all the ſmall weak Shoots in *March*, and ſhorten the ſtrong ones to about ten Feet long, which will ſtrengthen them againſt the ſucceeding *Summer*, and cauſe them to ſhoot vigorouſly.

This Plant may be propagated by Cuttings, which ſhould be planted in the *Spring* upon a ſhady Border, where they will take Root freely, and if water'd in dry Weather, will make a great Progreſs the ſucceeding *Summer*, and the *Spring* after may be tranſplanted where they are to remain, which may be in almoſt any Soil or Situation; for they are very hardy Plants.

I have above enumerated ſeveral Sorts of Grapes, which were the moſt eſteem'd in *England*, either for the Table or Vineyard; but as there are ſome curious Sorts which have been lately introduced into *England*, ſo I ſhall mention them in this Place; and then add ſomewhat relating to their Culture.

1. *The White Muſcat* or *Frontiniac of* Alexandria, by ſome called the *Jeruſalem Muſcat*, and *Groſs Muſcat*. The Berries are of an oval Shape, and very large; they grow very looſe on the Bunches, are very fleſhy and firm, and when ripe are of a greeniſh White, and have a delicate Flavour, ſomewhat like the white *Frontiniac*, but not quite ſo ſtrong. This is a very late Grape, ſo rarely ripens in *England* without ſome Aſſiſtance; but as it is an excellent Fruit when ripe, ſo it merits a Place againſt hot Walls; where, with a little artificial Heat, it will ripen very well.

2. *The Red Muſcat* or *Frontiniac of* Alexandria, by ſome called *Red* Jeruſalem *Muſcat*. This is not quite ſo late in ripening as the former; ſo is more eſteemed about *Paris*, where againſt good Walls, it ripens very well without any artificial Heat. The Berries of this Kind are not quite ſo large as thoſe of the White; but they are of the ſame Form, and are equal in Goodneſs.

3. *The White* Melie *Grape*. The Berries of this Sort are of a middle Size, ſomewhat oval-ſhap'd, and grow pretty cloſe on the Bunches. When theſe are ripe, they are of a greeniſh White, cover'd with a Flue which wipes off: the Juice is very ſweet, and makes an excellent white Wine. This ripens very well againſt Walls, and in a good Seaſon will ripen on Eſpaliers or in Vineyards.

4. *The white Morillon*. This is a middle-ſiz'd Grape, almoſt round, and grows pretty cloſe on the Bunches; the Juice is well flavour'd, but the Skin is tough. This ripens very well againſt good Walls.

5. *The* Alicant *Grape*. This is a large Fruit of a deep-red Colour, covered with a blue Fluer; the Bunches are alſo very large, and the Grapes grow ſparſly on them. The Juice is rich and vinous, when the Grapes are thoroughly ripe; which ſeldom happens in this Country, unleſs they are brought forward with an artificial Heat. This is the Sort of Grape of which the ſtrong *Spaniſh* Wine is made.

6. *The White* Auvernat. This is in Shape very like the black *Auvernat* Grape: it grows pretty cloſe on the Bunches, and is of a muddy white Colour when ripe. The Juice of this Sort is not ſo palatable to eat as many others, but it makes an excellent white Wine.

7. *The Grey* Auvernat is alſo ſhap'd ſomewhat like the former; but is of a pale murrey Colour, inclining to brown. This Sort produces its Grapes looſer on the Bunches than the former, and ripens ſooner; ſo it is better to plant for Vineyards, becauſe it ſeldom fails to ripen in a good Aſpect.

8. *The Raiſin Muſcat*. This is a large oblong pointed Grape, whoſe Berries are firm and fleſhy, and are looſely placed on the Bunches. It is a very late Fruit, ſo will not ripen in *England* without the Aſſiſtance of a Hot-wall. This Sort of Grape is frequently brought over from *Portugal*, and is ſold in *Winter* in the *London* Markets.

There have been ſeveral other Sorts of Grapes introduced into this Country of late; but there are not many of them worth cultivating, being too late in ripening to come to any Perfection in *England*, without the Aſſiſtance of artificial Heats; and there are amongſt the Sorts here enumerated, ſome of the moſt valuable Kinds which deſerve Hot-walls; for which Reaſon I ſhall not deſcribe any more Sorts, ſince it would be an endleſs Taſk to enumerate all the Sorts of Grapes, which are known in *Europe*; for as new Varieties ariſe frequently from the Seeds in hot Countries, ſo the Inhabitants of thoſe Wine Countries, who are curious in collecting the ſeveral Sorts, are annually adding to their Collections. The late Duke of *Tuſcany*, who was formerly very curious in collecting all the Sorts of *Italian* and *Greek* Grapes into his Vineyards, was poſſeſſed of upward of Three hundred ſeveral Varieties; many of which were of little Worth, only were kept by way of Curioſity.

There have lately been ſome Plants of the *Tokay* Grapes brought into *England*. When theſe Cuttings were procured abroad, it was ſuppoſed, that the *Tokay* Wine was made of only one Sort of Grape: but by thoſe of the Cuttings which did ſucceed here, it appears that there are ſeveral Sorts of Grapes cultivated in the Vineyards where that Wine is made, ſome of which are white, and others are black; but they are not extraordinary good Grapes for this Country.

Amongſt the Claret Grapes there are alſo ſeveral Varieties, which differ in the Colour of their Juice; ſome of them having a very pale red Juice, which will not give much Colour to the Wine; and others have a deep-coloured Juice, which will ſtain like the Juice of Mulberries; and it is the latter Sort which the Vine-dreſſers abroad prefer. The Leaves of this Sort of Grape turn of a deep purple Colour all over, at the time when the Fruit is ripening; whereas the Leaves of the paler Sorts are like the Juice of the Fruit, of a more lively purple Colour; ſo that the Sorts of theſe Claret Grapes are as eaſily diſtinguiſhed by their Leaves in the Autumn Seaſon, as by the Fruit when ripe.

As to the Culture of Vines againſt Walls and Pales, that being fully treated of before, I ſhall not inlarge on that in this Place; but ſhall add ſome Directions for the planting and managing *Vines* againſt Hot-walls, as alſo on Eſpaliers, becauſe both theſe Methods are at preſent practiſed in *England*.

The Method of building Hot-walls will be treated under the Article *Wall*; ſo I ſhall paſs it over in this Place, and proceed to the preparing of the Ground for planting. The Borders againſt theſe Hot-walls ſhould have the Earth taken out three Feet deep, (provided the Ground is dry) otherwiſe two Feet will be ſufficient; becauſe in wet Land the Borders ſhould be raiſed at leaſt a Foot above the Level of the Ground, that the Roots of the *Vines* may not be injured by the Wet. When the Earth is taken out, the Bottom of the Trench ſhould be filled with Stones, Lime, Rubbiſh, *&c.* a Foot and half thick, which ſhould be levelled and beaten down pretty hard. The Trenches ſhould be made five Feet wide at leaſt, otherwiſe the Roots of the *Vines* will in a few Years extend themſelves beyond the Rubbiſh; and finding an eaſy Paſſage downwards, will run into the moiſt Ground, and thereby imbibe ſo much Wet, as to leſſen the vinous Flavour of the Grapes. But before the Rubbiſh is filled into the Trench, it is a better Method to raiſe a nine Inch Wall, at five Feet Diſtance from the Hot-wall, which will keep the Rubbiſh from intermixing with the neighbouring Earth, and alſo confine the Roots of the *Vines* to the Border in which they are planted, ſo that they cannot reach to the

Moiſture of the Ground about them. This nine Inch Wall ſhould be raiſed to the Height of the intended Border; ſo will be of great Uſe to lay the Timbers of the Frames upon, which are deſigned to cover the Vines when they are forced, whereby the Timbers will be better preſerved from rotting; and where the Borders are raiſed to any conſiderable Height above the Level of the Ground, theſe Walls will preſerve the Borders from falling down into the Walks. But in carrying up of theſe Walls, it will be proper to leave, about eight or ten Feet Diſtance, little Openings to let the Water paſs off; becauſe when the Rubbiſh at the Bottom of the Trench unites and binds very hard, the Water cannot eaſily find a Paſſage thro' it. Therefore it will be the better Method to leave theſe ſmall Paſſages in the Wall, leſt the Moiſture, being confined at Bottom, ſhould be pent up as in a Ditch, which will be of ill Conſequence to the *Vines*.

When the Walls are finiſhed, and thoroughly dry, the Rubbiſh ſhould be filled in as before directed; then there ſhould be freſh light Earth laid on, about a Foot and a half thick, which will be a ſufficient Depth of Soil for the *Vines* to root in. Theſe Borders ſhould be thus prepared at leaſt a Month or ſix Weeks before the *Vines* are planted, that they may have Time to ſettle. The beſt Time to plant them is about the End of *March*, or the Beginning of *April*, according as the Seaſon proves early or late. Theſe I would alſo adviſe to be planted with Cuttings, rather than rooted Plants, for the Reaſons before aſſigned; but there ſhould be two Cuttings put into each Hole, leſt one of them ſhould fail; for if both ſhould ſucceed, the weakeſt of them may be eaſily drawn out the following *Spring*. Theſe Cuttings ſhould be well choſen from good bearing *Vines*, and the Shoots ſhould be well ripened, otherwiſe they will never make good Plants. The Diſtance theſe *Vines* ſhould be allowed, is the ſame as for common Walls, *i. e.* about ſix Feet. In planting of them there ſhould be Holes opened with a Spade, about fourteen or fifteen Inches deep; for if there are but three or four Inches of good Earth under the Foot of the Cuttings, it will be ſufficient. Then the two Cuttings ſhould be laid in the Hole a little ſloping, but in ſuch a manner as not to touch or croſs each other; becauſe if they do, when one of them is taken away the following *Spring*, it cannot be done without diſturbing the other. Then the Earth ſhould be filled into the Holes, and gently preſſed with the Foot to the Cuttings, and raiſed in a Heap over them, ſo as juſt to cover the uppermoſt Eyes of the Cuttings. Then lay a little Mulch on the Surface of the Ground about the Cuttings, to prevent the *Sun* and *Air* from drying of the Earth, and if the *Spring* ſhould prove very dry, they ſhould have ſome Water once a Week, which will be as often as theſe Cuttings require it; for nothing will deſtroy them ſooner than too much Water, which rots their Bark, and deſtroys them. If theſe Cuttings are well choſen and the Inſtructions here laid down duly obſerved, they will make ſtrong Shoots the firſt *Summer*; for I have frequently planted Cuttings, which have ſhot five Feet in one Year but then I carefully rubb'd off all the ſide-dangling Shoots as they were produced, and never permitted more than one Shoot to remain on each Cutting; which is what ſhould always be obſerved by thoſe who have the Management of *Vines*. With this Management there will be little Hazard of the Cuttings taking Root; for in upwards of five Hundred Cuttings, which I received from *Italy*, which were cut off from the *Vines* in the Beginning of *November*, and wrapp'd up in Moſs, and put on board the Ship, which did not arrive at the Port of *London* till *March*, ſo that they were full four Months cut off before they were planted; yet there were not twenty of the Number which failed, and many of them ſhot above ſix Feet the firſt Seaſon.

As I have before directed the pruning of *Vines* to be performed in the *Autumn*, (which is without Diſpute the beſt Seaſon for this Work); ſo in preſerving of the Cuttings till the planting Seaſon, I have adviſed them to be cut to their Lengths, and their Ends laid into the Ground, and then covered with Litter to keep the Air from them: but I find it a much better Method not to ſhorten the Shoots, from which the Cuttings are to be made, but to lay their Ends juſt into the Ground, about two Inches deep, and ſo leave them at full Length, only obſerving to cover them with dry Litter or Peas-haulm in froſty dry Weather; but in moiſt Weather the Covering ſhould not remain on, becauſe it would make the Cuttings grow mouldy, which would greatly injure them. Then in the *Spring*, when they are to be planted, they ſhould be taken out of the Ground, and their upper Part cut off, ſo as to reduce them to about fourteen Inches in Length, according to the Diſtance of the Buds or Eyes; for thoſe Cuttings, whoſe Buds grow pretty cloſe together, need not be left more than one Foot long; but in others fourteen Inches will be full ſhort. The leaving the upper Part of the Shoots on all the *Winter*, is of great Service to the Cuttings, becauſe when they are cut off in *Autumn*, the Air penetrates the wounded Part, and greatly injures the lower Eyes.

The Management of theſe Vines, for the three firſt Years after planting, being the ſame as is practiſed for thoſe againſt common Walls, I ſhall not repeat it in this Place, having fully treated of that already; only will obſerve, that during theſe three Years, the Vines ſhould be encouraged as much as poſſible, and the Shoots not left too long, nor too many in Number on each Root, that they may be duly ripened and prepared for bearing the fourth Year, which is the ſooneſt they ſhould be forced; for when any Sorts of Fruit-trees are forced by Fire too young, they ſeldom continue above three or four Years, and during that Time they produce very weak Shoots, and what Fruit they produce, is ſmall and not well-flavoured; ſo that in being over haſty to ſave a Year or two, very often the whole Deſign is loſt; for unleſs the Trees are in a proper Condition to bear much Fruit, it is not worth while to make Fire for a ſmall Quantity of ſtarved ill-taſted Fruit; the Expence and Trouble being the ſame for ten or twelve Bunches of Grapes, as it will be for a hundred or more.

Theſe Vines ſhould not be forced every Year; but with good Management they may be forced every other Year; tho' it would be yet better, if it were done only every third Year; therefore in order to have a Supply of Fruit annually, there ſhould be a ſufficient Quantity of Walling built, to contain as many Vines as will be neceſſary for two or three Years, ſo that by making the Frames in Front moveable, they may be ſhifted from one Part of the Wall to another, as the Vines are alternately forced. Therefore I would adviſe about forty Feet in Length of Walling, to be each Year forced, which is as much as one Fire will heat; and when the Vines are in full Bearing, will ſupply a reaſonable Quantity of Grapes for a middling Family.

In moſt Places where theſe Hot-walls have been built, they are commonly planted with early Kinds of Grapes, in order to have them early in the Seaſon: but this, I think, is hardly worth the Trouble; for it is of but little Conſequence to have a few Grapes earlier by a Month or ſix Weeks, than thoſe againſt common Walls; therefore I ſhould adviſe, whenever a Perſon is willing to be at the Expence of theſe Walls, that they may be planted with ſome of the beſt kinds of Grapes, which rarely come to any Perfection in this Country, without the Aſſiſtance of ſome artificial Heat; of which the following Sorts are the moſt valuable.

The Red Muſcat of Alexandria.
The White Muſcat of Alexandria.
The Raiſin Muſcat, or *Frontiniac.*
The Red Frontiniac.
The Griſly Frontiniac.
The White Frontiniac.
The Black Frontiniac.
The Burdelais or *Burlace.*
The Malmſey *Muſcadine.*
The St. Peter.

When the Vines which are planted againſt the Hot-walls, are grown to full Bearing, they muſt be pruned and managed after the ſame manner as hath been directed for thoſe againſt common Walls; with this Difference only, *viz.* that thoſe Seaſons when they are not forced, the Vines ſhould be carefully managed in the *Summer* for a Supply of good Wood, againſt the Time of their being forced; ſo that it will be the better Method to diveſt the Vines of their Fruit, in order to encourage the Wood; for as few of the Sorts will ripen without Heat, ſo it is not worth while to leave them on the Vines, during the Seaſons of reſting, except it be the common Frontiniac's, which in a good Seaſon will ripen without artificial Heat; but even during theſe, I would not adviſe many Grapes to be left on them; becauſe as the Deſign of reſting the Vines, is to encourage and ſtrengthen them; therefore all poſſible Care ſhould be had, that the young Wood is not robbed by over-bearing; for thoſe Years when the Vines are forced, the Joints of the young Wood are generally drawn farther aſunder, than they ordinarily grow in the open Air; ſo that when they are forced two or three Years ſucceſſively, the Vines are ſo much exhauſted, as not to be recovered into a good bearing State, for ſome Years; eſpecially if they are forced early in the Seaſon, or where great Care is not taken in the *Summer*, to let them have a proper Share of free Air, to prevent their being drawn too much, and to ripen their Shoots. Thoſe Years when the Vines are forced, the only Care ſhould be to encourage the Fruit, without having much Regard to the Wood; ſo that every Shoot ſhould be pruned for Fruit, and none of them ſhortened for a ſupply of young Wood, becauſe they may be ſo managed in the other Year's Pruning, as to repleniſh the Vines with new Wood. Thoſe Vines which are deſigned for Forcing in the *Spring*, ſhould be pruned early the *Autumn* before, that the Buds which are left on the Shoots, may receive all poſſible Nouriſhment from the Vine, and at the ſame time, the Shoots ſhould be faſtened to the Trelaſe in the Order they are to lie; but the Glaſſes ſhould not be placed before the Vines, till about the End of *January*, at which time alſo the Fires muſt be lighted; for if they are forced too early in the Year, they will begin to ſhoot before the Weather will be warm enough to admit Air to the Vines; which will cauſe the young Shoots to draw out weak, and thereby their Joints will be too far aſunder; ſo conſequently there will be fewer Grapes on them, and thoſe Bunches which are produced, will be ſmaller, than when they have a ſufficient Quantity of Air admitted to them every Day.

If the Fires are made at the Time before directed, the Vines will begin to ſhoot the latter End of *February*, which will be ſix Weeks earlier than they uſually come out againſt the common Walls; ſo that by the Time that other Vines are ſhooting, theſe will be in Flower, which will be early enough to ripen any of thoſe Sorts of Grapes perfectly well. The Fires ſhould not be made very ſtrong in theſe Walls; for if the Air is heated to about twenty Degrees above the temperate Point, on Mr. *Fowler*'s Thermometers, it will be ſufficiently warm enough to force out the Shoots leiſurely, which is much better than to force them violently. Theſe Fires ſhould not be continued in the Day-time, unleſs the Weather ſhould prove very cold, and the Sun not appear to warm the Air, at which times it will be proper to have ſmall Fires continued all the Day; for where the Walls are rightly contrived, a moderate Fire made every Evening, and continued till ten or eleven of the Clock at Night, will heat the Wall, and warm the incloſed Air to a proper Temperature; and as theſe Fires need not be continued longer than till about a Week or ten Days in *April*, (unleſs the *Spring* ſhould prove very cold) ſo the Expence of the Fire will not be very great, becauſe they may be contrived to burn either Coal, Wood, Turf, or almoſt any other Sort of Fuel; tho' where Coal is to be had reaſonable, it is the eveneſt Fuel for theſe Fires, and will not require much Attendance.

When the Vines begin to ſhoot, they muſt be frequently looked over to faſten the new Shoots to the Trelaſe, and to rub off all dangling Shoots; in doing of which great Care muſt be taken; for they are very tender, and very ſubject to break when any Violence is offered. The Shoots ſhould alſo be trained very regular, ſo as to lie as near as poſſible at equal Diſtances, that they may equally enjoy the Benefit of the Air and Sun; which is abſolutely neceſſary for the Improvement of the Fruit. When the Grapes are formed, the Shoots ſhould be ſtopped at the ſecond Joint beyond the Fruit, that the Nouriſhment may not be drawn away from the Fruit in uſeleſs Shoots, which muſt be avoided as much as poſſible in theſe forced Vines; upon which no uſeleſs Wood ſhould be left, which will ſhade the Fruit, and exclude the Air from it by their Leaves.

As the Seaſon advances, and the Weather becomes warm ſo there ſhould be a proportionable Share of free Air admitted to the Vines every Day, which is abſolutely neceſſary to promote the Growth of the Fruit; but the Glaſſes ſhould be ſhut cloſe every Night, unleſs in very hot Weather; otherwiſe the cold Dews in the Night will retard the Growth of the Fruit. The Bunches of the *White Frontiniac*, the *Raiſin Muſcat*, *St. Peter*, and *Burdelais*, ſhould alſo be looked over, and the ſmall Grapes cut out with Sciſſars, in order to thin them; for theſe Sorts grow ſo cloſe together on the Bunches, that the Moiſture is detained between the Grapes, which often occaſions their rotting; and the Air being excluded from the Middle of the Bunches, the Grapes never ripen equally; which by this Method may be remedied, if done in time: and as theſe Grapes are protected by the Glaſſes, from the Blights which frequently take thoſe which are expoſed, ſo there will be no Hazard in thinning theſe Grapes ſoon after they are ſet; at which Time it will be much eaſier to perform this Operation, than when the Grapes are grown larger, and conſequently will be cloſer together. But in doing of this, the Bunches muſt not be much handled; for if any of the Grapes are the leaſt bruiſed, or the Flue which there naturally is upon them, be rubbed off, their Skins will harden and turn of a brown Colour; ſo the Fruit will never thrive after. Therefore the Sciſſars which are uſed for this Operation, ſhould have very narrow Points, that they may be more eaſily put between the Grapes, without injuring the remaining ones. The other Sorts of Grapes which I have recommended for theſe Hot-walls, do not produce their Fruit ſo cloſe together on the Bunches; ſo they will not require this Operation, unleſs by any Accident they ſhould receive a Blight, which often occaſions a great Inequality in the Size of the Grapes; which, whenever it thus happens, will require to be remedied by cutting off the ſmall Grapes, that the Bunches may ripen equally, and appear more ſightly.

By the Beginning of *July*, theſe Grapes will be almoſt full-grown; therefore the Glaſſes may be kept off continually, unleſs the Seaſon ſhould prove very cold and wet; in which Caſe they muſt be kept on every Night, when the Days are cold or wet, and only open when the Weather is favourable; for as the racy vinous Flavour of theſe Fruits is increaſed by a free Air, ſo during the Time of their ripening, they ſhould have as large a Share as the Seaſon will admit to be given them. But when the cold Nights begin to come on in *Auguſt*, the Glaſſes muſt be every Night ſhut to exclude the Cold, otherwiſe it will greatly retard the ripening of the Fruit; for although the Vines are brought ſo forward in the *Spring*, as that the Fruit by this Seaſon are quite turned to their Colour, yet if they are expoſed to the cold Dews, and the morning Froſts, which frequently happen toward the latter Part of *Auguſt*, it will prevent the Fruit from ripening ſo kindly as when they are guarded from it. When the Grapes begin to ripen, they muſt be carefully guarded againſt Birds and Waſps, otherwiſe they will be in Danger of Deſtruction in a ſhort time; to prevent which, the Vines ſhould be carefully covered with Nets, ſo as to exclude the Birds, who will make great Havock with the Grapes, by breaking of their Skins; and if there are a few Twigs covered with Birdlime, placed here and there on the Outſide of the Nets, it will be of Service; becauſe the Birds are often ſo bold as to attempt to break the Nets to get to the Grapes, and ſo may be entangled on theſe Twigs; from which, whenever that happens, they ſhould not be diſengaged, but ſuffered to remain to keep off their Companions; and if they do get off themſelves, it will have the deſired Effect; for there will few other Birds come to the ſame Place that Seaſon, as I have more than once experienced.

As to the Waſps, the beſt Method is to hang up ſome Phials, about half filled with ſugar'd Water, and rub the Necks of the Phials with a little Honey, which will draw all the Waſps to them, who by attempting to get at the Liquor, will fall into the Phials, and are drowned; ſo theſe ſhould be carefully looked over once in three or four Days to take out the Waſps and deſtroy them, and to repleniſh the Phials with Liquor. If this be duly obſerved, and the Phials placed in time, before the Grapes are attacked, it will effectually prevent their being injured; but where theſe Precautions are not taken, the Grapes will be in Danger of being abſolutely deſtroyed: for as theſe early Grapes will turn Colour long before any others againſt common Walls, ſo they are in much more Danger, there being no other Fruit for them in the Neighbourhood: whereas, when Grapes in general begin to ripen, there is a large Quantity in almoſt every Garden; ſo that if they deſtroy a Part in each Garden, yet there will be a greater Chance to have ſome eſcape, than where there is only one Wall for them to attack.

Theſe Sorts of Grapes, being forced in the manner before directed, will begin to ripen early in *September*, eſpecially the *Black* and *Red Frontiniac's*, which will be fit for the Table a Fortnight earlier than the other Sorts; but as the Deſign of forcing them, is to have them in as great Perfection as poſſible in this Climate, ſo they ſhould not be gathered until they are thorough ripe; for which Reaſon ſome of the latter Sorts ſhould be left on the Vines till *October*, or ſometimes later; but then the Glaſſes ſhould be kept over them in wet and cold Weather, to protect the Fruit from it; but whenever the Weather is fair, the Glaſſes muſt be opened to let in the free Air; otherwiſe the Damps, ariſing from the Earth at that Seaſon, will cauſe a Mouldineſs upon the Grapes, which will rot them. So that if the Seaſon ſhould prove very cold and wet, it will be proper to make a ſmall Fire every Night to dry off the Damps, and prevent this Injury. By this Method the Grapes may be continued upon the Vines, until the Middle or latter End of *November*, when ſome of the large late-ripe Sorts will be in very great Perfection. But moſt People in *England* gather their Grapes too ſoon, never ſuffering them to remain on the Vines to ripen, even in the warmeſt Seaſons; when, if they are left on till after *Michaelmas*, they will be perfectly good.

Of late Years many Perſons have planted Grapes againſt Eſpaliers, which in ſome Places have ſucceeded very well in good Seaſons; but if theſe are not planted in a good Soil, and to a proper Aſpect, and the Sorts rightly choſen, they ſeldom produce any Fruit which are fit to be eaten. The Soil proper to plant Vines in Eſpaliers, ſhould be the ſame as hath been directed for Vineyards; *viz.* either a chalky or gravelly Bottom, with about a Foot and half of light hazel Earth on the Top, a little ſloping to the South or South-Eaſt, that the Wet may eaſily find a Paſſage, ſo as not to remain on the Ground. In ſuch a Soil ſituated to the Sun, and ſcreened from cold Winds, there are ſeveral Sorts of Grapes, which in warm Seaſons will ripen very well in *England*.

But there are ſome curious Perſons who line the Backſide of their Eſpaliers with low reed Hedges, and others who do it with thin ſlit Deals; both of which are a good Defence to the Vines againſt Blights in the *Spring*, and accelerate the ripening of the Grapes; ſo that in tolerable Seaſons they will come to good Maturity. Neither of theſe Methods are very expenſive; for theſe cloſe Fences need not be more than four Feet high; becauſe the Vines, being to be managed after the ſame manner as thoſe in Vineyards, will never riſe above the Height of a Man; and the bearing Shoots muſt always be trained about two Feet above the Surface of the Ground, ſo that the Fruit-branches will be always below the Top of the cloſe Fences; and as for the upright Shoots, which are deſigned for the next Year's Bearing, it matters not how much they riſe above the Fence: ſo theſe may have a looſe Trelaſe, to which they may be faſtened, to prevent their over-hanging of the Fruit.

In the making of theſe Kinds of cloſe Eſpaliers for Grapes, it will be proper to lay one ſtrong oaken Plank (ſuch as are procured in breaking up of old Ships or Barges) next the Surface of the Ground, which will laſt many Years ſound, and be very uſeful in ſupporting of the Fences. If theſe Planks are fifteen Inches broad, as they may always be readily procured; then, if the upper Part of the Fence be Reeds, there may be two Lengths cut out of them (provided the Reeds are of a due Length) without including their Tops. In the Front of theſe Hedges ſhould be a ſlight Trelaſe, to faſten the Vines to, which may be made of Aſh Poles. The upright Poles of theſe Trelaſes need not be nearer together than eighteen Inches; and if there are three croſs Poles, at about a Foot aſunder, they will be ſufficient to faſten the bearing Shoots of the Vines at proper Diſtances, in the manner they are deſigned to be trained; which ſhould be in ſuch Poſition, that the Fruit may not be over-ſhadow'd by the Branches. And if the upright Poles are cut ſo long, as to be a Foot and half above the Reeds, they will be tall enough to ſupport the upright Shoots for the next Year's Bearing; which being trained ſingly at proper Diſtances, will have the Advantage of the Sun and Air to ripen the Wood, much better than where four or five Shoots are faſtened to the ſame Pole.

To this Trelaſe the Reeds may be faſtened with Hoops on the Backſide, after the manner uſually practiſed in making of common reed Fences; and if on the Top of the Reeds there is faſtened a thin Slip of Deal, to ſecure the Tops of the Reeds from being broken, it will preſerve them a long time. In making of theſe Fences the Reeds ſhould not be laid too thick; for that will not only be more Expence, but will be troubleſome to faſten, and not laſt ſo long, as when they are made of a moderate Thickneſs. Therefore, as the Reeds will be cut into two Lengths, each Bundle will ſpread about ſix Feet in Length; obſerving firſt to ſpread the bottom Parts of the Bundles, which contain the largeſt Ends of the Reeds, the whole Length; and then the upper Parts of the Reeds ſhould be reverſed and ſpread in Front of the other, which will make the upper Part of the Fence almoſt as thick as the Bottom. But neither theſe, nor the boarded Fences, need be made till the Vines are in full Bearing, which will be the fourth or fifth Year after planting, according to the Progreſs they make; during which Time the Shoots may be ſupported by any common Stakes. For if the Fences are made before the Vines are planted, as is frequently practiſed, they will be half decayed by the Time the Vines are fit to bear; and before this Time, the Fences are of no Uſe to them.

The Sorts of Grapes which are proper to plant againſt theſe Fences, are,

The Miller Grape.
The Black Morillon.
The Chaſſelas White.
The White Muſcadine.
The Melie *Grape.*
The Sweet Water.
The Auvernat, *or true* Burgundy.

Theſe, if well managed, will ripen very well, provided the Seaſon is tolerably good, and will come in ſoon after thoſe on the Walls; ſo that if they are taken Care of, by hanging of Mats before them, when the Nights prove cold in *Autumn*, and are permitted to hang till *October*, the Fruit will prove very good. But where the *Sweet Water Grape* is planted againſt theſe Fences, they will require to be covered in the *Spring*, at the Time when they are in Flower, if there ſhould be cold Nights; otherwiſe the Bunches will receive a Blaſt, which will deſtroy the greateſt Part of the Grapes, ſo that many Times there will not be more than ſix or eight good Grapes on each Bunch; and the others will be ſmall ſtarved Fruit, hardly ſo large as the ſmalleſt Peaſe.

In planting of theſe *Vines*, either for open Eſpaliers or the cloſe Fences, they ſhould be performed in the ſame Manner as for Vineyards, which ſhould be from Cuttings planted ſix Feet aſunder, putting two into each Hole. And as theſe are only deſigned for the Table, ſo a ſingle Row of a moderate Length will be ſufficient to ſupply a Family, where there are others againſt Walls to come before them. But where a Perſon is inclinable to have more Rows than one, they ſhould be placed twelve Feet aſunder, that they may equally enjoy the Sun and Air.

As to the Pruning and other Management of theſe *Vines*, that being the ſame as for thoſe in the Vineyard, I ſhall not repeat it in this Place, it being fully treated of before; and to which I have nothing here to add, more than that I find the Grape which is preferred by the moſt ſkilful *Vignerons* in *France*, and what they call the *Auvernat*, as before-mentioned, is the ſame which in *England* is called the *Blue Cluſter Grape*, and hath been long in this Country planted as an eating Grape againſt Walls; ſo that from theſe, Cuttings may be eaſily procured. But it is to be feared, that the bad Seaſons, and the ill Succeſs which has attended the few Vineyards already planted in *England*, will put a Stop to their future Improvements, tho' it is a great Pity it ſhould; for as to the bad Seaſons, the Vineyards abroad have been equally expoſed thereto; nor has the Wine which they have produced the two laſt Seaſons, been of much Value; ſo that the Dealers in Wine in *England* have mixed it up with ſome of the ſtrong Wines of former Years Growth, in order to render it ſaleable. And with regard to the ill Succeſs which People have had, who have planted Vineyards, that is entirely owing to their not having followed the Directions exhibited, either in the Choice of Soil and Situation, the Sorts of Grapes, the Diſtance which ſhould be allowed to them, or the Method of pruning and managing them. In every of theſe Articles, I am convinced from ſeveral later Trials, there is no Reaſon to make the leaſt Alteration. And as to what farther Obſervations I have made, in the Buſineſs of preſſing, making and keeping of Wines, that ſhall be inſerted under the Article *Wine*.

VITIS IDÆA; The Bilberry *or* Whortleberry-buſh.

The *Characters* are;

The Flower conſiſts of one Leaf, which is ſhaped like a Pitcher, from whoſe Empalement ariſes the Pointal, fixed like a Nail, in the upper Part of the Flower, which afterwards becomes a ſoft umbilicated Fruit, or Berry, full of Juice, in which are incloſed Seeds, for the moſt part ſmall.

The *Species* are;

1. Vitis Idæa *magna quibuſdam, ſive Myrtillis grandis. J. B.* The great Bilberry-buſh.
2. Vitis Idæa *foliis oblongis crenatis, fructu nigricante. C. B. P.* Black Whorts, Whortle-berries, *or* Bilberry.
3. Vitis Idæa *ſempervirens fructu rubro. J. B.* Red Whorts, *or* Whortle-berries.
4. Vitis Idæa *Æthiopica, buxi minoris folio, floribus albicantibus. H. A.* Æthiopian Whortle-berry, with a leſſer Box Leaf, and white Flowers.
5. Vitis Idæa *Americana, foliis ſubrotundis hirſutis, ex adverſo naſcentibus, floribus minimis herbaceis, fructu parvo rubro.* American Whortle-berry, with roundiſh hairy Leaves growing by Pairs, ſmall greeniſh Flowers, and a ſmall red Fruit, *vulgarly called* St. Peter's-wort.

The firſt and third Sorts do grow wild in *Yorkſhire*, *Derbyſhire*, *Weſtmoreland*, and other Northern Counties of *England*, as alſo upon the *Alps*, and other lofty Mountains in ſeveral Parts of *Europe*; but can't by Art be cultivated in Gardens near *London*, ſo as to thrive and produce Fruit.

The firſt commonly grows to the Height of three or four Feet, in its native Places of Growth, and produces great Quantities of Fruit, which the poor Inhabitants of thoſe Countries gather, and ſell in the Markets for Tarts, *&c.* The third Sort is a very humble Plant, ſeldom growing much taller than the Dwarf *Dutch Box* (which is uſed for edging of Borders): This produces, in its native Places of Growth, large Quantities of red Fruit; but theſe will rarely grow in Gardens, unleſs planted in a ſtrong cold Soil and a ſhady Situation.

The ſecond Sort is very common upon marſhy or boggy Heaths, in divers Parts of *England*, and will grow to the Height of three or four Feet in ſuch Places, and produce great Quantities of Fruit, which ripen in *July*, and are gathered by the poor People for the ſame Uſes as the firſt Sort.

This is alſo very difficult to cultivate in Gardens: The only Method is, to take up ſome Plants in the *Spring*, from the Places of its Growth, with Balls of Earth to their Roots, and tranſplant them into a moiſt ſhady Part of the Garden, where, if the Soil be not too rich or warm, they will thrive tolerably well, provided the Ground is not dug or cleaned; for theſe Plants will grow beſt on ſuch Places as are never cultivated. This Sort is directed by the *College of Phyſicians* to be uſed in Medicine.

The fourth Sort is a tender Plant, which is preſerved in the Gardens of thoſe who delight in preſerving exotick Plants. This is propagated by Layers, which ſhould be laid down in the *Spring*, obſerving to make a little Slit in the Part which is laid in the Ground, (in the Manner as is practiſed in laying of Carnations) and in dry Weather they muſt be frequently watered, which will greatly facilitate their taking Root; and in the following *Spring* they may be cut off from the old Plants, and planted each into a ſeparate Pot, filled with ſtrong freſh Earth, and placed upon a moderate Hot-bed, which will facilitate their taking freſh Root; but they muſt be ſhaded from the Sun with Mats, and frequently watered.

In the *Summer* theſe Plants may be expoſed in the open Air, with other hardy exotick Plants; and in *Winter* they muſt be placed in the Green-houſe, where they ſhould have as much free Air as poſſible in mild Weather, and muſt be frequently watered, otherwiſe they will not thrive.

Theſe Plants produce their Flowers in *Winter* and *Spring*; but do rarely produce Fruit in this Country.

The fifth Sort grows to a Shrub of ſix or ſeven Feet high, and though a Native of *America*, yet will endure the ſevereſt Cold of our Climate in the open Air. It may eaſily be propagated by Layers or Suckers, which are generally produced in great Plenty from the Roots of the old Plants; theſe ſhould be taken off either in *Spring* or *Autumn*, and planted out amongſt other Shrubs of the ſame Growth, where they will add to the Diverſity; but there is little Beauty in them; for their Flowers (which are produced in *September*) are very ſmall, and of a greeniſh Colour, ſo that unleſs a Perſon ſearch for them, they may eſcape the Sight, being always ſituate amongſt the Leaves.

Theſe Flowers are ſucceeded by ſmall ripe Fruit, which ripen in *Winter*, after the Leaves are fallen off, ſo are more viſible than the Flowers. This Fruit is not uſed in its native Country, it having very little Taſte, and being ſo very ſmall, can't be worth the Trouble of gathering. I ſuppoſe this Shrub had the Name of *St. Peter's-wort* impoſed on it before it produced either Flowers or Fruit in *England*, from the Reſemblance which the Leaves of it have to thoſe of *Aſcyron*, or *St. Peter's-wort*; for in other Reſpects it differs widely from the Characters of that *Genus*.

VITIS SYLVESTRIS: *vide* Clematitis.

ULMARIA, Meadow-ſweet, *or* Queen of the Meadow.

The *Characters* are;

It hath a Flower compoſed of ſeveral Leaves, which are placed in a circular Order, and expand in form of a Roſe; out of whoſe Empalement riſes the Pointal, which afterward becomes a Fruit, compoſed of many little membranaceous crooked Huſks, gathered into a Head, each of which generally contains one Seed.

The *Species* are;

1. ULMARIA. *Cluſ. Hiſt.* Meadow-ſweet.
2. ULMARIA *flore pleno. Jeſſieu.* Meadow-ſweet, with a double Flower.
3. ULMARIA *foliis ex luteo variegatis.* Meadow-ſweet, with Leaves variegated with yellow.

The firſt Sort grows wild in moiſt Meadows in moſt Parts of *England*, and flowers the Beginning of *June*, when it makes a fine Appearance amongſt the Graſs. It alſo grows plentifully on the Sides of Ditches and Rivers, where as it is not often mowed down, it continues much longer in Beauty, and the Stalks riſe to a greater Height. The Flowers which are produced on the Tops of the Stalks, in form of an Umbel, are white, and ſmell very ſweet. Theſe, as alſo the Leaves and Roots, are uſed in Medicine. This Plant is eſteemed to be cooling, drying and binding; and alſo is ſudorifick and alexipharmick. The Preparations of this Plant are, the diſtilled Water of the Flowers and Leaves, and the Extract, which is by ſome much commended. The Flowers give an agreeable Flavour to Wine, and are ſometimes uſed to add a Flavour to ſtrong *Spaniſh* Wines, like that of the *Malvatic* Wine, which is made in the Iſland of *Candy*. Theſe Flowers are proper to place in Baſons to adorn Halls and Chambers, becauſe they are of an agreeable Sweetneſs, which doth not offend the Head.

This Plant is ſeldom planted in Gardens, being ſo commonly found wild in the Fields; but in low moiſt Places in large Gardens, if ſome of theſe Plants were placed, they would afford an agreeable Variety; and in ſuch Places few other Plants, which are more valuable, will thrive.

The ſecond Sort deſerves a Place in every good Garden, for the ſake of its fine double Flowers, which continue in Beauty a long Time. This doth not differ from the common Sort in any Thing, excepting that the Flowers are very double and large; ſo that when it is planted on a moiſt Soil, or is duly watered in dry Weather, it makes a fine Appearance for at leaſt a Month, or in a cool Seaſon near ſix Weeks; and as the Flowers have an agreeable Sweetneſs, ſo they are a fine Ornament in Baſons to place in Rooms.

Theſe Plants are propagated by parting of their Roots, which ſhould be done in *Autumn*, that they may be well rooted before the dry Weather comes on in the *Spring*; otherwiſe they will not flower very ſtrong the following *Summer*. Theſe Roots need not be parted oftener than every other Year, and then they ſhould not be parted into ſmall Heads; for as the Beauty of this Plant is to have many Stems of Flowers, ſo when the Roots are divided too much, there will be very few Stems produced, and conſequently the Plants will make but a mean Appearance.

Where theſe Plants are placed in moiſt ſhady Borders, intermixed with other flowering Plants, they ſhould be allowed good Room; for as their Roots ſpread pretty far in the Ground, ſo when they have but little Room, they will ſtarve in *Summer*, unleſs they are plentifully watered, and the Soil be very good in which they are planted; for wherever their Roots intermix with thoſe of other Plants, there will be a great Struggle for the Maſtery, and thereby both Sorts will be rendered weak. So that theſe ſhould be planted two Feet aſunder, and as much from any other Plants; and this will be Room enough to dig the Ground between the Plants, which ſhould always be carefully done thoſe Years when the Plants are not removed; which will encourage the Roots, and cauſe them to flower very ſtrong.

The Sort with ſtriped Leaves is alſo preſerved in ſome Gardens for the ſake of Variety. This may be propagated by parting of the Roots in the ſame Manner as the former Sort; but this muſt not have a rich Soil, for that will cauſe it to run plain.

ULMUS; The Elm Tree.

The *Characters* are:

The Flower conſiſts of one Leaf, which is ſhaped like a Bell, having many Stamina (or Threads) in the Centre; from the Bottom ariſes the Pointal, which afterwards becomes a membranaceous or leafy Fruit, almoſt Heart-ſhaped; in the Middle of which is placed a Pear-ſhaped Seed-veſſel, containing one Seed, for the moſt part of the ſame Shape.

The *Species* are;

1. ULMUS *vulgatiſſima, folio lato ſcabro. Ger. Emac.* The common rough-leav'd Elm.
2. ULMUS *folio latiſſimo ſcabro. Ger. Emac.* The Witch-Hazel, *or* broad-leav'd Elm; by ſome unſkilful Perſons call'd the Britiſh Elm.
3. ULMUS *minor, folio anguſto ſcabro. Ger. Emac.* The ſmall-leav'd *or* Engliſh Elm.
4. ULMUS *folio glabro. Ger. Emac.* The ſmooth-leav'd *or* Witch-Elm.
5. ULMUS *major Hollandica, anguſtis & magis acuminatis ſamarris, folio latiſſimo ſcabro. Pluk. Alm.* The Dutch Elm.

6. ULMUS *minor, folio anguſto ſcabro, elegantiſſime variegato.* The Engliſh Elm, with beautiful ſtriped Leaves.
7. ULMUS *folio glabro, eleganter variegato.* The Witch-Elm, with ſtriped Leaves.
8. ULMUS *minor, foliis flaveſcentibus.* The yellow-leav'd Elm.
9. ULMUS *major Hollandica, anguſtis & magis acuminatis ſamarris, folio latiſſimo ſcabro, eleganter variegato.* The Dutch Elm, with ſtriped Leaves.
10. ULMUS *minor, folio anguſto glabro.* The ſmooth narrow-leav'd Elm, *by ſome called* the Upright narrow-leav'd Elm.
11. ULMUS *folio lato ſcabro, cortice cinereo glabro.* The white-bark'd Elm, *by ſome called* the ſmooth Witch-Elm, *and by others* the Iriſh Elm.
12. ULMUS *folio lato ſcabro, anguſtis ſamarris.* The French Elm.

There are ſome other Varieties of the *Elm*, which differ ſo little from the Sorts enumerated, as ſcarcely to be diſtinguiſhed; ſo it will be needleſs to mention them, becauſe they are not ſo proper to make Plantations as the other more common Sorts.

The four firſt mentioned Sorts are very common in divers Parts of *England*, though it is generally believed neither of them were originally Natives of this Country: But however that be, they have propagated themſelves by Seeds and Suckers which have aroſe from the Roots of old Trees, in ſuch Plenty, as hardly to be rooted out, where they have long had Poſſeſſion, eſpecially in Hedge-rows, where there is Harbour for their Roots, which, when left undiſturbed, will ſend forth a freſh Parcel of young Plants annually, from whence the People who ſupply the Nurſery-men do gather them.

The fifth Sort is equally hardy, and almoſt as common in *England* as either of the former; this is pretty quick of Growth while young, and will out-ſtrip the common *Engliſh Elm* for ſeveral Years; but after twenty or thirty Years Growth, the *Engliſh Elm* will get the better every Year, and the Timber thereof being much preferable to that of the *Dutch Elm*, renders it more valuable for Planting.

The Sorts with ſtriped Leaves are preſerved by thoſe who are curious in collecting variegated Plants; but they are not worth propagating, unleſs for the ſake of Variety; being of ſlower Growth, and in moſt People's Judgment leſs beautiful than the plain Sorts.

Theſe Plants may be either propagated by Layers or Suckers taken from the Roots of the old Trees, the latter of which is greatly practiſed in many Places; but as theſe are often cut up with very indifferent Roots, ſo they very often miſcarry, and render the Succeſs doubtful; whereas thoſe which are propagated by Layers are in no Hazard, and do always make better Roots, and come on faſter than the other; for which Reaſons this Method ſhould be more univerſally practiſed. And ſince a ſmall Compaſs of Ground filled with Stools of theſe Plants, will be ſufficient to furniſh a Nurſery of a conſiderable Extent, annually, with Layers to be tranſplanted, ſo it is richly worth every Perſon's while, who would cultivate theſe Trees, to allot a Piece of Ground for this Purpoſe.

The beſt Soil for ſuch a Nurſery is a freſh Hazel Loam, neither too light and dry, nor over-moiſt and heavy; this Ground ſhould be well trenched, and a little rotten Dung buried therein; and in doing of this, great Care ſhould be taken to pick out all Roots of pernicious Weeds, which if left in the Ground would be very injurious to the Layers, and can't afterwards be ſo eaſily rooted out; then having laid the Ground level, the Plants muſt be planted at about eight Feet aſunder each Way. The beſt Seaſon for this Work is in *Autumn*, as ſoon as the Leaves begin to decay, that they may take Root before the dry Weather in the *Spring* comes on, whereby a great Expence of watering them will be ſaved; for if they are well ſettled in the Ground before the dry Weather, they will require little more than to mulch their Roots, to keep the Earth from drying.

Theſe Plants ſhould be permitted to grow rude two Years, during which Time the Ground between ſhould be carefully cleaned and dug every *Spring*; by this Time they will be ſtrongly rooted, and have made pretty ſtrong Shoots, ſo that they may be laid in the Ground: The Manner of performing this being already deſcribed in the Article of *Layers*, I ſhall forbear repeating it in this Place.

When theſe Layers are well rooted, they ſhould be taken off, and tranſplanted out into a Nurſery, which ſhould be upon a good Soil, and well prepared (as before for the Stools) The Plants ſhould be planted in Rows four Feet aſunder, and two Feet diſtance Plant from Plant in the Rows. This ſhould be done in *Autumn*, as ſoon as the Leaves begin to decay; and if there is ſome Mulch laid upon the Surface of the Ground about their Roots, it will preſerve them from being hurt by Froſt in *Winter*, and from drying Winds in *Spring*, and thereby ſecure them from all Hazard.

The following *Summer* the Ground between them ſhould be conſtantly kept clean from Weeds, and in *Autumn* they ſhould be pruned up, cutting off all ſtrong lateral Shoots, which, if left on, would impede their upright Growth; but there muſt be ſome of the ſmaller Shoots left on, to detain the Sap, in order to augment the Stems of the Trees; for where they are pruned up too naked, they are apt to grow up too ſlender to ſupport themſelves, ſo that their Heads will recline to the Ground, and cauſe their Stems to grow crooked.

In this Nurſery they may remain five or ſix Years, obſerving conſtantly to dig the Ground between them every *Spring*, and to trim them as before directed, which will promote their Growth, and render them ſtrong enough to tranſplant out where they are to remain, in the Time before-mentioned.

Theſe Trees are very proper to plant in Hedge-rows, upon the Borders of Fields, where they will thrive much better than when planted in a Wood or cloſe Plantation, and their Shade will not be very injurious to whatever grows under them; but when theſe Trees are tranſplanted out upon Banks after this Manner, the Banks ſhould be well wrought and cleared from all other Roots, otherwiſe the Plants, being taken from a better Soil, will not make much Progreſs in theſe Places. About *Michaelmas* will be a good Time for this Work, for the Reaſons before aſſigned; but when they are planted, there ſhould be ſome Stakes fixed in by them, to which they ſhould be faſtened, to prevent their being diſplaced by the Wind; and Part of their Heads ſhould be taken off, before they are planted, which will alſo be of Uſe in preventing their being eaſily overturned by Winds; but by no Means ſhould their leading Shoot be ſtopped, nor their Branches too cloſely cut off; for if there are not ſome Shoots left on, to draw and attract the Sap, they will be in Danger of miſcarrying.

Theſe Trees are alſo proper to plant at a Diſtance from a Garden or Building, to break the Violence of Winds; for which Purpoſe, there is not any Tree more uſeful; for they may be trained up in form of a Hedge, keeping them cut every Year, which will cauſe them to grow very cloſe and handſome, to the Height of forty or fifty Feet, and be a great Protection againſt the Fury of Winds; but they ſhould not be planted too near a Garden where Fruit-trees or other Plants are placed, becauſe the Roots of the *Elms* do run ſuperficially near the Top of the Ground to a great Width, and will intermix with the Roots of the other Trees, and deprive them of Nouriſhment; nor ſhould they be planted near Gravel or Graſs-walks, which are deſigned to be well kept, becauſe the Roots will run into them, and ſend forth Suckers in great Plenty, which will deface the Walks, and render them unſightly.

But for large Gardens, where Shade is required, there is ſcarce any Tree ſo proper for that Purpoſe, being eaſy to remove when grown to a conſiderable Size; ſo that a Perſon who is willing to have his Plantations for Shade in a ſhort Time, may procure Trees of two Feet Circumference in their Trunk, which will be in no Danger of ſucceeding, provided they are removed with Care; and theſe will take Root and grow again, almoſt as well as young Plants, which is what few other Sorts of Trees will do; but then they ſhould be ſuch Trees as have been thus regularly trained up in a Nurſery, and have good Roots, and not ſuch as are taken out of Hedge-rows (as is by ſome practiſed) which ſeldom riſe with any tolerable Roots, and conſequently do often miſcarry.

In Planting of theſe Trees, great Care ſhould be taken not to bury their Roots too deep, which is very injurious to them, eſpecially if they are planted on a moiſt Loam or Clay, in which Caſe, if the Clay is near the Surface, it will be the beſt Way to raiſe the Ground in a Hill, where each Tree is to be placed, which will advance their Roots above the Surface of the Ground, ſo that they will not be in Danger of rotting in *Winter* with Moiſture.

When theſe Trees are propagated by Suckers taken from the Foot of old Trees, they are commonly laid into the Ground very cloſe in Beds, where, in dry Weather, they may be frequently watered, to encourage their putting out Roots: In theſe Beds they are left two Years, by which Time thoſe that live will be well rooted (tho' a great many of them generally die); then they ſhould be tranſplanted into the Nurſery, and managed as hath been directed for the *Layers*.

There are ſome who raiſe the *Witch-Elm* from Seeds, which it generally produces in great Plenty, and are ripe in *April*. Theſe ſhould be ſown upon a Bed of freſh loamy Earth, and gently covered; in dry Weather they ſhould be watered, and if the Bed is ſhaded from the violent Heat of the Sun, it will be of great Service to the Seeds, (for I always obſerve, the Plants to come up better in the Shade than when expoſed to the Sun;) when the Plants come up, they ſhould be carefully cleared from Weeds, and after they have ſtood two Years in the Seed-bed, they will be fit to plant out into the Nurſery, where they muſt be managed as the former.

Sometimes the common *Engliſh Elm* will produce Seeds, but it is not ſo conſtantly fruitful as the *Witch-Elm*, which ſeldom fails to produce great Quantities, when they have arrived to a due Maturity; which Seeds will fall to the Ground, and when they light upon a Spot which is not diſturb'd, the Plants will come up in great Plenty.

The Timber of the common *Engliſh Elm* is generally preferr'd to the reſt, tho' that of the *Witch-Elm* is often as good, and is the largeſt Tree, when planted on a kindly Soil: but the *Dutch Elm* affords the worſt Timber, and never will grow to the Stature of either of the other Sorts, ſo that this ſhould not be cultivated for the Timber; therefore the beſt Way to be ſure of the Kinds which a Perſon would chuſe to propagate, is to have a Nurſery of Stools, in order to furniſh Layers; for when they are grubb'd up from Hedge-Rows, there will often be many Sorts intermix'd, eſpecially if the People who go about to gather them do furniſh them; becauſe they take them indifferently wherever they can procure them; ſo that when they are planted out thus blended together, there will be a conſiderable Difference in their Growths, which will deface the Plantation.

The tenth Sort is very common in ſome Parts of *Hertfordſhire*, and in *Cambridgeſhire*, where there is ſcarce any other Sort of Elm to be ſeen. This makes a very handſome upright Tree, and retains its Leaves as late in the *Autumn*, as the common ſmall-leav'd Elm, which is called the *Engliſh* Elm by the Nurſery Men near *London*.

The eleventh Sort is by ſome Perſons preferr'd to moſt others, for the free Growth, and its retaining the Leaves longer than any other Sort. The Bark of this Tree is very ſmooth, and of an Aſh-colour; the Leaves are of a lively green Colour, and the Growth of the Tree is very regular and upright.

The twelth Sort is not ſo much eſteemed as either of the former; but it being a very hardy Kind, will grow in ſuch Soils, where the former will not, for which ſome Perſons cultivate it; tho' I think neither this nor the *Dutch* Elm worth planting, becauſe when they are arrived to a conſiderable Size, they make a moſt deteſtable Appearance: their Branches growing very ſtraggling, which have a thick rugged Bark, and their Leaves being very thinly placed on them, they look very diſagreeable; and the Leaves of both theſe Sorts fall ſooner in *Autumn*, than thoſe of the common Elm.

Theſe may be propagated in the ſame manner as the other Sorts.

UMBELLA, an Umbel; is the Extremity of a Stalk or Branch, divided into ſeveral Pedicles or Rays, beginning from the ſame Point, and open'd in ſuch a Manner as to form an inverted Cone. When the Pedicles, into which the Stalk is divided, are ſubdivided into others of the ſame Form, upon which the Flowers or Fruits are diſpoſed, the firſt Order is call'd *Rays*, the ſecond *Pedicles*. That *Umbel* which conſiſts of Pedicles only, is call'd a *ſimple Umbel*; that which is compoſed both of Rays and Pedicles, is called a *compound Umbel*.

UMBELLIFEROUS PLANTS, are ſuch whoſe Flowers are produced in an *Umbel*, on the Top of the Stalks, where they, in ſome manner, repreſent an *Umbrella*; of this Kind are *Parſnips, Carrots, Fennel, Parſley*, &c.

URTICA, [ſo call'd of *urere*, Lat. to *burn*, becauſe this Plant being touch'd, burns very much] The Nettle.

The *Characters* are;

It hath an apetalous Flower, conſiſting of many Stamina *included in an Empalement; but theſe are barren; for the Embryo's are produced either on different Plants, or on different Parts of the ſame Plant, without any viſible Flower, which afterwards become a bivalve Seed-veſſel, ſometimes gathered into round Heads, and at other times are ſmall and hairy, incloſing ſeveral Seeds.*

The *Species* are;

1. Urtica *urens maxima. C. B. P.* The greateſt Stinging-Nettle.
2. Urtica *urens minor. C. B. P.* The leſſer Stinging-Nettle.
3. Urtica *urens pilulas ferens, 1. Dioſcoridis, ſemine lini. C. B. P.* Pill-bearing Stinging-Nettle, with a Seed like Flax.
4. Urtica *altera pilulifera, parietariæ foliis. H. R. Par.* Another Pill-bearing Stinging-Nettle, with Leaves like Pellitory, *commonly called* Spaniſh Marjoram.
5. Urtica *pilulifera, folio anguſtiori, caule viridi, Balearica. Salvad.* Narrower-leaved Pill-bearing Stinging-Nettle from Majorca, with a green Stalk.
6. Urtica *maxima racemoſa Canadenſis. H. R. Par.* The greateſt branching Nettle of Canada.
7. Urtica *Canadenſis, myrrhidis folio. Inſt. R. H.* Canada Nettle, with a Leaf of Sweet Cicely.
8. Urtica *racemoſa Americana, amplo coryli folio. Plum. Cat.* Branching American Nettle, with a large Hazel-leaf.
9. Urtica *racemifera maxima Sinarum, foliis ſubtus argenteis lanugine villoſis. Pluk. Amalth.* Greateſt branching Nettle of China, with Leaves which are white and woolly underneath.

The firſt of theſe Sorts is a very common Weed upon the Sides of Banks, Ditches, and other uncultivated Places, where its Roots will ſpread and over-run the Ground; ſo that it ſhould always be carefully extirpated from Gardens. It is ſometimes uſed in Medicine, but may be eaſily procured from the Fields at almoſt any Seaſon.

The ſecond Sort is alſo a very common Weed in Gardens and cultivated Fields; but it being an annual Plant, is not ſo difficult to eradicate as the former.

The third, fourth, and fifth Sorts are preſerved in many Gardens for Variety; but the fourth, which is commonly call'd *Spaniſh Marjoram*, is the moſt common in *Engliſh* Gardens, where it is cultivated for making Sport, many ignorant Perſons taking it for a ſort of *Marjoram*, are often ſeverely ſtung by ſmelling to it; and others put it into the Middle of Noſegays, amongſt other Greens, which they preſent to Perſons who are not acquainted with the Plant, and ſo by ſmelling to it, they ſuffer in like manner as the former.

The third Sort is mentioned to grow wild in *England*; but the other two are brought from warmer Countries.

All theſe Plants may be eaſily propagated by ſowing their Seeds in *March*, upon a Bed of light rich Earth, and when the Plants are come up, they ſhould be tranſplanted out into Beds, or the Borders of the Pleaſure-Garden, interſperſing them amongſt other Plants, ſo that they may not be ſo eaſily diſcovered by Perſons whom there is a Deſign to deceive, by gathering a Sprig from them to ſmell to; after the Plants have taken Root, they will require no farther Care, but only to keep them clear from Weeds; in *June* they will flower, and their Seeds will ripen in *Autumn*, which, if permitted to ſhed upon the Ground, will come up the following *Spring*, and flouriſh without any farther Care.

The Seeds of the third Sort are ſometimes uſed in Medicine.

The ſixth Sort is very common in many *Engliſh* Gardens, where it is preſerved more for the ſake of Variety, than for any Beauty it hath. This hath an abiding Root, which ſends forth a great Number of Shoots every *Spring*, which riſe about three Feet high, and form a thick Tuft or Buſh, which continues green till the *Autumn*, when the Shoots decay to the Root. This may be propagated by parting of the Root in the *Spring*, and may be planted in almoſt any Soil or Situation, and will endure the ſevereſt Cold of this Climate in the open Air.

The ſeventh Sort is alſo preſerved in ſome curious Gardens, for the ſake of Variety. The Leaves of this Plant are finely cut and jagged into many Parts, in ſome manner reſembling thoſe of Sweet Cicely. This is alſo a very hardy Plant, and may be treated as the former.

The eighth Sort was diſcovered by Father *Plumier* in *America*. This is more impatient of Cold than the other; ſo ſhould be planted in Pots, and placed in Shelter in the *Winter* Seaſon, otherwiſe it will not live in this Country. But as it is a Plant of little Beauty, ſo it is only preſerved by ſome curious Perſons for Variety.

The ninth Sort retains its Leaves all the *Winter*, which are very large and hoary underneath, ſo make an agreeable Variety in the Green-houſe in the *Winter* Seaſon. The Stems of this Plant riſe four Feet high or more; and theſe often branch out, at the Top, into Side-ſhoots; and the Flowers (which are like thoſe of the common Nettle) are produced from the Wings of the Leaves. This Sort is too tender to live in the open Air in *Winter*; ſo the Plants ſhould be potted, and in *Autumn* removed into the Green-houſe; where, if they are ſecured from the Froſt, and frequently refreſhed with Water, they will thrive extremely well. In *Summer* they may be placed abroad in a ſheltered Situation, and in dry Weather they muſt be plentifully watered; for they are very thirſty Plants. This may alſo be propagated by parting of the Roots, which ſhould be done in *May*, when they are removed out of the Green-houſe; for at that Seaſon this Plant is in its leaſt Vigour, the *Winter* being the Time when it is moſt flouriſhing. The Seeds of this Plant were brought from *China*, where the Plant is called *Peama*.

UVA URSI, The *Spaniſh* Red-whort.

The *Characters* are;

It hath a globular bell-ſhaped Flower, conſiſting of one Leaf, from whoſe Empalement ariſes the Pointal, fixed like a Nail in the binder Part of the Flower; which afterward becomes a ſoft Berry or Fruit of a ſpherical Form, incloſing hard Seeds, which are ſome plain, and other gibbous.

There is but one *Species* of this Plant at preſent known; *viz.*

Uva Ursi. *Cluſ. Hiſt.* Spaniſh Red-whort.

This Plant is very near a-kin to our common *Whorts* or *Bilberries*: it riſes about a Foot high, and hath ſeveral flexible Branches, which are covered with a reddiſh Bark, ſomewhat like the young Branches of the Strawberry-tree: theſe are thinly beſet with oblong ſtiff green Leaves, which are ſerrated on their Edges. The Flowers grow on the Top of the Branches, which are of a whitiſh bluſh Colour; theſe are ſucceeded by red Berries, ſomewhat larger than thoſe of our common Whorts, which have an acid Taſte.

This Plant muſt be treated in the ſame manner as our *Vitis Idæa*, or *Bilberry*; which is to procure the Plants with Balls of Earth to their Roots, from the Place of its native Growth; becauſe the Seeds often fail, and when they do ſucceed, it will be a long time before the Plants will grow to any Size; but as there are Directions for the Management of theſe Plants before treated of, under the Article of *Vitis Idæa*, I ſhall not repeat them in this Place.

VULNERARIA, Woundwort.

The *Characters* are;

It hath a papilionaceous (or Pea-bloom) Flower, out of whoſe tubular, and turgid Empalement ariſes the Pointal, which afterward becomes a ſhort Pod filled with roundiſh Seeds. To theſe Notes muſt be added, That the Pod is incloſed in a membranous Bladder, which was before the Empalement.

The *Species* are;

1. Vulneraria *ruſtica*. *J. B.* Ruſtic Woundwort, Kidney Vetch, or Ladies Finger.
2. Vulneraria *ruſtica, flore albo*. *Inſt. R. H.* Ruſtic Woundwort, with a white Flower.
3. Vulneraria *flore purpuraſcente*. *Inſt. R. H.* Ruſtic Woundwort, with a purpliſh Flower.
4. Vulneraria *pentaphyllos*. *Inſt. R. H.* Five-leav'd Woundwort.
5. Vulneraria *Cretica, flore parvo vario*. *Tourn. Cor.* Candy Woundwort, with a ſmall variable Flower.

The firſt Sort grows wild on poor chalky Ground in divers Parts of *England*, ſo is rarely cultivated in Gardens. This ſends forth ſeveral Stalks from the Root, which are about eight or nine Inches long, beſet with hairy Leaves alternately, which are compoſed of four or five Pair of Lobes, terminated with an odd one. On the Top of the Stalks the Flowers are produced, which are ſmall, and of a yellow Colour, collected together in a broad Head, which are ſucceeded by ſhort Pods filled with roundiſh Seeds. This Plant flowers toward the End of *May*, and the Seeds are ripe in *July*.

The ſecond Sort is a Variety of the firſt, from which it only differs in the Colour of its Flowers, which are white.

The third Sort is found wild in ſome Parts of *Wales*, from whence the Seeds and Plants have been procured by ſome curious Botaniſts, who preſerve them in their Gardens. This Sort produces pretty purpliſh Flowers, collected into Heads, which make an agreeable Appearance.

The fourth Sort is found wild in *Italy*, *Sicily*, and ſome other warm Countries; but in *England* it is preſerved in ſome curious Gardens for the ſake of Variety. This is an annual Plant, which periſhes with the firſt Approach of *Winter*. The Seeds of this Plant ſhould be ſown about the Middle of *March*, on a Bed of light Earth, in an open Situation, where they are deſigned to remain, becauſe the Plants do not bear tranſplanting very well. Therefore the beſt Method is, to ſow the Seeds in ſmall Drills, made two Feet aſunder; and when the Plants are come up, they ſhould be thinned where they are too cloſe, ſo as to leave them ſix or eight Inches aſunder in the Rows, and then keep the Ground clean from Weeds, which is all the Culture they require. The Branches of this Plant ſpread flat on the Ground, and the Flowers are produced in large Bladders from the Wings of the Leaves. Theſe appear in *June*, and the Seeds will ripen the End of *Auguſt*.

If ſome of theſe Seeds are ſown, the Beginning of *September*, on a warm dry Border, the Plants will come up in *Autumn*, and live thro' the *Winter*, (provided it is not very ſevere) and will flower early the following *Summer*, whereby good Seeds may be obtained; for when the *Summers* prove cold and wet, thoſe Plants which come up from Seeds ſown in the *Spring*, do not produce ripe Seeds; ſo that the *Species* may be loſt, wbere there are not autumnal Plants.

The fifth Sort was diſcovered by Dr. *Tournefort* in the Iſland of *Candy*, from whence he ſent the Seeds to the Royal Garden at *Paris*. This is alſo an annual Plant, ſo ſhould be managed in the ſame manner as hath been directed for the former Sort.

The firſt, ſecond and third Sorts, will abide two, and ſometimes three Years, before their Roots decay; tho' they generally are in the greateſt Vigour the ſecond Year, for theſe rarely flower the ſame Year they are ſown. The ſureſt Method to have theſe Plants ſucceed in a Garden, is to ſow their Seeds in the *Autumn* as ſoon as they are ripe, on a Bed or Border of poor, dry gravelly or chalky Soil, on which they will thrive much better than on a rich garden Earth. When the Plants are come up, they ſhould be thinned, leaving them ſix or eight Inches aſunder; and afterward, if thep are kept clear from Weeds, they will require no farther Care.

The firſt Sort was formerly much uſed by the *Germans*, as a Wound-herb, from whence it obtained its Name; but at preſent it is not in any Uſe.

W A

WALKS: In order to the laying *Walks* in Gardens, it will be very proper that the Bottom of them be fill'd with ſome Lime-rubbiſh or coarſe Gravel, Flint-ſtones, or other rocky Stuff, which will be very ſerviceable in preventing Weeds from growing thro' the Superficies of Gravel; this Bottom ſhould be laid eight or ten Inches thick, over which the Coat of Gravel ſhould be ſix or eight, which Gravel ſhould be fine, but yet not ſkreen'd, becauſe that ſpoils it. This ſhould be laid on an Heap, rounding, ſo that the larger rough Stones may run down on the Sides, which being every now and then raked off, the Gravel by that means will be ſufficiently fine.

After the Gravel has been laid to the Thickneſs abovemention'd, then the *Walks* muſt be raked true and level, from all great Drips as well as little Holes; by this means moſt of the Stones of the *Walks* will be raked under your Feet, which ſhould rather be gently ſprinkled back again, over the laſt length that is raked, than buried, (as is the Practice of many Gardeners;) for by this means the *Walk* will lie much harder, and the coarſeſt Stones will very much contribute to its Firmneſs.

There is alſo a great Fault committed frequently, in laying *Walks* too round, and ſome to that degree, that they cannot be walk'd on with that Eaſe and Pleaſure that ought to be; and beſides, this too great Rounding takes off much from the ſeeming Breadth of the *Walk*.

The common Allowance for a *Gravel-walk* of five Feet Breadth, is an Inch in the Crown; ſo that if a *Walk* be twenty Feet wide, according to this Proportion, it will be four Inches higher in the Middle than on each Side; and a *Walk* of twenty-five Feet, will be five Inches; one of thirty Feet, ſix Inches; and ſo on.

When a *Walk* has been thus carefully laid, or rather, after every Length or Part of it, (which commonly is about fifteen Feet each) then it ſhould be roll'd well, both in Length and alſo croſs-ways: The Perſon who rolls it ſhould wear Shoes with flat Heels, that he may not make Holes in the *Walks*; for when they are once made in a new *Walk*, it will not be eaſy to roll them out again.

In order to lay *Gravel-walks* firm, it will be neceſſary to give them three or four Water-rollings; that is, they muſt be roll'd when it rains ſo very faſt, that the *Walks* ſwim with Water; this will cauſe the Gravel to bind, ſo that when the *Walks* come to be dry, they will be as hard as a Terraſs.

Iron-mould is accounted the beſt for binding; or Gravel with a little binding Loam amongſt it; which latter, tho' it be apt to ſtick to the Heels of Shoes, in hot wet Weather, yet nothing binds better in dry Weather.

When the Gravel is over-ſandy or ſharp, Loam is frequently mix'd with it, which, if they be caſt together in Heaps, and well mix'd, will bind like a Rock; whereas looſe Gravel is as uncomfortable and uneaſy to walk on, as any other Fault in a *Walk* can render it.

The beſt Gravel for *Walks* is ſuch as abounds with ſmooth Pebbles, (as is that dug at *Black-heath*) which being mix'd with a due Proportion of Loam, will bind like a Rock, and is never injured by wet or dry Weather; and the Pebbles being ſmooth, are not ſo liable to be turn'd up, and looſen'd by the Feet in walking, as are thoſe which are angular and rough; for where *Walks* are laid with ſuch Gravel as is full of irregular Stones, they appear unſightly in a Day's time after rolling, becauſe the Stones will riſe upon the Surface whenever they are walk'd upon; but the ſmooth Pebbles will remain handſome two or three Days without rolling.

The Width of theſe *Walks* muſt always be proportion'd to their Length, and the Size of the Garden; but ſmall *Walks* are every where diſagreeable; ſo that if the *Walks* were to be only two hundred Feet long, I ſhould adviſe them to be made fourteen or fifteen Feet wide; for it is much better to have but few *Walks* in a Garden, and thoſe to be ſpacious, than to make many ſmall *Walks*, as is often practiſed.

Graſs-walks in a Garden are both ornamental and delightful, in *Summer* time and dry Weather.

Theſe may be made either by laying them with Turf, or ſowing them with Hay-ſeed, and raking them fine and level, which, with keeping them well roll'd, and frequently mow'd, will make the Graſs fine.

Theſe may be laid a little rounding, to caſt off the Water the better, but the Slope muſt not be ſo great as to be diſcover'd with the Eye: About a fourth Part of the Roundneſs allow'd for *Gravel-walks*, will be ſufficient for theſe, if in wet Ground; but if the Ground be dry, it is the beſt Way to lay them quite level.

Sometimes there are Water-tables on each Side of theſe *Walks*, which is very good for draining them, and alſo for keeping the Graſs and Weeds from mixing with the Borders: and beſides, theſe Water-tables render the *Walks* the handſomer, and appear the more beautiful.

Theſe Water-tables ought to be new cut once or twice a Year, and this ought to be done by a ſtrait Line, as exactly as poſſible.

The oftener theſe *Walks* are mow'd and roll'd in *Summer*, the thicker their Bottoms will be; and in *Autumn* the Graſs ſhould be kept very ſhort, and well roll'd; for if it be permitted to grow pretty long at this Seaſon, the Blade will decay in *Winter*, and greatly injure their Roots. The Worm-caſts muſt alſo be carefully beat to pieces with a long Aſh-pole, and ſo ſpread over the Graſs; this the Gardeners call *Polling of a Walk*, which is done by bruſhing the Surface of the Ground ſtrongly with a ſlender Pole; the oftner this is repeated, the better it is for the Graſs; beſides, it will deſtroy the Worm-caſts, and render the *Walks* more beautiful.

Having given Directions for the making and keeping of Gravel and Graſs-Walks; I ſhall add ſomething relating to Sand-Walks, which are now very frequently made in Gardens, as being leſs expenſive in the making, and alſo in keeping, than either of the former; and in very large irregular Gardens, which are ſuch as moſt Perſons now eſteem, this is a very great Article; for as the greateſt Part of the *Walks* which are made in Gardens, twiſt about in an irregular Manner, it would be very difficult to keep them handſome, if they were laid with Gravel. And as theſe *Walks* are for the moſt part ſhaded by Trees; ſo the dripping of the Water from their Branches in hard Rains, would waſh the Gravel in Holes, and render the *Walks* very unſightly. When theſe Wood-Walks are Graſs, they do not appear ſightly, nor are they very proper for walking on; for after Rain they continue damp ſo long, that they become unhealthy to walk on; and the Graſs generally grows ſpiry and weak for want of Air; and by the continual dropping of the Trees, will by degrees be deſtroyed. Therefore it is much better to lay theſe *Walks* with Sand, which will be dry and wholeſome; and whenever they appear moſſy, or any Weeds begin to grow on them, if they are ſhoved with a *Dutch* Hough in dry Weather, and then raked over, it will deſtroy the Weeds and Moſs, and make the *Walks* appear as freſh and handſome as if they had been new laid.

Graſs-Walks of late Years have been very little eſteemed, becauſe they are ſo unfit for walking on; for in a Morning there is commonly a great Dew upon the Graſs, as there is alſo late in the Evening, and after Rain they continue moiſt a long time; ſo that it is only in the Middle of the Day that theſe *Walks* can be uſed, which is a Time few Perſons care to be in a Garden: and at moſt times there remains a Dampneſs, which frequently occaſions Colds to ſuch Perſons as are tender; ſo they are with good Reaſon diſuſed at preſent. Beſides theſe *Walks* are not very beautiful, there being little Pleaſure in viewing long narrow Slips of Graſs, which is what moſt Graſs-Walks muſt be termed, being bounded either with Gravel or Borders on the Sides. And Graſs never appears ſo beautiful, as when it is diſpos'd into large irregular Pieces, and bounded with Trees.

Gravel-Walks are very neceſſary near the Houſe, becauſe they are ſoon dry after Rain, ſo are proper for walking on, in all Seaſons. But then theſe ſhould be but few, and thoſe ought to be large and magnificent, proportionable to the Grandeur of the Houſe and Garden. The principal of theſe *Walks* ſhould be elevated parallel with the Houſe, ſo as to form a Terrace; this ſhould extend itſelf each way, in proportion to the Width of the Garden; ſo that from this there may be a Communication with the Sand-Walks, without going on the Graſs; or there ſhould be two ſide *Walks* of Gravel to lead to them, ſo that there may be a dry *Walk* continued quite thro' the Gardens. But there is not a more ridiculous Sight, than that of a ſtrait Gravel-walk, leading to the Front of the Houſe, interſecting the Graſs, ſo as to cauſe it to appear like the ſtiff formal Graſs-plots, frequently made in little Court Yards by Perſons of low Taſte.

In the modern Way of laying out Gardens, the *Walks* are carried thro' Woods and Plantations, ſo that theſe are ſhady and convenient for walking in the Middle of the Day. Theſe are uſually carried about, winding as much as the Ground will admit of, ſo as to leave a ſufficient Thickneſs of Wood, to make the *Walks* private; and that the Perſons who are walking in one Part of them, may not be ſeen by thoſe who are in any of the other Parts. Where theſe Walks are contrived with Judgment, a ſmall Extent of Ground will admit of a great many Turns; ſo that a Perſon may walk ſome Miles in a ſmall Garden. But theſe Turns ſhould be made as natural as poſſible, ſo as not to appear too much like a Work of Art, which will never pleaſe ſo long as the former.

The Breadth of theſe Walks muſt be proportioned to the Size of the Ground, which in a large Extent may be twelve or fourteen Feet wide, but in ſmall Gardens five or ſix Feet will be ſufficient. There are ſome Perſons who allow a much greater Breadth to their Walks, than what I have aſſigned to the largeſt Gardens; but as theſe Walks are ſuppoſed to be ſhaded by Trees, ſo when they are made too broad, the Trees muſt be planted cloſe to the Sides of the *Walks*; and then it will be a long time before they will afford a ſufficient ſhade, if the Trees are young. Therefore I imagine, the Width here allowed will by moſt People be thought ſufficient, eſpecially as the *Walks* are deſigned to wind as much as the Ground will allow, becauſe the wider they are, the greater muſt be the Turns; otherwiſe the *Walks* will not be private for any ſmall Diſtance. Beſides, as it will be proper to line the Sides of theſe *Walks* with Honeyſuckles, Sweetbrier, Roſes, and many other ſweet-flowering Shrubs; ſo the tall Trees ſhould be placed four or five Feet from the Walk, to allow Room for theſe. But as I ſhall particularly treat of the Method of laying out Wilderneſſes, and planting of them, in ſuch a manner as to render them as nearly reſembling a natural Wood as poſſible, under its proper Head; I ſhall add nothing more in this Place, except a few common Directions for making of theſe Sand-Walks.

When the Ground is traced out in the manner as the Walks are deſigned, the Earth ſhould be taken out of the *Walks*, and laid in the Quarters. The Depth of this muſt be proportion'd to the Nature of the Soil; for where the Ground is dry, the *Walks* need not be elevated much above the Quarters; ſo the Earth ſhould be taken out four or five Inches deep in ſuch Places: but where the Ground is wet, the Bottom of the *Walks* need not be more than two Inches below the Surface, that the *Walks* may be raiſed ſo high, as to throw off the Wet into the Quarters; which will render them more dry and healthy to walk on.

After the Earth is taken out to the intended Depth, the Bottom of the *Walks* ſhould be laid with Rubbiſh, coarſe Gravel, or whatever of the like Nature can be moſt readily procured. This ſhould be laid three or four Inches thick, and beaten down as cloſe as poſſible, to prevent the Worms from working through it; then the Sand ſhould be laid on about three Inches thick; and after treading it down as cloſe as poſſible, it ſhould be raked over, to level and ſmooth the Surface. In doing of this, the Whole ſhould be laid a little rounding to throw off the Wet: But there will be no Neceſſity of obſerving any Exactneſs therein; for as the whole Ground is to have as little Appearance of Art as poſſible, the rounding of theſe *Walks* ſhould be as natural, and only ſo contrived, as that the Water may have free Paſſage off them.

The Sand with which theſe *Walks* are laid, ſhould be ſuch as will bind; otherwiſe it will be very troubleſome to walk on them in dry Weather: For if the Sand be of a looſe Nature, it will be moved with ſtrong Gales of Wind, and in dry Weather will ſlide from under the Feet. If after theſe *Walks* are laid, they are well rolled two or three times, it will ſettle them, and cauſe them to be firm. If the Sand is too much inclinable to Loam, it will alſo be attended with as ill Conſequence, as that which is too looſe: For this will ſtick to the Feet after every Rain; ſo that where Sand can be obtained of a middle Nature, it ſhould always be preferred.

In ſome Countries where Sand cannot be eaſily procured, theſe *Walks* may be laid with Sea-ſhells well pounded, ſo as to reduce them to a Powder, which will bind extremely well, provided they are rolled now and then. But where neither of theſe can be eaſily procured, Sea-coal Aſhes, or whatever elſe can be gotten, which will bind and be dry to the Feet, may be uſed for this Purpoſe. And where any of theſe can only be had in ſmall Quantities, the *Walks* ſhould have a greater Share of Rubbiſh laid in their Bottom, and theſe ſpread thinly over them: and in moſt Places Rubbiſh, rough Stones, or coarſe Gravel, may be eaſily procured.

WALLS: As for the Matter, Dimenſions, or Poſition of *Walls*, &c. ſee the Articles *Garden*, *Kitchen-Garden*, *Orchard*, &c.

Of all Materials proper for building *Walls* for Fruit-trees, Brick is the beſt, in that it is not only the handſomeſt, but the warmeſt and kindeſt for the ripening of Fruit; beſides that it affords the beſt Conveniency of nailing; for ſmaller Nails will ſerve in them than in *Stone-walls*, where the Joints are larger: And *Brick-walls* with Copings of Freeſtone, and Stone Pilaſters or Columns, at proper Diſtances, to ſeparate the Trees and break off the Force of the Winds, make not only the moſt beautiful, but the moſt profitable *Walls* of any others.

It has been propoſed by ſome to build *Garden-walls* with half rounds, every Semicircle being about ſix Yards in the Face or Diameter, and eight Yards round on the Outſide, each taking in two Trees, and ſo to make two Feet Breadth of plain Walling between every half round; on the Top of each may be placed a Flower-pot, of two Feet high, to contain a handſome Green, and a Vine planted at the Foot, to fill up the Space to the Top. If a *Wall* be ſo built, every Part of it will, by the Means of theſe Rounds, enjoy a Share of the Sun, one time of the Day or other; and the beſt *Walls* will not fail to be very hot, by Reflexion or Collection of the Beams of the Sun in the Rounds, and they will alſo be more ſecure from injurious Winds.

In ſome Parts of *England* there are *Walls* built both of Brick and Stone, which have been very commodious. The Bricks of ſome Places are not of themſelves ſubſtantial enough for *Walls*, nor are they any where ſo durable as Stone; and therefore ſome Perſons, that they might have *Walls* both ſubſtantial and wholſome, have built double ones, the Outſide being of Stone, and the Inſide of Brick, or a *Stone-wall* lined with Brick.

And where *Walls* are built for Fruit againſt Terraſs-walks, to prevent the ill Effects of Damps, it is a very good Method to leave a Space of about two Feet, the whole Length of the *Wall*, between the inner one next to the Bank of Earth, and the outward one which is to receive the Fruit, which will render the outward *Wall* always healthful, and the Product of the Fruit may be anſwerable to the Coſt.

Mr. *Fairchild* having obſerved, that all Peach-trees that grow in a ſhallow Soil with a gravelly Bottom, canker and decay as ſoon as they reach the Gravel, becauſe they want a due Quantity of Moiſture, adviſes, That where the Soil is ſuch, the *Walls* be built upon Arches, each Arch being four Feet wide, and the Piers between them two Feet apiece; the Top of the Arches to be as high as the Surface of the Border; and the *Wall* to face the South Sun; the Trees to be planted at twelve Feet Diſtance, which is one in every ſecond Arch: And on the North Side of the ſame *Wall*, to plant other Fruit in the vacant Arches.

By this Means, ſays he, the Peaches would have the Benefit of the Sun upon their Branches; and beſides, they having the double Liberty of ſpreading their Roots, they would be partly ſhaded, and enjoy a due Share of the North Border, and Moiſture to nouriſh them and their Fruit; and ſo by this Means they would be preſerved free from Cankers, and the Curling of their Leaves, which is commonly a Forerunner of Death. Vines may be planted on the South Side between the Peaches.

As to thoſe Trees that are planted on the North Side of the *Wall*, he ſuppoſes that they would be much aſſiſted in their Vigour, by the Warmth of the Sun falling upon their Roots on the South Side of the Arches.

But as to this Manner of building of *Walls*, I do not approve of it; becauſe,

1. If it be a Party-wall in a Garden, and be planted on both Sides, the Trees will run through, and rob one another of the Nouriſhment.

2. If it be an outſide *Wall*, there are commonly Elms planted at ſome ſmall Diſtance, to break the Violence of the Winds, and the Roots of theſe Elms will more eaſily run thro' and rob the Trees of their Nouriſhment; but if there are not Elms, it is but ſeldom that there is as good Earth on the Outſide of the Garden as there is within.

3. Becauſe the worſt Inconvenience will be, that it will entice the Roots of the Trees to run downright, which is a very great Fault in Fruit-trees.

4. The Roots will not be able to find much Nouriſhment under a *Brick-wall*, where neither Sun nor Rain can come to correct the Humidity of the Earth, and render it proper for the Nouriſhment of Fruit.

I have ſeen a Book, written by a *Fellow of the Royal Society*, for the further Improvement of Fruits, by building of *Walls* ſloping; but I never have had any practical Experience of building ſuch a *Wall*; yet I am of Opinion that a perpendicular *Wall* is preferable to any other, or one rather hanging a little inward over the Fruit, if it could be ſo conveniently contrived.

For when the Sun is low, either in the *Spring* or *Autumn*, or in the Evening or Morning, thoſe *Walls* which lean ſloping backwards, will have but a Glance, or but little of the Power of the Sun; but a perpendicular *Wall* has the Sun's Rays full againſt it, which is preferable to the greateſt Heats of the Sun at *Midſummer* upon a back-ſloping *Wall*.

In *Autumn* the Sun is wanting to ripen *Winter* Pears, which ſhould be kept dry, which againſt ſloping *Walls* cannot, the Dews lying much longer on ſuch than on thoſe that are perpendicular; and beſides, they are much more liable to Blights in the *Spring*, and are more expoſed to eddy Winds on all Sides.

In the building of *Walls* to accelerate the ripening of Fruits, there have been many Contrivances for obtaining the greateſt Warmth from the Sun; ſuch as inclining the *Walls* to the Horizon, that the Rays may fall more directly upon them. Others have built *Walls* in Semicircles, thinking thereby to collect the Force of the Sun's Rays, and thereby to reflect them from one Side of the half-Circle to the other: And there are ſome who have built their *Walls* in Angles for the ſame Purpoſe. But neither of theſe Contrivances have ſucceeded according to the Expectations of the Perſons who have practiſed them; for their Fruits have not ripened ſo well againſt either of theſe *Walls*, as againſt ſuch as have been plain. For as to thoſe *Walls* which are built inclining to the Horizon, though they have the Rays of the Sun almoſt perpendicular in the Middle of the Day; yet in the Mornings and Evenings, the Rays fall more oblique on theſe *Walls*, than on thoſe which are upright. And it is not the greateſt Force of the Sun's Rays, in the Middle of the Day, which is of ſo much Service to Fruits, as the long Continuance of the Sun on the *Wall*, or its ſtrongeſt Force in the Morning to dry the Dew from off the Trees; for in the Middle of the Day, when the Sun is greatly advanced above the Horizon, and the Air thoroughly warmed by his Influence, there will need no additional Heat to forward the Growth of the Fruit, and to ripen it in Perfection; for wherever the Fruit is expoſed too much to the Sun by the want of Leaves to ſhade it, and thoſe Fruit happen to lie cloſe to the Wall, as is ſometimes the Caſe; they are never ſo fair or well-taſted as thoſe which are ſcreened from the Sun by Leaves: For the violent Heat of the Sun in the Middle

dle of the Day, in very hot Weather, will cauſe many Fruits, which are too much expoſed, to be mealy before they are ripe. And theſe inclining *Walls* are greatly expoſed to hoary Froſts in *Spring* and *Autumn*, which are very deſtructive to Fruits, as alſo to Rain, Hail, *&c.* and the Dampneſs will remain a conſiderable time longer on theſe ſloping *Walls*, than on thoſe which are upright; ſo that theſe ſloping *Walls* are by no means proper for Fruit.

As to thoſe Walls which are built in half Circles, or thoſe in Angles, they are alſo bad; for the Wind, being drawn into the Area's of them, is reverberated from Side to Side, which renders the Air about the Fruit much colder than any in the Neighbourhood; ſo inſtead of forwarding the ripening of the Fruit, as they were intended, the Fruit will be much later ripe than againſt plain *Walls* built to the ſame Aſpect, as I have ſeveral times obſerved; ſo that from all the ſeveral Trials which have yet been made of different ſhaped *Walls*, it appears there are none ſo proper for Fruit as thoſe which are built plain; and as theſe are alſo the leaſt Expence to build, ſo they ſhould always be preferred.

According to the modern Taſte in Gardening, there are very few *Walls* built round Gardens; which is certainly very right, not only with regard to the pleaſure of viewing the neighbouring Country from the Garden, but alſo in regard to the Expence, 1. of building theſe *Walls*; and, 2. if they are planted with Fruit, as is frequently practiſed, to maintain them will be a conſtant Charge, without receiving much Profit or Pleaſure. For when there is too much Walling planted with Fruit Trees, they are ſeldom taken much Care of; ſo that the Quantity of Fruit produced will be ſmall, and that ill-nouriſhed and bad-taſted. Therefore the Quantity of Walling ſhould be proportioned to the Fruit conſumed in the Family. But as it will be neceſſary to incloſe the Kitchen-garden, for the Security of the Plants, ſo, if that be walled round, it will contain as much Fruit as will be wanted in the Family; becauſe the Kitchen-garden is always proportioned to the Number of Perſons maintained. And as the Kitchen-garden ſhould always be placed out of Sight from the Houſe, ſo the *Walls* may be hid by Plantations of Trees, at ſome little Diſtance, which will be of Uſe in ſheltering of the Fruit.

The beſt Aſpect for *Walls* in *England*, is to have one Point to the Eaſtward of the South; for theſe will enjoy the Benefit of the Morning Sun, and will be leſs expoſed to the Weſt and South-weſt Winds, (which are very injurious to Fruit in *England*) than thoſe *Walls* which are built due South. I know there are many Perſons who object to the turning of *Walls* the leaſt Point to the Eaſt, on Account of the Blights which they ſay come from the Eaſt in the *Spring*. But from many Years Experience and Obſervation, I can affirm, that Blights as often attack thoſe *Walls* which are open to the South-weſt, as thoſe which are built to any other Aſpect: and I believe, whoever will be at the Trouble to obſerve for ſeven Years, which aſpected Walls ſuffer moſt from Blights, will find thoſe which are built with a Point to the Eaſtward of the South, as ſeldom blighted as thoſe which are turned to any other Aſpect. Therefore, in the Contrivance of a Kitchen-garden, there ſhould be as great Length of theſe *Walls* built as the Situation of the Ground will admit.

The next beſt Aſpect is due South, and the next to that South-eaſt, which is preferable to the South-weſt, for the Reaſons before aſſigned. But as there will for the moſt part be South-weſt and Weſt *Walls* in every Garden; ſo theſe may be planted with ſome Sorts of Fruit, which do not require ſo much heat to ripen them, as thoſe deſigned for the beſt *Walls*. But where-ever there are North-walls, it is hardly worth while to plant them with Fruit; becauſe whatever Sorts of Fruit will ripen againſt them, will do much better in Eſpaliers, or on Standards.

Where Perſons are very curious to have good Fruit, they erect a Trelaſe againſt their *Walls*, which projects about four Inches from them, to which they faſten their Trees; which is an excellent Method, becauſe the Fruit will be always at a proper Diſtance from the *Walls*, ſo as not to be injured by them, and will have all the Advantage of their Heat. And by this Method the Walls will not be injured by driveing Nails into their Joints, which by every Year being drawn out, do draw out the Mortar from between the Bricks, and thereby make Holes; in which Snails and other Vermin will harbour, and deſtroy the Fruit, and the *Walls* will be alſo greatly impaired.

Theſe Trelaſes may be contrived according to the Sorts of Fruit which are planted againſt them. Thoſe which are deſigned for Peaches, Nectarines, and Apricocks, (which for the moſt part produce their Fruit on the young Wood) ſhould have their Rails three, or at moſt but four Inches aſunder every way. But for other Sorts of Fruit, which continue bearing on the old Wood, they may be five or ſix Inches apart; and thoſe for Vines may be eight or nine Inches Diſtance. For as the Shoots of Vines are always trained at a much greater Diſtance, than thoſe of any other Sort of Fruit, ſo the Trelaſes for theſe need not be near ſo cloſe; eſpecially as thoſe muſt for Peaches and Nectarines, whoſe Shoots are generally ſhortened to about five or ſix Inches or leſs; ſo that, if the Rails are not pretty cloſe, many of the ſhort Branches cannot be faſtened to them.

Theſe Trelaſes may be made of any Sort of Timber, according to the Expence which the Owner is willing to beſtow; but Fir is moſt commonly uſed for this Purpoſe, which if well dried and painted, will laſt many Years; but if a Perſon will go to the Expence of Oak, it will laſt ſound much longer. And if any one is unwilling to be at the Expence of either, then a Trelaſe may be made of Aſhpoles, in the ſame manner as is practiſed in making Eſpaliers, with this Difference only, that every fourth upright Rail or Poſt ſhould be very ſtrong, and faſtened with Iron Hooks to the *Wall*, which will ſupport the Whole: and as theſe Rails muſt be laid much cloſer together, than is generally practiſed for Eſpaliers; ſo theſe ſtrong upright Rails or Poſts will not be farther diſtant than three Feet from each other. To theſe the croſs Rails which are laid horizontally ſhould be well nailed, which will ſecure them from being diſplaced, and alſo ſtrengthen the Trelaſe; but to the other ſmaller upright Poles, they need only be faſtened with Wire. To theſe Trelaſes the Shoots of the Trees ſhould be faſtened with Ozier-twigs, Rope-yarn, or any other ſoft Bandage; for they muſt not be nailed to it, becauſe that will decay the Wood-work.

Theſe Trelaſes need not be erected until the Trees are well ſpread, and begin to bear Fruit plentifully; before which time the young Trees may be trained up againſt any ordinary low Eſpalier, made only of a few ſlender Aſhpoles, or any other Sort of ſlender Sticks; by which Contrivance the Trelaſes will be new when the Trees come to Bearing, and will laſt many Years after the Trees have overſpread them. Whereas when they are made before the Trees are planted, they will be half decayed before the Trees come to bearing Fruit.

Where theſe Trelaſes are intended to be made againſt new Walls, it will be proper to faſten ſome ſtrong Iron Hooks into the Wall as it is built, at the Diſtance which the upright Poſts are intended to be placed; becauſe when theſe are afterwards driven into the *Wall*, they diſplace the Mortar in the Joints, and injure the *Wall*.

In the building of the *Walls* round a Kitchen-garden, the Inſides which are deſigned to be planted with Fruit-trees, ſhould be made as plain as poſſible, ſo that the Piers ſhould not project on thoſe Sides above four Inches at moſt; and theſe ſhould be placed about fourteen Feet aſunder, in ſuch *Walls* as are deſigned for Peach and Nectarine-trees, ſo that each Tree may be planted exactly in the Middle between the Piers, which will render them more ſightly, and be better for the Trees. But where Apricocks, Plums or Cherries, are to be planted, the Piers may be only ten Feet aſunder, and againſt every other Pier the Trees ſhould be planted, which will allow them ſufficient Room to ſpread; and as the Trelaſe will project as forward as the Piers, ſo the Branches of the Trees may be trained on a Plain. But when the Piers do not project more on the Inſide of the Garden, they ſhould be built ſtronger on the Outſide, for the better ſupporting of the *Walls*.

The uſual Thickneſs which Garden-walls are allowed, if built with Bricks, is thirteen Inches, which is one Brick and a half: but this ſhould be proportionable to the Height; for if they are all built fourteen Feet high or more, as is often practiſed, then the Foundations of the *Walls* ſhould be at leaſt two Bricks and a half thick, and brought up level to the Surface of the Ground, of the ſame Thickneſs; then they ſhould be ſet off two Inches on each Side, which will reduce them to two Bricks; and four Feet above the Ground, they may be diminiſhed on each Side, to reduce them to the thickneſs of a Brick and half, which muſt be continued to the Top of the *Walls*. And the Piers in theſe high *Walls* ſhould alſo be proportionably ſtronger than is commonly allow'd to lower *Walls*; for as theſe will be much more expoſed to ſtrong Gales of Wind, ſo if they are not well built, they will be in Danger of being blown down. Therefore the Piers of theſe *Walls* ſhould be projected the Length of a Brick on their Backſide, and the Thickneſs of a Brick on their Front; and if theſe are built about ten or twelve Feet aſunder, they will greatly ſtrengthen the *Walls*.

But there is no Neceſſity of building *Walls* higher than nine or ten Feet, unleſs it be for Pears, which, if properly managed, will ſpread over a great Compaſs of *Walling*; but as only ſome of the lateſt *Winter* Pears require the Aſſiſtance of a *Wall*, ſo there need no more but that Part of the *Wall* where theſe are deſigned to be, built higher; for Peaches and Nectarines never require a *Wall* higher than nine or ten Feet, provided they are rightly managed; for whenever they are carried to a greater Height, the lower Part of the *Wall* is unfurniſhed with bearing Branches. And altho' Apricocks, Plums and Cherries, will frequently grow higher; yet if they are planted at a proper Diſtance, and the Branches trained horizontally from the Bottom, they will not ſoon cover a Wall of this Height. And Vines may be kept as low as any Sort of Fruit; for when they are planted againſt low *Walls*, they muſt be treated ſomewhat after the ſame manner as thoſe in Vineyards, which is to cut out the greateſt Part of the Wood which produced Fruit the preceding Year, and train in new Shoots for the next Year's Bearing, which are rarely left a Yard in Length; ſo will not require very high Walls.

If the Pears which are deſigned to be planted, are allowed a South-weſt Aſpect, on which they will ripen very well; then the *Wall* to this Aſpect ſhould be built fourteen Feet high or more; for as theſe Trees ſpread very far, when on free Stocks, ſo they ſhould not be ſhortened and ſtopp'd in their Growth, which will prevent their Bearing, by cauſing them to ſend out a great Number of groſs luxuriant Shoots, which will never produce Fruit. Therefore theſe ſhould never be planted amongſt other Sorts of Fruit-trees, which are of ſmaller Growth; becauſe then the Walls muſt appear very unſightly, in having ſome Trees planted more than double the Diſtance which the others require; ſo that there is no other Sort of Fruit which requires the Aſſiſtance of *Walls* to ripen their Fruit, which need ſo great Room for ſpreading as Pears, except it be Figs; a few Trees of which may be planted againſt the ſame *Walls* where there is Room, tho' theſe may be planted againſt the Back-walls of Offices or Stables, where there is Conveniency, becauſe this Fruit is ſeldom coveted by Servants; and being planted in Places which are much frequented, they will not be in ſo much Danger of being deſtroyed by Birds, as thoſe which are in private Places. But I ſhall now proceed to give ſome Directions for the Building of *Hot-walls*, to promote the ripening of Fruits, which is now pretty much practiſed in *England*.

In ſome Places theſe *Walls* are built at a very great Expence, and ſo contrived as to conſume a great Quantity of Fuel; but where they are judiciouſly built, the firſt Expence will not be near ſo great, nor will the Charge of Fuel be very conſiderable; becauſe there will be no Neceſſity of making Fires more than two Months, or at moſt ten Weeks; beginning about the Middle of *January*, and ending by the Beginning of *April*, when there will be no want of Fires, if the Glaſſes are cloſe ſhut every Night, or in bad Weather: for half an Hour's Sun-ſhining on the Glaſſes at this Seaſon, will ſufficiently warm the Air incloſed in the Glaſſes, for the Growth of any of our *European* Fruits.

There are ſome Perſons who plant Vines and other Fruit-trees by the Sides of Stoves, and draw ſome of their Branches into the Stove, in order to obtain early Fruit; but this is by no means right, becauſe where the Stove is deſigned for the Ananas, the Air muſt be kept much warmer for them, than is required for any of the other Fruits, ſo that they can never do well together; for when there is a ſufficient Quantity of Air admitted, to promote the Growth of the other Fruit, the Ananas are ſtarved for want of a proper Heat; and ſo, on the contrary, when the Stove is kept up to the proper Heat for the Ananas, it will be too hot for Fruit. And it will alſo be proper to have the Vines on a particular *Wall* by themſelves, becauſe theſe require to have a greater Share of Air admitted to them. When they begin to ſhoot, then Peaches or Nectarines are proper, ſo that it is by much the better Method to have them ſeparate.

The ordinary Height of theſe hot-walls is about ten Feet, which will be ſufficient for any of thoſe Sorts of Fruits which are generally forced; for by this the Trees are commonly weakened in their Growth, ſo that they will not grow ſo vigorouſly as thoſe which are always expoſed to the open Air; and where there is not a Quantity of Walling planted ſufficient to let one Part reſt every Year, the Trees will never be very healthy, and will laſt but a few Years. The Quantity of Walling to produce early Fruit for a middling Family, can't be leſs than eighty or one hundred Feet in Length; ſo that where a Perſon is deſirous to have the Fruit in Perfection, and the Trees to continue in a good Condition many Years, there ſhould be three times this Quantity of Walling built; ſo that by dividing it into three Parts, there will be two Years for the Trees to recover their Vigour between the Times of their being forced; whereby a greater Quantity of Bearingwood may be obtained, and the Fruit will be fairer, and in larger Quantities than when they are forced every Year, or every other Year; and as the Glaſſes may be contrived ſo as to move from one to the other, the Expence of building the *Walls* ſo much longer, will not be vaſtly great, becauſe the Frames and Glaſſes will be the ſame as for one Year's Fruit.

The Foundations of theſe *Walls* ſhould be made four Bricks and a half thick, in order to ſupport the Flues; otherwiſe, if Part of them reſt on Brick-work, and the other Part on the Ground, they will ſettle unequally, and ſoon be out of Order; for where-ever there happen any Cracks in the Flues, thro' which the Smoak can make its Eſcape, it will prevent their Drawing; and if the Smoak gets within the Glaſſes, it will greatly injure the Fruit. This Thickneſs of *Wall* need not be continued more than ſix Inches above the Ground, where ſhould be the Foundation of the firſt Flue; which will raiſe it above the Damps of the Earth: then the *Walls* may be ſet off four Inches on each Side, which will reduce it to the Thickneſs of three Bricks and a half, ſo that the Back-wall may be two Bricks thick, which is abſolutely neceſſary to throw the Heat out more in Front; for when the Back-walls are built too thin, the Heat will eſcape thro' them. The *Wall* in Front next to the Fruit, ſhould be only four Inches thick: ſo there will be an Allowance of nine Inches for the Flues, which may be covered with ten Inch Tiles; for if they have half an Inch Bearing on each Side, it will be ſufficient.

The Ovens in which the Fires are made, muſt be contrived on the Backſide of *Walls*, which ſhould be in Number proportionable to the Length of the *Walls*. The Length uſually allowed for each Fire to warm, is forty Feet, tho' they will do very well for fifty Feet: but I would not adviſe the Flues to be longer than this to each Fire; becauſe when they are made too long, there is a Neceſſity of making the Fires ſo much ſtronger to warm them; which will occaſion the Heat to be too violent near the Fires. Theſe Ovens ſhould be ſhedded over, to keep out the Wind and Rain, otherwiſe the Fires will not burn. Some People make theſe Sheds of Timber, but it is much better to build them of Brick, and tile them over; becauſe the wooden Sheds will in a few Years decay, and afterwards will be a conſtant Charge to keep in Repair; and beſides, they may be in Danger of firing, if great Care is not conſtantly taken of the Fires. As it is abſolutely neceſſary to have the Ovens below the Foundation of the firſt Flues, ſo there muſt be Steps down into the Sheds, to come to the Mouth of the Ovens to ſupply the Fuel. Therefore the Sheds ſhould not be narrower than eight Feet in the Clear; for as the Steps will require four Feet Space, ſo there ſhould be at leaſt four Feet more for the Perſon who attends the Fire to have Room to turn himſelf to clear out the Aſhes, and to put in the Fuel. Where the Length of Walling requires two Ovens, it will be proper to have them in the Middle included in one Shed, which will ſave Expence, and allow more Room to attend the Fires; for in this Caſe the Sheds muſt be at leaſt ten Feet long, and then they need not be more than ſix in Breadth. The Steps down into theſe ſhould be at one End, ſo that the Door opening into the Sheds, will not be oppoſite to the Mouths of the Ovens: therefore the Fires will burn more regular; for whenever the Doors are contrived to front the Mouth of the Ovens, if the Wind ſets directly againſt them, it will cauſe the Fire to burn too fiercely, and the Fuel will be ſoon conſumed.

Theſe Ovens may be contrived in the ſame manner as thoſe which are already deſcribed for Stoves: ſo I ſhall not repeat it again in this Place; but muſt obſerve, that when the two Ovens are joined together, there ſhould be a Partition-wall at leaſt two Bricks thick between them, otherwiſe the Fires will ſoon deſtroy it; and if there ſhould be the leaſt Hole in the *Wall*, through which the Smoak of the two Fires can communicate, it will prevent their Drawing.

The lower Flue, thro' which the Smoak firſt paſſes from the Fire, may be two Feet and a half Deep; ſo the Back-wall ſhould be continued two Bricks thick as high as to the Top of this Flue; and then it may be ſet off to a Brick and half Thickneſs, which muſt be continued to the Top of the *Wall*. The ſecond Flue, which ſhould return over the firſt, may be made two Feet deep, the third a Foot and half, and the fourth one Foot deep; which four Flues, with their Coverings, will riſe near eight Feet in Height; ſo that there will be about two Feet left for the fixing of the Frames at the Top to ſupport the Glaſſes, and for coping the *Wall*. And theſe four Returns wil be ſufficient to warm the Air in the Frames; for the Smoak will have loſt its Heat by the time it has paſſed thus far.

In the carrying up of theſe *Walls*, there ſhould be ſome ſtrong Iron Hooks faſtened at convenient Diſtances, which ſhould project about three Inches from the *Wall*, to which the Trelaſe muſt be faſtened, which is to ſupport the Trees. Theſe Hooks ſhould be long enough to faſten into the Back-wall; for the *Wall* in Front, being but four Inches thick, will not be ſtrong enough to ſupport the Trelaſe. But in placing of them, Care ſhould be had, not to lay them croſs the Middle of the Flues, becauſe they would obſtruct the Clearing of the Flues of Soot, whenever there ſhould be Occaſion. So that the beſt Way is to lay them juſt under the Tiles which cover each Flue, at about three Feet aſunder, which will be near enough, provided the Hooks are made ſufficiently ſtrong. As the Flues muſt be well plaſtered with Loam on their Inſide; ſo alſo ſhould the Loam be ſpread under the Tiles which cover them to the Thickneſs of the Hooks, that the Flues may be very ſmooth; otherwiſe the Soot will hang to the Iron Hooks, and ſtop the Smoak from paſſing. It will alſo be very proper to cover theſe Flues on the Side next the Trelaſe with Hop-bags, or ſome ſuch coarſe Cloth, in the ſame manner as hath been directed for the Stoves; which will make them ſo tight, that no Smoak will find its Way thro', which, without this Covering, it is very apt to do, thro' the Joints of *Walls*; eſpecially when they are ſo thin as theſe muſt be built. And this Covering will alſo ſtrengthen the *Wall* of the Flues, and join the whole Work together. If at each End of theſe Flues, there are ſmall Arches turned in the Back-walls, in ſuch a manner that there may be Holes opened to clean the Flues of Soot whenever there is a Neceſſity for it, the Trouble will be much leſs than to open the Flues in Front; and there will be no Damage done to the Trees, nor will the Flues be the leaſt injured by this, which they muſt be, when they are opened in Front.

The Borders in Front of theſe Hot-walls, ſhould be about five Feet wide, which will make a ſufficient Declivity for the ſloping Glaſſes; and in theſe Borders there may be a Row of dwarf Peaſe planted to come early, or a Row of dwarf Kidney-beans, either of which will do very well; and if they are not planted too near the Trees, will not do them any Injury. On the Outſide of theſe Borders ſhould be low *Walls* erected, which ſhould riſe about an Inch or two above the Level of the Borders; upon which the Plate of Timber ſhould be laid, on which the ſloping Glaſſes are to reſt. And this *Wall* will keep up the Earth of the Border, as alſo preſerve the Wood from rotting.

The Glaſſes which are deſigned to cover theſe Walls, muſt be divided into two Ranges; for as they muſt reach from the Ground-plate (juſt above the Level of the Border) to almoſt the Top of the *Wall*, ſo they will be near twelve Feet long; which will be too great Length for ſingle Frames, which, when they are more than ſix Feet long, are too heavy to move, eſpecially if the Frames are made of a proper Strength to ſuſtain the Glaſs. Theſe Frames ſhould be contrived in ſuch manner, as that the upper Row may ſlide down; and by making on one Side three ſmall Holes in the Woodwork which ſupports the Frames, at about a Foot Diſtance, and having a ſmall Iron Pin to fix into them, the top Glaſſes may be let down one Foot, two Feet, or three Feet, according as there may be Occaſion. The lower Row of Glaſſes may be contrived ſo as to take eaſily out: but as they muſt lie ſloping, and the upper Row muſt bear on them, ſo they cannot be contrived to ſlide upwards, nor indeed will there be any Occaſion of their Moving, becauſe it is much better to let the Air in at the Top, than in the Front of the Trees.

The ſloping Timbers which are to ſupport the Glaſs-frames, muſt be faſtened at Bottom, into the Ground-plate in the Front of the Border, and at the Top into ſtrong Iron Cramps fixed in the upper Part of the *Wall* for that Purpoſe. Theſe Timbers ſhould be made of Fir, which will not twiſt as Oak and ſome other Wood will, where it is laid in ſuch Poſition. They muſt be made ſubſtantial, otherwiſe they will not laſt many Years, eſpecially as they are deſigned to be moveable. On the Top of theſe ſhould be fixed a ſtrong Board, under which the upper Row of Glaſſes ſhould run. The Uſe of this Board is to ſecure the upper Part of the Glaſſes from being raiſed by the Winds, and alſo to keep the Wet from getting to the Trees. Therefore it ſhould be joined as cloſe as poſſible to the Wall, and ſhould project about two Inches over the Glaſs-frames; which will be enough to throw the Wet on the Glaſſes, and likewiſe to ſecure them faſt down.

The Breadth of theſe Frames for the Glaſſes may be about three Feet, or a little more, according as the Diviſions of the Length of the Wall will admit; for a ſmall Matter in their Width is of no Conſequence, provided they are not too wide to be eaſily moved; for when they are wider than a Man can eaſily reach with his Arms to manage, they will be very troubleſome to carry from one Place to another. The Bars of theſe Frames which are to ſupport the Glaſs, ſhould be placed lengthwiſe of the Frames; for when they are placed a-croſs, they ſtop the Moiſture which is lodged on the Inſide of the Glaſſes, and cauſe it to fall in Drops on the Border at every Bar; which will be very injurious to any Plants which are put there, and if it falls on the Trees, will greatly damage them, eſpecially when they are in Bloſſom. The Lead into which the Glaſſes of theſe Frames are fixed, ſhould be very broad, and the Joints well cemented; otherwiſe the Wet will find an eaſy Paſſage thro', and do great Damage to the Fruit.

At each End of the Range of Glaſſes, there will be an angular Space between the Glaſſes and the Wall, which muſt be cloſely ſtopped to prevent the Air from getting in, which might greatly injure the Fruit. Theſe are by ſome Perſons cloſely boarded up; but if they are cloſed with Glaſſes, ſo contrived as to open to let in Air at proper times, it will be of great Advantage; becauſe, when the Wind may be too ſtrong againſt the front Glaſſes, one or both of theſe end Glaſſes may be opened, according to the Warmth of the Air incloſed; which will be often very uſeful to cool the Air, and to admit a ſmall Quantity of freſh Air to the Fruit.

The Sorts of Fruit which are uſually planted for Forcing, are Cherries, Plums, Peaches, Apricocks and Nectarines. As for the Vines, I would propoſe they ſhould be planted by themſelves againſt a particular *Wall*; for as they will require more Air to be admitted to them when they begin to ſhoot, than any of the above-mentioned Fruits; ſo they will not all ſucceed, if they are included in the ſame Frame. As to the others, they will do very well in the ſame Border, and will require the ſame Temperature of Warmth. The beſt of theſe Sorts to plant againſt theſe Hot-walls, are thoſe here-mentioned,

Cherries.
The Early May, and *May Duke.*
Plums.
The Jean Hative, or *White Primordian.*
The Early Black Damaſk, or *Morocco.*
The Great Damaſk Violet of Tours.
The Drap d'Or.
Peaches.
The Red Nutmeg.
The Red Magdalain.
The Montauban.
Nectarines.
Fairchild's *Early Nutmeg.*
The Elruge.
Apricock.
The Maſculine.

Theſe are the Sorts which ripen early, ſo are the moſt proper to plant againſt theſe *Walls*, altho' they are not ſo valuable as ſome other Sorts of theſe Fruits: yet as they ripen naturally three Weeks or a Month earlier in the Seaſon; ſo they will be very early ripe, when they are brought forward by artificial Warmth.

In the preparing of the Borders for planting of theſe Fruit-trees, there ſhould be the ſame Care taken, as for thoſe againſt open Borders, as before directed. There muſt alſo be the ſame Care in training up the Trees, when they ſhoot; but the Trelaſes need not be made againſt theſe *Walls*, until the Trees are grown large enough to ſpread, and produce a Quantity of Fruit; till which time they may be ſupported by any low ordinary Trelaſe, which will do very well till the time that the Trees will have Strength enough to force, which will not be until the fourth or fifth Year after planting, according to the Progreſs they have made; for if they are forced too young, it will weaken them ſo much, as that they ſeldom make vigorous Trees afterwards. Beſides, the Quantity of Fruit which ſuch young Trees produce, is not worth the Expence and Trouble of Forcing: for the Quantity of Fuel uſed, and the Trouble, will be the ſame for ſmall Trees, which are not capable of producing more than ſix or eight Fruit each, as for thoſe Trees which may produce three or four dozen. So that the greater time the Trees have to grow before they are forced, the better they will pay for the Trouble and Expence.

But it will be the beſt Way not to have any of the Frames made, nor the Trelaſe or any other of the Woodwork, until the Trees are ſtrong enough to force: for if theſe are done when the *Walls* are firſt built, as is by ſome Perſons practiſed, they will be half decayed, before there is any Uſe for them. But then the Perſons who are employed in making of the Trelaſe, muſt be very careful, in putting of it up, not to injure the Trees.

When the Trees have acquired Strength enough to produce a Quantity of Fruit, that Part which is deſigned to be forced the following *Spring*, ſhould be carefully pruned at *Michaelmas*; when the very weak Shoots muſt be either entirely cut out, or pruned very ſhort, becauſe theſe, by being forced, will for the moſt part decay; and tho' ſome of them may be full of Flower-buds, yet theſe Shoots being weak, cannot nouriſh them; ſo that the Flowers having exhauſted all the Sap, the Shoots die ſoon after, and rarely produce any Fruit. The other more vigorous Shoots ſhould alſo be ſhortened to a proper Length, after the ſame Manner as is directed for thoſe Trees in the open Air; with this Difference only, *viz.* That theſe which are deſigned for forcing, ſhould not have their Shoots left ſo long, becauſe the forcing of them will weaken them; and ſo conſequently, ſhould there be as great a Length of Branches, there will probably be a greater Number of Fruit on them; becauſe, as theſe will be ſcreened from the open Air, ſo they will not be liable to Blaſts; and the having too many Fruit on the Trees, will render them ſmall, and alſo weaken the Trees too much. Then the Shoots ſhould be all regularly faſtened to the Trelaſe, at a proper Diſtance from each other, ſo that when the Branches ſhoot the following *Spring*, they may not overhang each other. The Reaſon for my adviſing theſe Trees to be pruned ſo early in the Seaſon, is, that thoſe Branches which are left on, may enjoy the whole Nouriſhment of the Sap; ſo that the Buds will become very turgid during the *Winter* Seaſon, and will be prepared to open when the Fires are ſet to work.

The Time for beginning to make the Fires, is about the Middle or latter End of *January*, according as the Seaſon is more or leſs favourable; for if the Trees are forced too early into Flower, they will be in ſome Danger of miſcarrying, if the Weather ſhould prove ſevere; ſo that it is by much the ſureſt Method to begin about the Time here directed, becauſe there will be a Neceſſity of admitting freſh Air to the Trees when they are in flower; which cannot be done with Safety, when they flower in very bad Weather. And thoſe Trees which are forced into Flower by the Beginning of *February*, will ripen their Fruit as early as moſt People will deſire to eat them; for the Cherries will ripen early in *April*, and the Apricocks by the Beginning of *May*; and ſoon after, the Plums, Peaches and Nectarines will be ripe.

There are ſome Perſons who plant Strawberries in their Borders before their Fruit-trees, in order to have early Fruit, which often ſucceed very well; but wherever this is practiſed, great Care ſhould be taken to keep them from ſpreading over the Border, becauſe theſe Plants will exhauſt the principal Goodneſs of the Earth, and thereby injure the Trees; ſo that when it is deſigned to have Strawberries in theſe Borders, I would adviſe, that the Roots ſhould be either planted in Pots, or ſingly at a good Diſtance on a ſhady Border of loamy Earth, one Year before they are deſigned to be forced; during which Time the Runners ſhould be diligently pulled off, to encourage the main Roots for fruiting: And at *Michaelmas* theſe Plants may be tranſplanted, with large Balls of Earth to their Roots, into the Borders before the Fruit-trees which are to be forced the following *Spring*, ſo that they may have Time to get new Root before that Seaſon; and if theſe Plants are carefully watered when they begin to ſhew their Flower-buds, they will produce a good Quantity of Fruit, which will ripen the latter End of *April*, or the Beginning of *May*. But then I would alſo adviſe, that theſe Plants be taken away ſo ſoon as they have done bearing, that they may not rob the Trees of their Nouriſhment.

Since I have mentioned this Method of having early Strawberries, I ſhall take the Liberty to inſert another Method, which is often practiſed to obtain this Fruit early in the *Spring*, though it doth not ſo properly come under this Article; which is, to train up the Plants either in Pots or Borders, after the Manner before directed, for at leaſt one Year or more; then, about the Beginning of *February*, there ſhould be a moderate Hot-bed prepared, in Length proportionable to the Number of Plants deſigned to be forced; and the Breadth ſhould be proportionable to the Width of the Frames which are deſigned to cover them. Theſe Frames may be ſuch as are uſed for common Hot-beds, to raiſe early Cucumbers, *&c.* This Hot-bed muſt be covered with freſh loamy Earth about eight Inches thick, into which the Strawberry Plants ſhould be placed, with large Balls of Earth to their Roots, as cloſe as they can conveniently be planted (for as they muſt be kept clear from Runners, ſo they will not ſpread much during the Time they remain in the Bed, which will be no longer than until their Fruit is gone). Then they ſhould be gently watered, to ſettle the Earth to their Roots, which muſt be frequently repeated as the Earth becomes dry, otherwiſe they will produce but few Fruit. While the Nights continue cold, the Glaſſes of the Hot-bed ſhould be covered with Mats, to preſerve a kindly Warmth in the Beds; but in the Day-time, when the Weather is favourable, the Glaſſes ſhould be raiſed to admit freſh Air to the Plants; for if they are too much drawn, (eſpecially when they begin to flower) they will not produce much Fruit. If the Seaſon ſhould continue long cold, and the Heat of the Beds ſhould decline, it will be proper to lay ſome freſh hot Dung round the Sides of the Beds to renew their Heat, being always careful not to make them too hot; for that will ſcorch their Roots, and prevent their fruiting. If the Plants which are planted in theſe Beds are ſtrong, and in a good Condition for bearing; and Care be taken in tranſplanting of them to preſerve good Balls of Earth to their Roots, as alſo to keep a due Temperature of Warmth in the Beds, they will produce ripe Fruit by the End of *April*, or the Beginning of *May*, in Plenty; and will continue bearing, until ſome of thoſe in the open Air come in to ſucceed them.

The beſt Kinds of Strawberries to plant for forcing, are the Wood, and the Scarlet, for the Hautboys grow too rampant for this Purpoſe.

But to return to the Subject of Hot-walls: What I have here inſerted concerning the forcing of Fruits, has been only to obtain theſe Fruits earlier in the Seaſon, than they would naturally ripen againſt common *Walls*. But in ſome Parts of *England*, where moſt of our good Kinds of Fruit ſeldom ripen, it might be very well worth while to build ſome of theſe *Walls*, to obtain good Fruit from the beſt Kinds of Peaches, Plums, *&c.* eſpecially in ſuch Places where Fuel is Plenty, becauſe there the Expence will not be great after the firſt building of the *Walls*. For I would not propoſe to have Coverings of Glaſs, excepting for a ſmall Proportion of the *Walls*; the reſt may have Frames of Canvas to ſhut over them, in the ſame Manner as the Glaſſes are contrived; which will ſucceed very well, where proper Care is taken; for as there will not be Occaſion to cover theſe Trees until the latter End of *February*, at which Time alſo the Fires muſt be made; ſo before the Trees are in flower, the Weather may be frequently warm enough to open the Covers to admit Sun and Air to the Trees in the Middle of the Day; for if theſe Covers are kept too cloſely ſhut, the Shoots of the Trees will draw very weak, and their Leaves will turn pale, for want of Light and Air. And as the Deſign of theſe Contrivances is only to bring the Trees five or at moſt ſix Weeks earlier, than they would naturally come againſt common *Walls*, ſo there will be no Neceſſity of making very large Fires, or keeping the Covers too cloſely over the Trees.

Inſtead of Canvas for theſe Covers, oiled Papers may be uſed; which ſhould be done in the Manner directed for raiſing of Melons, by paſting as many Sheets of Paper together, as will fit the Frames on which they are to be fixed; and when the Paſte is dry, the Paper ſhould be faſtened into the Frames, and then the Oil rubbed over on the Outſide with a Bruſh, which will ſoak thro' the Paper; and when the Paper is dry, the Covers may be uſed. This Paper will laſt very well one Seaſon, and the Expence of repairing it will not be very great: So theſe are to be preferred to the Canvas, becauſe all Sorts of Plants will thrive much better under them, than they will under Canvas, or any other cloſe Covering, which will not admit the Light ſo well thro' to the Plants.

The Frames deſigned for either Canvas or Paper, may be made much ſlighter than thoſe for Glaſs; becauſe theſe being very light, will not require much Strength to ſupport them. And if theſe are well painted, and every Year, when their Uſe is over, carried into Shelter, they will laſt a long Time; for they will not be wanted abroad longer than four Months, *viz.* from the End of *February* to the End of *May*; for after this Time the Fruit will not require any Covering, the Trees being then full of Leaves, and the young Shoots will by that Time have made ſuch Progreſs, as to become a good Defence for the Fruit. But theſe Covers ſhould not be too ſuddenly taken away, but by Degrees the Trees ſhould be inured to the open Air; otherwiſe the Change will be too great, and may occaſion moſt of the Fruit to fall off, eſpecially if cold Nights ſhould follow.

By this Method Gentlemen may be ſupplied with moſt of the beſt Kinds of Fruit, in the northern Parts of *England*; where, without ſome ſuch Care, they can expect very little good Fruit in their Gardens. And as Coal is very plenty in thoſe Places, ſo the Expence will be very little; therefore I am ſurpriſed, that moſt of the Gentlemen who live in the North, do not put this Method in Practice. That there are ſome few of theſe *Walls* built in the North, is well known; but then they are chiefly deſigned to produce a little early Fruit, more for Curioſity than any real Uſe: and theſe *Walls* are for the moſt part ſo ill contrived, that four times the Fuel is expended, as will be required when the Walls are built after the manner here directed: and where the Heat is not pretty equally diſtributed thro' every Part of the Wall, ſome of the Trees will have too much Heat, while others will have little Benefit from the Fires.

There are ſome Perſons who build their Hot-walls, in ſuch a manner, as to have the greateſt Heat under the Border, near to the Roots of their Trees, ſuppoſing there is a Neceſſity of Heat to the Roots as well as the Branches; but this is a great Miſtake, and the Fires muſt greatly injure the Roots of the Trees, by drying up the Moiſture of the Earth, as alſo in ſcorching the tender Fibres of thoſe Roots which lie near them. Therefore this Practice ſhould not be continued, for it is much the better Method to elevate the firſt Flue nine Inches or a Foot above the Level of the Border, according as the Ground is dry or wet, than to place it the leaſt below Ground; which will only dry the Earth, and not warm the Air about the Trees, which is the only Uſe of artificial Heat; for it is very commonly practiſed to draw a Branch of a Vine or other Fruit-tree into a Stove, which Branch will produce its Fruit as early as if the whole Tree had been forced; when at the ſame time all the other Branches of the ſame Tree, which are expoſed to the open Air, will not be the leaſt forwarded, tho' they are all nouriſhed by the ſame Root; which is a plain Proof, that there is no Neceſſity of adding any Warmth to the Roots of Fruit-trees, to have their Fruit earlier or better ripened.

I have alſo heard of ſome *Walls* which have been built for Forcing of Fruit, with one continued Chaſm from their Bottoms to the Top; ſo that they have been like double *Walls*, with Places at proper Diſtances to make the Fires. But theſe can be of little Uſe; for if the Vents are open at their Tops to let out the Smoak, the Heat will alſo eſcape with it; for if the Smoak be not led about three or four times in Flues, in order to warm the Bricks, the Heat will paſs off at the Top, without doing much Service to the Trees.

Where the *Walls* are planted with the beſt Kinds of Fruit, which are deſigned to ripen them in Perfection; if the *Autumns* ſhould prove cold, or very wet, before the Fruit are ripe, it will be proper to put the Covers over the Trees; and if there are ſome ſlow Fires made to dry off the Damps, it will be of great Uſe to prevent the Fruit from growing mouldy, and to haſten their Ripening. But when this is practiſed, the Covers ſhould be taken off whenever the Weather will admit of it, that the Fruit may enjoy the Benefit of the free Air, without which they will be inſipid or ill-taſted.

Altho' in the former Directions for forcing of Trees, for to have early Fruit, I have adviſed, that ſuch Trees ſhould have one or two Years Reſt, in order to recover Vigour; yet that is not to be underſtood of theſe Trees, which are only deſigned to be brought forward enough to produce their Fruit in Perfection: for as the Fires are not deſigned to be made till the Middle or End of *February*; ſo the Trees will not be weakened thereby, becauſe they will be inured to the open Air long before their Fruit is ripe, and will have time to ripen their Shoots, and form their Buds, for the next Year's Bearing: therefore theſe Trees may be thus forced every Year, without doing them any Injury, provided the Trees are carefully managed.

In Forcing of Fruit-trees, People generally hang up Thermometers under their Glaſſes, for the better adjuſting the Heat, and regulating of the Fires. But when this is practiſed, they ſhould be hung where the Sun can never ſhine on them; for one Hour's Sun-ſhine upon the Ball of the Thermometer, in the *Spring* of the Year, will rarefy the Spirits ſo much, that they will riſe to the Top of the Tube; when at the ſame time the circumambient Air may not be much more than of a temperate Heat. But as the principal Uſe of theſe Thermometers is to regulate the Fires, ſo they are ſeldom of much Uſe in the Day-time; becauſe, if there be only one Hour's Sun-ſhine in the Day on the Glaſſes, it will warm the Air ſufficiently for the Production of *European* Fruits, without any additional Heat; ſo there will rarely be any Occaſion for continuing of the Fires in the Day. And if by the Fires in the Night, the Air is warmed to the temperate Point marked on Mr. *Fowler*'s Botanic Thermometers; the Fruit will thrive much better than in a greater Heat.

There are ſome Perſons near *London*, who make it their Buſineſs to produce early Fruit to ſupply the Markets with; which they perform by the Heat of Dung only, having no Fire-walls in their Gardens. The Method which theſe People follow, is to have a good Quantity of new Dung laid in a Heap to warm (after the ſame manner as is practiſed for making of Hot-beds): when this Dung is in a proper Temperature of Heat, they lay it cloſe on the Backſide of their Fruit-wall, about four Feet thick at the Bottom, and ſloping to about ten Inches or a Foot thick at the Top. This Dung ſhould be gently beat down with a Fork, to prevent the Heat from going off too ſoon; but it ſhould not be trodden down too hard, leſt that ſhould prevent its Heating. The Outſide of the Dung ſhould be laid as ſmooth as poſſible, that the Wet may run off more eaſily; and if there is a Covering of Thatch, as is ſometimes practiſed, it preſerves the Dung from rotting too ſoon: ſo the Heat is continued the longer. The Time for laying of this Dung to the Back of the Wall, is the ſame as for making of the Fires, (*i. e.*) about the Middle or End of *January*. This firſt Parcel of Dung will continue warm about a Month or five Weeks, when there ſhould be a freſh Supply of new Dung prepared, and the old taken quite away, or mixed up with this new Dung, to renew the Heat; which, if it works kindly, will be ſufficient to laſt the Seaſon. Theſe *Walls* are covered with Glaſſes or Canvas, in the ſame manner as the Fire-walls; and the Trees muſt be treated the ſame way: but there muſt be more Care taken to open the Glaſſes againſt theſe *Walls*, whenever the Weather will permit; otherwiſe the Steam of the Dung will occaſion a great Dampneſs thro' the *Wall*; which, if pent in about the Trees, will be very pernicious to them, eſpecially at the time they are in Flower.

By this Method ſome Gardeners have forced long *Walls* filled with old well-grown Fruit-trees, which have produced great Quantities of Fruit annually, ſo have well anſwered their Expence. But as in many Parts of *England* it will be very difficult to procure a ſufficient Quantity of new Dung for this Purpoſe; ſo the Fire-walls are the moſt uſeful, and leaſt expenſive.

I have ſeen in ſome Places long Timber-fences erected to force Fruit-trees, by laying of new Dung againſt the Backſide, in the ſame manner as is practiſed for the *Walls*; but theſe are by no means proper, becauſe the Steam of the Dung will eaſily get thro' every little Crack or Joint of the Boards, to the great Prejudice of the Trees: beſides the Boards will continue very damp, ſo long as any Moiſture remains in the Dung, which will alſo be very injurious to them; and as theſe Boards will in a few Years decay, ſo theſe will be the moſt expenſive, if they are kept in Repair for ſome Years, and will never anſwer the Deſign ſo well as *Walls*.

WALL-FLOWER: *vide* Leucojum.

WALNUT: *vide* Nux Juglans.

WATER, is one of the moſt conſiderable Requiſites belonging to a Garden; if a Garden be without it, it brings a certain Mortality upon whatſoever is planted. By Waterings the great Droughts in *Summer* are allay'd, which would infallibly burn up moſt Plants, had we not the Help of *Water* to qualify the exceſſive Heats: beſides, as to noble Seats, the Beauty that *Water* will add, in making *Jet d'Eaux*, Canals, and Caſcades, which are ſome of the nobleſt Ornaments of a Garden.

Sir *Iſaac Newton* defines *Water* (when pure) to be a very fluid Salt, volatile, and void of all Savour and Taſte; and it ſeems to conſiſt of ſmall, hard, porous, ſpherical Particles, of equal Diameters, and equal ſpecifick Gravities; and alſo that there are between them, Spaces ſo large, and ranged in ſuch a Manner, as to be pervious on all Sides.

Their *Smoothneſs* accounts for their ſliding eaſily over the Surfaces of one another.

Their *Sphericity* keeps them from touching one another in more Points than one; and by both theſe, their Frictions in ſliding over one another, are rendered the leaſt poſſible.

The *Hardneſs* of them accounts for the *Incompreſſibility* of *Water*, when it is free from the Intermixture of Air.

The *Poroſity* of *Water* is ſo very great, that there is at leaſt forty times as much Space as Matter in it; for *Water* is nineteen times ſpecifically lighter than Gold, and of conſequence rarer in the ſame Proportion: But Gold will, by Preſſure, let *Water* paſs thro' its Pores, and therefore may be ſuppoſed to have (at leaſt) more Pores than ſolid Parts.

Monſ. *Le Clerc* ſays, there are theſe Things obſervable in *Water*, which Naturaliſts ſtudy to know and account for:

1. It is tranſparent; becauſe, as ſome are of Opinion, it conſiſts of flexible Particles, like Ropes, which are not ſo cloſe as to leave no Pores, nor ſo intangled, but that there are right Lines enough to tranſmit the Light.

For ſince the Particles are not join'd cloſe together, and are in perpetual Motion, the very Particles of Light do eaſily paſs thro' their right Lines, unleſs the *Water* be very deep, or put into Motion by ſome outward Cauſe; then indeed the Tranſparency of *Water* is very much obſtructed, and it looks of a cloudy obſcure Colour, as it is obvious to Sight in a rough Sea; for at ſuch a Time the vehement Agitation of the *Water* diſturbs their Pores, and ſpoils their Straitneſs.

2. *Water* is liquid, but capable of being fix'd. *Water* ſeems to be liquid for the ſame Reaſon that other Bodies are ſo. For ſince the Particles of it are flexible like Ropes, and leave Pores between one another, which are filled with finer Matter, when this Matter is put into a vehement Commotion, the Particles are eaſily toſs'd about every where; yet when the Motion of this reſtleſs Matter is reſtrain'd, as it is in *Winter*, then the *Water* congeals into Ice; whether this comes of Cold only, or there be, beſides, nitrous Particles, which fall out of the Air at that Time, and with their Rigidneſs fix the watery ones.

3. It may be made *hot* or *cold:* The Particles of *Water* being, as has before been ſaid, *Ice*, are ſoon diſſolved by the Motion of thoſe of Fire: For the Particles of Fire getting into the Pores of the Ice, do mightily ſhake the fine flexible Particles of it, and reſtore them to their former Motion in a little Time.

But if this *Water* be ſet in cold Air, the fiery Particles will ſoon vaniſh, and the *Water* become as cold as before.

4. *Water* eaſily evaporates by the Heat of Fire or Air. This is becauſe its Particles are quickly ſeparated and got into Motion; ſo that the airy Particles eaſily carry thoſe of the *Water* about with them.

5. It is heavy if compared with Air and ſome other Bodies, but much heavier than Air. It has been ſhewn by various Experiments, that the Gravity of the Air in the Place where we live, is to that of *Water*, as One to Eight hundred, or ſomething more; ſo that *Water* is Eight hundred times heavier than Air. And for this Reaſon a Bladder, or any other Thing fill'd with Air, can hardly be ſunk under *Water*; and indeed, to make Air ſink, there muſt be a Weight added to it, that ſhall exceed the Weight of the *Water* as much, and ſomething more, than that of the *Water* exceeds that of the Air.

Hences it comes to paſs, that *Water* eaſily ſupports Wood, and vaſt Ships fraught with the heavieſt Cargo; for the Weight alone will never ſink them, unleſs the Goods and Veſſel together ſhould make up a Weight which exceeds that of *Water*; and as ſalt *Water* is heavier than freſh, ſo it bears a greater Weight.

Thoſe Things which are heavier than *Water*, as Stones, Metals, *&c.* when they are thrown into it, go ſtrait down to the Bottom, and as their Weight is greater, by ſo much the quicker; while other Bodies which are of the ſame Weight with the *Water*, do neither float on the Surface, nor ſink quite down, but remain ſuſpended between the Top and Bottom, as is ſeen in the Carcaſſes of Animals.

6. *Water* is inſipid, and without Smell. The Reaſon is, becauſe its flexible Parts ſlip gently over the Tongue, and are not ſharp enough to prick the Nerves and affect the Taſte: but this is to be underſtood of pure *Water*, void of all kind of Salt; ſuch as diſtill'd *Water* is, and next, that of Rain; for the moſt wholeſome Fountain *Water* commonly derives a Saltneſs from the Earth; tho' in this Place are not meant medicinal Fountain *Waters*, the Taſte of which is more acute, but ſuch *Water* as is uſually drank.

And that it is without Smell: The purer any *Water* is, the leſs Smell it has; for the Reaſon why the Particles don't prick the Tongue, is the Reaſon why they don't affect the Smell: The Flexibility and Smoothneſs of *Water* is ſuch, that they cannot pierce the olfactory Nerves: ſome Fountain *Water* has indeed ſome Smell, but then it is a Sign that it is not pure.

7. *Water* is ſubject to putrify, according as the Place is where it is kept. *Water* will grow thick and ſtinking by Heat and reſt, as we find it does in Ponds and Marſhes, and in cloſe Veſſels: but here it ought to be remember'd, that this is what was ſpoken of before, as ſuch *Water* as is not pure; for unmix'd *Water* cannot putrify. This is proved,

Firſt, by diſtill'd *Water*, which may be kept very long without Putrefaction.

Secondly, in Rain *Water*, which is caught in clean Veſſels, and preſently ſtopp'd up cloſe, and buried under Ground, which is kept many Years, in Countries where they want Fountains: This ſhews that the Cauſe of Putrefaction is not in the *Water* itſelf, but in other Things that are mingled with it; becauſe pure *Water*, ſuch as is diſtill'd, or comes from the Clouds, keeps ſweet for a great while; but then thoſe Veſſels in which ſuch *Water* is kept, muſt be ſo well ſtop'd that the leaſt Fly may not get into them, and they muſt be made of ſuch Stuff as will not corrupt; ſuch as Glaſs or Clay.

But as for ſtanding *Water*, in Ponds or Marſhes, that is corrupted two Ways:

1. By the Nature of the Soil, which often abounds with noiſome Sulphur, whereby the *Water* is impregnated, and comes to ſmell in warm Weather, as it does at *Amſterdam*, not only in the Canals, but where-ever the Ground is open'd for the Foundations of Houſes. This Putrefaction is owing to the Soil, and not to the *Water*.

2. By the naſty Things that are thrown into it, or Bodies of Inſects which die in it; as alſo by the Eggs of Flies, which are dropp'd about where-ever they go, and breed Worms. *Water* is corrupted in wooden Veſſels, eſpecially at Sea, by the ſulphureous Parts of the Wood, and by uncleanly Things; as Flies, Eggs, *&c.*

Water penetrates the Pores of thoſe Bodies, whoſe Pores are wide enough to receive its Particles; thus it enters the Pores of Sugar and Salts, ſo as to ſeparate and quite diſſolve their Particles; but it cannot get into the Pores of Stones, or but a very little Way; ſo that it only wets their Surface, without dilating them; hangs on the Outſide of them, becauſe they are rough, and becauſe the Extremities of the Pores are open a little Way. But ſuch Bodies, when they are wet, are ſoon dried in the Air; becauſe the Motion of the airy Particles carries off the ſoft and ſmooth ones of the *Water*.

It is obſervable, that if Bodies rubb'd over with Oil or Fat, be dipp'd in *Water*, they get very little Wet; becauſe the Roughneſs of their Surface, whereon the *Water* ſhould hang, is ſmoothed, and made even by the Fat, and the Mouths of the Pores are cloſed up, ſo that there is nothing left for the watery Particles to hold by, and therefore they muſt needs ſlide off.

Dr. *Cheyne* obſerves, that the Quantity of *Water* on this Side our Globe does daily decreaſe, ſome Part thereof being every Day turn'd into animal, metalline, mineral, and vegetable Subſtances, which are not eaſily diſſolved again into their component Parts; for if you ſeparate a few Particles of any Fluid, and faſten them to a ſolid Body, or keep them aſunder one from another, then they are no more fluid; for a conſiderable Number of ſuch Particles are required to produce Fluidity.

Moſt Liquors are form'd by the Coheſion of Particles of different Figures, Magnitudes, Gravities, and attractive Powers, ſwimming in pure *Water*, or an aqueous Fluid, which ſeems to be the common Baſis of all. And the only Reaſon why there are ſo many Sorts of *Water* differing from one another by different Properties, is, that the Corpuſcles of Salts and Minerals, with which that Element is impregnated, are equally various.

Wine is only *Water* impregnated with Particles of Grapes, and *Beer* is *Water* impregnated with Particles of *Barley*, &c. All Spirits ſeem to be *Water* ſaturated with ſaline and ſulphureous Particles.

And all Liquors are more or leſs fluid, according to the greater or ſmaller Coheſion of the Particles, which ſwim in the aqueous Fluid; and there is hardly any Fluid without this Coheſion of Particles, not even pure *Water* itſelf, as will appear from the Bubbles, which will ſometimes ſtand on the Surface of it, as well on that of Spirits and other Liquors.

Water contributes much to the Growth of Bodies, in that it both renders and keeps the active Principles fluid, ſo that they are capable of being convey'd by Circulation into the Pores.

The learned Dr. *Halley* has demonſtrated, that if an Atom of *Water* be expanded into a Shell or Bubble, whoſe Diameter ſhall be ten times as great as before, ſuch an Atom would be ſpecifically lighter than the Air, and will riſe ſo long as that *Flatus*, or warm Spirit, which at firſt ſeparated or raiſed it from the Maſs of *Water*, ſhall continue to diſtend it to the ſame Degree; but when that Warmth declines, and the Air grows cooler, and withal ſpecifically lighter, theſe Vapours will ſtop at a certain Region of the Air, or elſe deſcend.

Therefore, if it ſhould be ſuppoſed that the whole Earth were cover'd with *Water*, and that the Sun ſhould make his diurnal Courſe round it, as now he does, he is of Opinion, that the Air would be impregnated with a certain Quantity of aqueous Vapours, which it would retain in it, like Salts diſſolved in *Water*, and that the Sun in the Day-time warming the Air, that Part of the Atmoſphere would ſuſtain a greater proportion of Vapours, (as warm *Water* will hold more Salt in it diſſolved than Cold) which by the Abſence of the Vapours at Night would be diſcharged into Dews.

And in this Caſe he concludes, there could not be any Diverſity of Weather, other than periodically every Year alike; the Mixture of all terreſtrial, ſaline, and heterogeneous Vapours here being excluded, which he judges to be, when variouſly compounded and driven by Winds, which are the Cauſes of theſe various Seaſons and Changes of Weather which we now find.

But inſtead of ſuppoſing an Earth to be cover'd all over with *Water*, you ſuppoſe the Sea interſperſed about wide and ſpacious Tracts of Land, and alſo divided by high Ridges of Mountains, ſuch as the *Alps*, the *Apennine*, and the *Pyrenean*, in *Europe*; the *Caucaſus*, the *Imaus*, and the *Taurus*, in *Aſia*; the Mount *Atlas*, and the Mountains of the *Moon*, in *Africa*; the *Andes* and *Apalatean* Mountains, in *America*; each of which ſurpaſſes the uſual Height to which the aqueous Vapours do of themſelves aſcend, and on the Tops of which the Air is ſo cold and rarefied, as to retain but a ſmall Part of theſe Vapours, which are brought thither by the Winds.

Then the Vapours thus raiſed from the Sea, and carried by the Winds over the low Lands to thoſe Ridges of Mountains, are there compell'd by the Steams of the Air, to mount with it up to their Tops, where the *Water* preſently precipitates, gleeting down by the Crannies of the Stones; and Part of the Vapours entering into the Caverns of the Hills, the *Water* thereof gathers, as in an Alembick, in the Baſons of Stones; and theſe being once full, the Overplus of the *Water* runs down at the loweſt Place of the Baſon, and breaking out by the Sides of the Hills, forms ſingle Springs; many of which run down by the Vallies or Guts between the Ridges of the Hills, and after uniting, form little Rivulets or Brooks; and many of theſe meeting again, form large Rivers.

Whether *Water* be originally a Fluid? It is a Point that has been controverted among Philoſophers, whether Fluidity be the natural State of *Water*, or rather the Effect of Violence.

Sometimes we find it appear in a fluid Form, and ſometimes in a ſolid one; and as the former is the more uſual in our warmer Climate, we are apt to conclude Fluidity to be its proper State, and ſuppoſe the other to proceed from the extraneous Action of Cold. But the learned *Boerhaave* aſſerts the contrary, and maintains, that *Water* is of the cryſtalline kind; becauſe wherever a certain Degree of Fire (Heat) is wanting to keep it in Fuſion, it readily grows into a hard Glebe, which we call *Ice*.

Mr. *Boyle* is much of the ſame Opinion. He obſerves, that Ice is commonly reputed to be *Water*, brought into a preternatural State by Cold. But with regard to the Nature of Things, and ſetting aſide our arbitrary Ideas, it might as juſtly be ſaid, that *Water* is Ice, preternaturally thaw'd by Heat. If it be urged, that Ice left to itſelf will, upon the freezing Agent's being removed, return to *Water*, it may be anſwer'd, That not to mention the Snow and Ice that lie all the *Summer* long on the *Alps*, and other high Mountains, even in the *Torrid Zone*, we have been aſſured, that in ſome Parts of *Siberia* the Surface of the Ground continues more Months of the year frozen, by the natural Temperature of the Climate, than it has been thaw'd by the Heat of the Sun; and a little below the Surface of the Ground, the *Water* which chances to be lodged in the Cavities there, continues in a State of Ice all the Year round; ſo that when in the Heat of *Summer* the Fields are cover'd with Corn, if you dig three or four Feet deep, ſhall find Ice, and a frozen Soil.

Dr. *Boerhaave* is of Opinion, That if *Water* could be had alone and pure, it would have all the Requiſites of an Element, and be as ſimple as Fire: but there has been no Expedient hitherto found out for making it ſuch.

Rain *Water*, which ſeems to be the pureſt of all thoſe we know of, is replete with infinite Exhalations of all kinds, which it imbibes from the Air; ſo that tho' it be filter'd and diſtill'd ever ſo often, yet there ſtill remain *Fæces*.

As for that Rain *Water* that is gather'd from the Roofs of Houſes, it is a *Lixivium* of Tiles, Slate, or the like, impregnated with the Dungs and *Fæces* of Animals, Birds, &c. depoſited thereon, and the Exhalations, of numerous other Things.

As for that Rain *Water* that is collected in Cities, it muſt be ſaturated with the Smoke of a thouſand Chimnies, and the various *Effluvia* of Numbers of Perſons, &c. Beſides that, there is Fire contain'd in all *Water*, as appears from its Fluidity, which is owing to Fire alone.

As what is in the Air neceſſarily mixes itſelf with *Water*, it hence appears impoſſible to have ſuch a thing as pure *Water*. If it be percolated thro' Sand, or ſqueez'd thro' Pumice, or paſs'd thro' any other Body of the like Kind, there will always be Salt remaining: nor can Diſtillation render it pure; ſince it leaves the Air therein, which abounds in Corpuſcles of all Sorts.

The pureſt of all *Waters* we can any way arrive at, is that diſtill'd from Snow, gather'd in a clear, ſtill, pinching Night, in ſome very high Place, taking none but the outer or ſuperficial Part thereof. By a Number of repeated Diſtillations thereof, the greateſt Part of the Earth and other *Fæces* may be ſeparated from it; and this is what we muſt be content to call *Pure Water*.

Mr. *Boyle* indeed relates, That a Friend of his, by diſtilling a Quantity of *Water* an hundred times, found at length that he had got ſix-tenths of the Quantity in Earth: Whence he concludes, that the whole Water, by the further proſecuting the Operation, might be converted into Earth.

But it ſhould be conſider'd, that the *Water* cannot be removed or poured into a Veſſel without the Mixture of ſome Duſt with it; ſo neither can the Luting of the Veſſel be diſtill'd without loſing ſomething every time: Therefore Dr. *Boerhaave* rather concludes, That the *Water* thus often diſtill'd, might acquire new Earth from the Duſt floating in the Air, and the Inſtruments employ'd in the Operation.

That Author aſſures us, That after he had diſtill'd ſome very pure *Water* by a gentle Fire for the Space of four Months, it appear'd perfectly pure; and yet leaving it to reſt in Veſſels perfectly clos'd, it conceiv'd a certain kind of weedy Matter, ſomewhat like the *Stamina* of Plants, or the little Tufts of a Mucilage: And yet it is related, that *Schottus* ſaw *Water* in *Kercher*'s *Muſæum*, that had been kept in a Veſſel hermetically ſealed upwards of fifty Years, and yet it ſtill remain'd clear and pure, and ſtood to the ſame Height in the Veſſel as at the firſt, without the leaſt Sign of Sediment.

Dr. *Boerhaave* adds, That he is convinced no body ever ſaw a Drop of pure *Water*; That the utmoſt of its Purity known, only amounts to its being free from this and that Sort of Matter; and that it can never, for Inſtance, be quite deprived of its Salt; ſince Air will always accompany it, and that has always Salt.

Water ſeems to be diffuſed every-where, and to be preſent in all Space where there is Matter. There is not a Body in all Nature but will yield *Water*. It is alſo aſſerted, that even Fire itſelf is not without *Water*. A ſingle Grain of the moſt fiery Salt, which in a Moment's time will penetrate through a Man's Hand, readily imbibes half its Weight of *Water*, and melts even in the dryeſt Air imaginable. Thus Salt of Tartar, placed near the hotteſt Fire, will attract or imbibe *Water*, and by that Means increaſe conſiderably its Weight in a ſmall time: So in the dryeſt *Summer*'s Day, a Pewter Veſſel with Ice in it, brought up from ſome cold ſubterraneous Place, into the hotteſt Room will, immediately be cover'd over with little drops of *Water*, gather'd from the contiguous Air, and condens'd by the Coldneſs of the Ice.

Even dry Bodies do afford a plenteous Stock of *Water*. Dr. *Boerhaave* ſays, Oil of Vitrol being expos'd a long time to a violent Fire, to ſeparate all the *Water* from it, as much as poſſible, did afterwards, by only ſtanding a few Minutes, contract freſh *Water* ſo faſt, as ſoon to afford it as plenteouſly as at firſt.

And that Hartſhorn that had been kept for forty Years, and was as hard and dry as any Metal, ſo that if ſtruck againſt a Flint, it would yield Sparks of Fire; yet this very Hartſhorn being put in a Glaſs Veſſel and diſtill'd, afforded him one-eighth of its Quantity of *Water*. He adds; We have known Bones dead and dry'd twenty-five Years, and thus become almoſt as hard as Iron, which yet, by Diſtillation, afforded half their Weight of *Water*; and the hardeſt Stones ground and diſtill'd, do always diſcover a Portion thereof.

Mr. *Boyle*, by Diſtillation, found that Eels yielded ſome Oil, Spirit, and volatile Salt, beſides the *Caput mortuum*; yet all theſe were ſo diſproportionate to the *Water*, that they ſeemed to have been nothing but that coagulated.

The ſame Author, from human Blood itſelf, as ſpirituous and elaborate a Liquor as it is reputed, did, by Diſtillation, out of ſeven Ounces and a half, draw near ſix of Phlegm, before ever any other of the Principles began to riſe.

Vipers, though they are eſteemed hot in Operation, and will, in a convenient Air, ſurvive for ſome Days the Loſs of their Heads and Hearts, yet it is ſurprizing how great a Share of *Water* they yield by Diſtillation.

Some have been of the Opinion, that *Water* was the common Matter of all Bodies. And *Thales*, with ſome other Philoſophers, have held, that all Things were made of *Water*. Which Opinion, probably, had its Riſe from the Writings of *Moſes*, where he ſpeaks of the Spirit of God moving upon the Face of the *Waters*.

But Mr. *Boyle* does not conceive the *Water* here mentioned by *Moſes* as the univerſal Matter, to be our elementary *Water*; ſince though we ſhould ſuppoſe it to have been an agitated Congeries, conſiſting of a great Variety of ſeminal Principles, and of other Corpuſcles fit to be ſubdu'd and faſhion'd by them, it yet might be a Body fluid, like *Water*, in caſe the Corpuſcles it was made up of, were, by their Creator, made ſmall enough, and put into ſuch an actual Motion as might make them all roll and glide over one another.

However, *Baſil Valentine*, *Paracelſus*, *Van Helmont*, *Centivoglio*, and others, have maintain'd, on his Principles, that *Water* is the elemental Matter or *Stamen* of all Things, and that it ſuffices for the Production of all Things: Which *Helmont* endeavours to prove from the following Experiment.

He burnt a Quantity of Earth in a Potter's Veſſel, till ſuch time as all the Oil it contain'd was quite conſumed; then mixing it up with *Water*, he drew out all the Salt: The Earth thus prepared, he put into an Earthen Pot, ſuch as is uſed by Gardeners, and took Care that nothing but *Rain-Water* could enter into the ſame: And yet a Willow being planted in this Earth, grew up to a conſiderable Height; whence he concluded, that *Water* was the only Nutriment of the Vegetable Kind, as Vegetables are of the Animal.

The ſame thing Mr. *Boyle* likewiſe argu'd from a ſimilar Experiment; and the Whole is countenanced by Sir *Iſaac Newton*, who obſerves, that *Water* ſtanding a few Days in the open Air, yields a Tincture, which, like that of Malt, by ſtanding longer, yields a Sediment and a Spirit; but before Putrefaction, is fit Nouriſhment for Animals and Vegetables.

But Dr. *Woodward* endeavours to ſhew that they were both miſtaken; by proving, that *Water* contains in it divers extraneous Corpuſcles, and that ſome of theſe are the proper Matter of Nutrition, *Water* being found to afford ſo much the leſs Nouriſhment the more it is purify'd: Thus Mint planted in *Water*, purify'd by Diſtillation, will not grow ſo faſt as if put in *Water* not diſtill'd; and if the *Water* be diſtill'd three or four times over, the Plant will ſcarce grow at all, or receive any Nouriſhment from it.

So that *Water*, as ſuch, is not the proper Nutriment of Vegetables, but only the Vehicle thereof, which contains the nutritious Particles, and carries them along with it through all the Parts of the Plant; ſo that a *Water-Plant*, *e. g.* a *Water-Creſs*, being put in a Glaſs Veſſel full of *Water*, will be found to contain the more Salt and Oil.

In effect, *Water* nouriſhes the leſs, the more it is purged of its ſaponaceous Salts: In its pure State it may ſuffice to extend, or ſwell the Parts, but affords no new vegetable Matter.

Helmont, however, carries his Syſtem farther, and imagines that all Bodies may be converted into pure elementary *Water*: He affirms, that his Alkaheſt adequately reſolves Plants, Animals and Minerals, into one Liquor or more, according to their ſeveral internal Differences of Parts; and that the Alkaheſt being abſtracted from theſe Liquors, in the ſame Weight, and with the ſame Virtues, as when it diſſolved them, the Liquors may, by frequent Cohobations from Chalk, or ſome other proper Matter, be totally depriv'd of their ſeminal Endowments, and return at laſt to their firſt Matter, inſipid *Water*.

It is certain, that from mixed Bodies we can draw *Water*, *Oil*, *Spirit*, *Salt*, and *Earth*. Now Spirits cannot be better repreſented, than by *Alcohol* of Wine which *Helmont* affirms, may be ſo united with *Water*, as to become *Water* itſelf.

Tho' Spirit of Wine, exquiſitely rectify'd, ſeems, of all Liquors, the moſt free from *Water*; yet even this is, by *Helmont*, affirmed to be materially *Water*, under a ſulphureous Diſguiſe; for, according to him, in making *Paracelſus*'s *Balſamus Samech*, (which is nothing but *Sal Tartari* dulcify'd, by diſtilling Spirit of Wine from it, till the Salt be ſufficiently ſaturated with its Sulphur, and till it ſuffers the Liquor to be drawn off as ſtrong as it was poured on) when the Salt of Tartar from which it is diſtill'd, hath retain'd or depriv'd it of its ſulphureous Parts of the Spirit of Wine; the reſt, which is incomparably the greateſt Part of the Liquor, will turn to Phlegm.

2. As to *Salts*, Salt of Tartar well calcin'd, being laid to liquify in Air, will depoſite an Earth; and if it be then committed to Diſtillation, will yield a conſiderable Quantity of inſipid *Water*; inſomuch, that if it be urged with a vehement Fire, the Salt will almoſt all vaniſh, and nothing ſaline remain either in the *Water* or the Earth: Whence *Helmont* concluded, that all Salts might be converted into *Water*.

As to the Converſion of acid Salts into *Water*; Sea-Salt, recovered from its own acid Spirit, and Oil of Tartar, melts into *Water* as much as into Oil of Tartar.

Mr. *Boyle* tells us, that corroſive Spirits abound in *Water*; which may be obſerv'd by intangling and ſo fixing their ſaline Parts, as to make them corrode ſome proper Body; or elſe by mortifying them with ſome contrary Salt, which will turn them into Phlegm.

Laſtly: *Oils* run, in great meaſure, into *Water*, and, 'tis probable, might be converted wholly into the ſame.

Of the Fluidity of Water.

Water, ſays Dr. *Boerhaave*, is fluid: but the Fluidity is not natural thereto; for, naturally, it is of the cryſtalline Kind; and accordingly, wherever a certain Degree of Fire is wanting, there we ſee the *Water* become Ice. That this Ice is the proper Effect of the want of Heat, and not of any additional *Spicula* introduced into the *Water*, as *Mariotte* and others contend, is evident enough, were it only hence, that, on this Suppoſition, it could not penetrate the Subſtance of all Bodies, as we find it does, and even that of Metals.

This *Water*, in its State of Solution, never remains at reſt, its Parts are in perpetual Motion; as was firſt diſcovered by the *French* with the Help of Microſcopes; and is farther confirm'd by this, that if a little Saffron be ſuſpended in the Middle of a Veſſel full of *Water*, the Saffron Colour will in a little time form, as it were, a kind of Atmoſphere around, and at length be diffuſed through the whole *Water*. Now this could no way be effected without a Motion of the watry Particles among each other. Add, that if you caſt a Quantity of the drieſt Salt, in the coldeſt Weather, into *Water*, it will ſoon be diſſolved: which argues the continual Motion of the Particles of that Element.

He adds, That he had more than once fill'd a large wide Veſſel with *Water*, and narrowly watch'd it with a good Microſcope, but could never perceive it without ſome ſort of undulatory Motion.

Water ſcarce ever continues two Moments exactly of the ſame Weight, but is always varying more or leſs, by reaſon of the Air and Fire contained in it. Thus, if you lay a Piece of pure limpid Ice in a nice Balance, you will never find it continue in Æquilibrio. The Expanſion of *Water* in boiling, ſhews what Effect the different Degree of Fire has on the Gravity of *Water*.

This Uncertainty makes it difficult to fix the ſpecifick Gravity of *Water*, in order to ſettle its Degree of Purity: But this we may ſay in the general, that the pureſt *Water* we can procure, is that which weighs 880 times as much as Air.

However, neither have we any tolerable Standard for Air: For *Water* being ſo much heavier than Air; the more *Water* is contain'd in Air, the heavier of courſe muſt it be; as, in effect, the principal Part of the Weight of the Atmoſphere ſeems to ariſe from the *Water*.

Of all *Waters*, the pureſt is that which falls in Rain in a cold Seaſon, and a ſtill Day; and this we muſt be content to take for Elementary *Water*. The Rain *Water* in *Summer*, or when the Atmoſphere is in Commotion, 'tis certain muſt contain infinite Kinds of heterogenous Matter: Thus, if you gather the *Water* that falls after a Thunderclap in a ſultry *Summer*'s Day, and let it ſtand and ſettle, you will find a real Salt ſticking at the Bottom: but in *Winter*, eſpecially when it freezes, the Exhalations are but few, ſo that the Rain falls without much Adulteration: And hence, what is thus gather'd in the Morning-time, is found of good Uſe in taking away Spots in the Face; and that gather'd from Snow, againſt Inflammations of the Eye: Yet this Rain-water, with all its Purity, may be filter'd and diſtill'd a thouſand times, and it will ſtill leave ſome *Fæces* behind it: So that to procure the pureſt *Water* poſſible, a Man muſt look for it in a large ſpacious Plain in the Winter-time, when the Earth is cover'd with Snow, and its Pores lock'd up with Froſt.

The next, in Point of Purity, is Spring-Water: This, according to Dr. *Halley*, is collected from the Air itſelf, which being ſaturated with *Water*, and coming to be condens'd by the Evening's Cold, is driven againſt the cold Tops of Mountains, where, being farther condens'd and collected, it gleets down or diſtills, much as in an Alembick. This *Water*, which before floated in the Atmoſphere in form of Vapours, being thus brought together, at firſt forms little Streams, ſeveral of which meeting together, form Rivulets, and theſe, at length, Rivers, as has been ſaid before.

If ſuch *Water* chances to flow over *Strata* or Beds wherein there is Salt or Sulphur, or Vitriol, or Iron, or Copper, or the like, the *Water* becomes medicinal; but the Baſis, it may ſtill be obſerv'd, is Rain-Water.

Spring-Water becomes the better by running; for, during all its Courſe, it is depoſiting what heterogeneous Matters it contained: But while the River drives on its *Waters* in an uninterrupted Stream, all its Salts, with all the vegetable and animal Matters drained into it, either from Exhalations, or from the Ground it waſhes gradually, either ſink to the Bottom, or are driven to the Shore.

But what *Water* deſcends from Springs on the Tops of Mountains, is generally pretty free from heterogeneous Bodies.

Of the Penetrability of Water.

Water is the moſt penetrable of all Bodies next after Fire: For which Reaſon it is very difficult to confine it; inſomuch that a Veſſel thro' which *Water* cannot paſs, may retain any Thing. Nor is it any Objection, that Syrups and Oils will ſometimes paſs thro' Veſſels which *Water* cannot paſs; for this is not owing to the greater Subtilty or Penetration of their Particles; but to this, that ſuch Veſſels are made of Wood wherein Reſin abounds, to which Oils and Syrups are Menſtruums; ſo that diſſolving the Reſin, they make their Way through the Spaces left thereby: Whereas *Water*, as it does not act on Reſin, is retained in theſe Veſſels.

Water, however, does gradually make its Way through all Woods, and is only retainable in Glaſs and Metals; nay, it was found by Experiment at *Florence*, that *Water* ſhut up in a ſpherical Veſſel of Gold, and then preſſed with a great Force, made its Way thro' the Pores even of Gold: So that the moſt unpermeable Body in Nature is permeable to *Water*.

Water is even more fluid than Air; for we account a Body is more fluid than another, when its Parts will make their Way thro' ſmaller Pores. Now Air, 'tis known, will not paſs thro' Leather, as is evident by covering an exhauſted Receiver therewith; but *Water* goes thro' it with Eaſe. Again; Air may be retained in a Bladder, whereas *Water* oozes thro'. In effect, 'tis found that *Water* will paſs thro' Pores ten times ſmaller than Air will.

All that has been ſaid of Air, with regard to the Compoſition of Bodies, holds much more of *Water*, as being both more penetrative and more ponderous. It enters the Compoſition therefore of all Bodies, both Vegetables, Animals, and Foſſils; and has this Circumſtance peculiar to it, that it is eaſily ſeparable from any of the Bodies it unites withal; which cannot be ſaid of any other Body.

Fire, indeed, will penetrate more than *Water*: But then 'tis difficult to ſeparate it again from the Bodies it is once fixed in, as is evident in red Lead, *&c.*

This Property of *Water*, joined with its Smoothneſs and Lubricity, renders it fit to ſerve as a Vehicle for the commodious and eaſy Conveyance of the nutritious Matter of all Bodies; for in being ſo very fluid, and paſſing and repaſſing ſo readily, it never ſtops up the Pores, but leaves Room for the following *Water* to bring on a new Supply of nutritious Matter.

And yet the ſame *Water*, as little coheſive as it is, and as eaſily ſeparated from moiſt Bodies, will cohere firmly with ſome others, and bind them together into the moſt ſolid Maſſes; tho' it appears wonderful, that *Water*, which is almoſt an univerſal Diſſolvent, ſhould withal be a great Coagulator.

Thus *Water*, mixed up with Earth or Aſhes, gives them the utmoſt Firmneſs and Fixity: The Aſhes, for Inſtance, of an Animal, well incorporated with pure *Water*, and made into a Paſte, and this baked by a vehement Fire, grow into a Cupel, which ſhall bear the utmoſt Effort of the Refiner's Furnace. 'Tis in Effect upon the glutinous Nature of *Water* alone that our Houſes ſtand: For take the *Water* out of the Wood, and it becomes Aſhes; out of Tiles, and they become mere Duſt.

Thus a little Clay dry'd in the Sun, becomes a Powder; which mixed with Water, ſticks together again, and may be faſhioned at Pleaſure; and this dry'd again by a gentle Fire, or in the Sun, and then baked in a Potter's Oven by an intenſe Fire, becomes little other than a Stone.

So the *Chineſe* or *Japan* Earth, whereof our Porcelain Veſſels are made, which hold all Liquors, and even melted Lead itſelf, is diluted and wrought up with *Water*. In effect, all the Stability and Firmneſs that is ſeen in the Univerſe, is owing to *Water* alone: Thus Stone would be an incoherent Sand, did not *Water* bind it together.

Thus, again, of a fat gravelly Earth, wrought up with *Water*, and baked or burnt, we make Bricks, Tiles, and Earthen Veſſels, of ſuch exceeding Hardneſs and Cloſeneſs that *Water* can't paſs thro' them. And theſe Bodies, tho' to appearance perfectly dry and deſtitute of *Water*, yet if they be pulverized, and put in a Retort, and diſtilled, yield an incredible Quantity of *Water*: Whence it appears, that the Particles of *Water* may be ſo diffuſed and diſperſed thro' Bodies, as to cohere with them, and give them Hardneſs, (for the Particles of Sand would never ſtick together without *Water*) and yet may be fetch'd back again, and reduced to their former fluid State.

And the ſame holds of *Metals*; for the Parings or Filings of Lead, Tin, or Antimony, *&c.* by Diſtillation, yield *Water* very plentifully; and the hardeſt Stones, Sea-ſalt and Sulphur, Nitre, Vitriol, *&c.* are found to conſiſt chiefly of *Water*, into which they reſolve by the Force of Fire, and loſe the Coheſion of their Parts. Thus if you diſtil *Sal Gemmæ*, which is a very hard, tranſparent Body, like Cryſtal, a good Quantity of *Water* will ariſe; and then the Body, which before was tranſparent, becomes opaque, white and friable.

The *Lapis Calcarius*, or Lime-ſtone, being expoſed to the Fire, affords a prodigious Quantity of pure *Water*; and the more this *Water* is expreſſed, the more friable does it become; wherein, in the lieu of the *Water* ſo expelled, the Fire, in the Courſe of Calcination enters; which is expelled again in its Turn, by pouring on cold *Water*. Laſtly: Of the *Water* and Calx tempered together, ariſes a Maſs ſcarce inferior, in point of Solidity, to the primitive Lime-ſtone: So that the *Lapis Calcarius* appears to be no more than living Earth, bound into a Conſiſtence with *Water*.

From what has been ſaid, it appears, that *Water* is the univerſal Gluten which binds together the Parts of all Bodies: And hence that Obſervation of *Centivoglio*, That Nature makes Diamonds of a *Water* well depurated and hardened into a Maſs.

That *Water* is not elaſtick, is evident hence, that it is incompreſſible, or incapable, by any Means, of being reduced into leſs Compaſs, though urged with the greateſt Weight. Thus we learn from that famous Experiment made by Order of the great Duke of *Tuſcany*; where a Quantity of *Water* being cloſely included in a hollow Ball of pure Gold, and thus laid in a Preſs with a prodigious Force thereon, the Ball not being able to aſſume a more copious Figure, to give more Room for the *Water*, and the *Water* being incapable of Condenſation, rather than yield, it tranſfuſed thro' the Pores of the Metal; ſo that the Ball was found wet all over on the Outſide; 'till at length, making a Cleft in the Gold, it ſpun out with great Vehemence; From which Circumſtance ſome have concluded, that it was elaſtick, but on weak Grounds; the Impetus wherewith the *Water* darted out, being more probably owing to the elaſtick Force of the Gold, which communicated that Impreſſion to the *Water*.

And hence we ſee the Reaſon why Blocks of Marble ſometimes burſt in cold *Water*; and why a Veſſel filled with *Water*, and afterwards by any Means reduced to a leſs Compaſs, burſts, though the Veſſels be ever ſo ſtrong. This is obſervable in a Piece of Braſs Cannon, which being filled with *Water*, and the Mouth exactly ſtopped, ſo as to prevent all Egreſs of *Water*; if a cold Night happens ſufficient to contract and conſtipate Bodies, the metallick Matter undergoing the common Fate, and the *Water* refuſing to give Way, the Cannon is burſt aſunder with incredible Violence. Tho' others account for the Effect from this, that the included *Water*, in freezing, endeavours to expand itſelf, or poſſeſs more Room than it did before; which being deny'd, it burſts through its Reſtraint.

Some bring an Argument for the Elaſticity of *Water*, hence, That hot *Water* takes up more Room than cold: But no legitimate Concluſion can be formed from hence; for in the hot *Water* there is a good Quantity of Fire contained, which interpoſing between the Particles of the *Water*, makes it extend to a greater Space, without any Expanſion of Parts from its own Elaſticity. This is evident hence, That if *Water* be once heated, there is no reducing it to its former Dimenſions, but by letting it cool again: Which plainly ſhews, that the Expanſion depends not on the Elaſticity of Parts, but on the Preſence of Fire. *Water* then, though incapable of Compreſſion or Condenſation, may yet be rareſy'd by Heat, and contracted by Cold; ſo that Fire may act on ſome Bodies that are not elaſtick.

It may be added, that a farther Degree of Cold, that is, ſuch a one as congeals *Water*, or turns it into Ice, does expand it. There are other Ways to manifeſt this Expanſion of *Water* by freezing. Mr. *Boyle* having poured a proper Quantity of *Water* into a ſtrong cylindrical Earthen Veſſel, he expoſed it uncovered both to the open Air in froſty Nights, and the Operation of Snow and Salt, and found, that the Ice produced in both Caſes, reached higher than the *Water* before it was froze, and expanded into Ice.

So if a concave Cylinder, made of any compact Matter, be tightly ſtopped at one End, and filled with *Water* at the other, and then that alſo be cloſed in the ſame Manner; if this Pipe be ſuſpended in the Air, ſufficiently cold, the contained *Water* will be froze, and the Stopples at both Ends, or at leaſt at one, will be thrown out, and a Rod of Ice appear thereat, in Continuation with the Tube.

A Stone-cutter complained to Mr. *Boyle*, that ſometimes, thro' the Negligence of the Servants, the Rain being ſuffer'd to ſoak into Marble, the violent Froſts coming on, would burſt the Stones.

Another Tradeſman complained, that even Implements made of Bell-metal, being careleſly expoſed to the Wet, have been broken and ſpoiled by the *Water*, which having entered at the little Cavities of the Metal, was there afterwards froze and expanded into Ice. And *Cabeus* tells us, he ſaw a huge Veſſel of exceeding hard Metal ſplit aſunder by congealed *Water*.

If it be aſked, How a Body ſo light, fluid, volatile, and which ſo eaſy a Fire ſuffices to rareſy, ſhould be ſo ſtubborn and incompreſſible? We ſee no other Cauſe to aſſign, but the Homogeneity of its Parts.

If *Water* be conſidered as conſiſting of ſpherical or cubical Particles, hollow within-ſide, and of a firm Texture, here will be enough to account for the whole. Its Firmneſs and Similarity will make it reſt ſufficiently, and its Vacuity renders it light enough, *&c.*

From what has been ſaid, we may ſettle ſomething as to the Nature of the component Particles of *Water*:

1. The Particles whereof *Water* conſiſts, are, as to our Senſes, infinitely ſmall; as it appears from their prodigious penetrative Power.

2. They are exceedingly ſmooth and ſlippery, void of any ſenſible Aſperities; as appears from their being ſo eaſily ſeparable from other Bodies they adhere to.

3. They are extremely ſolid; as appears by their cohering with other Bodies into a ſolid Form.

4. They are perfectly tranſparent; and, as ſuch, inviſible. This we gather, 1. From hence, That pure *Water* incloſ'd in a clean Veſſel hermetically ſealed, projects no Shadow; ſo that the Eye ſhall not be able to diſcover whether the Veſſel have *Water* in or not. 2. In that the Cryſtal of Salts, when the *Water* is ſeparated from them, loſe their Tranſparency.

5. They are very rigid and inflexible; as appears from their not being compreſſible. *Des Cartes* ſuppoſed the Particles of *Water* of an Eel-like Form, to account for their Lubricity: But, on this footing, they could not be incompreſſible.

It is obſerved, that when Salt is infuſed in *Water*, it does not fill the Veſſel in proportion to its own Bulk: whence it follows, that there muſt be ſome little Spaces between its Particles, to admit thoſe of the Salt. And hence again we gather, that the watry Particles are ſolid and inflexible; ſince though they have intermediate Spaces, yet no Force or Weight can any way compreſs or croud them nearer together.

From the Whole, it follows, that *Water* devoid of any heterogeneous Admixture, conſiſts of exceedingly minute, penetrative, fluid, ſlippery, ſolid, ponderous Particles; and conſequently, approaches near to the nature of *Mercury*: And hence that Obſervation of the ancient Chymiſts, *That* Mercury *is the only Body in Nature that diſſolves*; alluding to the menſtruous Virtue of *Water*.

Water is the moſt inſipid of all Bodies; for the Taſte we ſometimes obſerve therein, does not ariſe from the mere *Water*, but from Salt, Vitriol, or other Bodies mix'd with it: and accordingly all the *Waters* that are ſavoury, as thoſe of *Italy*, &c. and which are recommended by Phyſicians for medicinal Uſes, are always found to depoſit a Quantity of ſome of theſe Foſſils.

Nor does it appear by any Experiment, that *Water* has the leaſt Smell, provided it be pure: ſo that *Water* might remain imperceptible to us, were it not for our Senſe of Touching.

Water therefore appears to be perfectly indifferent, as to the aſſuming of all Forms. *Centivoglio* maintains, That if it happens to fall in a Place where there is, *ex. gr.* pure Cinnabar, or any other Matter, the *Water* will join with them all, and become what they are. Which Opinion falls in with that of *Thales* and *Paracelſus* above mentioned. And hence it is that *Water* is call'd a *ſecond Mercury*.

Of the ſolutive Power of Water.

Water conſidered as a *Menſtruum*, diſſolves,

1. All *Salts*; as Sugar, Borax, *&c.* which Air only diſſolves by virtue of the *Water* it contains; which Fire only liquefies, and Earth leaves untouch'd: So that *Water* alone is the proper *Menſtruum* of Salts.

The Particles of Salts, as it has been obſerved, can inſinuate themſelves into the Interſtices between the Particles of *Water*; but when thoſe Interſtices are filled with any Salt, the ſame *Water* will not any longer diſſolve the ſame Salt: but a Salt of another Kind it will, by reaſon its Particles being of a different Form, will enter and occupy the Vacancies left by the former. And thus again, it will diſſolve a third or fourth Salt, *&c.* So when *Water* has imbib'd its Fill of common Salt, it will ſtill diſſolve Nitre; and, when ſaturated with Heat, it will diſſolve *Sal Armoniack*; and ſo on.

2. It diſſolves all ſaline Bodies; it being the conſtituent Quality of a ſaline Body to be uninflammable and diſſoluble in *Water*. Hence *Water* may diſſolve all Bodies, even the heavieſt and moſt compact, as Metals, inaſmuch as theſe are capable of being reduced into a ſaline Form; for theſe may be ſo intimately diſſolved by *Water*, as to be ſuſtained therein.

3. It diſſolves all ſaponaceous Bodies, *i. e.* all alkalious Salts and Oils blended together: Thoſe two Bodies make a *Sapa*, which is a ſaline Body, but not a Salt. Now Oil itſelf is not diſſoluble in *Water*; but the Admixture of the Salt here, rendering it ſaline, *Water* readily diſſolves it.

All the Humours in the human Body are apparently ſaline, tho' none of them are Salt itſelf. The ſame may be ſaid of the Juices of all Vegetables, excepting the Oils, which accordingly diſſolve in *Water*.

Salts are the active Inſtruments of Nature; and yet thoſe do not act, unleſs diſſolved either by *Water* or Fire.

A Cryſtal is a Glebe of Salt, or Metal, or both together. If now you take Sea-ſalt well dry'd, it will be white, and not tranſparent: Diſſolve it in *Water*; and after exhaling the *Water*, it will become tranſparent, by reaſon of the *Water* interpoſed between its Parts.

4. It diſſolves Glaſs itſelf; for this, if melted with Salt of Tartar, becomes ſoluble in *Water*.

5. It diſſolves all gummous Bodies; this being part of the Definition of a Gum, that it diſſolves in *Water*, in Contradiſtinction from a Reſin: but oleaginous Bodies it leaves untouch'd, nay, and what is more extraordinary, it repels them; and, by repelling, drives the oily Particles into Eddies.

If an hundred Drops of Oil be thrown upon *Water*, all the ſeveral Drops, which before were perfectly diſperſed, will ſoon gather together again, and leave the *Water* alone: So that there ſhould ſeem to be ſome Repugnance between *Water* and Oil, and ſome Attraction between the Particles of *Water*, as alſo between thoſe of Oil.

Add, that *Water* ſeems to repel all oleaginous, fatty, and adipoſe Bodies wherein Oil predominates; and hence alſo it is, that the fatty Parts in our Bodies eſcape being diſſolv'd by *Water*: And it is, in all Probability, by this Means that Fat is collected in the adipoſe Cells of all Animals.

Nor does *Water* diſſolve *Sulphur*; for tho' you boil Sulphur ever ſo long in *Water*, yet it will ſtill remain untouch'd.

Nor does it diſſolve *terrene* or *earthly* Bodies, but rather unites and conſolidates them; as we ſee in Tiles, *&c.*

Water, however mix'd with Alkali Salts, diſſolves Oil, and oily Bodies: Thus, though mere *Water* pour'd on greaſy Wool, be repell'd thereby, and contributes nothing towards cleanſing of the ſame; yet mix a ſtrong Lixivium or an Alkali Salt with the *Water*, and then it readily diſſolves, and abſorbs all that is greaſy and oleaginous; and thus it is Woollen Cloths are ſcoured. But neither will *Water* alone do, as being immiſcible with Oil, nor will any other ſort of Salts; for *Sea-water*, with all its Salts, will never waſh out any oily Impurities. So, in the ordinary Methods of Scouring and Fulling, the Stuffs are waſh'd in ſtale, putrify'd human Urine, which is known to be a thorough Alkali.

Laſtly: It does not diſſolve *Reſins*; as we conceive a Reſin to be no other than an inſpiſſated or concentrated Oil.

It has been diſputed, whether or no *Water* be convertible into Air; there being numerous Inſtances of at leaſt an apparent Tranſmutation.

In the Vapours daily rais'd, we find *Water* rarefy'd to ſuch a Degree, as to take Place in the Atmoſphere, and help to compoſe a conſiderable Part of what we call *Air*, and even to contribute to many of the Effects aſcribed to *Air*.

But ſuch a Vapour has not the Character of true, permanent *Air*, being eaſily reduced into *Water* again. So, in Digeſtions and Diſtillations, tho' *Water* may be rarefy'd into Vapours, yet it is not really changed into Air, but only divided by Heat, and diffuſed into very minute Parts; which meeting together, preſently return to ſuch *Water* as they conſtituted before.

Yet *Water* rarefy'd into Vapour in an Æolipyle, will, for a while, have an elaſtick Power, the great and laſt Characteriſtick of true *Air*, and ſtream out perfectly like a Blaſt of *Air*. The elaſtick Power of this Stream is manifeſtly owing to nothing elſe but the Heat, that expands and agitates the aqueous Particles thereof; and when the Heat is gone, the Elaſticity, and other aerial Properties, diſappear.

Rapid Winds thus made, ſeem to be no more than mere *Water* broke into little Parts, and put into Motion; ſince by holding a ſolid, ſmooth, and cold Body againſt it, the Vapours condenſing thereon, will preſently cover the Body with *Water*.

Indeed, tho' no Heat intervenes, Motion alone, if vehement, may perhaps ſuffice to break *Water* into minute Parts, and make them aſcend upwards in form of Air.

Mr. *Boyle* obſerves, that between *Lyons* and *Geneva*, where the *Rhone* is ſuddenly ſtraiten'd by two Rocks very near each other, that rapid Stream daſhing with great Impetuoſity againſt them, breaks part of its *Water* into minute Corpuſcles, and gives it ſuch a Motion, that a Miſt may be obſerved at a conſiderable Diſtance ariſing from the Place, and aſcending high into the Air.

Sea-water is an Aſſemblage of Bodies, wherein *Water* can ſcarce be ſaid to have the principal Part; 'tis an univerſal Colluvies of all the Bodies in Nature, ſuſtain'd and kept ſwimming in *Water* as a Vehicle.

Dr. *Liſter* conſiders it as the Fund or Source out of which all Bodies ariſe. He gives, in ſome meaſure, into the Opinion of *Thales* and *Van Helmont*; and imagines the *Sea-water* to have been the only Element created at the Beginning, before any Animal or Vegetable, or even before the Sun himſelf.

Freſh-water, he ſuppoſes to have aroſe accidentally after the Creation of theſe, and to owe its Origin to the Vapours of Plants, the Breath of Animals, and the Exhalations raiſed by the Sun.

Dr. *Halley* is of another Opinion: He ſuppoſes, that the Saltneſs of the Sea ariſes from the ſaline Matter diſſolved and imbibed by the Rivers in their Progreſs, and diſcharged with their *Waters* into the Ocean; and conſequently, that the Degree of Saltneſs is continually and gradually increaſing.

On this Hypotheſis he even propoſes a Method for determining the Age of the World: For two Experiments of the Degree of Saltneſs, made at a large Interval of Time, will, by the Rule of Proportion, give the Time wherein it has been acquiring its preſent Degree of Saltneſs. *Philoſ. Tranſ.* N°. 344.

Without *Water*, there can no Fermentation be raiſed.

Thus, if you grind a Plant into Duſt and *Farina*, it will never ferment, even tho' you add Yeaſt or Spirit of Wine thereto: but *Water* being poured on it, the Fermentation readily riſes.

All Putrefactions, both of animal and vegetable Bodies, are likewiſe perform'd by Means of *Water* alone; and without it, there would be no ſuch Effect in all Nature.

Water is of great Service in directing and determining the Degree of Fire or Heat. This was firſt diſcovered by M. *Amontons*, from an Obſervation, that *Water* over the Fire grows gradually more and more hot, 'till it comes to boil; but then ceaſes to increaſe, and only maintains its preſent Degree of Heat, even tho' the Fire was ever ſo much enlarged, or was continued ever ſo long. This therefore affords a Standard or fix'd Degree of Heat all over the World; boiling *Water*, provided it be equally pure, being of the ſame Heat in *Greenland* as under the *Equator*.

Mineral-waters are of ſeveral Kinds:

1. *Acid-waters:* Theſe ariſe from the Admixture of Vitriol, Nitre, Allom, and Salt. Theſe are cold, and very frequent, there being reckon'd not leſs than a thouſand in *Germany* alone; ſome of which are ſour as Vinegar, and uſed inſtead thereof; others vinous, and ſerving for Wine; others aſtringent, *&c.*

Hot-waters ariſe from the Admixture of ſulphureous Particles and Fumes: of theſe, the hotteſt is ſaid to be that of *Japan*, which no Fire can bring *Water* to equal, and which keeps hot thrice as long as our boil'd *Water*.

Oily and *fat Waters* ariſe from bituminous and ſulphureous Matter; as Amber, Petroleum, Pitch, Naphtha, *&c.*

Bitter-waters are produced from an impure Sulphur, Nitre, and Copper; ſuch is the *Lacus Aſphaltites*.

Very Cold Waters have their Riſe from a Mixture of Nitre and Allom; or of Mercury, Iron, *&c.* The Depth of the Source or Spring too has ſome Effect.

There are alſo divers *Waters* which change the Nature of Bodies.

In the Northern Part of *Ulſter* in *Ireland* is reported to be a Spring, which, in the Space of ſeven Years, petrifies Wood, or converts it into Stone. The like are ſaid to be found in divers other Parts, as in *Hungary*, *Burgundy*, &c. *Vitruvius* mentions a Lake in *Cappadocia* which converts Wood into Stone in one Day.

Near *Armagh* in *Ireland*, is ſaid to be a Lake, wherein a Staff being fixed ſome Months, the Part that ſtuck in the Mud will be turn'd into Iron; and that Part incompaſs'd with Water, into Hone; the reſt remaining as before.

There are *Waters* ſuppoſed to tranſmute Iron into Copper.

Poiſonous-waters are occaſioned by their creeping thro' arſenical, antimonial, or mercurial Earths, and being impregnated by their Fumes; ſuch as the *Lacus Aſphaltites*, and divers others about the *Alps*, &c. which immediately kill thoſe who drink thereof: but theſe are moſt of them fill'd up with Stones, which is one Reaſon ſo few are known.

Saline-waters are generated two Ways; either they are derived from the Sea by ſome ſubterraneous Paſſage, or are generated from Mineral Salts, which they meet withal in their Paſſage ere they arrive at their Springs.

Boiling or *Bubling-waters* are produced either by a ſulphureous, or a nitrous Spirit, mix'd with the *Water* in the Earth: if it be ſulphureous, the *Water* is hot; if nitrous, cold: For all the *Waters* that boil as if hot, are not ſo, but ſome few are cold.

There are divers other *Waters* that have ſingular Properties, not reducible to any of theſe Claſſes; ſuch are,

1. That Spring in *Portugal*, which abſorbs all Bodies caſt into it, altho' the lighteſt: And not far from it there was anciently another, in which no Bodies, not the heavieſt, could ſink.

2. There is ſaid to be a Lake in *Andaluſia* which foretels approaching Storms, by making a terrible Bellowing, that may be heard at 18 or 20 Miles Diſtance.

3. In *Granada* is a Well, whoſe Water diſſolves Stones.

4. There are Springs in divers Parts of *England* and *Wales*, *Spain*, &c. which ebb and flow daily with the Flux and Reflux of the Sea; and ſome are ſaid even to ebb and flow againſt the Tide.

M. *Marriote*, in his Treatiſe of *Hydroſtaticks*, tells us, That there is in *Water* a kind of Viſcouſneſs, which makes its Parts ſtick to one another, and to other Bodies, as to Wood, and clean Glaſs, in ſuch a manner, that a large Drop of *Water* will hang upon the Wood or Glaſs without falling; and if you pour *Water* into a clean Glaſs, without filling it, that Part of the *Water* which is next to the Glaſs will riſe above a Line and a half higher than the Level of the reſt. And tho' we cannot tell wherein this Viſcouſneſs conſiſts, yet its Effects are always ſenſible.

After this Manner, two diſtinct Drops of *Water* will unite into one as ſoon as they touch one another ever ſo little.

The ſame thing will happen to two Drops of Mercury, or two Drops of Oil, laid ſoftly upon *Water*, if you bring them to touch one another. The ſame will alſo happen to thoſe Bubbles of Air which are at the Bottom of a Diſh full of *Water*, when it has ſtood a while upon the Fire; for if you puſh them towards each other, with a Pin, or any thing elſe, they will, after the ſame manner, run into one another.

To explain the Reaſon of this Viſcouſneſs, as well as we can, we might ſay, that each of theſe Subſtances having their Particles in conſtant Motion, the Particles of each Kind have a Figure proper to hook and unite themſelves to thoſe of the ſame Kind, and that they faſten to each other as ſoon as by their Motion they come to touch.

There is another Conjecture; *viz.* That the Air having a ſtrong Spring, endeavours to reduce thoſe Fluid Bodies to the leaſt Space they can take up, which is a ſpherical Figure. But if this was true, then a Drop of *Mercury* and a Drop of *Water* would be reduced into a Globe. Beſides, we find, that in the exhauſted Receiver of an Air-pump, Drops of *Water* or *Mercury* keep their globular Figures, and unite into one in that rarefy'd Air, as they do in common Air.

There are alſo Bodies that *Water* will not ſtick to, or not without Difficulty; as Tallow, Colewort-leaves, before they are handled, Swan or Duck-feathers; if it lies upon thoſe Subſtances, it is in round Drops: or if it be in a pretty large Quantity, its Outſide is round, and the reſt is a level Subſtance.

WEATHER is the State or Diſpoſition of the Atmoſphere, with regard to Moiſture or Drought, Heat or Cold, Wind or Calm, Rain, Hail, Froſt, Snow, Fog, *&c.*

As 'tis in the Atmoſphere that all Plants and Animals live and breathe; and as that appears to be the great Principle of moſt animal and vegetable Productions, Alterations, *&c.* there does not ſeem any thing in all Philoſophy of more immediate Concernment to us, than the State of the *Weather*.

In effect, all living Things are only Aſſemblages or Bundles of Veſſels, whoſe Juices are kept in Motion by the Preſſure of the Atmoſphere, and which, by that Motion, maintain Life: So that any Alterations in the State of the Rarity or Denſity, the Heat, Purity, *&c.* of the Atmoſphere, muſt neceſſarily be attended with proportional ones with theſe. Almoſt every Body knows what vaſt, yet regular Alterations, a little Change of *Weather* makes in a Tube fill'd with *Mercury*, or *Spirit of Wine*, by *Barometers*, *Thermometers*, *Hygroſcopes*, &c. and we ſhould not fail to feel as great and as regular Alterations in the Tubes, Chords, and Fibres of our own Bodies, were it not partly for our Inattention, and partly for our unequal and intemperate Courſe of Living.

The Knowledge of the *Weather* is of great Service in *Gardening* and *Agriculture*: but the imaginary Prognoſtications of Almanack-Writers have been found to be a mere deluſive Cant and Jargon. There is nothing more wanting, than a juſt Theory of the *Weather* on Mechanical Principles.

Were Regiſters carefully kept in divers Parts of the Globe for a good Series of Years, we might by them be enabled to determine the Directions, Breadth, and Bounds of the Winds, and of the *Weather* they bring with them; the Correſpondence between the *Weather* in divers Places, and Dependence between one Sort and another at the ſame Place: And thence we might in time learn to foretel divers great Emergencies; as, extraordinary Heats, Rains, Froſts, Droughts, Dearths, *&c.* But, in order to this, a complete Hiſtory of the *Weather* will be required.

Indeed, there have been ſome Eſſays made this Way by the Members of our *Royal Society*, the *French Academy of Sciences*, and divers other Perſons of Note; but the Dryneſs of the Subject has put a Stop to their Progreſs in that Matter.

As for Inſtance: *Eraſ. Bartholinus* has Obſervations of the *Weather* every Day throughout the Year 1671: And Mr. *Werle* made the like at *Oxford* for ſeven Years, from the Year 1337 to 1343. Dr. *Plot* did the ſame at the ſame Place for the Year 1684. Mr. *Hiller* at *Cape Corſe*, for the Years 1686 and 1687; and Mr. *Hunt*, &c. at *Greſham College*, for the Years 1695, 1696. Dr. *Derham* at *Upminſter* in *Eſſex*, for the Years 1691, 1692, 1697, 1698, 1699, 1703, 1704, 1705. Mr. *Townly* in *Lancaſhire*, for the Years 1697, 1698. Mr. *Cunningham* at *Emin* in *China*, for the Years 1698, 1699, 1700, 1701. Mr. *Lock* at *Oats* in *Eſſex*, 1692. Dr. *Scheuchzer* at *Zurich*, in 1708; and Dr. *Tilly* at *Piſa*, the ſame Year.

The moſt certain Signs and Prognoſticks of good and bad *Weather* may be collected from thoſe Things that are nearer to us than the Orbs of the Planets: Nor need we go any farther than this our ſublunary World for the moſt probable Conjectures in relation to the *Weather*; and may deduce our Prognoſtications in relation thereto, from *Animals* and *Vegetables*, &c.

It is certain, that a great Part of the Brute Creation have a Senſibility and Sagacity this Way beyond Mankind, and that without any Means or Diſpoſition thereto, more than we; except that their Veſſels, Fibres, *&c.* being in other reſpects in one equable Habitude: The ſame, or a proportionable Cauſe from without, has always a like or proportionable Effect on them; that is, their Veſſels are regular *Barometers*, &c. effected only from one external Principle, *viz.* the Diſpoſition of the Atmoſphere: Whereas ours are acted on by divers from within, as well as without; ſome of which check, impede, and prevent the Action of others.

Animals that live in the open Air, muſt neceſſarily be ſuppoſed to have a quicker Senſe of it than Men that live within Doors; and eſpecially the airy Inhabitants, the *Birds*, who live in the freeſt and cleareſt Air, and are more apt, by their Flight, and other Motions, as well as their Voices, to diſcover their Senſations of it.

Therefore thoſe who have apply'd themſelves to the Obſervations of the Signs and Prognoſticks of *good* or *bad Weather*, have laid down theſe following Rules.

Signs or Prognoſtications of Rainy Weather.

The Lord *Bacon* ſays, That Water-fowls, ſuch as *Sea-gulls*, *Moor-hens*, &c. when they flock and fly together from the Sea towards the Shore, foretel Rain and Wind.

And on the other hand, when Land-birds, ſuch as *Crows*, *Swallows*, &c. fly from Land to the Waters, and beat the Waters with their Wings, it betokens Rain and Wind.

The natural Reaſon of that ſeems to be, the Pleaſure that both Land and Water-fowl take in the Moiſtneſs and Denſity of the Air, and to love to be in Motion and upon the Wing.

It is no ſtrange Thing that Water-fowls delight in that Air which is moſt like Water, their natural Element; and that Land-fowl alſo (many of them) delight in Bathing, and moiſt Air.

And alſo for the ſame Reaſon, many Birds prune their Feathers; *Geeſe* gaggle, and the *Crows* call for Rain: All which ſeems to be, but the Pleaſure they take in the Relaxation of the Air.

The *Heron*, which is a Water-fowl, delights in a condenſed Air: And beſides, being a Fowl of a heavy Wing, requires the Aſſiſtance of the groſſer Air; and therefore, where the Air is groſs, and thickens into Showers, ſhe flies low.

When *Crows* flock together in large Flights, and hold their Heads upwards as they fly, and cry louder than they uſually do, it is a Sign of Rain; and when they walk ſtalking by Rivers and Ponds, it is the ſame.

When *Swallows* chatter and fly low about Lakes and Ponds (which they do, in order to catch Flies; for the Air being clogged with Vapours, hinders the Flies from aſcending) it beſpeaks Rain.

When *Peacocks* cry much, when Birds that uſually perch upon Trees fly to their Neſts, when Fowls pick up their Feathers with their Bills, when *Cocks* crow before their uſual Hour, and *Hens* creep in Cluſters into the Duſt, they are Signs of rainy *Weather*.

Not only Birds, but Beaſts do give Notice of Rain, as *Sheep*, when they leap mightily, and puſh at one another with their Heads, it denotes Rain.

When *Aſſes* bray, or ſhake their Ears, or are annoy'd with Flies; when *Deers* fight; when *Foxes* and *Wolves* howl mightily; when *Hogs* at play break or ſcatter their Food, and *Oxen* that are tied together, raiſe their Heads, and lick their Snouts, it is a Sign of Rain.

When *Cattle* leave off feeding, and make Haſte to ſhelter under Buſhes and Hedges, *&c.* when *Cats* rub their Heads with their Fore-paws, (eſpecially that Part of their Heads which is above their Ears) and lick their Bodies with their Tongues, it is a Sign of Rain.

Beaſts do generally delight in a moiſt Air, and it cauſes them to eat their Meat the better. *Cattle*, *Deer*, and *Rabbets* will feed heartily before Rain. *Heifers* will put up their Noſes, and ſnuff in the Air againſt Rain. *Sheep* will riſe early in a Morning to feed againſt Rain.

Alſo *Fiſhes*, either *Sea* or *River-fiſh*, do often, by their playing towards the Top of the Waters, foretel Rain. For this the Lord *Bacon* gives this Reaſon, That when the *Weather* is dry, the *Fiſh* love to keep as much as they can from the Air, and ſwim lower, and will not come near the Air till it is moiſt.

Inſects and *Reptiles* do alſo give Prognoſticks of Rain.

Ants quit their Labour and hide themſelves in the Ground againſt Rain: For theſe provident Inſects, by a ſecret Inſtinct in Nature, carry their Eggs to a Place of drier Security, when they find the Air changed into Moiſtneſs, and clogged with Vapours.

Bees, when Rain is coming on, do not ſtir from their Hives, or at leaſt not far.

Fleas bite more againſt Rain, and *Flies* are very troubleſome, often daſhing againſt Perſons Faces.

Moles will caſt up more Earth, and *Earth worms* will creep out of the Ground againſt Rain.

Even the Bodies of *Men* and *Women* give Tokens of Rain or Froſt, by Aches, Corns and Wounds, which will be more troubleſome againſt ſuch Seaſons: For Rain makes the Humours of the Body to abound more, and Froſt makes them ſharper.

Mr. *Ozanam* ſays, That the very Body of all Animals and Vegetables, is (as it were) a Contexture of *Barometers*, *Hygrometers*, and *Thermometers*; for the Humours with which organized Bodies are repleniſhed, increaſe or decreaſe, according to the different Diſpoſitions of the Air.

Prognoſticks of the Weather *from Vegetables.*

Mr. *Pointer* tells us, He has obſerved that many, if not moſt Vegetables, do expand their Flowers and Down in Sun-ſhiny *Weather*, and towards the Evening, and againſt Rain, cloſe them again, eſpecially at the Beginning of their flowering, when their Leaves are young and tender.

This is evident in the Down of *Dandelion*, and other Downs, and evidently in the Flowers of *Pimpernel*, the Opening and Shutting of which (he ſays) are the Countryman's *Weather-wiſer*.

And Mr. *Gerard* ſays, If the Flowers be cloſe ſhut, it betokens Rain and foul *Weather*; but if they be ſpread abroad, fair *Weather*.

The Lord *Bacon* ſays, *Trefoil* ſwells in the Stalk againſt Rain, and ſo ſtands more upright; for by Wet, Stalks do erect, and Leaves bow down: And *Pliny* ſays much to the ſame Purpoſe.

The former ſays likewiſe, That there is in the Stubble-fields a ſmall red Flower, which Country People call the *Wincopipe*, which if it opens in the Morning, you may be ſure of a fair Day to follow.

Mr. *Ozanam* gives as a natural Reaſon for this, that Plants are a Sort of natural *Hygrometers*, which are compos'd of an infinite Number of Fibres, *Tracheæ* or Air-veſſels, which are like ſo many Canals or Pipes, through which the Moiſture of the Air, as well as the Juice of the Earth, is convey'd into all its Parts.

Theſe *Tracheæ* or Air-veſſels are viſible, and appear very pretty in the Leaf of the *Scabious* or the *Vine*; if you pull aſunder ſome of its principal Ribs, you may ſee between them the Spiral Air-veſſels (like Threads or Cobwebs) a little uncoiled.

Signs of rainy Weather *by ſolid Bodies.*

The hardeſt and moſt ſolid Wood will ſwell by the Moiſture of the Air: This is evident by the Difficulty of ſhutting Doors and Windows in wet *Weather*, and Boxes, eſpecially of Deal; and Pegs of Wood, when they draw and wind hard are Signs of wet *Weather*: And this is cauſed by the Admiſſion of the Air thro' the Pores of the Wood.

Mr. *Ozanam* ſays, The moiſt Vapours do readily inſinuate into Wood, eſpecially that which is light and dry, it being extremely porous; ſo that they are ſometimes made uſe of in dilating and breaking the hardeſt Bodies, and in particular Mill-ſtones; for when they have cut a Rock into a Cylinder, they divide that into ſeveral leſſer Cylinders, by making ſeveral Holes round the great Cylinder, at proportional Diſtances, according to the Thickneſſes they deſign the Mill-ſtones, and then fill them with as many Pieces of Sallow-wood dry'd in an Oven; for when the wet *Weather* comes, theſe Wedges or Pieces of Wood become ſo impregnated with the moiſt Corpuſcles of the Air, that they ſwell and break, or ſeparate the cylindrical Rock into ſeveral Stones.

And Stones, eſpecially *Marble*, will ſweat againſt wet *Weather*, tho' it be but from an outward Cauſe, in that the Stones are ſo hard and ſolid, as not to admit the Moiſture of the Air, and therefore it only lies upon the Superficies of the Stones.

And the Humidity of the Air inſinuates itſelf into the hardeſt Bodies, which are not deſtitute of Pores, and eſpecially into light Bodies that take up a great Space.

Signs of rainy Weather *from the Planets and Stars.*

By the *Sun*. If the *Sun*, at his Riſing, looks red, and broader than uſual, then many moiſt Vapours are gathering from the Sea, and the Air is thickening, and the Beams of the *Sun* being diffuſed in it, cauſes the *Sun's* Face to ſhew a great deal bigger than is uſual; and in a ſhort Time you will perceive the Clouds muſtering, and over-ſpreading the Heavens, and the Air condenſing into a watery Body.

If this happens in *Summer* or *Autumn*, when the *Weather* is hot, the Showers that fall will be violent, but of ſhort Continuance; but if this happens in the *Winter* or *Spring*, it denotes ſettled Rains, but more moderate.

It has been an Obſervation, confirm'd by long Experience, That if the *Sun* riſes with a bluiſh Circle, inclining to white, the Air is groſs and condenſed, and Rain will ſoon fall.

And if, when the *Sun* riſes, he is pale, and the Sky is of a duſky red in the Morning, it will ſoon be over-caſt, and there muſt quickly follow Rain, attended with whiſking Winds.

Alſo if the *Sun* riſes of a miſty, muddy Colour, or in a black Cloud, and diffuſes his Rays paliſh towards the North and South, it foretels Rain.

It has been an Obſervation, That if the *Sun* ſets under a thick Cloud, Rain will fall the next Day; or if it rains immediately, there will be a great deal of Wind the next Day: And this is almoſt the conſtant Conſequence of a pale-ſetting *Sun*.

Tho' a red Sky at the Sun-riſing is a Sign of Rain, yet a red Sky, when the *Sun* ſets, is a Sign of fair *Weather*: Tho' indeed, if the Sky be red at a great Diſtance from the Part where the *Sun* ſets, as in the Eaſt, there will be either Rain or Wind the next Day.

As to the *Moon*. A pale *Moon* is a Forerunner of Rain; a red one of Wind, and a clear one of fine *Weather*.

When the *Moon* is encompaſſed with a very large Circle, or is dim and miſty, then there will follow Wind, Rain, or Snow very quickly, probably within twentyfour Hours.

If the Horns of the *Moon* at her firſt Riſing, or within two or three Days after her Change, are blunt, it betokens rainy *Weather* for that Quarter, but ſeaſonable *Weather* the other Quarter.

An *Iris* round the *Moon* is alſo a Sign of Rain, with a South Wind.

Two or three diſcontinued and ſpeckled Circles or Rings round the *Moon*, beſpeak a Storm.

Signs of rainy Weather *by the Stars.*

When the *Stars* ſeem bigger than uſual, pale, dull, and do not twinkle, it is a Sign that the Air is condenſing to Rain, that will ſoon fall.

When in *Summer* time the *Stars* appear brighter and more blazing than ordinary, it beſpeaks great Winds and Rain.

When many *Stars* appear in the Night, and ſeem more numerous than uſual, and in *Summer* time the Wind be Eaſt, it denotes ſudden Rain.

Signs of rainy Weather *from the Clouds.*

If in an Evening there appear many ſmall *Clouds* from the Weſt, it ſhews that Rain is gathering, and will ſoon fall.

When *Clouds* appear like Rocks or Towers, they ſignify great Showers.

Mr. *Ozanam* ſays, That when we ſee little, black, looſe *Clouds*, wandering to and fro, lower than the reſt, we apprehend a future Storm; and when at the riſing of the Sun ſeveral *Clouds* are ſeen to gather in the Weſt; and, on the other hand, if theſe *Clouds* diſperſe, it beſpeaks fair *Weather*.

When the Sun thro' the *Clouds* appears double or triple, it ſhews a Storm of long Duration.

Signs of Rain from the Rainbow.

If the *Rainbow* appears very big, it denotes much Wet; but if very red, Wind withal.

If a *Rainbow* appears after a long Drought, it ſignifies Rain; but if it appears after a long Time of Wet, it betokens fair *Weather*.

If a *Rainbow* appears in the Morning, it betokens a ſmall Rain, and fair *Weather* preſently after.

If a *Rainbow* vaniſhes altogether, fair *Weather* will follow, Winds will ariſe, and bring great Showers from the Part that the *Rainbow* firſt begins to break or vaniſh.

If the *Rainbow* be broken in many Parts, tempeſtuous Winds are gathering in the Air.

If after a *Rainbow* appears, the Colours grow darker and darker, Rain is gathering; if lighter, and the Colours fairer, fair *Weather*.

Mr. *Ozanam* ſays, a *Rainbow* in the Eaſt, eſpecially if it be of a bright, lively Colour, is a Sign of great Rain.

A *Rainbow* in the Eaſt, in an Evening, preſages fair *Weather*; but if the Colour is lively and red, it preſages Wind.

A *Rainbow* in the Weſt foretels an indifferent Quantity of Rain and Thunder.

If two *Rainbows* appear together, it foretels fair *Weather* for the preſent, but Rain two or three Days after.

Prognoſtications of the Weather *from Miſts.*

If *Miſts* ariſe out of Ponds and Rivers to the Top of Hills, it betokens that there will be Rain ſoon, either the ſame Day, or commonly within two or three Days; but if when they ariſe out of ſuch Places they vaniſh away, it is a Sign of fair *Weather*.

If there be a general *Miſt*, both on the Hills and Vales, before the Sun-riſing near the Full-moon, it denotes fair *Weather*.

Mr. *Ozanam* ſays, If you obſerve a white Vapour ariſing upon Waters, or Marſhes, or Meads, after Sun-ſet, or before Sun-riſing, it will be fair warm *Weather* the next Day.

Signs of fair Weather.

When the Sun is fair and bright at its Riſing in a Morning, and is bluſhing, without Spots or black Clouds near him when he ſets at Night, it is a Sign of *fair Weather*.

When the Moon is three or four Days old, and has her Horns ſharp, and pointed very bright, it is a Sign of *fair Weather* till ſhe comes to the Full, if not the whole Month.

If the Moon has a bright, ſhining Circle about her when ſhe is at the Full, it promiſes *fair Weather* for many Days.

When the Stars ſhine out clear and bright, and ſeem to dart out pointed Rays, it is a Sign of *fair Weather*.

Alſo when little Clouds ſink low, as into Valleys at South-Eaſt or South-Weſt, it is a Sign of *fair Weather*.

If the Tops of Hills be clear, it is a Sign of *fair Weather*.

If there are to the North-Weſt white ſcattering Clouds, like Fleeces of Wool, it is a Sign of *fair Weather*.

When white Clouds or Miſts hang juſt over Rivers, and diſperſe no farther, it is a Sign of *fair Weather*.

When a Rainbow appears after a Shower, and the blue or yellow Part of it be very bright, and the higheſt Colour, they are Tokens of *fair Weather*.

When Bees fly far from their Hives, and come home late, it is a Sign of *fair Weather*.

When there are great Swarms of Gnats, it preſages *fair Weather*.

Glow-worms ſhining by Night is a Sign of *fair Weather*.

When Kites fly aloft, it beſpeaks *fair* dry *Weather:* The Lord *Bacon* gives this Reaſon for it; Becauſe the Kite mounts moſt into the Air of that Temper wherein he delights; for this aſpiring Bird does not ſo much affect the Groſsneſs of the Air, as the Cold and Freſhneſs of it; for being a Bird of Prey, and therefore hot, he delights in the freſh Air.

When Swallows fly high, it is a Sign of *fair Weather*.

When Owls hoot much, it is a Sign of *fair Weather:* And tho' Owls do always hoot much both in wet and dry Weather, yet there is this Difference, that their Hooting is more clamorous in wet Weather, but more eaſy and ſedate in *fair Weather*.

When Halcyons, Coots, and other Sea-Fowls leave the Shores, and flock to the Sea, it is a Sign of *fair Weather*.

When Cattle feed eagerly, without looking about them, it is a Sign of *fair Weather*.

When Fiſh riſe frequently, and flirt upon the Water, it is a Sign of *fair Weather*.

Spiders Webs in the Air, or on the Graſs and Trees, foretel much *fair Weather*.

1. *A thick, dark Sky, laſting for ſome Time, without either Sun or Rain, always becomes firſt fair, then foul, i. e.* changes to a fair, clear Sky ere it turns to Rain——Thus the Reverend Mr, *Clark*, who kept a Regiſter of the *Weather* for thirty Years, ſince put it into Dr. *Derham*'s Hand by his Grandſon, the learned Dr. *Samuel Clark*. This, he ſays, he ſcarce ever knew to fail, at leaſt when the Wind was in any of the Eaſterly Points: But Dr. *Derham* has obſerv'd the Rule to hold good, be the Wind where it will.

The Cauſe is obvious. The Atmoſphere is replete with Vapours, which tho' ſufficient to reflect, and intercept the Sun's Rays from us, yet want Denſity to deſcend; and while the Vapours continue in the ſame State, the *Weather* will do ſo too. Accordingly ſuch *Weather* is generally attended with moderate Warmth, and with little or no Wind to diſturb the Vapours, and an heavy Atmoſphere to ſuſtain them; the *Barometer* being commonly high. ——— But when the Cold approaches, and by condenſing, drives the Vapours into Clouds or Drops, then Way is made for the Sun-beams, till the ſame Vapours, being by farther Condenſation form'd into Rain, fall down in Drops.

2. *A Change in the Warmth of the* Weather, *is generally followed by a Change of the Wind.*———Thus the Northerly and Southerly Winds, commonly eſteem'd the Cauſes of cold and warm *Weather*, are really the Effects of the Cold or Warmth of the Atmoſphere; of which Dr. *Derham* aſſures us, he has had ſo many Confirmations, that he makes no Doubt of it.

Thus it is common to ſee a warm Southerly Wind ſuddenly chang'd to the North, by the Fall of Snow or Hail; or to ſee the Wind in a cold froſty Morning North, when the Sun has well warm'd the Earth and Air, wheel towards the South, and again turn Northerly or Eaſterly in the cold Evening.

Prognoſticks of the Weather *by the Winds.*

The Winds, ſays Mr. *Pointer*, are the Cauſes of the moſt ſudden and extraordinary Alterations of the Air.

The Nature of the Winds is ſuch, that by the Experience we have of them, we may very nearly predict what *Weather* we ſhall have for two or three Days after.

As for Example: We know that in our Climate a South Wind generally brings Rain, and a Weſt Wind more; and the Weſt Wind is the predominant Wind with us, becauſe the Ocean lies on the Weſt Side of our Country.

And alſo, that a North Wind brings fair *Weather* to us, as well as the Eaſt Wind, which does not laſt ſo long as the North; therefore the North-eaſt and South-weſt Winds are thoſe that are neceſſary chiefly to be treated of.

Some curious Obſervers of the *Weather* have made this Obſervation for many Years; That there is as much South and Weſt Wind in eight Years, as there is North and Eaſt Winds, and of Conſequence as many wet Years as dry ones.

Mr. *Pointer* gives the following Rules to know when the Wind will ſet in one of theſe two Points, for the moſt part, for two or three Months together.

Firſt, as to the North-eaſt Wind: When the Wind turns to the North-eaſt Point, and continues in it two Days without Rain, and does neither turn to the Southward the third Day, nor rain, then it is likely to continue eight or nine Days without Rain, and then to return into the South.

If the Wind turn out of the South to the North-eaſt again, and continues two Days in that Point, and neither rains, nor turns to the South the third Day, it is likely to continue North-eaſt for two Months, and for the moſt part for three Months. The Wind will finiſh theſe Turns towards the North in three Weeks Time.

Secondly, as to the South-weſt Winds; when the Wind has been in the North for two Months or more, and comes to the South, there are uſually three or four fair Days at firſt, and then on the fourth or fifth Day comes Rain, or elſe the Wind turns North, and continues ſtill dry.

If within a Day or two, without Rain, it return into the South, and with Rain, turn Northward, and return into the South the firſt or ſecond Day, as before, two or three times together after this manner, then it is like to be in the South or South-weſt two or three Months together for the moſt part, as it was in the North before.

He does not mention the Eaſt or Weſt Winds, becauſe he ſays, the Rains come uſually from the South, or in the ſhifting of the Wind from the South to the North: As for the Drought, the Wind is, for the moſt part, North-eaſt.

If it prove fair *Weather* out of the South for a Week together, (which is not uſual) it is like to be a great Drought, when it has rain'd for a long time out of the South before.

The Wind uſually turns from the North to the South quietly without Rain; but comes back again into the North, with a ſtrong Wind and Rain.

The greateſt Winds, which blow down Houſes and Trees, uſually come by the turning of the Wind out of the South by Weſt into the North, which drives away Rain, and clears the Air.

Of Prognoſtications of the Weather *from the* Barometer.

Dr. *Derham* preſents us with the following Remarks:

1. That foggy *Weather* makes the *Mercury* riſe in the *Barometer*, as well as the North Wind———The Cauſe he ſuggeſts, probably enough, to be the Acceſſion of the Load of Vapour to the former Weight of the Atmoſphere: Mizzling *Weather* he likewiſe obſerves to have the like Effect.

2. The Colds and Heats in *England* and *Switzerland* begin and end nearly about the ſame Time; nay, and any remarkable *Weather*, eſpecially if it continue any while, affects one Place as well as t'other.

3. That the remarkably cold Days in *June*, *Anno* 1708. were found in *Switzerland* to precede ours commonly about five Days or more; and that the remarkable Heats in the following Months began to abate in both Places about the ſame time, only ſomewhat ſooner here than there.

4. That the Winds in both Places frequently agree, yet they often differ.

5. That the *Barometer* is always lower at *Zurich* than at *Upminſter*, by ſometimes one, and ſometimes two *Engliſh*

Inches; but the common Difference is about half an Inch; which may be ſolv'd either by ſuppoſing *Zurich* ſituate one fourth of an Inch higher above the Level of the Sea than *Upminſter*; or elſe by ſuppoſing, that Part of the terraqueous Globe, as lying nearer the Line, to be higher and more diſtant from the Center than ours is, which lies nearer the Pole.

6. That the *Barometer* generally riſes and falls together at far diſtant Places: Tho' this Agreement of the *Barometer* is not ſo conſtant between *Zurich* and *Upminſter*, as in Places nearer Home, *viz.* at *London* and *Paris*; where again the Agreement is not ſo great as between *Upminſter* and *Lancaſhire*.

7. That the Variations of the *Barometer* are greateſt, as the Places are neareſt the Poles. Thus, *e. g.* the *Mercury* at *London* has a greater Range by two or three Lines than at *Paris*; and at *Paris* a greater than at *Zurich*: In ſome Places near the Equinoctial, there is ſcarce any Variation at all.

8. That the Rain in *Switzerland* and *Italy* is much greater in Quantity throughout the Year than that in *Eſſex*; yet the Rains are more frequent, *i. e.* there are more rainy Days in *Eſſex* than at either of thoſe Places.

The Proportion of the annual Rains that fall in the ſeveral Places we have any good Obſervations of, ſtand thus: At *Zurich* the Depth of the annual Rain, at a Medium, is about 32½ Inches; at *Piſa* 43¼; at *Paris* 23; at *Liſle* in *Flanders* 23½; at *Townley* in *Lancaſhire* 42½; at *Upminſter* 19¼.

9. That Cold contributes greatly to Rain, and that apparently by condenſing the ſuſpended Vapours, and making them deſcend. Thus very cold Months or Seaſons are generally followed immediately by very rainy ones; and cold *Summers* are always wet ones.

10. That high Ridges of Mountains, as the *Alps*, and the Snows they are covered withal, not only affect the neighbouring Places by the Colds, Rains, Vapours, *&c.* they produce; but even diſtant Countries, as *England*, often partake of their Effects—Thus the extraordinary Colds *December* 1708. and the Relaxations thereof, were felt in *Italy* and *Switzerland* ſeveral Days before they reach'd us. This Dr. *Derham* thinks is an Indication that they were driven from them to us.

WILDERNESSES, if rightly ſituated, artfully contriv'd, and judiciouſly planted, are the greateſt Ornaments to a fine Garden: But it is rare to ſee theſe ſo well executed in Gardens, as to afford the Owner due Pleaſure (eſpecially if he is a Perſon of an elegant Taſte); for either they are ſo ſituated as to hinder a diſtant Proſpect, or elſe are not judiciouſly planted: The latter of which is ſcarce ever to be found in any of our moſt magnificent Gardens, very few of their Deſigners ever ſtudying the natural Growth of Plants, ſo as to place them in ſuch Manner, that they may not obſtruct the Sight from the ſeveral Parts of the Plantation which are preſented to the View: Therefore I ſhall briefly ſet down what has occurred to me from time to time, when I have conſidered theſe Parts of Gardens, whereby a Perſon will be capable to form an Idea of the true Beauties, which ought always to be ſtudied in the Contrivance of *Wilderneſſes*.

1. *Wilderneſſes* ſhould always be proportion'd to the Extent of the Gardens in which they are made, that they may correſpond in Magnitude with the other Parts of the Garden; for it is very ridiculous to ſee a large *Wilderneſs* planted with tall Trees in a ſmall Spot of Ground; and on the other hand, nothing can be more abſurd, than to ſee little paultry Squares, or Quarters of *Wilderneſs* Work, in a magnificent large Garden.

2. As to the Situation of *Wilderneſſes*, they ſhould never be plac'd too near the Habitation, becauſe the great Quantity of Moiſture which is perſpired from the Trees, will cauſe a damp, unwholſome Air about the Houſe, which is often of ill Conſequence. Nor ſhould they be ſituated ſo as to obſtruct any diſtant Proſpect of the Country, which ſhould always be preſerv'd wherever it can be obtain'd, there being nothing ſo agreeable to the Mind as an unconfined Proſpect of the adjacent Country. But where the Sight is confined within the Limits of the Garden from its Situation, then there is nothing ſo agreeable to terminate the Proſpect, as a beautiful Scene of the various Kinds of Trees judiciouſly planted; and if it is ſo contrived, that the Termination is planted circularly, with the Concave toward the Sight, it will have a much better Effect, than if it end in ſtrait Lines or Angles, which are never ſo agreeable to the Mind.

3. The Plants ſhould always be adapted to the Size of the Plantation; for 'tis very abſurd to ſee tall Trees planted in ſmall Squares of a little Garden; and ſo likewiſe, if in large Deſigns are planted nothing but ſmall Shrubs, it will have a mean Appearance: It ſhould alſo be obſerved, never to plant Ever-greens amongſt deciduous Trees, but always place the Ever-greens in a *Wilderneſs*, or a ſeparate Part of the *Wilderneſs* by themſelves, and that chiefly in Sight, becauſe theſe afford a continual Pleaſure both in *Summer* and *Winter*, when in the latter Seaſon the deciduous Trees do not appear ſo agreeable.

4. The Walks muſt alſo be proportioned to the Size of the Ground, and not make large Walks in a ſmall *Wilderneſs*, (nor too many Walks, tho' ſmaller) whereby the greateſt Part of the Ground is employ'd in Walks: Nor ſhould the grand Walks of a large *Wilderneſs* be too ſmall, both of which are equally faulty. Theſe Walks ſhould not be enter'd immediately from thoſe of the Pleaſure-Garden, but rather be led into by a ſmall private Walk, which will render it more entertaining: Or if the large Walk be turned in Form of a Serpent, ſo as not to ſhew its whole Extent, the Mind will be better pleaſed, than if the whole were open to the View.

The uſual Method of contriving *Wilderneſſes* is, to divide the whole Compaſs of Ground, either into Squares, Angles, Circles, or other Figures, making the Walks correſpondent to them; planting the Sides of the Walks with Hedges of Lime, Elm, Hornbeam, *&c.* and the Quarters within are planted with various Kinds of Trees promiſcuouſly without Order. But this can by no means be eſteem'd a judicious Method, becauſe hereby there will be a great Expence in keeping the Hedges of a large *Wilderneſs* in good Order, which inſtead of being beautiful, are rather the reverſe; for as theſe Parts of a Garden ſhould, in a great meaſure, be deſign'd from Nature, ſo whatever has the ſtiff Appearance of Art, does by no means correſpond therewith. Beſides, theſe Hedges are generally train'd up ſo high, as to obſtruct the Sight from the Trees in the Quarters, which ought never to be done.

In the next place, the Walks are commonly made to interſect each other in Angles, which alſo ſhews too formal and trite for ſuch Plantations, and are by no means comparable to ſuch Walks as have the Appearance of *Meanders* or *Labyrinths*, where the Eye cannot diſcover more than twenty or thirty Yards in Length; and the more theſe Walks are turn'd, the greater Pleaſure they will afford. Theſe ſhould now and then lead into an open circular Piece of Graſs; in the Center of which may be placed either an *Obeliſk*, *Statue*, or *Fountain*; and if in the middle Part of the *Wilderneſs* there be contriv'd a large Opening, in the Center of which may be erected a Dome or Banqueting-houſe, ſurrounded with a green Plot of Graſs, it will be a conſiderable Addition to the Beauty of the Place.

From the Sides of the Walks and Openings, the Trees ſhould riſe gradually one above another to the Middle of the Quarters, where ſhould always be planted the largeſt growing Trees, ſo that the Heads of all the Trees will appear to the View but their Stems will be hid from Sight, which will have a vaſtly different Effect from the common Method, where the Trees are planted large and ſmall without any Order, ſo that many times the largeſt are next the Sight, and ſmall ones behind them, juſt according as it happens; in which manner the ſmall ones, being overhung and ſhaded, do ſeldom thrive well.

But in order to plant a *Wilderneſs* with Judgment, the uſual Growth of all the different Sorts of Trees ſhould be well conſidered, that each may be placed according to the Magnitude to which they generally grow; otherwiſe, if they are at firſt planted one above another, as before directed, they will not continue to grow in this Order many Years; for ſome Sorts will greatly out-grow the others, and thereby render the Plantation leſs beautiful; but when they are placed according to their uſual manner of growing, they will always continue nearly in the ſame Order, which renders them very entertaining to the Sight.

Theſe Trees ſhould alſo be allowed a proportionable Diſtance, according to their Growth, and not crouded ſo cloſe as is commonly practiſed, whereby there are four times the Number of Trees planted which need be; and this cloſe Planting cauſes them to aſpire to a great Height, but then they want the noble Diffuſion of Branches, which is vaſtly more agreeable to the Sight, than a Parcel of thin, taper Stems, with ſcarcely any Heads, as is too often the Caſe in ſome of the largeſt Gardens in *England*, where, inſtead of looking at a noble Parabola of Trees, with their ſpreading globular Heads, a Parcel of naked Stems preſent themſelves to View; and where the Trees are thus crouded, they never thrive half ſo well, nor will they continue half ſo long as thoſe which are allowed a proper Diſtance; for their Roots running and interfering with each other, do draw the Nouriſhment away faſter than the Ground can ſupply them, which cauſes their Leaves to be ſmall, and in dry Seaſons to decay and fall off long before their uſual Time, and thereby renders the Plantation leſs agreeable.

In the Diſtribution of theſe Plantations, in thoſe Parts which are planted with deciduous Trees, may be planted next the Walks and Openings, *Roſes*, *Honeyſuckles*, *Spirea frutex*, and other Kinds of low flowering Shrubs, which may be always kept very dwarf, and may be planted pretty cloſe together; and at the Foot of them, near the Sides of the Walks, may be planted *Primroſes*, *Violets*, *Daffodils*, and many other Sorts of Wood Flowers, not in a ſtrait Line, but rather to appear accidental, as in a natural Wood. Behind the firſt Row of Shrubs ſhould be planted *Syringa's*, *Cytuſſus's*, *Althæa frutex*, *Mezerion's*, and other flowering Shrubs of a middle Growth, which may be back'd with *Laburnums*, *Lilacs*, *Gelder Roſes*, and other flowering Shrubs of large Growth; theſe may be back'd with many other Sorts of Trees, riſing gradually to the Middle of the Quarters, from whence they ſhould always ſlope down every way to the Walks.

By this Diſtribution you will have the Pleaſure of the flowering Shrubs near the Sight, whereby you will be regal'd with their Scent, as you paſs thro' the Walks; which is ſeldom obſerved by thoſe who plant *Wilderneſſes*: for nothing is more common than to ſee *Roſes*, *Honeyſuckles*, and other ſmall flowering Shrubs, placed in the Middle of large Quarters, under the Dropping and Shade of large Trees, where they ſeldom thrive; and if they do, the Pleaſure of them is loſt, becauſe they are ſecluded from the Sight. If theſe Quarters are ſlightly dug every *Winter*, it will keep the Ground clean from noxious Weeds, and be a great Benefit to the Trees. And the Expence of doing this, where Labour is cheap, cannot be very conſiderable, unleſs in very great Plantations.

But beſides theſe grand Walks and Openings, (which ſhould always be laid with Turf, and kept well mowed) there ſhould be ſome ſmaller Serpentine Walks through the Middle of the Quarters, where Perſons may retire for Privacy. There need be nothing but the Ground of the Place made level and kept houghed to clear it from Weeds, which will be no great Trouble to do with a *Dutch* Hough, which is broad, and will make great Riddance; and then rake them over to make them handſome. Theſe Walks need not be very broad, but ſhould be turned in ſuch a manner, as not to deviate far from the Middle of the Quarter, becauſe there the Trees being largeſt, will afford the ampleſt Shade; five or ſix Feet will be a ſufficient Width for theſe Walks, in large Quarters; but in ſmall ones, four feet is full enough. By the Sides of theſe private Walks may alſo be ſcattered ſome Wood-Flowers and Plants, which, if artfully planted, will have a very good Effect.

In the general Deſign for theſe *Wilderneſſes*, it ſhould not be ſtudied to make the ſeveral Parts correſpondent, for that is ſo formal and ſtiff, as to be now quite rejected; the greater Diverſity there is in the Diſtribution of theſe Parts, the more Pleaſure they will afford; and ſince, according to this Method of Deſigning and Planting, the different Parts never do preſent themſelves to the ſame Views, ſo it is no matter how different they are varied aſunder; that Part of them which is moſt in view from the Houſe or other Parts of the Garden, may be planted with Ever-greens; but the other Parts may be planted with deciduous Trees in the foregoing manner.

The Part planted with Ever-greens may be diſpos'd in the following manner, *viz.* in the firſt Line, next the great Walks, may be placed *Laurus-Tinus*, *Boxes*, *Spurge-Laurel*, *Juniper*, *Savin*, and other dwarf Ever-greens; behind theſe may be placed *Laurels*, *Hollies*, *Arbutus's*, and other Ever-greens of a larger Growth; next to theſe may be placed *Alaternus's*, *Phillyrea's*, *Yews*, *Cypreſs's*, *Virginian Cedars*, and other Trees of the ſame Growth; behind theſe may be planted *Norway* and *Silver Firs*, the *True Pine*, and other Sorts of the like Growth; and in the Middle ſhould be planted *Scotch Pines*, *Pinaſter*, and other of the largeſt growing Ever-greens, which will afford a moſt delightful Proſpect, if the different Shades of their Greens are curiouſly intermixed. And in order to render the Variety greater, there may be many Kinds of hardy Ever-greens obtain'd from the North Parts of *America*, as there are already ſome in *England*, which are very fit for this Purpoſe, and are mentioned in different Parts of this Book.

This manner of ſeparating the Ever-greens from the deciduous Trees, will not only make a much better Appearance, but alſo cauſe them to thrive far beyond what they uſually do when intermixed; therefore I ſhould never adviſe any Perſon to plant them promiſcuouſly together.

By what I have ſaid concerning the planting the Trees in Rows, one behind another, according to their different Growths, I would not have it underſtood, that I mean the placing them in ſtrait Lines, which is too ſtiff and formal for theſe Plantations; all that is intended, is to place the front Rows of Trees on each Side the Walks, at an equal Diſtance from the Side of the Walks; but the Lines of Trees (eſpecially the three firſt) muſt turn in the ſame manner as the Walks; thoſe behind may be placed after any manner, provided Care be taken to allow each ſufficient Room to grow, and that there may appear no uneven Gaps in the Diſtance of their Heads, but that they may all riſe gradually, ſo as to form a handſome Slope.

In ſmall Gardens, where there is not Room for theſe magnificent *Wilderneſſes*, there may be ſome riſing Clumps of Ever-greens, ſo deſign'd as to make the Ground appear much larger than it is in Reality; and if in theſe there are ſome Serpentine Walks well contrived, it will greatly improve the Places, and deceive thoſe who are unacquainted with the Ground as to its Size. Theſe Clumps or little Quarters of Ever-greens ſhould be placed juſt beyond the plain Opening of Graſs before the Houſe, where the Eye will be carried from the plain Surface of Graſs, to the regular Slope of Ever-greens, to the great Pleaſure of the Beholder; but if there is a diſtant Proſpect of the adjacent Country from the Houſe, then this ſhould not be obſtructed, but rather a larger Opening allowed for the View, bounded on each Side with theſe riſing Clumps, which may be extended to half the Compaſs of the Ground: And on the back Part from the Sight, may be planted the ſeveral Kinds of flowering Shrubs, according to their different Growths, which will ſtill add to the Variety. Theſe ſmall Quarters ſhould not be ſurrounded with Hedges for the Reaſons before given for the larger Plantations; nor ſhould they be cut into Angles, or any other ſtudied Figures, but be deſign'd rather in a rural Manner, which is always preferable to the other, for theſe Kinds of Plantations.

In *Wilderneſſes* there is but little Trouble or Expence after their firſt planting, which is an Addition to their Value; the only Labour required, is to mow and roll the large Graſs-Walks, and to keep the other Ground-Walks free from Weeds. And in the Quarters, if the Weeds are houghed down two or three times in a *Summer*, it will ſtill add to their Neatneſs. The Trees ſhould alſo be pruned to cut out all dead Wood or irregular Branches, where they croſs each other, and juſt to preſerve them within due Bounds; and, as was before obſerved, if the Ground be ſlightly dug between the Trees, it will greatly promote their Vigour. This being the whole Labour of a *Wilderneſs*, 'tis no Wonder they are ſo generally eſteem'd, eſpecially when we conſider the Pleaſure they afford.

Having laid down ſome Rules for the deſigning, planting, and managing of *Wilderneſſes*, ſo as to render them magnificent and beautiful; I ſhall now add a few Inſtructions, which will explain ſome of thoſe Rules, which have been by ſeveral Perſons miſtaken and miſapplied.

As to the planting of the Trees in *Wilderneſſes*, according to their different Growths, I did not thereby mean to have whole Lines of the ſame Sort of Tree, but as many different Sorts of Trees as the Soil or Situation would admit, obſerving to place thoſe of the largeſt Growth toward the Inſide of the Quarters, where they are ſo ſituated as to have Openings round them. But if the Boundaries of the Quarters are at the Extremity of the Garden, and there are no Proſpects beyond them worth enjoying; then the largeſt Trees ſhould be placed next to the Boundaries, and the ſeveral Trees of lower Growth planted before them in form of a Slope. But in this I would not be underſtood to mean, that the Trees ſhould all of them be ſo choſen and planted, as to form a regular even Slope, which would have too uniform an Appearance to be entertaining to the Sight. Therefore all that I deſign by this Method of Planting is, that every Tree may appear to the Sight at a proper Diſtance, that the Extent of the Plantation may be viewed; which is too frequently obſtructed by the planting of large Trees near the Walks and Openings, and placing of low Trees and Shrubs behind them.

In the planting of theſe Trees, there are two principal Things to be regarded: the firſt is, To diſpoſe them in ſuch a manner, that the different Colours of their Leaves may appear in ſome ſort like the Lights and Shades in Pictures. The ſecond is, That their different Manners of Growing may be conſidered, and ſo placed as to make ſo many irregular Breaks in the Plantation, as the Size of the Ground will admit. For Inſtance, by mixing ſome Trees, whoſe Heads grow in a pyramidal Form, among others whoſe

Heads are globular or conical, which will make the whole appear more pictureſque and agreeable. But where the Plantation is very large, and is ſeen from a great Diſtance, there the Trees ſhould be ſo planted, as that ſeveral Trees, whoſe Growth and the Colour of their Leaves appear the ſame, may be joined near each other, that their Shades, and the Breaks which they make, may be diſtinguiſhed; for when ſingle Trees of each Sort are intermixed amongſt others of different Kinds, they do not ſtrike the Eye in large Plantations near ſo well as when many of a Kind appear in Clumps.

In Plantations of Evergreen-trees, there may be a greater Diverſity made in regard to their ſeveral Forms of Growth, than there can be amongſt the deciduous Trees; becauſe there are ſeveral Sorts of Evergreens, which naturally grow in form of Pyramids; and there are others which grow in form of Cones, and ſome which ſpread and extend their Branches in various irregular Figures. And theſe are alſo of very different Shades; ſo that when they are properly diſpoſed, they will make a beautiful Appearance; eſpecially in the *Winter* Seaſon, when other Trees are deſtitute of Leaves. But that any Perſon who is deſirous to make one of theſe Plantations, may not commit a Blunder, by not knowing the different Forms of the Growths of theſe Trees, I ſhall here mention ſome of the moſt known Evergreens, diſtinguiſhing them according to their Growths.

Pyramidal Evergreen-trees.

Common or *Spruce Firr.*
Silver Firr.
Corniſh *long-con'd Firr.*
Balm of Gilead *Firr.*
Lord Weymouth*'s Firr.*
Cedar of Virginia.
—— *of* Carolina.
—— *of* Bermudas.

Conical Evergreen-trees.

Manured Pine.
Scotch *Pine.*
Pinaſter, or *wild Pine.*
Cluſter Pine.
Jerſey *Pine.*
Strawberry-tree.
Ilex.
Bays.
Cork-tree.

Spreading Evergreen-trees.

Alaternus's.
Phillyrea's.
Holly.
Cedar of Libanus.
Laurel.
Laurel-leav'd Tulip-tree.
Tamariſk.
Laurus Tinus.

As to the different Heights to which theſe Trees naturally grow, that will be deſcribed in a Catalogue added at the End of this Volume; where all the different *Species* of Evergreen-trees and Shrubs will be enumerated and ranged according to the ſeveral Sizes to which they uſually grow in this Country.

Altho' I have before adviſed, not to mix Evergreen-trees with thoſe which loſe their Leaves; yet by that I did not intend intirely to ſeparate them in all Plantations, but only to avoid the confuſed manner of planting them together, which is too often practiſed by unſkilful Perſons, many times to the great Prejudice of the Trees; becauſe ſeveral of the Evergreens will be ſtarved, if they are planted too near ſome Sorts of deciduous Trees: beſides the Soil will rarely ſuit all the Sorts which are thus injudiciouſly mixed together; ſo that if ſome of the Sorts are ſuch as the Soil is naturally diſpoſed to nouriſh, the others, which require a very different Soil, will not thrive amongſt them.

The beſt Situation for moſt of the largeſt Evergreen-trees, is to plant them in open Groves, where they will thrive much better, than if they are crouded too cloſe together; and if theſe Groves are judiciouſly placed, they will be great Ornaments to large Gardens.

In the planting of very large Wilderneſſes, there ſhould be Care had to fill up the Ground on each Side of the private Serpentine-walks, with Shrubs and Underwood, in ſuch a manner, as that where the Walks twiſt ſo much, as in ſome Places to be but a ſmall Diſtance apart, the Wood may be ſo thick as to prevent the Seeing from one Walk to the other. This muſt be more particularly regarded in ſmall Gardens; where there ſhould be as much Walking contrived, as the Ground will poſſibly admit. On each Side of theſe private Walks, ſhould be planted a good Number of the different Sorts of Honeyſuckles, which may be encouraged to climb up the Trees, and to grow rude over the adjoining Buſhes. There ſhould alſo be ſome Sweetbrier, Roſes, and other ſweet Shrubs planted, which will perfume the Walks in an Evening, or after Showers of Rain.

Under the large Trees may be planted Hazel, Berry-bearing Alder, Laurels, Laurus Tinus, and ſuch other Shrubs as will grow under Shade; and if ſome of the common climbing Plants be placed ſo as to grow up the larger Trees, in the manner they are often obſerved in Woods, they will have a very good Effect to the Eye, and be ſerviceable in thickening of the Quarters, where they are narrow. And if there are a good Number of low Shrubs and Plants, ſuch as naturally grow in Woods, ſcattered up and down in the Quarters under the Trees, they will appear much better than either the common Weeds, which naturally grow there; or the Ground lying bare, as it many times does in large wilderneſs Quarters. Of theſe Shrubs and Plants, there will be a Catalogue at the End of this Volume, by which any Perſon may be inſtructed as to the Sorts, which will thrive in ſuch ſhady Places.

The ſmaller Serpentine-walks which lead thro' the Quarters of theſe Plantations, muſt be proportioned according to the Size of the Ground: if the Quarters are very large, then the Walks may be ſeven or eight Feet wide, to admit of two Perſons walking abreſt; but in ſmaller Gardens, where there is deſired as many Walks as can be conveniently made, four Feet in Width will be ſufficient. For it will be neceſſary to have the Diviſions between the Walks double the Width of the Walks, otherwiſe it will be very difficult to get the Shrubs and Underwood thick enough to render the Walks private.

If the Ground where theſe Wilderneſſes are deſigned to be made, is very uneven, it will ſtill add a Variety to the Plantation, as it will alſo when there are very different Soils, becauſe then a judicious Planter will adapt the ſeveral Sorts of Trees and Plants to the Soils in which they delight to grow; ſo that there may be a greater Variety of Sorts planted, and they will thrive much better than on a level Ground; and the Walks, by being twiſted about, may be ſo contrived, as to be as eaſy to walk on, as thoſe on the moſt level Spot.

If the Ground where theſe Wilderneſſes are deſigned to be made, hath large Trees already growing on it, they will be a great Advantage, by affording a preſent Shade; for the Walks may be twiſted about in ſuch a manner, as that the Trees may not interfere with them; and then by trenching and clearing the Ground round the Outſides of the Quarters, it will be fit to receive flowering Shrubs, and other Trees to face the other larger Trees; which if carefully performed, will render the Plantation very beautiful. And if under theſe Trees the Ground is carefully clear'd and trench'd, it will improve the Growth of the Trees, and many Underſhrubs and Wood-plants may be planted to thicken up the Quarters, ſo as to make the Walks private.

All Trees and Shrubs which are planted in theſe Wilderneſſes, are to be ſuffered to grow rude, and not to have any other pruning, than is abſolutely neceſſary to prevent their ſpreading over the Walks, or too much over-bearing the neighbouring Trees or Shrubs, ſo that they may have an equal Advantage of the open Air; by which means there will be little Expence in keeping large Plantations of this Kind, eſpecially after the Trees and Shrubs are well rooted in the Ground; for they will in a great meaſure prevent the Growth of Weeds, by overſhadowing the Ground with their Branches; and there is nothing more ornamental in Gardens, when they are judiciouſly contrived.

Where-ever there are large Woods ſo ſituated, as that they may be taken into the Deſign of the Garden, they may at an eaſy Expence be rendred very beautiful, by only cutting away unſightly Trees and Shrubs, and adding ſome flowering Trees, and ſweet-ſmelling Shrubs in proper Places, and opening Walks thro' the different Parts, which may be twiſted about after an eaſy natural manner, ſo as to ſhew as little of Art as poſſible. If to this there is added ſome large Openings, in ſuch Places where there are few good Trees, which may be varied in their Figures, and ſome little Buildings, Obeliſks, Vaſes, Urns, *&c.* placed properly in them, it will add greatly to their Magnificence.

In laying out of theſe Walks thro' Woods, there ſhould be a great Regard had to the neighbouring Country; ſo as where-ever there are any diſtant Objects which appear to the Sight, there ſhould be Openings, to which the Serpentine-walks ſhould lead, from whence the Objects may be viewed; which will be an agreeable Surprize to Strangers, after having traverſed thro' many of theſe Walks, to be led to a fine Proſpect of the adjacent Country; where a Village, Church, or ſome other remarkable Object, may appear to the Sight; or perhaps a River, or other large Body of Water, either of which will have a very agreeable Effect.

But as there is no laying down Rules which can ſuit with every Situation, ſo the Deſigning of theſe Wilderneſſes muſt be left to the Judgment of the Owner, or ſome other Perſon of a good Taſte, who ſhould be a little converſant with the Situation, before he begins to execute, leſt many irreparable Miſtakes ſhould be made, by deſtroying of Trees, which has too often happen'd, when theſe Works have been directed by unſkilful Perſons, or by others who have not taken Time to conſider enough the adjoining Country, ſo as to bring as many Objects to View as can poſſibly be obtained. Therefore I ſhall not add any further Directions, ſince thoſe already inſerted, will be ſufficient Inſtructions for the right laying out and planting any of theſe Kinds of Work.

SWEET-WILLIAMS; *vide* Caryophyllus Barbatus.

WILLOW; *vide* Salix.

WILLOW the French; *vide* Chamænerion.

WIND, is defined to be the Stream or Current of the Air, together with ſuch Vapours as the Air carries along with it: Or it is a ſenſible Agitation of the Air, whereby a large Quantity thereof flows out of one Place or Region to another.

The Ancients made but four *Winds*, according to the four Cardinal Points; but this was quickly look'd upon as too groſs a Diviſion; the following Age added eight more to this Number, which was thought too nice, and a ſubdividing; and therefore they reduc'd the laſt Number to four, taking every other or middle *Wind*, and adding them to the old Account. But our Sailors, who are far beyond the Ancients for their Skill in Navigation, have divided the Horizon into thirty-two equal Parts, adding twenty-eight to the four Cardinal *Winds*: a Thing exceeding uſeful in Navigation, but of no great Concern in Natural Philoſophy, unleſs it be to give a Hint that the *Wind* blows from all Parts of the Heavens.

As to the Phyſical Cauſe of Winds,

Some Philoſophers, as *Des Cartes*, *Rohault*, &c. account for the general *Wind* from the diurnal Rotation of the Earth; and from this general *Wind* derive all the particular ones.

They ſay, the Atmoſphere inveſting the Earth, and moving round it, that Part will perform its Circuit ſooneſt, which has the ſmalleſt Circle to deſcribe. The Air therefore near the Equator, will require a ſomewhat longer Time to perform its Courſe in from Weſt to Eaſt than that nearer the Poles, that as the Earth turns Eaſtward, the Particles of the Air nearer the Equinoctial, being exceeding light, are left behind, ſo that in reſpect of the Earth's Surface, they move Weſtwards, and become a conſtant Eaſterly *Wind*.

This Opinion ſeems confirm'd, for that theſe *Winds* are found only near the *Equinoctial*, in thoſe Parallels of Latitude, where the diurnal Motion is ſwifteſt; but the conſtant Calms in the *Atlantick Sea*, near the *Equator*, the Weſterly *Winds* near the Coaſt of *Guiney*, and the periodical Weſterly *Monſoons*, under the Equator of the *Indian Sea*, ſeemingly declare the Inſufficiency of that Hypotheſis.

Beſides, the Air being kept to the Earth by the Principle of Gravity, would in Time acquire the ſame Degree of Velocity that the Earth's Surface moves with, as well in reſpect of the diurnal Rotation, as of the Annual about the Sun, which is about thirty Minutes ſwifter.

It remains therefore to ſubſtitute ſome other Cauſe, capable of producing a like conſtant Effect, not liable to the ſame Objections, but agreeable to the known Properties of the Elements of Air and Water, and the Laws of the Motion of fluid Bodies: Such an one is the Action of the Sun's Beams upon the Air and Water as he paſſes every Day over the Oceans, conſidered together with the Nature of the Soil, and Situation of the adjoining Continents. This has been done by Doctor *Halley*.

Therefore, according to the Laws of *Staticks*, the Air which is leſs rarefied or expanded by Heat, and conſequently more ponderous, muſt have a Motion towards thoſe Parts thereof which are more rarefied and leſs ponderous, to bring it to an *Equilibrium*; alſo the Preſence of the Sun continually ſhifting to the Weſtward, that Part to which the Air tends, by reaſon of the Rarefaction made by his greateſt Meridian Heat, is with him carried Weſtward; and conſequently the Tendency of the whole Body of the lower Air is that Way.

Thus a general Eaſterly *Wind* is formed, which being impreſs'd upon all the Air of a vaſt Ocean, the Parts impel one the other, and ſo keep moving till the next Return of the Sun; whereby ſo much of the Motion as was loſt, is again reſtor'd; and thus the Eaſterly *Wind* is made Perpetual.

From the ſame Principle it follows, that the Eaſterly *Wind* ſhould, on the North Side of the Equator, be to the Northward of the Eaſt; and in South Latitudes, to the Southward thereof; for near the Line the Air is much more rarefied, than at a greater Diſtance from it; becauſe the Sun is twice in a Year vertical there, and at no Time diſtant above 23 Degrees ½; at which Diſtance the Heat being at *the Sine of the Angle of Incidence*, is but little ſhort of that of the perpendicular Ray. Whereas, under the Tropicks, tho' the Sun ſtay long vertical, yet he is a long 47 Degrees off; which is a kind of *Winter*, wherein the Air ſo cools, as that the *Summer* Heat cannot warm it to the ſame Degree with that under the Equator. Wherefore the Air towards the Northward and Southward being leſs rarefied than that in the Middle, it follows, that from both Sides it ought to tend towards the Equator. This Motion, compounded with the former Eaſterly *Wind*, anſwers all the *Phænomena* of the general Trade *Winds*; which, if the whole Surface of the Globe were Sea, would undoubtedly blow all round the World, as they are found to do in the *Atlantick* and *Ethiopick* Ocean.

But ſeeing ſo great Continents do interpoſe and break the Continuity of the Oceans, Regard muſt be had to the Nature of the Soil, and the Poſition of the high Mountains, which are the two principal Cauſes of the ſeveral Variations of the *Wind* from the former general Rule; for if a Country lying near the Sun, prove to be flat, ſandy and low Land, ſuch as the Deſerts of *Libya* are uſually reported to be, the Heat occaſion'd by the Reflection of the Sun's Beams, and the Retention thereof in the Sand, is incredible to thoſe who have not felt it; whereby the Air being exceedingly rarefied, it is neceſſary that this cooler and more denſe Air ſhould run thitherwards to reſtore the Equilibrium.

This is ſuppos'd to be the Cauſe why, near the Coaſt of *Guiney*, the *Wind* always ſets in upon the Land, blowing Weſterly inſtead of Eaſterly; there being ſufficient Reaſon to believe, that the Inland Parts of *Africa* are prodigiouſly hot, ſince the Northern Borders thereof were ſo intemperate, as to give the Ancients Cauſe to conclude, that all beyond the Tropicks was uninhabitable by Exceſs of Heat.

From the ſame Cauſe it happens, that there are ſo conſtant Calms in that Part of the Ocean call'd the *Rains*; for this Tract being placed in the Middle, between the Weſterly *Winds* blowing on the Coaſt of *Guiney*, and the Eaſterly *Trade Winds* blowing to the Weſtward thereof, the Tendency of the Air here is indifferent to either, and ſo ſtands in *Equilibrio* between both; and the Weight of the incumbent Atmoſphere being diminiſhed by the continual contrary *Winds* blowing from hence, is the Reaſon that the Air here holds not the copious Vapour it receives, but lets it fall in ſo frequent Rains.

But as the cool and denſe Air, by reaſon of the greater Gravity, preſſes upon the hot and rarefied, it is demonſtrative that this latter muſt aſcend in a continued Stream, as faſt as it rarefies; and that being aſcended, it muſt diſperſe itſelf to preſerve the *Equilibrium*; that is, by a contrary Current the upper Air muſt move from thoſe Parts where the greateſt Heat is; ſo by a kind of Circulation, the North-Eaſt *Trade-Wind* below will be attended with a South-weſterly above: That this is more than a bare Conjecture, the almoſt inſtantaneous Change of the *Wind* to the oppoſite Point, which is frequently found in paſſing the Limits of the *Trade-Winds*, ſeems to aſſure us; but that which above all confirms this Hypotheſis, is the *Phænomena* of the *Monſoons*, by this means moſt eaſily ſolv'd, and without it hardly explicable.

Suppoſing therefore ſuch a Circulation as above, 'tis to be conſidered, that to the Northward of the *Indian* Ocean, there is every where Land within the uſual Limits of the Latitude of Thirty, *viz. Arabia*, *Perſia*, *India*, &c. which, for the ſame Reaſon as the *Mediterranean* Parts of *Africa* are ſubject to unſufferable Heats when the Sun is to the North, paſſing nearly vertical; but yet are temperate enough, when the Sun is remov'd towards the other *Tropick*, becauſe of a Ridge of Mountains at ſome Diſtance within the Land, ſaid to be frequently in *Winter* covered with Snow, over which the Air, as it paſſes, muſt needs be much chill'd.

Hence it comes to paſs, that the Air coming, according to the general Rule, out of the North-eaſt in the *Indian Sea*, is ſometimes hotter, ſometimes colder, than that which by this Circulation is return'd out of the South-Weſt, and, by Conſequence, ſometimes the under Current or *Wind*, is from the North-Eaſt, ſometimes from the South-weſt.

That this has no other Cauſe, is clear from the Times wherein thoſe *Winds* ſet, *viz.* in *April*, when the Sun begins to warm thoſe Countries to the North, the South-weſt *Monſoons* begin, and blow during the Heat till *October*, when the Sun being retired, and all Things growing cooler Northward, and the Heat increaſing to the South, the North-eaſt enter and blow all the *Winter*, till *April* again. And it is undoubtedly from the ſame Principle, that Southward of the Equator, in Part of the *Indian* Ocean, the North-eaſt *Winds* ſucceed the South-eaſt, when the Sun draws near the *Tropick of Capricorn*.

But in this latter occurs a Difficulty not well to be accounted for, which is, why this Change of the *Monſoons* ſhould be any more in this Ocean, than in the ſame Latitudes in the *Ethiopick*, where there is nothing more certain than a South-eaſt *Wind* all the Year.

It is likewiſe very hard to conceive, why the Limits of the *Trade-Winds* ſhould be fixed about the thirtieth Degree of Latitude all round the Globe; and that they ſhould ſo ſeldom tranſgreſs or fall ſhort of thoſe Bounds; as alſo that in the *Indian* Sea, only the Northern Part would be ſubject to the changeable *Monſoons*; and in the Southern there ſhould be a conſtant South-eaſt.

This Account of *Wind* is taken from the learned Dr. *Halley*'s Diſcourſe on this Subject. *Philoſoph. Tranſactions*, N°. 183.

The Reverend Mr. *Robinſon* gives this Account of the Origin of *Wind*; That in the greateſt Probability it proceeds from vaſt Swarms of nitrous Particles, which riſe from the Bottom of the Sea; which having been put into Motion, either by the central Fire, or by that Heat and Fermentation which do abound in this huge Body of the Earth; and therefore this firſt Commotion, which is excited by the ſaid Fermentation, is called a *Bottom Wind*, which is preſently diſcovered by *Porpoiſes* and other Sea Fiſh, that delight to ſport and play upon the Waves of the Sea, and do by their playing give to the Mariners the firſt Notice of an approaching Storm.

When theſe nitrous Swarms are riſen towards the Surface of the Sea, they cauſe, in a dark Night, ſuch a ſhining Light upon the Waves, as if the Sea were on Fire, and being delivered from the brackiſh Water, and received into the open Air, thoſe fiery and ſhining Meteors, which fix upon the Maſts and Sides of the Ships, are only nitrous Particles condenſed by the circumambient Cold, and like that which the Chymiſts call *Phoſphorus*, or artificial Glow-worm, ſhine and caſt a Light, but have no Heat.

This gives the ſecond Notice to Mariners that the Storm is riſing, for the Sea begins to be rough upon the firſt breaking out of the *Wind*, and the Waves ſwell and riſe, tho' the Air at the ſame time is calm and clear.

This boiling Fermentation of the Sea cauſes the Vapours to ariſe, which, by the Intenſeneſs of the circumambient Cold, are condenſed into thick Clouds, and fall down in Storms of *Wind* and Rain; firſt upon the Sea from whence they roſe, and then the attractive Power of the Mountain Cold, by a ſecret Magnetiſm between Vapour and Cold, attracts the wateriſh Vapours, and intermix, with nitrous Particles, aſcend to the high Tops of Mountains and Hills, where they hang hovering in thick Fogs and watery Miſts, until the atmoſpherical Heat rarefies the nitrous Part of the Fog, which is always uppermoſt, and appears white and tranſlucent, into briſk Gales of *Wind*.

And the Intenſeneſs of the atmoſpherical Cold, having attracted the Vapours into the colder Regions of the Air, where they are condenſed into Clouds, the *Wind* breaks, diſſipates, and drives them before it, till they fall down in Rain, and water the Surface of the Earth.

And this ſeems to be the Reaſon why they have but little *Wind*, and leſs Rain, in *Egypt*, and thoſe level Countries where they have no Mountains.

Dr. *Derham* ſays, *Wind* is a Current of the Air, and that which excites or alters its Currents, may juſtly be ſaid to be the Cauſe of *Wind*.

An Æquipoiſe of the Atmoſphere produces a Calm; but if that Æquipoiſe be taken off, more or leſs, a Stream of Air or *Wind* is accordingly thereby produced, either ſtronger or weaker, ſwifter or ſlower.

And there are divers Things that may cauſe ſuch Alterations in the Æquipoiſe or Balance of the Atmoſphere, *viz.* Eruptions of Vapours from the Sea and Land, Rarefactions and Condenſations in one Place more than in another, the Falling of Rain, Preſſure of the Clouds, *&c.*

It is obſerv'd of Caves, that they do always emit *Winds*, more or leſs; and as great Caves, ſo great Lakes alſo ſend forth *Winds*; but the moſt univerſal and conſtant Alterations of the Atmoſphere are produced by Heat and Cold.

This is manifeſt in the general *Trade-Winds* which between the Tropicks blow all the Year from Eaſt to Weſt; if the Cauſe of this be (according to the Opinion of ſome ingenious Men) the daily Progreſs of the Sun round that Part of the Globe, and by his Heat rarefying one Part of the Air, while the cooler and heavier Air behind preſſes after.

And ſo the Land and Sea Breezes; and ſo in our Climate the Northerly and Southerly *Winds* (which are commonly eſteem'd the Cauſe of warm and cold Weather) are really the Effects of the Cold or Warmth of the Atmoſphere.

Of this, Dr. *Derham* ſays, he has had ſo many Confirmations, that he does not doubt of it; and he produces for an Inſtance of it, that it is not uncommon to ſee a warm Southerly *Wind*, on a ſudden, chang'd to the North by the Fall of Snow or Hail; and in a cold froſty Morning, to ſee the *Wind* North, and to wheel about toward the Southerly Quarters, when the Sun has well warmed the Air; and then again, in the cold Evening to turn Northerly or Eaſterly.

And hence alſo it is, that the *Winds* and Clouds are oftentimes contrary to one another in Thunder Showers (eſpecially if Hail falls), the ſultry Weather below directing the *Wind* one way, and the Cold above the Clouds another way.

And that he has obſerved ſeveral times, that when the Morning has been warm, and what *Wind* was ſtirring was Weſt-ſouth-weſt, that the Clouds were thick and black (as they generally are when Snow follows); and that a little before Noon, the *Wind* veer'd about to the North by Weſt, and ſometimes to other Points; the Clouds at the ſame time flying ſome North by Weſt, and ſome South-weſt; that about one o'Clock it rained apace, the Clouds ſometimes flying North-eaſt, then North, and at laſt both *Wind* and Clouds have ſettled North by Weſt, and that at that Time the Sleet fell very plentifully, and it grew very cold.

From all which he obſerves;

Firſt, That though the Region below was warm, the Region of the Clouds was cold, as the black Snowy Clouds ſhewed.

Secondly, That the Struggle between the Warmth of our Region and the Cold of the cloudy Region, ſtopp'd the airy Currents of both Regions.

Thirdly, That the Falling of the Snow through our warmer Air, did at firſt melt into Rain; but after the ſuperior Cold had conquered the inferior Warmth, it became Sleet.

Fourthly, That as the Cold prevail'd by degrees, it wheel'd about both the *Winds* and Clouds, from the Northward towards the South.

To this a certain Author replies:

Several learned and ingenious Men have advanced ſeveral Speculations, in order to account for the Productions of the *Wind*, or Current of the Air, and have, in ſome meaſure, accounted for ſome particular Breezes, or conſtant *Winds*; yet we are ſtill at a Loſs to determine from whence the Agitations of the Air in general do ariſe, or to aſſign the Cauſes of the violent Motions and alterable Courſes of it.

Some ſuppoſe the Heat of the Sun to be an Agent therein, by rarefying certain Parts of the Atmoſphere.

To this another ingenious Author ſuppoſes as follows: That the Heat of the Sun rarefying the Atmoſphere, cannot be imagined to produce a Storm, or occaſion the ſudden Generation of a great *Wind*: Nor upon this Suppoſition can the ſame *Winds* be expected in the Night, when the Sun is abſent, as in the Day-time, when he is preſent; or that there ſhould be any *Winds* in thoſe larger Latitudes of the Earth, where in the *Winter*, there is ſcarce a ſenſible Difference of the Sun's Heat in the Day more than in the Night, whereas there are more *Winds* found to be in thoſe Parts than in hotter Climates, and are greateſt in the *Winter*.

Beſides, there are many more Objections that over-turn this Probability of the Riſe of *Wind*.

He adds, that in order to trace out the Cauſes of the *Wind* by Effects and *Phœnomena*, we may obſerve, that *Wind* is generally attended with a cloudy Sky, and that there are more *Winds* in the *Winter*, when there is more Rain and obſcure Weather, than in the *Summer*; and likewiſe in our Northerly Climates than in leſſer Latitudes, that more uſually are attended with a fair and ſerene Atmoſphere, which makes it probable, that the aqueous Vapours that are ſuſtained in the Air, from whence proceed Clouds and Rains, may be the Foundation of *Winds*.

It is paſt all Diſpute, that there is always a vaſt Quantity of Vapours contained in the Atmoſphere, as is manifeſt from the great Quantity of Water that is conſtantly diſcharged from thence in Rain, Snow, *&c.* And Dr. *Halley* has given us a curious Eſtimate of the vaſt Quantity of Water waſted in Vapours by the Surface of the Seas and Rivers in the World, and diffuſed in the Atmoſphere.

It is very well known, that Water has a very great Expanſion in Vapours; ſo that every cubick Inch of Water reduced to Vapours, does exclude as much Air as the Quantity of Steam or Vapours it will produce, and, *è contra*, if theſe Vapours be exempt of included Air, the Condenſation of what appertains to every cubick Inch of Water, leaves as great a *Vacuum* as the Difference is between the Spaces taken up by evaporated and natural Water.

But it is evident that Vapours are empty, and their Expanſion is not made by Air incloſed in the ſmall Particles which conſtitute them, as is ſeen by thoſe Engines that are contrived for raiſing of Water by means of Steam.

For the Condenſation of the Steam or Vapours cauſes a *Vacuum*, which gives Room to the Preſſure of the Atmoſphere, to act as a Power for working the Machine; a Specimen of which we have in the Engine at *York-Buildings* in *London*.

Nor is it poſſible upon the Principles of Nature, that have hitherto been diſcovered, that Vapours could aſcend in the *Medium* of the Air, if their expanded Particles were filled by the ſame Fluid: For, if ſo, the Weight of the Water, together with that of the included Air, would render each Particle or *Veſicula* ſpecifically heavier than Air of itſelf, and then of Conſequence it muſt ſink, unleſs it were obſtructed by ſome Cauſe different from that of Gravity.

Therefore it is neceſſary that Vapours be exhauſted, in order to their acquiring a Bulk that ſhall render them lighter than Air, in order to ſwim therein.

The ſaid ingenious Author, in order to prove that Vapours are not filled by Air, and the great Extent that Water occupies in Vapours, made uſe of the following Experiment.

He cauſed a Bellows to be made of two circular Boards, of about ten Inches diameter, which being filled, repreſented a Cylinder $10\frac{1}{2}$ Inches in Height; over a Hole in the Centre of one of the Boards, he fixed a Pipe of one Inch and an half Diameter; the End of this Pipe ſhut into a Socket belonging to a Veſſel, by which Means there was a Communication between the Inſide of the Bellows and of this Veſſel, and there was a little Pin, which being turned round, ſtopped the Pipe, by a ſmall Board that moved over it in the Inſide of the Bellows: There was alſo a Wire in the ſame Manner, to ſtop the Socket of the Veſſel.

Into this Veſſel he poured a certain Quantity of boiling Water, which, together with the Veſſel, weighed 25 Ounces $\frac{1}{4}$ *Troy-weight*, and then having compreſſed the Bellows, and brought the two Boards cloſe, he fixed the Veſſel to it, binding ſome Leather faſt over the Part where they joined, to prevent a Communication with the exterior Air. This Veſſel being ſet over the Fire, the Water contained in it was made to boil violently, the Steam of which immediately ſwelled the Bellows, and quite filled it in a ſmall Time.

That then he ſtopped the Veſſel, by turning the Wire; and ſeparating it from the Bellows, found it weighed 24 Ounces $\frac{1}{2}$; that is, it had loſt $\frac{3}{4}$ of an Ounce of its former Weight.

The Content of the Bellows was 824,25 cubical Inches; but allowing for the Separation of the Boards, when compreſſed, which were an Inch diſtant, the Quantity of Vapours therein was but 745,75 cubical Inches; ſo that from $\frac{3}{4}$ of an Ounce, or 1,42 cubical Inch of Water, filled 745,75 cubical Inches, without the Help of any Air.

Beſides, he repeated this Experiment, and when the Bellows were filled, he removed them from the Fire to a cool Place, where the Vapours condenſing, the Bellows were depreſſed by the Weight of the Atmoſphere, till quite exhauſted, which could not have been, unleſs the Vapours were devoid of Air; for otherwiſe that which they muſt have emptied would have ſupported the Bellows.

We may therefore, he ſays, venture to conclude, that Vapours are made up of ſmall excavated Globules of Water, which owe their Inflation only to Heat; and this ſeems to be confirmed by their abſolution of Cold.

This is after the Rate of one Inch of Water to fill 2100,6 Inches of Steam or Vapours, according to the ſpecifick Weight of Water.

Some have aſſerted, that an Inch of Water makes 13000 Inches of Steam; ſo then, according to the Experiment before-mentioned, all the Water that falls in Rain, Snow, *&c.* poſſeſſed 2100,6 or to ſay no more than 2000 times the Space, when it floated in the Atmoſphere in Vapours, and the Condenſation thereof muſt occaſion *Vacuums*, which, if collected, would be a Space 2000 times greater than what is taken up by it in Water, which will put the ſurrounding Air in no ſmall Motion to reſtore ſo conſiderable a Deficiency.

It is not at all improbable, that there is often aſſembled in the Atmoſphere, a ſufficient Quantity of Vapours to maintain a laſting Condenſation, and that it is alſo quick enough at ſometimes to create a great *Wind*.

He adds, that according to Dr. *Halley*'s Experiment, it may be computed, that there is 129796,219 cubical Miles of the Atmoſphere filled by Vapours every Day. This prodigious Quantity being divided and arranged in Bodies at various Situations throughout the World, occaſions, by the mutual Condenſations, almoſt conſtant Reſults of the Air, to ſupply the empty Places, and he ſuppoſes, may be thought abundantly ſufficient for producing and maintaining all *Winds* univerſally.

From theſe and other Conſiderations he concludes, that the Production of *Winds* depends chiefly on the Condenſation of Vapours; and in order to confirm his Hypotheſis, proceeds to explain ſeveral Properties and Caſes ſolvable thereby.

1. That the Direction or Courſe of any *Wind*, is according to the Situation of the Body of Vapours, whoſe Condenſation produces it; ſo if a Concourſe of Vapours be gathered over the Kingdom of *France*, the Condenſation thereof would draw the Air from *England* in a Southerly Direction, in *Spain* would be a Northerly *Wind*, in *Germany* would blow Weſterly, at the Bay of *Biſcay* an Eaſterly *Wind*.

2. That the Force or Intenſity of a *Wind* is as the Extenſion of the condenſing Vapours, and the Quickneſs of their Condenſation.

3. He accounts for there being more *Winds* about the Equinoxes than at other Seaſons.

4. He adds, that it is underſtood that the greater Quantities of Rain that fall in the *Winter*, muſt occaſion more *Winds* than in *Summer*, there being a proportionable Quantity of Vapours condenſed; and likewiſe,

5. That there are more *Winds* in diſtant Latitudes than towards the Equator, becauſe the former are more ſubject to Rain.

6. Why there is more Rain and *Wind* in the *Winter* than in the *Summer*, when the Heat of the Sun in the former is more weak and languid, by which it is incapable of raiſing any great Quantity of Vapours to produce that Rain and *Wind*.

7. Why they have more Rain and *Wind* towards the Poles than about the Equator, although the latter is a Part of the World where the Sun makes the greateſt Evaporation.

The Induſtry of ſome late Writers having brought the Theory and Production and Motion of the *Winds*, to ſomewhat of a Mathematical Demonſtration, we ſhall here give it the Reader in that Form.

Laws of the Production, &c. *of* Winds.

If the Spring of the Air be weakened in any Place, more than in the adjoining Places, a *Wind* will blow through the Place where the Diminution is.

For, ſince the Air endeavours by its elaſtick Force to expand itſelf every Way, if that Force be leſs in one Place than another, the *Niſus* of the more againſt the leſs elaſtick, will be greater than the *Niſus* of the latter againſt the former. ——The leſs elaſtick Air therefore, will reſiſt with leſs Force than it is urged by the more elaſtick; conſequently the leſs elaſtick will be driven out of its Place, and the more elaſtick will ſucceed.

If now, the Exceſs of the Spring of the more elaſtick to that of the leſs elaſtick, be ſuch as to occaſion a little Alteration in the Baroſcope, the Motion both of the Air expelled, and that which ſucceeds it, will become ſenſible. Q. E. D.

2. Hence, ſince the Spring of the Air increaſes, as the compreſſing Weight increaſes, and compreſs'd Air is denſer than Air leſs compreſs'd, all *Winds* blow into a rarer Air out of a Place filled with a denſer.

3. Wherefore, ſince a denſer Air is ſpecifically heavier than a rarer, an extraordinary Lightneſs of the Air in any Place, muſt be attended with extraordinary *Winds* or Storms.

Now an extraordinary Fall of the Mercury in the Barometer, ſhews an extraordinary Lightneſs of the Atmoſphere; therefore it is no Wonder if that foretels Storms.

4. If the Air be ſuddenly condenſed in any Place, its Spring will be ſuddenly diminiſhed: Hence, if this Diminution be great enough to affect the Barometer, there will a *Wind* blow thro' the condenſed Air.

5. But ſince it cannot be ſuddenly condenſed, unleſs it has before been much rarefied, there will a *Wind* blow thro' the Air as it cools, after having been violently heated.

6. In like Manner, if Air be ſuddenly rarefied, its Spring is ſuddenly increaſed; wherefore it will flow thro' the contiguous Air, not acted on by the rarefying Force.—A *Wind* therefore will blow out of a Place in which the Air is ſuddenly rarefied; and on this Principle it is, in all Probability, that,

7. Moſt Caves are found to emit *Wind*, either more or leſs.——Since the Sun's Power in rarefying the Air is notorious, it muſt neceſſarily have a great Influence on the Generation of *Winds*.

The Riſing and Changing of the *Wind* is determined experimentally, by Means of Weather-cocks placed on the Tops of Houſes, *&c.*——— But theſe only indicate what paſſes about their own Height, or near the Surface of the Earth: *Wolfius* aſſuring us, from Obſervations of ſeveral Years, that the higher *Winds* which drive the Clouds, are different from the lower ones, which move the Weather-cocks.

Dr. *Derham* obſerves, upon comparing ſeveral Series of Obſervations made of the *Winds* in divers Countries, *viz. England*, *Ireland*, *Switzerland*, *Italy*, *France*, *New-England*, &c. That the *Winds* in thoſe ſeveral Places ſeldom agree; but when they do, it is commonly when they are ſtrong, and of long Continuance in the ſame Quarter; and more, he thinks, in the Northerly and Eaſterly than in other Points.——Alſo, that a ſtrong *Wind* in one Place is oftentimes a weak one in another; or moderate, according as the Places are nearer or more remote.

The Laws of the Force and Velocity of Wind.

Wind being only Air in Motion, and Air a Fluid, ſubject to the Laws of other Fluids, its Force may be brought to a preciſe Computation: Thus——

The Ratio *of the ſpecifick Gravity of any other Fluid to that of Air, together with the Space that Fluid, impelled by the Preſſure of the Air, moves in any given Time, being given; we can determine the Space which the Air itſelf, acted on by the ſame Force, will move in the ſame Time by this Rule.*

1. As the ſpecifick Gravity of Air is to that of any other Fluid, ſo reciprocally is the Square of the Space which that Fluid, impelled by any Force, moves in any given Time, to the Square of the Space which the Air, by the ſame Impulſe, will move in the ſame Time.

Suppoſing, therefore, the *Ratio* of the ſpecifick Gravity of that other Fluid to that of Air, to be $= b : c$; the Space deſcribed by the Fluid to be called $ſ$; and that which the Air will deſcribe by the ſame Impulſe x: The Rule gives us $x=\sqrt{}\,(b s : c)$.

Hence, if we ſuppoſe Water impelled by the given Force, to move two Feet in a Second of Time; then will $ſ=2$; and ſince the ſpecifick Gravity of Water to Air, is as 970 to 1, we ſhall have $b=970$, and $c=1$; conſequently $x=\sqrt{970}.\ 4=\sqrt{3880}=632$ Feet; the Velocity of the *Wind*, therefore, to that of Water, moved by the ſame Power, will be as 623 to 2; *i. e.* if Water move 2 Feet in a Second, the *Wind* will fly 623 Feet.

2. Add, that $ſ=\sqrt{}\,(c x^2 : b)$ and therefore the Space any Fluid, impelled by any Impreſſion, moves in any Time, is determined by finding a fourth Proportional to the two Numbers that expreſs the *Ratio* of the ſpecifick Gravity, and the Square of the Space the *Wind* moves in the given Time.—— The Square Root of that fourth Proportional is the Space required.

M. *Mariotte*, *e. gr.* found, by various Experiments, that a pretty ſtrong *Wind* moves 24 Feet in a Second of Time; wherefore, if the Space which the *Water*, acted on by the ſame Force as the Air, will deſcribe in the ſame Time, be required, then will $c=1$, $x=24$, $b=970$, and we ſhall find $ſ=\sqrt{}\,(576 : 970=\frac{24}{31})$.

3. *The Velocity of* Wind *being given, to determine the Preſſure required to produce that Velocity*; we have this Rule.

The Space the *Wind* moves in one Second of Time, is to the Height a Fluid is to be raiſed in an empty Tube, in order to have a Preſſure capable of producing that Velocity; in a *Ratio* compounded of the ſpecifick Gravity of the Fluid to that of Air, and of quadruple the Altitude a Body deſcends in the firſt Second of Time, to the aforeſaid Space of Air.

Suppoſe, *e. gr.* the Space the Air moves in a Second $a=24$ Feet, or 288 Inches: call the Altitude of the third x, and the *Ratio* of *Mercury* to the Air $b : c=13580 : 1$, $d=181$ Inches; x will be leſs than the Number by one Line, or $\frac{1}{12}$ of an Inch. And hence we ſee why a ſmall, but ſudden Change in the Barometer, ſhould be followed with violent Winds.

The Force of the *Wind* is determin'd experimentally, by a peculiar Machine call'd an *Anemometer*, or *Wind-Meaſurer*, which being moved by means of Sails, like thoſe of a *Wind-mill*, raiſes a Weight, that ſtill the higher it is raiſed, receding further from the Center of Motion, by ſliding along an hollow Arm fitted on to the Axis of the Sails, becomes heavier and heavier, and preſſes on the Arm, till being a Counterpoiſe to the Force of the *Wind* on the Sails, it ſtops the Motion of them. An Index then fitted upon the ſame Axis, at right Angles with the Arm, by its riſing or falling, points out the Strength of the *Wind*, on a Plane divided like a Dial-plate, into Degrees.

Winds are either *conſtant* or *variable*. The conſtant *Winds* are up and down always at a certain Time of the Year, and in certain Parts of the World; but the variable vary ſo much, that they cannot be reduc'd to any Rule.

The conſtant and periodical *Winds* are only in the wideſt Seas; as in the *Atlantick* and *Ethiopick* Seas, between the Tropicks, there is generally an Eaſterly *Wind* all the Year long, without any conſiderable Variation, unleſs declining ſome few Points towards the North or South; but all along the Coaſts of *Guinea*, for five hundred Leagues, the Southerly and South-weſt *Winds* are perpetual.

In the *Indian* Ocean the *Winds* are partly general, as in the *Ethiopick* Ocean, and partly periodical; that is, they blow one way half the Year, and upon the oppoſite Points the other half.

This that is here ſaid relates to the Sea *Winds*, at ſome Diſtance from the Land; for upon the Land, and near the Shores, the Land and Sea-Breezes are almoſt every where ſenſible; and the great Variety that happens in their Periods, Force, and Direction, happens from the Situation of Mountains, Vallies, and Woods, and from the various Texture of the Soil, more or leſs capable of retaining or reflecting Heat, or of exhaling or condenſing Vapours.

Of variable *Winds*, ſome are common to all Countries; others are more peculiar to ſome particular Parts.

Of the latter Sort, the moſt famous are *Hurricanes*, which chiefly infeſt the *Caribbee* Iſlands; but are not anniverſary, nor equally frequent..

Their Fury is ſo great, that they throw down all before them, tear up Trees, overturn Houſes, toſs Ships prodigiouſly, and blow about Things of vaſt Weight. They are not even, continued *Winds*, but blow in Guſts, which ſuddenly come and go; neither do they extend very wide, but are ſometimes confin'd to a narrow Compaſs, and at other times take a larger Scope. As for their Duration, it is but a few Days, and ſometimes only for a few Hours. They are more common in *America* than any where elſe; but yet *Europe* and *Aſia* are not altogether without them, as appears from Hiſtories and Travels.

The Cauſes of Tempeſts and Hurricanes are hardly to be accounted for in all Particulars. However, it may, in the firſt place, be noted, that the *Ratio* of all Liquids is much the ſame, and therefore an extraordinary Motion may be excited in the Air, by the ſame way as in Water.

Now, if Water fall from a high Place, or if there be a Confluence of ſeveral Streams together, this gives a violent Motion, and cauſes many Whirlings and Eddies in it. This is apparent in the Torrents falling down the Rocks, and the Confluence of Rivers.

If therefore ſomething analogous may happen in the Air, there needs muſt be furious Tempeſts of *Wind* raiſed in it. And ſuch a thing may happen, if any extraordinary Quantity of Vapours be drawn by the *Wind*, upon a certain Place, which they cannot eaſily get over, by reaſon of Mountains, or contrary *Winds*, which oppoſe them: For Example; Suppoſe a *Wind* upon ſome Point between North and Eaſt, carries a large Collection of Vapours out of *Africa* into the *Caribbee* Iſles, this *Wind* lights upon the Continent of *America*; now it is poſſible that not only the Mountains and Woods of *Panama* may reſiſt the Current of this *Wind*, and croud the Vapours together there; but a contrary *Wind* upon a Point between South and Weſt, may blow at the ſame time upon the Weſtern Shore of *America*, which ſhall force the Vapours back again. When ſuch a Rencounter happens, there muſt be a wild Uproar in the Air about the *Caribbee* Iſlands, and in all that Tract between *South* and *North America*; and the Vapours in this circular Motion muſt needs be furious on all Sides, juſt as it is in the Water.

For we ſee in the Confluence of two Rivers, if their Currents are rapid at the Place where they fall in, they cauſe violent Eddies, whirl Things about that are caſt in them, ſwallowing them up for a little Time, and then throwing them up again.

This ſhews us the Reaſon, why heavy Bodies are often toſſed in the Air by the whirling of Hurricanes, and then daſh'd to the Ground again: For the Air being a circular Motion, is with great Fury toſſed backwards and forwards, between the Ground and the Clouds. For as the Waters of the rolling Sea do not run to the Shores in an even Stream, but in ſuch Waves as daſh by Fits and Turns; ſo the Courſe of a violent *Wind* is in broken and diſtinct Blaſts.

Such Tempeſts do not extend very far, (though their Bounds are uncertain) becauſe the neighbouring Air giving way to them, they ſpend themſelves in the Progreſs of their Motion.

Thus, when a great Stone is caſt into the Water, we ſee a great Agitation round about the Place where it fell; but the more the Waves retire from the Centre of Motion, the ſlower and the leſs ſenſible they grow: And as ſuch Motions do not laſt long in Water, no more do they in the Air, for the ſame Reaſon.

Though there may be unuſual Storms of *Wind* any-where, the Air and Vapours are drawn together thereabouts by contrary *Winds*, yet are they more frequent about the *Caribbee* Iſlands, eſpecially in *June* and *Auguſt*, when the Sun is vertical there; for their Air being rarefied by the Sun's Heat, the uſual Winds bring thither a vaſt Quantity of Air and Vapours, which being crouded together in the Gulf of *America*, cauſe a great Eſtuation about the neighbouring Iſlands.

When the Sun is on this Side the Equator, the Air is more rarefied thereabouts, and it may ſo happen, that the South South-eaſt *Wind* which conſtantly blows beyond the Line, may ſometimes tranſgreſs its Limits, and bring the Vapours of the *Ethiopick* Sea to the ſame Place where thoſe of the *Atlantick* are already gathered; which being kept in by the Shores of *America*, muſt neceſſarily be driven about the *Caribbee* Iſlands.

Of the Qualities of Winds.

A Wind *that blows from the Sea is always moiſt, in* Summer *it is cold, in* Winter *warm, unleſs the Sea be froze up:* This is well demonſtrated thus; there is Vapour continually riſing out of all Water, (as appears even hence, that a Quantity of Water being left a little while in an open Veſſel, is found ſenſibly diminiſhed) but eſpecially if it be expos'd to the Sun's Rays; in which Caſe the Evaporation is beyond all Expectation. By this means the Air incumbent on the Sea becomes impregnated with a deal of Vapour; but the *Winds* blowing from off the Sea, ſweep theſe Vapours along with them, and conſequently are always moiſt.

Again, Water in *Summer*, &c. conceives leſs Heat than terreſtrial Bodies, expoſed to the ſame Rays of the Sun; but in *Winter*, Sea-water is warmer than the Earth, covered with Froſt, Snow, *&c.* Wherefore, as the Air, contiguous to any Body, is found to partake of its Heat and Cold; the Air, contiguous to Sea-Water, will be warmer in *Winter*, and colder in *Summer*, than that contiguous to the Earth: Or thus, Vapours raiſed from Water by the Sun's Warmth in *Winter*, are warmer than the Air they riſe in, as appears from the Vapours condenſing and becoming viſible almoſt as ſoon as they are got out into the Air: Freſh Quantities of Vapours therefore continually warming the Atmoſphere over the Sea, will raiſe its Heat beyond that over the Land.

Again, the Sun's Rays reflected from the Earth into the Air in *Summer*, are much more than thoſe from the Water into the Air: The Air therefore over the Earth, warmed by the Reflection of more Rays than that over Water, is warmer.——Hence Sea *Winds* make cloudy, hazy Weather.

2. Winds *which blow from the Continent are always dry, in* Summer *warm, and cold in* Winter:——For there is much leſs Vapour ariſing from the Earth, than from Water; and therefore the Air over the Continent will be impregnated with much fewer Vapours: Add, that the Vapours or Exhalations raiſed by a great Degree of Heat out of the Earth are much finer and leſs ſenſible than thoſe from Water:——The *Wind* therefore, blowing over the Continent, carries but little Vapour with it, and is therefore dry.

Further, [the Earth in *Summer* is warmer than Water expos'd to the ſame Rays of the Sun:——Hence, as the Air partakes of the Heat of contiguous Bodies, that over the Earth in *Summer* will be warmer than that over the Water; therefore the *Wind*, *&c.*

After the like Manner it is ſhewn, that the Land *Winds* are cold in *Winter*:——Hence we ſee how Land *Winds* make clear, cold Weather.

Our Northern and Southerly *Winds*, however, which are commonly eſteem'd the Cauſes of cold and warm Weather, Dr. *Derham* obſerves, (as we have ſaid) are really the Effects of the Cold or Warmth of the Atmoſphere: Hence it is that we frequently ſee a warm Southerly *Wind* on a ſudden changed to the North, by the Fall of Snow or Hail; and that in a cold, froſty Morning we ſee the *Wind* North, which afterwards wheels about towards the Southerly Quarters, when the Sun has well warm'd the Air; and again in the cold Evening turns Northerly or Eaſterly.

Some *Winds* are drying, others are moiſt; ſome gather Clouds, others diſperſe them; ſome are warm, others cold; but their Influence is not one and the ſame in all Places; for ſuch *Winds* as are warm in one Country, are cold in another; thoſe that are wet with us, are dry with other Nations; and on the contrary.

The dry *Winds* are ſuch, as carry but a few Vapours along with them, and therefore lick off the moiſt Particles from the Bodies over which they paſs; and thus in *Holland* the North and Eaſt *Winds*, with the intermediate Points, are drying, becauſe the cold Northern Sea yields but few Vapours in Compariſon of thoſe that come from warmer Parts of the Ocean; but the Weſterly *Winds* and others are moiſt, becauſe they iſſue from warm and vaporous Parts, the Weſtern *Wind* ſeldom failing to ſend Rain.

Such *Winds* gather Clouds, which blow from the Quarters where the Vapours ariſe, which in Conjunction with the Vapours of our own Region, fill the Air: And on the contrary, thoſe that bring little Vapour along with them, and bear away that which hangs over us, bring fair Weather.

Winds are either warm or cold, as the Countries are from whence they blow; and therefore when a briſk *Wind* blows from a cold Quarter, it allays the Heat of *Summer*, which is very troubleſome in ſtill Weather. Thus a quick Blaſt of a Pair of Bellows will put out a Flame, which a gentle Blowing increaſes; for the quick Blaſt drives all the Flame to one Side, where it is ſtifled by the Force of the incumbent Air for want of Aliment; but a gentle *Wind* augments the Motion of the Flame every way, and makes it ſeize on more Parts of Fuel.

Now, becauſe all the Heat or Cold of *Wind* proceeds from the Heat or Cold of the Country where it blows, therefore the ſame *Winds* are cold or hot every where. Beyond the Line they are juſt the Reverſe of what they are with us; their cold *Winds* are from the South, ours from the North; and as our South *Winds* are warm, from no other Reaſon, but becauſe they bring us an Air heated by the Sun; for the very ſame Reaſon the North *Winds* are warm to our Antipodes.

From what has been ſaid, it is evident that the Sun is the Cauſe of the *Wind*, and Motion the Cauſe of Vapours.

There are ſome, who fancy that the Waters in the Bowels of the Earth are rarefied into Vapours by the ſubterraneous Fires, and theſe Vapours iſſuing out of the Chinks of the Ground, create the *Wind*; and becauſe the Situation of Mountains is commonly ſuch, as permits thoſe to flow but one Way, therefore, they ſay, the Vehemence of the *Wind* is in ſuch and ſuch a Place.

But theſe Perſons ſhew no Place whence the Matter of the *Winds* can come with ſo much Force; tho' they talk of Caves which are the Store-houſes of the *Winds*, yet if it were ſo, all Places muſt be full of Caves, whereas we hear but of very few: And beſides, in the Places where ſuch Caves are, the ſame *Winds* would blow continually, or would ſeldom fail; but this is what was never found yet. See *Atmoſphere*, *Air*, *Vapour*, *Hail*, *Rain*, *Snow*, &c.

Prognoſticks of Weather from the Winds.

The *Winds*, Mr. *Pointer* ſays, are the Cauſes of the moſt ſudden and extraordinary Alterations of the Air.

The Nature of the *Winds* is ſuch, that by the Experience we have of them, we may very nearly predict what Weather we ſhall have for two or three Days after; as for Example, we know that in our Climate, a South *Wind* generally brings Rain, and a Weſt *Wind* more, and the Weſt

Wind is the predominant *Wind* with us, becauſe the Ocean lies on the Weſt Side of our Country.

And alſo, that a North *Wind* brings fair Weather to us, as well as the Eaſt *Wind*, which does not laſt ſo long as the North; therefore the North-eaſt and South-weſt *Winds* are thoſe that are neceſſary chiefly to be treated of.

Mr. *Pointer* gives the following Rules to know when the *Wind* will ſet in one of theſe two Points, for the moſt part for two or three Months together. Firſt, as to the North-eaſt *Wind*; when the Wind turns to the North-eaſt Point, and continues in it two Days without Rain, and does neither turn to the Southward the third Day, nor rain, then it is likely to continue eight or nine Days without Rain, and then to return into the South.

If the *Wind* turns out of the South to the North-eaſt again, and continues two Days in that Point without Rain, and neither rains nor turns to the South the third Day, it is likely to continue North-eaſt for two Months, and for the moſt part for three Months. The *Wind* will finiſh theſe Turns towards the North in three Weeks Time.

Secondly, as to the South-weſt *Winds*; when the *Wind* has been in the North for two Months or more, and comes to the South, there are uſually three or four fair Days at firſt, and then on the fourth or fifth Day comes Rain, or elſe the *Wind* turns North, and continues dry ſtill; if within a Day or two, without Rain, it return to the South, and with Rain turn Northward, and return into the South the firſt or ſecond Day, as before, two or three times together after this Manner, then it is like to be in the South or South-weſt two or three Months together, for the moſt part, as it was in the North before: The *Wind* will finiſh theſe Turns in a Fortnight.

He does not mention the Eaſt or Weſt *Winds*, becauſe, he ſays, the Rains come uſually from the South, or in the ſhifting of the *Wind* from the South to the North: As for the Drought, the *Wind* is, for the moſt part, North-eaſt.

If it prove fair Weather out of the South for a Week together, (which is not uſual) it is like to be a great Drought, when it has rained a long Time out of the South before.

The *Wind* uſually turns from the North to the South quietly without Rain; but comes back again into the North, with a ſtrong *Wind* and Rain: The greateſt *Winds* which blow down Houſes and Trees, uſually come by the turning of the *Wind* out of the South by the Weſt into the North, which drives away Rain, and clears the Air.

Signs of the Changing of the Wind.

Mr. *Pointer* ſays, in what Point ſoever the *Wind* is, when the Sun riſes with many pale Spots appearing in its Orb, and Part of it hid in a Cloud, it will ſoon turn to the South.

That when the *Wind* has been ſettled for Twenty-four Hours or more, in any of the full Points, as North, Eaſt, Weſt, or South, when it begins to turn, it will not ſettle till it comes to the oppoſite Point, as from the North to the South, and ſo from full Eaſt to full Weſt; and ſo of the angular Points, as from the North-eaſt to the South-weſt.

Upon whatſoever Quarter the *Wind* is when the Moon changes, it preſently changes upon the New Moon.

When the Generality of the Clouds tack with the *Wind* (though there ſhould be many in little Fleeces or long Flakes lying higher) the *Wind* is flagging, and will change ſoon, and ſhift its Point.

Common Obſervations and Signs of Winds *and Storms ariſing*.

If pale Spots ſeem to appear in the Orb of the Sun at his Setting, and do dazzle there, ſtrong *Winds* from the South will enſue; the *Wind* ſoon ſhifting into that Point, in what Quarter ſoever it was before.

If there appear upon the Sun, when he is ſetting, fiery Spots, or of a reddiſh Colour, much *Wind* will enſue; and a red, louring Morning is frequently a Fore-runner of *Wind*.

If the Moon, when at full, has a reddiſh Circle about her, it preſages much *Wind*.

When Meteors, or, as they are commonly called, Stars, ſhoot and ſpread a long Train of Light, they are Fore-runners of *Winds* that will ſoon follow.

The Lord *Bacon* ſays, the following are Prognoſticks of high *Winds* or Tempeſts ariſing.

When the Sea reſounds upon the Shore, when the *Winds* murmur in the Woods, without any apparent *Wind*, they portend that *Wind* will follow; for ſuch *Winds* breathing chiefly out of the Earth, are not firſt perceived, except they are pent by Water or Wood; and therefore a Murmur out of the Caves likewiſe portends as much.

When the Brightneſs of the ſmaller Stars is on a ſudden obſcured, it is a Sign of a Tempeſt ariſing; for the upper Regions of the Air perceive the Matter of the Collection of Tempeſts and *Winds*, before the Air here below; therefore the obſcuring of the ſmaller Stars, is a Sign of Tempeſts following.

He ſays, the Air and Fire have ſubtil Perception of the riſing *Winds* before Men.

We may perceive the Trembling of a Candle will diſcover a *Wind*, that otherwiſe we do not feel; and the flexious burning of Flames ſhews the Air is beginning to be unquiet; and in like manner do Coals of Fire, by caſting off the Aſhes more than uſual; and as for the Aſhes it is not to be admired at, if the *Wind*, unperceived, ſhake them off; for it is a common thing to try which way the *Wind* blows, by throwing up Graſs, Chaf, or ſuch like Things into the Air.

Signs of the Wind's *ceaſing*.

If a haſty Shower of Rain falls, when the *Wind* has raged for ſome Hours, it ſoon abates.

If Water ruckles much, and frequent Bubbles ariſe, the Storm is but of a ſhort Continuance.

If Sparrows chirp merrily, and Moles come out of their Holes, it is a Sign of the Storm ceaſing.

If the Bird call'd *Kings-Fiſher*, or *Halcyon*, attempts the Seas when the *Wind* blows hard, it is a Sign of its abating.

Of WINES, *and vinous Liquors*.

WINE is a briſk, agreeable and ſpirituous Juice, drawn from vegetable Bodies, and fermented.

Dr. *Boerhaave* characterizes *Wine*, that the firſt Thing that it affords by Diſtillation, be a thin, fatty, inflammable, *&c.* Fluid, called a Spirit; and in this it is diſtinguiſhed from another Claſs of fermented vegetable Juices, *viz.* Vinegars, which inſtead of ſuch Spirit, yield for the firſt thing an acid, uninflammable Matter.

In order to the making *Wines*, it will be of great Advantage to be well acquainted with the Buſineſs of Fermentation. This Dr. *Boerhaave* defines and explains as follows:

Fermentation is a Change produc'd in vegetable Bodies, by means of an inteſtine Motion excited therein; the Effect whereof is this, that the Part which firſt riſes from them in Diſtillation, is either a thin, fat, acrid, hot, tranſparent, volatile and inflammable Fluid that will mix with Water; or elſe a thin, acid, pellucid, leſs volatile, uninflammable Liquor, capable of extinguiſhing Fire.

The Liquor obtain'd by means of Fermentation, is call'd *Thin*, becauſe none appears to be thinner than the Spirit of fermented Vegetables; Acid, becauſe it acts almoſt like Fire, when apply'd to the Tongue, or other Parts of the Body; Volatile, becauſe there appears to be no Liquor, that is raiſed with greater Eaſe; but 'tis this Liquor being totally inflammable, and at the ſame time capable of mixing with Water, that ultimately diſtinguiſhes Fermentation from all other Operations in Nature: For neither Putrefaction, Digeſtion, Effervеſcence, nor any thing of that kind, will ever afford a Liquor at once poſſeſſed of thoſe Qualities.

Putrefaction, indeed, as well as Fermentation, is performed by means of an inteſtine Motion; but the former will never produce either of the Liquors above deſcrib'd, as the Effects of Fermentation, that is, neither a vinous nor acetous Liquor.

We ſee then, that there are two different Effects of Fermentation, the Production of an inflammable Spirit, and an uninflammable Acid; and whatever Operation will afford, neither of theſe Liquors is improperly called Fermentation; which therefore can only take place in the Vegetable Kingdom: For all the Art in the World, ſo far as hitherto appears, will never gain ſuch Spirits from Animals or Foſſils; and conſequently never excite an actual and real Fermentation in them: For Fermentation is the ſingle Operation in Nature, by which ſuch Spirits can be obtain'd.

2. Any Vegetable Liquor ſo fermented, as to afford the inflammable Spirit above-mentioned, for the firſt thing in Diſtillation, we call *Wine*; but if the Liquor be ſo fermented, as firſt to afford the acid, uninflammable one, 'tis call'd Vinegar; by which we mean every thin, acid, volatile, vegetable Liquor, capable of extinguiſhing Fire: So likewiſe under the Name of *Wine*, we include Beer or Ale, Mead or Metheglin, Cyder, Perry, all Sorts of artificial *Wines*, and whatever Liquors afford Spirits poſſeſſed of the Properties before ſet down.

The like is to be underſtood of Vinegar, which is obtainable from all the ſame Bodies that afford *Wine:* So that we have either the *Wine* or Vinegar of all Sorts of Fruits, as of Grapes, Currants, Mulberries, Cherries, *&c.* all Sorts of Grain, as Barley, Wheat, Oats, *&c.* all Sorts of Pulſe, as Beans, Peas, Tares, *&c.* all Sorts of Roots, as Turnips, Carrots, Radiſhes, *&c.* and in ſhort, of all Sorts of vegetable Subſtances, even Graſs itſelf.

3. All the Bodies capable of being changed by Fermentation, either into *Wine* or Vinegar, are ſaid to be fermentable Bodies; and becauſe ſuch a Change can only be wrought, ſo far as we know at preſent, upon Vegetables, theſe alone are accounted fermentable.

4. Any Matter which being mixed with a fermentable Body increaſes its inteſtine Motion, or excites or forwards the Fermentation, is called a Ferment: And, according to the Doctrine before delivered, nothing can properly be called ſo, but what will produce either Wine or Vinegar.

Theſe fermentable Bodies may be reduced to the following Claſſes.

The firſt Claſs will conſiſt of the mealy Seeds, *i. e.* all the Grain, which being fully ripe, and well dry'd, may be reduced, by grinding, to a light Meal or Flower, that is neither clammy nor unctuous.

The ſecond Claſs conſiſts of all the pulpy *Summer* Fruits, which, when ripe, affect the Tongue with the Senſe of Acidity and Sharpneſs, as Apples, Pears, Grapes, Gooſeberries, *&c.* Under this Claſs may be ranged all Manner of bulbous pulpy Roots growing in the Ground, if they are but firſt deprived of their volatile, alkaline Salt, which is apt to determine them to Putrefaction.

The third Claſs takes in all the juicy Parts of Plants, as the Leaves, Flowers, Stalks and Roots, provided they are not too oily or too alkaline, in which Caſes Vegetables will rather putrefy than ferment.

The fourth Claſs contains the freſh, expreſſed and native Juices of all Kinds of Vegetables; to which may be added, all the native ſaline Liquors that diſtil from wounded Plants, as the Tears of the Vine, the Walnut, the Birchtree, *&c.*

Under the fifth Claſs come the moſt perfect of all vegetable Juices, *viz.* thoſe that are unctuous, condenſed and elaborated by Nature herſelf, ſuch as Honey, Manna, Sugar, and all other Kinds of concreted Juices capable of diſſolving in Water.

In order to fit any of the fermentable Bodies for Fermentation, there are ſeveral Particulars requiſite:

1. Maturity: The Juice of unripe Berries, as of Currants or Gooſeberries, for Inſtance, will ſcarce be brought to ferment at all; while it is very difficult to hinder their Juice, when fully ripe, from falling ſpontaneouſly into Fermentation.

Thus, the Juice of unripe Grapes, being incapable of fermenting, is a rough, acid Liquor, called *Verjuice*, that will for ſeveral Years remain in the ſame unactive State; but after they are come to Maturity, it can no ſooner be preſſed into the Veſſel, than it becomes a fermentable ſpirituous Fluid.

2. Another Requiſite to prepare a Body for Fermentation, is, That it ſhould contain only a moderate Proportion of Oil; for if it either exceeds in the Quantity, or be entirely deſtitute of Oil, it will never be brought to ferment at all. Thus Almonds, Fennel-ſeeds, *&c.* are always deprived of their Oil before they are attempted to be fermented.

3. The Bodies intended for Fermentation, muſt not be too acid or auſtere; as is plain from the acid Juices of unripe Fruits, which are greatly indiſpoſed to ferment.

4. The laſt Thing required to fit and prepare a Body to undergo Fermentation, is the Property of diſſolving in Water: For want of which all acid Bodies, and ſuch Woods, Roots and Herbs as are dry and hard, become unfit for this Operation; for unleſs the Parts of theſe Bodies are diſſolved, the requiſite inteſtine Motion thereof will not enſue; but without ſuch Motion, Fermentation cannot ſubſiſt.

Hence Honey itſelf can never be made to ferment, whilſt it retains its native, thick Conſiſtence; but being diſſolved by Heat, or let down with Water, it immediately enters the State of Fermentation. On the other hand, ſo violently as the Juice of Grapes affects this State, yet, if immediately after it is expreſſed, it be reduced by boiling to the Conſiſtence of a Jelly, it will lie quiet, and never ferment at all, unleſs it be again diluted, and let down with Water.

Ferments are of two Kinds, the natural or ſpontaneous, and thoſe produced by Fermentation.

The ſpontaneous, or natural Ferments, are,

1. All the freſh expreſſed Juices of fully ripened Plants which eaſily run into Fermentation.

2. Honey, Manna, Sugar, and the like thick and inſpiſſated vegetable Juices, which cauſe a ſtrong Fermentation.

3. The Ferments produced by Fermentation, are the freſh Flowers or Yeaſt of any fermenting vegetable Juice or Liquor, as of *Wine*, *Beer*, &c. By Flowers or Yeaſt is to be underſtood that light, frothy Matter, which covers the Surface of the fermenting Liquor in the Nature of a tender Cruſt, and which being added to any other fermentable Juices, will excite a Fermentation in them.

4. The freſh *Fæces*, or Lees of any fermenting Liquor, as of *Wine*, *Ale*, *Beer*, &c. For all Fermentation divides the Liquor, which is the Subject of it, into three Parts, *viz.* the Flowers or Yeaſt, which poſſeſs the uppermoſt Place; the operating or fermenting Fluid, which lies in the Middle; and the groſs and ſeemingly exhauſted Matter, which falling to the Bottom of the Veſſel, is known by the Name of *Lees*, *Sediments*, *Fæculence*, or *Mother*, that will, if raiſed again out of the Liquor into which it was precipitated, cauſe it to work afreſh.

Thus, when a Hogſhead of *Wine* has done fermenting, and is fined down, if the Veſſel be any way ſhook or diſturbed, it will grow turbid again, and ferment anew, as Vintners very well know: For ſuch as were the Flowers in the Act of Fermentation, ſuch is the Mother after the Action is over.

5. Acid Paſte, or Bakers Leaven, which is no more than any Kind of Meal brought into a cloſe Lump by Means of Water, after the ſame Manner as common Bread is made; for this being ſet in a warm Place during the Space of four or five Days, it will firſt ſwell, then turn very acid, and at length become a Ferment.

6. Thoſe Ferments which reſide in, or ſtick to the Sides of the Caſks that have contained fermenting Liquors; for ſuch Caſks will of themſelves raiſe a Fermentation in the Liquors committed to them; and *Helmont* was of Opinion, they might be capable of doing this for ever.

Upon account of this inherent Ferment it is that old-ſeaſoned Veſſels, or ſuch as have been long employed by Vintners or Brewers bear ſo great a Price among them.

It is very remarkable, tho' a Thing well known to Brewers and Vintners, that a new Caſk checks the Fermentation of vinous Liquors, and renders them weak and ſpiritleſs; for which Reaſon they never chuſe to make Uſe of ſuch a Caſk before it is ſeaſoned, as they call it, by having firſt contained ſome ſpirituous or fermented Liquor or other, which being plentifully drank in by the Wood, the original Liquor comes to be deprived of a large Proportion of its Spirit and more fermentable Part, whence the Remainder muſt needs taſte flat and vapid.

This is certain, that even Muſt itſelf will not eaſily ferment in a new pure Veſſel; but with the greateſt Facility, if put into one that has before contained fermenting Juices; for the Parts of the fermenting Liquors, with which ſuch a Veſſel muſt have been impregnated, preſently rouze and determine it to Action.

7. There are ſome Ferments that appear to be heterogeneous, or which are improperly called Ferments; as the White of an Egg beat into a Froth, which is uſed when the Liquor to be fermented proves too dilute or thin to ſuſtain the Operation: For in this Caſe the fermentable Parts of the Fluid eaſily extricate themſelves, and ſo fly off for want of ſomething to detain and keep them in the Body of the Liquor; which therefore requires ſome viſcid Subſtance to be mixed with it, in order to prevent this Avolition of its ſubtil Parts: And this cannot be more commodiouſly effected than by the White of an Egg.

8. Of the like heterogeneous Kind of Ferments are all fixed and acid Salts. Thus, if the Liquor deſigned for Fermentation be too acid to work kindly, the Addition of an alkaline Salt, as that of Vine-branches, or any ſaponaceous Subſtance, will, by taking off from the Acidity, fit it for, and ſo promote the Operation; but if the Liquor be of itſelf too alkaline, then Tartar, or the like, ought to be added to it to promote the Fermentation.

But this does not happen, becauſe either the acid or alkaline Salt is an actual Ferment, as ſome Chymiſts have vehemently contended for the alkaline, becauſe the Salts employed, reſpectively temper and take down the predominant Acid or Alkali, which before hindered the Fermentation of the Liquor.

And if ſuch Salts ſhould, in due Quantities, be mixed with any proper Subject of Fermentation, poſſeſſed of all the Qualities before ſet down, as requiſite to it, the Operation would be entirely checked and prevented; ſo that alkaline

line Bodies may as well be ſaid to hinder, as promote Fermentation.

9. And laſtly, Of the ſame Sort are certain auſtere or rough-taſted Subſtances; as all harſh and green Fruit, Pomegranate Bark and Flowers, the Tamariſk Bark, Crab-apples, unripe Medlars, *&c.* which, when the Liquor deſigned for the Fermentation is too much broken in its Parts, or diſſolved in its Texture, bind it together again by its aſtringent Quality; ſo that though it was before too thin and aqueous, it is now reduced to a proper Conſiſtence for Fermentation.

Thus, when Muſt proves thin and watery, it will not ferment kindly, unleſs ſome auſtere or aſtringent Ingredient, as red Roſe Leaves, or the like, be added to it to thicken and improve its Conſiſtence, and at the ſame Time prevent the Air it contains from making too eaſy an Eſcape.

But when a Liquor is too auſtere, or its Roughneſs proves ſo great that it cannot ferment, the Addition of a fixed Alkali, in a proper Quantity, will remove the Obſtruction, and leave it at Liberty to work.

So likewiſe when the Operation is prevented by too large a Proportion of Acid in the Liquor, the Method is to throw Chalk, Crabs Eyes, Bole Armoniac, or the like, into it; but if it be too unctuous or oily, as is the Caſe of ſome *Spaniſh Wines*, Salt of Tartar is made choice of; and thus, as Circumſtances alter, different Bodies are employed to ſtop or promote Fermentation in Liquors.

In order for fitting the Subjects of the ſecond Claſs for Fermentation, and making vinous Liquors, *viz.* pulpy *Summer* Fruits, and the Roots of bulbous Plants, in caſe they prove crude or hard, they are to be firſt boiled in Water, and afterwards bruiſed; which will diſpoſe them for Fermentation: But if ſuch Subjects are juicy, they may be directly ground to a Pulp, or have their Juice preſſed from them: or if they are very ſucculent indeed, there may be no Occaſion to bruiſe them, only directly to commit them to the Preſs, and ſqueeze out all their Juice.

But if the Fleſh or Subſtance be ſtrong and tough, it may be proper to raſp, ſhave, or cut them into ſmall Pieces, which will be of Service in ſome bulbous Roots, and make them yield their Juice with the greater Eaſe, and in greater Plenty.

Prepared Fruits ſeldom ſtand in need of any Thing to make them ferment, for they generally begin to work of their own accord; but if the Weather ſhould prove exceeding cold, or the Operation proceed but languidly, it may not be amiſs to quicken it, by adding a ſmall Proportion of a Ferment, as a little Yeaſt, the Lees or *Mother* of *Wine*, or even a little new *Wine* may ſerve the Turn.

The Subjects of the third Claſs, *viz.* the ſucculent Parts of Plants, need only, in order to their Fermentation, be beat to a thick kind of Pulp, while they are freſh, and mix'd with a proper Proportion of Rain-water, that is juſt enough to dilute them, for if much Water be employed, the Spirit will be the weaker for it.

Theſe require but very little Ferment, or none at all, to make them work in the *Summer* Seaſon, and no large Proportion in the *Winter*; but in caſe any at all be required, nothing will prove more ſerviceable than Honey or Sugar.

The Subjects of the fourth and fifth Claſſes, *viz.* the freſh native Juices and weeping Liquors of Vegetables, with the condenſed and unctuous Juices of the ſame, are to be diluted and let down with Rain-water to a due Conſiſtence, which is then commonly thought to be obtained, when the compound Liquor will juſt keep a new-laid Egg afloat: But ſome vegetable Juices may naturally be of this very Denſity or Conſiſtence; and in that Caſe they will require no Water at all: If any be thicker or denſer, they ferment not ſo kindly; and if thinner or rarer, they afford but a weak Spirit. Thus, in order to ferment Sugar, Treacle, or any common Syrup, we firſt let down the Matter with Water, to the Conſiſtence above-mentioned; and then, if there be Occaſion, put Yeaſt to it to quicken the Fermentation, and make it proceed kindly.

The Subjects of the fourth Claſs, *viz.* The prepar'd recent Juices, and ſpontaneous Tears of Vegetables, are ſo far from requiring any Ferment, that it often proves very difficult to reſtrain or check the Fermentation they naturally fall into, eſpecially if the Seaſon be warm, and the Juices rich; at moſt, if the Weather ſhould prove cold, they need only be ſet in a warm Place to make them work.

The Subjects of the fifth Claſs, *viz.* The prepar'd or inſpiſſated Juices of Vegetables require no Ferment at all in the *Summer*, and but a ſmall Proportion in the *Winter*, to ſet them on working; leſs than an Ounce of Yeaſt to twenty Pints of prepared Liquor, will uſually ſuffice for that Purpoſe in the coldeſt Seaſon: But in hot Countries, or ſultry Seaſons, theſe prepared Juices, and eſpecially Sugar, are of themſelves apt to fall into a too violent Fermentation; which therefore ought to be abated by the contrary Means.

All the vegetable Bodies of theſe ſeveral Claſſes deſigned for Fermentation, and prepar'd for it in the foregoing Manner, ought, together with their Ferments, to be committed to Caſks of Oak already ſeaſoned or imbued with the ſame kind of fermented Liquor, or ſome other, conſiſting of ſubtil and penetrating Parts: Then thoſe Caſks or Veſſels having their Bung-holes lightly covered with a thin or ſingle Cloth, and being ſet in a warm Place, the Liquor will ferment.

The Mouths of the Veſſels are thus ſlightly covered over, that the Air may have a free Paſſage in and out at them; for they are here deſigned to ſerve as Vent-holes. And theſe Veſſels are ordered of Wood, becauſe Fermentation is never obſerved to be ſo well carried on in thoſe of glaz'd Earth or Glaſs; tho', on Account of their Tranſparency, 'tis ſometimes perform'd in the latter, that the *Phænomena* may be better obſerv'd.

The preparatory Buſineſs of Fermentation, hitherto deſcrib'd, has been carry'd on by Art, but Nature muſt now perform the reſt of the Work; ſo that we are here only concerned to obſerve the *Phænomena* which ariſe in the Operation.

When therefore any fermentable Body is prepar'd after the Manner above delivered, and with its due Proportion of a Ferment, committed to a large ſtrong Glaſs Veſſel, ſtanding in a warm Place;

1. The whole Body of the Liquor ſoon begins to ſwell, heave, rarefy and ſend up little Bubbles to the Top of the Veſſel, where they burſt with an audible Noiſe, and form into Froth: Now the Liquor which was before tranſparent, grows opaque, and a violent uninterrupted inteſtine Motion manifeſts itſelf therein.

2. The Parts of the fermenting Fluid appear to be incredibly elaſtick, and the Motion of them exceeding violent. Indeed, by means of this Property of Fermentation, very terrifying and ſurprizing Actions may be performed. Thus, if an hundred Pints of Muſt were, on ſome warm Day in *Autumn*, to be confin'd cloſe in a Veſſel of Oak above an Inch thick in the Sides, and made ever ſo tight and ſtrong with Iron Hoops, yet could not this prevent the working of the Liquor, but in ſpite of ſo great a Reſiſtance, it would burſt the Veſſel, with a Report as loud as that of a Cannon.

And therefore the Way to preſerve New *Wine* in the State of Muſt is, to put it up in very ſtrong, but ſmall Caſks, firmly cloſed on all Sides, by which means it will be kept from fermenting; and then it goes by the Name of *Stum*: But if it ſhould happen to fall into Fermentation, the readieſt and only Way to ſtop it, is by the Fume of Sulphur, or ſomething of the like Nature.

Were it not for the Knowledge of this Property of burning Sulphur, the *Wine-Merchants* and *Vintners* might frequently ſuſtain great Damages from the burſting of their Veſſels when the Liquor is upon the Fret, or, by ſome Alteration in the Air, or other Accident, begins to ferment again: But the Smoke of a little common Brimſtone, or a lighted Match dipp'd in it, and held under a Caſk of *Wine* that is juſt ready to burſt its Hoops, will calm its Fury, and make it ſubſide as ſuddenly as a Spoonful of Oil thrown into a large foaming Copper of boiling Sugar, takes down its Heat, and prevents the Miſchief it might otherwiſe occaſion.

3. A thick Skin or cruſty Scurf forms itſelf on the Surface, thro' which the elaſtic or fermenting Matter is continually breaking. This Cruſt appears to be the principal Cauſe of Fermentation, for it keeps in, or prevents the ſpirituous Part of the Liquor from flying off; and if it be frequently broken, it puts a Check to the Fermentation, and will often intirely ſtop it, if wholly taken away.

4. This Skin or Cruſt, which we now call Flowers or Yeaſt, gradually conſumes and precipitates to the Bottom of the Liquor; in which Caſe 'tis call'd by the Name of *Fœces* or *Mother*; and after this, the Fluid above it immediately becomes tranſparent again, ceaſes to hiſs and bubble, has a very penetrating pungent, ſpirituous, or vinous Taſte and Scent, with a Mixture of Acidity and Sweetneſs: And now the Liquor having undergone the Operation of Fermentation, is become *Wine*.

The Vapour ariſing from the Liquor, during its Fermentation, ought not to be approached too near, or breathed in too great a Quantity, becauſe it is highly poiſonous; and if it prove not mortal, may at leaſt, render the Perſon apoplectic or paralytic. We have Accounts in the *French* and

German Tranſactions, of People who were immediately ſtruck dead by receiving at the Noſe the Fumes that iſſued from large Veſſels of *Wine* in the State of Fermentation.

And now, if the Liquor thus fermented be ſtopp'd down cloſe, it will begin to work or feed upon, and digeſt its own Lees or Mother, and at length conſume them: In which Caſe we commonly ſay, the *Wine* begins to ripen; and afterwards, this Mother ſhoots to the Sides of the containing Veſſel, and there appears in the Form of an eſſential Salt, which is then call'd *Tartar*.

The Space of Time requir'd for finiſhing the Fermentation, differs with the ſubject Matter, the Seaſon of the Year, the Nature of the Place, and other Circumſtances; but 'tis known to be perfectly perform'd by the ſeveral *Phænomena* juſt now mentioned.

As ſoon as ever the Flowers fall to the Bottom, the Veſſel ſhould be bung'd down, otherwiſe the volatile Part, would fly off, and the fermented Liquor become vapid and flat.

In this State it ought to ſtand for ſome Weeks in a cool Place, by which Means it will grow ſtronger and more liquid; for during this Time it imbibes and conſumes its own *Fæces*, which abound in ſubtil, ſpirituous Parts, and grows ſoft, and loſes of its Acidity by trowing off its Tartar.

And the longer it is thus ſuffered to ſtand, the more Strength it gains, or the more Spirit it will yield in Diſtillation.

Thus, for Inſtance; Malt Liquors newly brew'd, afford but a ſmall Quantity of inflammable Spirit; but if ſuffered to remain for ſome Weeks in the Veſſel, till they become fine and clean, they will yield a much greater Proportion: Tho' to avoid ſo great an Apparatus of Veſſels as would then be required, Malt Liquors, brew'd in order to make Spirits, are ſeldom kept, but immediately after Fermentation committed to the Still. And hence we are furniſh'd with a Reaſon, why all ſtale, vinous Liquors are ſtronger, and inebriate ſooner, than ſuch as are new.

The Phyſical Effects.

The Phyſical Properties of a vinous Liquor, prepar'd in the manner above deſcribed, are thoſe which follow:

1. It will have an inebriating Quality, when received into the Body: And nothing is properly poſſeſs'd of this Quality but what has been firſt fermented.

For if a Perſon ſhould eat ever ſuch a Quantity of Grapes, or drink ever ſo freely of Muſt, he might, indeed, bring a Looſeneſs upon himſelf by that means, but he would not be fuddled. So likewiſe to take down large Draughts of ſweet Wort, or the Tincture of Malt, might throw one into a violent Vomiting and Flux, but never produce the Symptoms of Drunkenneſs.

And whatever ſome pretend, as to *Mandrake*, *Hemlock*, *Poppies*, *Opium*, and the like, the Effects they have upon the human Body, are rather ſtupifying than inebriating: But Drunkenneſs is different from Stupification.

An Over-doſe of vinous Liquors makes a Man briſk, lively, and joyful, or diſpoſes him to ſing, dance, and be merry; at length, however, his Legs will not ſupport him: And, if the Fit be violent, he grows furious, raving, or paralytick, and ſo he dies.

But Opium has not theſe Effects; it brings on a profound Sleep; and he who has taken too much of it, dies lethargick.

2. *Wine* has the Faculty of heating the Body. Nothing appears to cool the Body more than *Currants*, yet the *Wine* prepared from them is very heating. The like is to be underſtood of *Cherries*, and all fermentable Bodies, tho' ever ſo cold; for theſe will afford a vinous Liquor.

3. It is inflammable, and will mix with Water.

4. It contains Tartar, and affords it after the Fermentation is over. This Tartar is the eſſential Salt of the Vegetable made uſe of, and differs from the Lees or Mother, being reſolvable by Diſtillation into a Water, a Spirit, two Kinds of Oil, and alkaline Salt and Earth. All fermented Vegetables afford it. Muſt yields a feculent Salt, and no Tartar; but if once it works, ſo as to become pure *Wine*, it will, in the Space of half a Year, throw off a clean Tartar; which therefore appears to be the Effect of a perfect Fermentation, and accordingly is never obtain'd without it.

5. It retains neither the Colour, Taſte, nor Smell of the Specifick Vegetable, from which it is made. Thus we have ſeen, that *Roſemary* affords a quite different Water, after it has been fermented, from what it did before. Thus fermented *Hydromel*, *Malt Liquors*, *Treacle*, *Sugar*, &c. yield Spirits by Diſtillation, that cannot be diſtinguiſhed from one another.

The Grapes of ſome Countries are as ſweet as Honey, and ſo is their Muſt before Fermentation; yet the *Wine* prepared from either, may have little or no Sweetneſs, and ſometimes even gain a Degree of Acidity. It is not eaſy to believe, that *Rheniſh Wine* ſhould proceed from ſo ſweet a Grape as it does.

6. It acquires a ſomewhat acid and ſpirituous Taſte and Smell. The Taſte of Honey or Malt, *&c.* is ſweet, and their Scent ſcarce perceivable before you commit them to Fermentation; but after having undergone that Operation, they are leſs ſweet, but ſharper upon the Tongue, and affect the Noſe with a briſk, ſpirituous or vinous Odour.

7. It contains the volatile Salt and Oil of the Vegetable, attenuated, and reduced into one Spirit; as may appear by the Chymical Analyſis of a fermented Subject.

8. It renders the Oil of the vegetable more volatile than the Water: When an unfermented Vegetable is diſtilled, the firſt thing that comes over is Water, and the next the Eſſential Oil; but the contrary is obſerved after Fermentation: For by that Operation, the Oil is render'd more volatile than the Water, and therefore riſes firſt in Diſtillation, having been broke and ground ſo fine by the preceding Operation, as now to come over the Helm, not in its own Form, as before, but as the fineſt and moſt volatile Part of the fermented Liquor, capable of uniting with Water.

The Things that promote Fermentation, are;

1. *Reſt*; by means of which the Cruſt on the Surface may remain unbroken: For 'tis this Cruſt that prevents the ſpirituous Part from flying off.

2. *A free Admiſſion of the external Air*, ſo that it may come at the internal Parts of the fermenting Fluid: For, according to Mr. *Boyle*, if a fermenting Liquor be put into his exhauſted Receiver, the Operation immediately ceaſes.

3. *A moderate Degree of Warmth*; for too great Heat, and too great Cold, are the Bane of Fermentation.

4. *A proper Seaſon of the Year*; that is, when the Vegetables of the ſame Species with that made uſe of are in their Bloom, for it is then their Juices are moſt in Motion: Accordingly we find, when Vines are in the Bloſſom, the *Wines* of former Growths will again ſpontaneouſly run into Fermentation. When theſe ſeveral Conditions meet, Fermentation is perform'd to the beſt Advantage.

The Things which check or hinder Fermentation are;

1. Too large a Proportion of acid Salts; ſuch as Spirit or Oil of Vitriol, Oil of Sulphur *per Campanum*, Spirit of Salt, *&c.* Thus, when any Liquor ferments too violently, a few Drops of Oil put into it, or the burning a little Sulphur under or near the Veſſel, will immediately check and reſtrain its Fury.

2. An Over-proportion of *fixed Alkalies*; ſuch are Salt of Tartar, Pot-Aſhes, or ſaponaceous Bodies.

3. *Terreſtrial Alkalies*; as Chalk, Marl, Crabs-Eyes, *&c.*

4. A cloſe *ſtopping* up of the Veſſel.

5. A great Degree of *Cold*.

6. A violent Degree of *Heat* or conſtant Motion, ſo as to thicken the fermenting Liquor, and render its Parts hard to be ſeparated.

7. A total Extraction of the *Air*.

8. A violent Compreſſion of the Air in the Veſſel; which Mr. *Boyle* has ſhewn, will ſtop Fermentation, as well as taking out the Air by means of his pneumatick Engine.

Some ſhort general Directions as to the making of Wines.

Wine is made of Grapes, by ſtamping them in a Vat, or cruſhing and expreſſing the Juice out of them in a Preſs, and then fermenting, *&c.*

In the Southern Parts of *France*, their Method is for *Red Wines*, to tread the Grapes, or ſqueeze them between their Hands, and to let the whole ſtand, Juice and Huſks, till the Tincture be in Colour as they would have it, and then they preſs it: But for *White Wines*, they preſs the Grapes immediately.

When they have been preſſed, they tun the Muſt, and ſtop up the Veſſel, leaving the Caſk empty about the Depth of half a Foot, or better, to give Room for its working.

At the End of ten Days they fill this Space with ſome other proper *Wine*, that will not provoke it to work again, repeating this every ten Days for ſome Time; new *Wine* ſpending itſelf a little before it be perfect.

About *Paris*, and in the Northern Parts of *France*, they let the Marc and Muſt ſtand two Days and Nights for *White Wines*, and at leaſt a Week for *Claret Wines*, before they tun it; and while it continues working, they keep it as warm as poſſible.

Some, upon ſtopping it up for good and all, roll the Caſk about the Cellar to mix it with the Lees; and after it has been ſettled a few Days, rack it off with great Improvement.

To fine it down, they put in Shavings of green Beach into the Caſk; but they firſt take off all the Rind, and boil them an Hour in Water, to extract their Rankneſs, and afterwards dry them in the Sun or an Oven. A Peck of theſe will ſerve for an Hogſhead of Wine: They put it in a gentle Working, and purify it in twenty-four Hours; they alſo give it an agreeable Flavour.

Some ſweeten their *Wines* with Raiſins of the Sun, trod in the Vat with the Grapes, they having been firſt plump'd by boiling: Others by boiling half the Muſt, ſcumming it, and tunning it up hot with the other.

Wine is diſtinguiſhed from the ſeveral Degrees and Steps of its Preparation into

1. *Mere-gutte*, Mother-drop; which is the Virgin Wine, or that which runs of itſelf out of the Tap of the Vat before the Grapes are trodden.

2. The *Muſt*, *Surmouſt* or *Stum*, which is the *Wine* or Liquor in the Vat after the Grapes have been trodden in the Vat.

3. The *preſs'd Wine*, or *Vin de preſſurage*, which is that ſqueez'd with a Preſs out of the Grapes half bruiſed by treading.

4. *Boiſſon* or *Draught Wine*. This is made of the Husks left of the Grapes, which are call'd *Rape* or *Marc*: By throwing Water upon which, and preſſing afreſh, they make a Liquor for Servants.

Wines are alſo diſtinguiſhed into

Vin Doux or *Sweet Wine*, which is that which has not yet work'd nor boil'd.

Bouru; that which has been prevented working, by caſting in cold Water.

Vin of the Cuve, or *work'd Wine*, *i. e.* that which has been let to work in the Vat to give it a Colour.

Vin Cuit, i. e. *boil'd Wine*, that which has had a Boiling before it work'd, and which by that means ſtill retains its native Sweetneſs.

Vin Paſſé, i. e. *ſtrained Wine*; that which is made by ſteeping dry Grapes in Water, and letting it ferment of itſelf.

The Goodneſs of *Wine* conſiſts in its being neat, dry, clear, fine, briſk, without any Taſte of the Soil, of a clean, ſteddy Colour; in its having a Strength, without being heady; a Body, without being ſour; and its keeping, without growing hard.

After *Wines* have been made, they require to be managed according to their different State and Circumſtances. We ſhall therefore conſider them under theſe four general Heads following:

1. The natural Purification or Clarification of *Wines*, whereby of themſelves they paſs from the State of Crudity and Turbulency, to that of Maturity by degrees, growing clear, fine, and potable.

2. The unſeaſonable Workings, Frettings, and other Sickneſſes, to which from either internal or external Accidents, they are afterwards ſubject.

3. Their State of Declination or Decay, wherein they degenerate from their Goodneſs, and Pleaſantneſs, becoming pall'd, or turning into Vinegar.

4. The ſeveral Artifices uſed to them, in each of theſe States and Conditions. As to the firſt, *viz.* The natural Clarification of new *Wines*, two Things occur, which deſerve Conſideration, the Manner how, and the Cauſe by which the ſame is effected.

As for the Manner, it is to be obſerved that *Wine*, while yet in the Muſt, is uſually put into open Veſſels; the Abundance and Force of the Spirits, *i. e.* the more ſubtil and active Parts therein contained, being then ſo great, as not to endure being impriſoned in cloſe ones, at which Time it appears troubled, thick and feculent: All Parts or Elements of it being violently moved and agitated, ſo that the whole Maſs of the Liquor ſeems to boil like Water in a Cauldron over the Fire.

This Tumult being in ſome degree compos'd, and the *Gas ſylveſtre* (as *Van Helmont* calls it) or wilder Spirit ſufficiently evaporated, they then pour the Muſt into cloſe Veſſels, there to be farther defecated by Continuance of the ſame Motion of Fermentation, reſerving the Froth or Flower of it; and putting the ſame into ſmall Casks hooped with Iron, leſt otherwiſe the Force of it might break them.

This Flower thus ſeparated, is what they call *Stum*, either by Tranſpoſition of the Letters in the Word *Muſt*, or from the Word *Stum*, which in *High-Dutch* ſignifies Mute, becauſe this Liquor (as one may ſay) is hindred from that Maturity by which it ſhould ſpeak its Goodneſs and Wholſomeneſs.

This being done, they leave the reſt of the *Wine* to finiſh its Fermentation; during which, it is probable, that the ſpirituous Parts impel and diffuſe the groſſer and feculent Parts up and down in a confuſ'd and tumultuous manner, until all being diſpos'd in their proper Regions, the Liquor becomes more pure in Subſtance, more tranſparent to the Eye, more piquant and guſtful to the Palate, more agreeable to the Stomach, and more nutritive to the Body.

The Impurities being thus ſeparated from the Liquor, are, upon Chymical Examinations, found to conſiſt of Salt, Sulphur (each of which is impregnated with ſome Spirits) and much Earth. Which being now diſſociated from the pureſt Spirits, either mutually cohere, coagulate, and affix themſelves to the Sides of the Veſſels, in form of a ſtony Cruſt, which is call'd *Tartar* and *Argol*, or ſink to the Bottom in a muddy Subſtance, like the Grounds of Ale or Beer, which is call'd the *Lees* of *Wine*: And this is the Proceſs of Nature in the Clarification of all Wines, by an orderly Fermentation.

As for the principal *Agent* or *efficient Cauſe* of this Operation, it ſeems to be no other but the *Spirit* of the *Wine* itſelf: Which, according to the Mobility of its Nature, ſeeking after Liberty, reſtleſly moving every way in the Maſs of the Liquor, thereby diſſolves that common Tye of Mixture, whereby all the heterogeneous Parts thereof were combined and blended together; and having gotten itſelf free, at length abandons them to the Tendency of their Gravity, and other Properties. Which they ſoon obeying, each Kind conſorts with their like, and betaking themſelves to their ſeveral Places or Regions, leave the Liquor to the Poſſeſſion and Government of its nobleſt Principle the Spirit. For this Spirit, as it is the Life of the *Wine*, ſo doubtleſs it is alſo the Cauſe of its Purity and Vigour, in which the Perfection of that Life ſeems to conſiſt.

From the *natural* Fermentation of *Wines*, we paſs to the *accidental*; from their State of *Soundneſs*, to that of their *Sickneſs*, which is the ſecond general Head.

We have the Teſtimony of Experience, that frequently even thoſe *Wines* that are good and generous are invaded by unnatural and ſickly Commotions, or (as the Wine-coopers call them) *Workings*; during which they are turbulent in Motion, thick of Conſiſtence, unſavoury in Taſte, unwholſome in Uſe; and after which they undergo ſundry Alterations for the worſe.

The *Cauſes* of this may be either *Internal* or *External*.

Among the *Internal*, the chief Place may be aſſign'd to the exceſſive Quantity of Tartar, or of Lees, which contain much Salt and Sulphur, and continually ſend forth into the Liquor abundance of quick and active Particles, that like *Stum*, or other adventitious Ferment, put it into a freſh Tumult or Confuſion, which if not in Time allay'd, the *Wine* either grows rank or pricking, or elſe turns ſour, by reaſon that the Sulphur being too much exalted above the reſt of the Elements or Ingredients, predominates over the pure Spirits, and infects the whole Maſs of Liquor with *Sharpneſs* or *Acidity*: Or elſe it comes to paſs, that the Spirits being ſpent and flown away in the Commotion, and the Salt diſſolved and ſet afloat, obtains the Maſtery over the other ſimilar Parts, and introduceth *Rankneſs* or *Ropineſs*.

Nay, if thoſe Commotions chance to be ſuppreſs'd, before the *Wine* is thereby much depraved; yet do they always leave ſuch ill Impreſſions, as, more or leſs, alienate *Wine* from the Goodneſs of its former State, in Colour, Conſiſtence and Taſte.

For hereby all *Wines* acquire a deeper Tincture, *i. e.* a thicker Body or Conſiſtence; *Sacks* and *White Wines* changing from a clear White to a cloudy Yellow; and *Claret* loſing its bright Red for a duskiſh Orange Colour, and ſometimes for a Tawny. In like manner they degenerate alſo in *Taſte*, and affect the Palate with Foulneſs, Roughneſs and Rancidity very unpleaſant.

Among the *External* are commonly reckon'd the too frequent or violent Motion of *Wines*, after their Settlement in their Veſſels; immoderate *Heat*, *Thunder*, or the Report of *Cannon*, and the *Admixture* of any exotick Body, which will not ſymbolize, or agree and incorporate with them, eſpecially the Fleſh of Vipers, which has been frequently obſerv'd to induce a very great *Acidity* upon even the ſweeteſt and fulleſt bodied *Malaga* and *Canary Wines*.

Yet all theſe foreign Accidents may be accounted rather *Occaſions* than *Cauſes* of the ill Events that follow upon them; becauſe theſe Events ſeem to ariſe immediately and principally from the Commotion and Diffuſion of the *ſulphureous* and *ſaline* Impurities formerly ſeparated from the Liquor, and kept in due Subjection by the genuine and benign Spirits.

This brings us, in the next place, to the third previous Thing conſiderable, *viz.* the *palling* or flatting of *Wines*, and their declining towards *Vinegar*, before they have attained to their State of Maturity and Perfection.

Of this the greateſt and neareſt Cauſe ſeems to be their *Jejuneneſs* and *Poverty* of Spirits, either Native or Adventitious.

Native, when the Grapes themſelves are of a poor and hungry Kind, or gathered unripe, or nipt by early Froſts, or half ſtarv'd in their Growth, by a dry and unkindly Seaſon, or too full of watery Parts.

Adventitious, when the Liquor, rich perhaps, and generous enough at firſt, comes afterwards to be impoveriſhed by Loſs of Spirits, either by *Oppreſſion*, or by *Exhauſtion*.

The Spirits of *Wine* may be *oppreſſed*, when the Quantity of Impurities or Dregs, with which they are combined, is ſo great, and their Crudity, Viſcoſity and Tenacity ſo ſtubborn, that they can neither overcome them, nor deliver them from their Adheſion; but are forced to yield to the Obſtinacy of the Matter on which they ſhould operate, and ſo to remain unactive and clogg'd: As may be exemplified in the coarſe *Wines* of *Moravia*, which, by reaſon of their great Auſterity and Roughneſs, ſeldom attain to a due Exaltation of their Spirits, but ſtill remain turbulent, thick, and in a State of Crudity, and therefore eaſily pall; in which reſpect they are condemned by ſome *German* Phyſicians, as bad, for generating the Scurvy, and adminiſtring Matter for the Stone and Gout, they yielding more of Tartar than other *Wines*.

The Spirits of *Wine* may be *exhauſted* or conſumed, either ſuddenly or gradually. *Suddenly*, by *Lightning*, which ſpoils *Wine*, (as may be conceived) at leaſt, not by *Congelation* or Fixation of its Spirits, for then ſuch *Wines* might be capable of being reſtor'd by ſuch Means as are apt to reinforce and volatilize the Spirits again, contrary to what hath been found by Experience, but perhaps by *Diſgregation*, and putting them to Flight, ſo as to leave the Liquor dead, pall'd, and never to be reviv'd by any Supply.

Gradually, two Ways, *viz.* by *unnatural Fermentation*; of the ill Effects of which, ſomething has been already ſaid: Or by *Heat* from without; of which, we have an Inſtance in the making of Vinegar; which commonly is done by ſetting the Veſſels of *Wine* againſt the hot Sun; which, beating upon the Maſs of Liquor, and rarefying the finer Parts thereof, gives Wings to the fugitive Spirits to fly away together with the purer and more volatile Sulphur, leaving the Remainder to the Dominion of the Salt, which ſoon debaſeth and infecteth it with Sourneſs.

This being the common Manner of turning *Wine* into Vinegar, in all Ages and all Countries, it may be doubted whether Spirit of *Wine* may be drawn out of Vinegar, notwithſtanding it hath been delivered as practicable by *Sennertus* himſelf.

The *Times of the Year* when *Wines* are obſerv'd to be moſt prone to Ferment and Fret, and then to grow *Qually*, (as it is call'd) that is, Turbulent and Foul, are *Midſummer* and *Allhallontide*, when our Vintners are wont to rack them from their groſs Lees, eſpecially *Rheniſh*, which commonly grows ſick in *June*, if not rack'd; and they chuſe to do it in the Wane of the Moon, and fair Weather, the Wind being Northerly.

Having thus ſuccinctly recounted the moſt remarkable Diſtempers of *Wines*, gueſs'd at their reſpective Cauſes, and touch'd upon the Times, it is proper to proceed to their uſual Remedies; ſuch, at leaſt, as may be collected from *Wine-Coopers* and *Vintners*, which is the fourth and laſt Part propoſed to be treated of.

To begin therefore with ſome of the *Artifices* uſed to *Wines* when yet in *Muſt*; it is obſervable, that tho' to raiſing a Fermentation in them at that Time, there is not ſo much need of any additional Ferment, as there is in the Wort of *Ale*, *Beer*, *Hydromel*, *Metheglin*, and other Sorts of Drinks, familiar to us in *England*, becauſe the Juice of the Grape is repleniſhed with generous Spirits, ſufficient of themſelves to begin that Work; yet it is uſual in ſome Countries to put quick *Lime* either upon the *Grapes*, when they are preſſing, or into the *Muſt*; to the end, that by the Force and Quickneſs of its ſaline and firy Particles, the Liquor may be both accelerated and aſſiſted in working.

For the ſame Reaſon, perhaps, it is, that the *Spaniards* mix with their *Wines*, while they are yet flowing from the Preſs, a certain thing they call *Gieſſo*, which probably is a kind of *Gypſum* or Plaiſter, whereby the *Wines* are made more durable, of a paler Colour, and pleaſanter Taſte: Others put into the Cask Shavings of *Fur*, *Oak*, or *Beech*, for the ſame Purpoſe; and others *Vinegar*.

Again, tho' the firſt Fermentation ſucceeds generally well, ſo that the whole Maſs of Liquor is thereby deliver'd from the groſs Lee; yet ſometimes it happens, either thro' Scarcity of Spirits at firſt, or thro' immoderate Cold, that ſome Part of thoſe Impurities remain confuſed and floating therein.

Now, in this Caſe, *Wine-Coopers* put into the *Wine* certain Things to haſten and help its *Clarification*; ſuch as, being of groſs and viſcous Parts, may adhere to the floating *Lee*, and ſinking, carry it with them to the Bottom; of which Sort are, Iſinglaſs and the Whites of Eggs: Or ſuch, as meeting with the groſſer and earthy Particles of the *Lee*, both diſſociate and ſink them by their Gravity; of which Kind are the Powders of *Alabaſter*, *Calcin'd Flints*, *White Marble*, *Roch Allom*, &c.

The Clarification of *Hippocras* is uſually expedited by putting into it new Milk; which, after a ſhort Space of Time, ſeparates and ſinks of itſelf, carrying with it the Powders of the Species, and groſſer Parts of the *Wine*, after the manner of Things that clarify Liquors by way of Adheſion.

The *Grecians* at this Day, have a peculiar way of ſpurring Nature, in Fining and Ripening their ſtrongeſt and moſt generous *Wines*; and this is done by adding to them, when they begin to work, a proportionate Quantity of Sulphur and Allom; not (as it is very probable) to prevent their fuming up to the Head, and inebriating according to the Conjecture of that great Man the Lord *St. Albans*; for notwithſtanding this Mixture, they cauſe Drukenneſs as ſoon, if not ſooner, than other *Wines*; nor are Men intoxicated by the Vapours of *Wine* flying up immediately from the Stomach into the Brain, but only to excite and promote Fermentation, and haſten their Clarification that enſues thereupon; the Sulphur perhaps helping to attenuate and divide thoſe groſs and viſcid Parts, wherewith *Greek Wine* abounds; and the Allom conducing to the ſpeedier Precipitation of them afterwards. And a learned Traveller relates, that ſome Merchants put into every Pipe of their *Greek Wine*, a Gill, or thereabouts, of the Chymical Oil of Sulphur, in order to preſerve it the longer clear and ſound.

Which tho' it is very probable, becauſe the Sulphur is known to reſiſt Putrefaction in Liquors, yet one would decline the Uſe of *Wines* ſo preſerv'd, unleſs in Time of Peſtilential Infection.

But of all Ways of the haſtening the Clarification and Ripening *Wine*, none ſeems to be more eaſy, or leſs noxious, than that borrowed from one of the Ancients by the Lord Chancellor *Bacon*, which is by putting the *Wine* into Veſſels well ſtopped, and letting it down into the Sea.

But how ſhall we reconcile this Experiment to that common Practice of both the Ancients and Moderns, of keeping *Wine* in the *Muſt* a whole Year about, only by ſinking the Caſk for thirty or forty Days in a Well or deep River?

That this Practice was very ancient, is manifeſt from that Diſcourſe of *Plutarch*, *Quæſt. Natur.* 27. about the Efficacy of Cold upon *Muſt*; whereof he gives this Reaſon, That Cold, not ſuffering the *Muſt* to ferment, by ſuppreſſing the Activity of the Spirits therein contained, conſerveth the Sweetneſs thereof a long Time. Which is not improbable, becauſe Experience teaches, that ſuch who make their Vintage in a rainy Seaſon, cannot get their *Muſt* to ferment well in a Vault, unleſs they cauſe great Fires to be made near the Caſks; the Rain mixed with the *Muſt*, together with the ambient Cold, hindering the Motion of Fermentation, which ariſes chiefly from Heat.

That the ſame is frequent at this Day alſo, may be collected from what Mr. *Boyle* has obſerv'd in his *Hiſtory of Cold*, on the Relation of a *Frenchman*, *viz.* that the way to keep *Wine* long in the *Muſt*, (in which the Sweetneſs makes many to deſire it) is to tun it up immediately from the Preſs; and, before it begins to work, to let down the Veſſels, cloſely and firmly ſtopped, into a Well or deep River, there to remain for ſix or eight Weeks; during which Time the Liquor will be ſo confirm'd in its State of Crudity, as to retain the ſame, together with its Sweetneſs, for many Months after, without any ſenſible Fermentation.

But it may be objected, How can theſe two ſo different Effects, the *Clarification of new Wine*, and the *Conſervation of Wine in the Muſt*, be deriv'd from one and the ſame Cauſe, the *Cold* of the Water?

But this may be conceived without much Difficulty; for it ſeems not unreaſonable, that the ſame Cold which hinders *Muſt* from fermenting, ſhould yet accelerate and promote the Clarification of *Wine* after Fermentation: In the *Firſt*, by giving a Check to the Spirit, before it begins to move and act upon the crude Maſs of Liquor, ſo that it cannot in a long Time after recover Strength enough to work: In the *Latter*, by keeping in the pure and genuine Spirit, otherwiſe apt to exhale; and rendering the flying *Lee* more prone to ſubſide, and ſo making the *Wine* much ſooner clear, fine, and potable. Thus much concerning the *Helps* of *New Wine*.

The general and principal *Remedy* for the *preternatural* or ſickly Commotions incident to *Wines* after their firſt Clarification, and tending to their Impoveriſhment or Decay, is *Racking*, *i.e.* drawing them from their Lees into freſh Veſſels.

Which yet being ſometimes inſufficient to preſerve them, *Vintners* find it neceſſary to pour into them a large Quantity of new Milk, as well to blunt the Sharpneſs of the ſulphureous Parts now ſet afloat and exalted, as to precipitate them, and other Impurities, to the Bottom, by Adheſion.

But taught by Experience, that by this means the genuine Spirits of the *Wine* alſo are much flatted and impaired; (for the *Lee*, tho' it makes the Liquor turbid, doth yet keep the *Wine* in Heart, and conduce to its Duration) therefore leſt ſuch *Wines* ſhould pall and die upon their Hands, as of Neceſſity they muſt, they draw them for Sale as faſt as they can vend them.

For the ſame Diſeaſe they have divers other Remedies, particularly accommodated to the Nature of the *Wine* that needs them: To inſtance in a few;

For *Spaniſh Wines* diſturbed by a *flying Lee*, they have this Receipt: Make a *Parell* (as they call it) of the Whites of Eggs, Bay-Salt, Milk, and Conduit Water; beat them well together in a convenient Veſſel, then pour them into the Pipe of *Wine*, (having firſt drawn out a Gallon or two to make room) and blow off the Froth very clean: Hereby the Tumult will, in two or three Days, be recompos'd, the Liquor refin'd, and the *Wine* drink pleaſantly, but will not continue to do ſo long; and therefore they adviſe to rack it from the Milky Bottom, after a Week's Settlement, leſt otherwiſe it ſhould drink foul, and change Colour.

If *Sacks* or *Canary Wines* chance to boil over, draw off four or five Gallons; then putting into the *Wine* two Gallons of Milk, from which the Cream hath been ſkimm'd, beat them till they be thoroughly mix'd together, and add a Penny-worth of *Roch Allom*, dry'd in a Fire-ſhovel, and powder'd, and as much of *white Starch*; after this take the Whites of eight or ten Eggs, a Handful of Bay-Salt, and having beaten them together in a Tray, put them alſo into the *Wine*, filling up the Pipe again, and letting the *Wine* ſtand two or three Days, in which Time the *Wine* will recover to be fine and bright to the Eye, and quick to the Taſte; but you muſt be ſure to draw it off that Bottom ſoon, and ſpend it as faſt as you can.

For *Claret*, in like manner diſtemper'd with a *flying Lee*, they make uſe of this Artifice.

They take two Pounds of the Powder of Pebble-ſtones, baked in an Oven, the Whites of ten or twelve Eggs, a Handful of Bay-ſalt; and having beaten them well together, in two Gallons of the *Wine*, they mix them with that in the Caſk, and after two or three Days draw off the *Wine* from the Bottom.

The ſame *Parell* ſerves alſo for *White Wines* upon the Fret, by the Turbulency and Riſing of their *Lee*.

To cure *Rheniſh* of its Fretting, (to which it is moſt prone a little after *Midſummer*, as was before obſerv'd) they ſeldom uſe any other Art but giving it Vent, and covering the Oaken Bung with a Tile or Slate, from which they carefully wipe off the Filth purg'd from the *Wine* by Exhalation; and after the Commotion is by this means compos'd, and much of the fretting Matter caſt forth, they let it remain quiet for a Fortnight, or there-abouts, and then rack it into a freſh Caſk, newly fum'd with a ſulphurated Match.

As for the various Accidents that frequently enſue and vitiate *Wine*, (after thoſe before-mentioned Reboilings, notwithſtanding their Suppreſſion before they were incurable;) you may remember they have all been referr'd to ſuch as alter and deprave *Wines*, either in Colour or Conſiſtence, or Taſte or Smell. Now for each of theſe Maladies our *Vintners* are provided of a Cure.

To reſtore *Spaniſh* and *Auſtrian Wines* grown yellow or browniſh, they add to them ſometimes *Milk* alone, and ſometimes *Milk* and *Iſinglaſs* well diſſolv'd therein; ſometimes *Milk* and white *Starch*; by which they force the exalted Sulphur to ſeparate from the Liquor, and ſink to the Bottom; ſo reducing the *Wine* to its former Clearneſs and Whiteneſs.

The ſame Effect they produce with a Compoſition of *Fleur-de-Lys* Roots and *Salt Petre*, of each four or five Ounces, the Whites of eight or ten Eggs, and a competent Quantity of common Salt, mix'd and beaten in the *Wine*.

To amend *Claret* decay'd in Colour, firſt they rack it upon a freſh Lee, either of *Alicant* or red *Bourdeaux Wine*; then they take three Pounds of *Turnſole*, and ſteep it all Night in two or three Gallons of the ſame *Wine*; and having ſtrained the Infuſion through a Bag, they pour the Tincture into the Hogſhead, (ſometimes they ſuffer it firſt to fine itſelf in a Rundlet) and then cover the Bung-hole with a Tile, and ſo let it ſtand for two or three Days, in which Time the *Wine* uſually becomes well-coloured and bright.

Some fuſe only the Tincture of *Turnſole*.

Others take half a Buſhel of full ripe *Elder-Berries*, pick them from their Stalks, bruiſe them, and put the ſtrained Juice into a Hogſhead of diſcoloured Claret, and ſo make it drink brisk, and appear bright.

Others, if the *Claret* be otherwiſe ſound, and the Lee good, over-draw three or four Gallons; then repleniſh the Veſſel with as much good *Red Wine*, and roll it upon its Bed, leaving it reverſed all Night; and then next Morning they turn it again, ſo as the Bung-hole may be uppermoſt, which ſtopt, they leave the *Wine* to fine.

But in all theſe Caſes they obſerve to ſet ſuch newly recovered *Wines* abroach the very next Day after they are fined, and to draw them for Sale ſpeedily.

To correct *Wines* faulty in *Conſiſtence*, *i. e.* ſuch as are lumpiſh, foul, or ropy.

They generally make uſe of the Powders of *Burnt Allom*, *Lime*, *Chalk*, *Plaſter*, *Spaniſh white*, *calcin'd Marble*, *Bay-Salt*, and other the like Bodies, which cauſe a Precipitation of the groſs and viſcid Parts of the *Wine* then afloat: as for Example;

For *Attenuation* of *Spaniſh Wines* that are foul and lumpiſh, having firſt rack'd them into a newly ſcented Cask, they make a *Parell* of Burnt Allom, Bay Salt, and Conduit Water; then they add to theſe a Quart of *Bean Flower* or *Powder of Rice*; (and if the *Wine* be always brown and dusky, *Milk*, otherwiſe not) and beating all theſe well together with the *Wine*, blow off the Froth, and cover the Bung with a clean Tile or Stone. Laſtly they again rack the *Wine* after a few Days, and put it into a Cask well ſcented.

The Manner of ſcenting Casks is as follows:

They take four Ounces of *Brimſtone*, one Ounce of *Burnt Allom*, two Ounces of *Aqua Vitæ*; theſe they put together in an earthen Pan or Pipkin, and hold them over a Chafing-diſh of glowing Coals, till the Brimſtone is melted and runs, then they dip therein a little Piece of new Canvas, and inſtantly ſprinkle thereon the Powders of *Nutmegs*, *Cloves*, *Coriander* and *Aniſe* Seeds. This Canvas they fire, and let it burn out in the Bung-hole, ſo as the Fume may be received into the Veſſel; and this is ſaid to be the beſt Scent for all *Wines*.

To prevent the Foulneſs and Ropineſs of *Wines*, the *Old Romans* uſed to mix *Sea-water* with their *Muſt*.

To cure the *Ropineſs* of *Claret*, the Vintners, as well *French* as *Engliſh*, have many Remedies; of which theſe that follow are the moſt uſual.

Firſt, they give the *Wine* a *Parell*, then draw it from the *Lee*, after the Clarification by that *Parell*; this done, they infuſe two Pounds of *Turnſole* in good Sack all Night, and the next Day putting the ſtrained Infuſion into a Hogſhead of *Wine* with a Spring Funnel, leave it to fine, and after draw it for excellent *Wine*.

Another is this: They make a *Lee* of the Aſhes of Vine-branches, or of Oaken-leaves, and pour it into the Wine hot, and after ſtirring, leave it to ſettle. The Quantity of a Quart of *Lee* to a Pipe of *Wine*.

A third is only *Spirit of Wine*; which, put into a muddy Claret, ſerves to the Refining it effectually and ſpeedily; the Proportion being a Pint of Spirit to a Hogſhead; but this is not to be uſed in ſharp and eager *Wines*.

When *White-wines* grow foul and tawny, they only rack them on a freſh Lee, and give them Time to fine.

For the mending of *Wines* that offend in *Taſte*, Vintners have few other Correctives, but what conduce to *Clarification*; nor do they indeed much need Variety in the Caſe, ſeeing all Unſavourineſs of *Wines* whatever proceeds from their Impurities ſet afloat, and the Dominion of others, their ſulphureous or ſaline Parts over the finer and ſweeter, which Cauſes are remov'd chiefly by *Precipitation*.

For all *Clarification* of Liquors may be referr'd to one of theſe three Cauſes;

1. *Separation* of the groſſer Parts of the Liquor from the finer.

2. The equal *Diſtribution* of the *Spirits* of the Liquor, which always renders Bodies clear and untroubled.

3. The *refining* of the *Spirit* itſelf.

And the two latter are Conſequents of the firſt, which is effected chiefly by Precipitation, the Inſtruments whereof are Weight and Viſcoſity of the Body mix'd with it, the one cauſing it to cleave to the groſs Parts of the Liquor flying up and down in it, the other ſinking them to the Bottom.

But this being more than Vintners commonly underſtand, they reſt not in Clarification alone, having found out certain Specificks, as it were, to palliate the ſeveral Vices of *Wines* of all ſorts, which make them diſguſtful. Of theſe I ſhall recite two or three of the greateſt Uſe and Eſteem among them.

To correct *Rankneſs*, *Eagerneſs*, and *Pricking* of *Sacks*, and other ſweet *Wines*, they take twenty or thirty of the whiteſt Lime-ſtones, and ſlack them in a Gallon of the *Wine*; then they add ſome more *Wine*, and ſtir them together in a half Tub, with a Parelling-ſtaff; next they pour this Mixture into the Hogſhead, and having again uſed the Parelling Inſtrument, leave the *Wine* to ſettle and then rack it.

This *Wine* may probably be no ill Drink for groſs Bodies and Rheumatick Pains, but injurious to Good-Fellows of a hot and dry Conſtitution, and meagre Habits.

Againſt the *Pricking* of *French Wines*, they preſcribe this eaſy and cheap Compoſition: Take of the Powder of *Flanders* Tile one Pound, of Roch Allom half a Pound, mix them, and beat them well, with a convenient Quantity of *Wine*, then put them into the Hogſhead, as the former.

When the *Rheniſh Wines* prick, they firſt rack them off into a clean and ſtrongly-ſcented Cask, or Vat; then they add to the *Wine* eight or ten Gallons of clarified Honey, with a Gallon or two of Skim-milk; and beating all together, leave them to ſettle.

Sometimes it happens that *Claret* loſes much of its Briskneſs and Piquantneſs; and in ſuch Caſe they rack it upon a good Lee of *Red-wine*, and put into it a Gallon of Sloes or Bullace, which after a little Fermentation and Reſt, makes the *Wine* drink brisk and rough.

To meliorate the Taſte of *hungry* and *too eager White-wines*; they draw off three or four Gallons of it, and infuſing therein as many Pounds of *Malaga* Raiſins ſton'd, and bruis'd in a Stone Mortar, till the *Wine* has ſufficiently imbib'd their Sweetneſs and Tincture, (which it will do in a Day's Time) they run it through an Hippocras-bag, then put it into a freſh Cask well ſcented, together with the whole Remainder of the *Wine* in the Hogſhead, and ſo leave it to fine.

To help *ſtinking Wines*, the general Remedy is racking them from their old and corrupt Lee: Beſides which, ſome give them a fragrant Smell or Flavour, by hanging in them little Bags of Spices, ſuch as Ginger, Zadoary, Cloves, Cinamon, Orras Roots, Cubebs, Grains of Paradiſe, Spikenard, and other Aromaticks.

Others boil ſome of theſe Spices in a Pottle of good ſound Wine of the ſame Sort, and tun up the Decoction hot.

Others correct the ill Savour of rank-leed *French-Wine* with only a few Cinamon Canes hung in them.

Others again, for the ſame Purpoſe, uſe Elder Flowers and Tops of Lavender.

Having thus run over the *Vintner's Diſpenſatory*, and deſcribed many of their principal Receipts or Secrets, for the Cure of the acute Diſeaſes of *Wine*, we ſhall come to the fourth Head, which contains Medicaments proper for their Chronick Diſtempers, *viz. Loſs of Spirits*, and *Decay of Strength*.

Concerning theſe, therefore, it is obſervable, that as when *Wines* are in preternatural Commotions, from an Exceſs and Predomination of their ſulphureous Parts, the Grand Medicine is to rack them from their Lees; ſo on the contrary, when they decline and tend towards palling, by reaſon of the Scarcity of their Spirits and Sulphur; the moſt effectual Preſervative is to rack them upon other Lees, richer and ſtronger than their own; that being from thence ſupply'd with new Spirits, they may acquire ſomewhat more of Vigour and Quickneſs.

I ſay Preſervative, becauſe there is, in truth, no reſtoring of *Wines* after they are perfectly pall'd and dead; for nothing that is paſt Perfection, and hath run its natural Race once, can receive much Amendment.

But beſides reinforcing of impoveriſh'd *Wines*, by new and more generous Lees, there are ſundry Confections, by which alſo, as by Cordials, the languiſhing Spirits of many of them may be ſuſtain'd, and to ſome Degree recruited; of which the following are Examples.

When *Sacks* begin to languiſh, (which doth not often happen, eſpecially in this City, where it is drank in Plenty) they refreſh them with a cordial Syrup, made of moſt generous *Wine*, Sugar and Spices.

For *Rheniſh* and *White-wines*, a ſimple Decoction of Raiſins of the Sun, and a ſtrong-ſcented Cask, uſually ſerve the Turn.

For *Claret* inclining to a Conſumption, they preſcribe a new and richer Lee, and the Shavings of Fir-wood; that the Spirit being recruited by the additional Lee, may be kept from exhaling by the unctuous Spirit of the Turpentine.

This Artifice is uſed in *Paris* in the moſt delicate and thin-bodied *Wines* of *France*, and is very probably the Cauſe of of that exceeding Dulneſs and Pain of the Head, which always attends Debauches with ſuch *Wines*.

Nor is it a modern Invention, but well known to, and frequently uſed by the *Romans*, in the Time of their greateſt Wealth and Luxury: For *Pliny* (*Hiſt. Nat. lib.* 14. *cap.* 2.) takes ſingular Notice of the Cuſtom of the *Italian* Vintners, in mixing with their *Wines* Turpentine of ſeveral Sorts.

The *Grecians* long before had their *Vina Picata* and *Reſinata*, as is evident by the Commendation of ſuch *Wines* by *Plutarch*, and the Preſcription of them to Women, in ſome Caſes, by *Hippocrates*; and they were ſo much delighted with their *Vinum Piſcites*, that they conſecrated the Pitch-tree to *Bacchus*. But I ſhall next take ſome Notice of the more diſingenuous Practices of Vintners in the Tranſmutation or Sophiſtication of *Wines*, which they call *Trickings* or *Compaſſings*.

They transform poor *Rochel* and *Coniac White-wines* into *Rheniſh*; *Rheniſh* into *Sack*; the Lags of *Sack* and *Malmſeys* into *Muſcadels*.

They counterfeit *Raſpie Wine* with Fleur-de-Lys Roots; *Verdea* with Decoctions of Raiſins: They ſell decay'd *Xeres*, vulgarly *Sherry*, for *Luſenna Wine*: In all theſe Impoſtures deluding the Palate ſo neatly, that few are able to diſcern the Fraud; and keeping theſe *Arcana* ſo cloſe, that few can come to the Knowledge of them.

As for their Metamorphoſis of *White* into *Claret*, by daſhing it with *Red*, nothing is more commonly either done or known.

For their Converſion of *White* into *Rheniſh*, they have ſeveral Artifices to effect it, among which this is the moſt uſual.

They take a Hogſhead of *Rochel*, or *Coniac*, or *Nantz White-wine*, rack it into a freſh Cask ſtrongly ſcented; then give the *White* Parell: Put into it eight or ten Gallons of clarify'd Honey, or forty Pounds of coarſe Sugar, and beating it well, leave it to clarify.

To give this Mixture the delicate Flavour, they ſometimes add a Decoction of Clary-Seeds, or of *Galitricum*; of which Drugs there is an incredible Quantity uſed yearly at *Dort*, where the Stable of *Rheniſh Wines* was; and this is that Drink with which the *Engliſh* Ladies were wont to be ſo delighted, under the ſpecious Name of *Rheniſh in the Muſt*.

The Manner of making *Adulterate Baſtard* is thus:

Take four Gallons of *White-wine*, three Gallons of old *Canary*, five Pounds of *Baſtard Syrup*, beat them well together, put them into a clean Rundlet well ſcented, and give them Time to fine.

Sack is made of *Rheniſh*, either by ſtrong Decoctions of *Malaga* Raiſins, or by a Syrup of Sack, Sugar, and Spices.

Muſcadel is ſophiſticated with the Lags of *Sack* or *Malmſey*, thus;

They diſſolve it in a convenient Quantity of *Roſe-water*, of *Musk* two Ounces, of *Calamus Aromaticus* powdered one Ounce, of *Coriander* beaten half an Ounce; and while this Infuſion is yet warm, they put it into a Rundlet of old *Sack*, or *Malmſey*; and this they call a *Flavour for Muſcadel*.

There are many other Ways of adulterating *Wines* in this City, but becauſe they all tend to the above-mentioned Alterations, and are not ſo general, I ſhall paſs them over, and mention the Obſervations of a certain curious Author on this Subject.

The Myſtery of *Wines* conſiſts in the making and meliorating of Natural *Wines*.

Melioration is either of ſound or vicious *Wines*. Sound *Wines* are better'd,

1. By Preſerving.
2. By timely Fining.
3. By mending Colour, Smell, or Taſte.

1. To preſerve *Wines*, Care muſt be taken, that after the Preſſing they may ferment well; for without good Fermentation they become *qually*, *i. e.* cloudy, thick, and dusky, and will never fine of themſelves, as other *Wines* do; and when they are fined by Art, they muſt be ſpeedily ſpent, or

elſe they will become *qually* again, and then will not be recoverable by any Art.

The principal Impediments of the Fermentation of *Wines* after preſſing the Grapes, are either their Unripeneſs, when gather'd, or the Mixture of Rain-water with them, as in wet Vintages, or elſe thro' the Addition of Water to rich Grapes. The *Spaniards* uſe *Gieſſe*, to help the Fermentation of their *Canary Wines*.

To preſerve *Spaniſh Wines*, and chiefly *Canary*, and thereof principally that which is *Razie*, which will not keep ſo long, they make a Layer of Grapes and *Gieſſe*, whereby it acquires a better Durance and Taſte, and a whiter Colour, moſt pleaſing to the *Engliſh*.

Razie Wine, is ſo call'd, becauſe it comes from *Rheniſh* Vine-Cuttings, ſometimes renew'd. The Grapes of this Vine are fleſhy, yielding but a little Juice.

The *French* and *Rheniſh Wines* are chiefly and commonly preſerv'd by the *Match*, thus uſed at *Dort* in *Holland*.

They take twenty or thirty Pounds of Brimſtone, rack into it melted, as Cloves, Cinamon, Mace, Ginger, and Coriander-Seeds; and ſome, to ſave Charges, uſe the Reliques of the Hippocras-bag; and having mix'd theſe well with the Brimſtone, they draw thro' this Mixture, long, ſquare, narrow Pieces of Canvas; which Pieces thus drawn through the ſaid Mixture, they light, and put into the Veſſel at the Bung-hole, and preſently ſtop it cloſe: Great Care is to be had in proportioning the Brimſtone to the Quantity and Quality of the *Wine*, for too much makes it rough; this Smoaking keeps the *Wine* long white, and good and gives it a pleaſant Taſte.

There is another Way for *French* and *Rheniſh Wines*, *viz.* Firing it. 'Tis done in a Stove, or elſe a good Fire made round about the Veſſel, which will gape wide, yet the *Wine* runs not out; twill boil, and afterwards may ſoon be rack'd.

Secondly, for timely Fining of *Wines*. All *Wines* in the *Muſt* are more opacous and cloudy. Good *Wine* ſoon fines, and the groſs Lees ſettle quickly; and alſo the flying Lee in Time. When the groſſer Lees are ſettled, they draw off the *Wine*; this is call'd *Racking*. The uſual Times for Racking are *Midſummer* and *Alhallontide*.

The Practice of the *Dutch* and *Engliſh* to rid the *Wine* of the flying Lees ſpeedily, and ſerves moſt for *French* and *Spaniſh Wine*, is thus perform'd:

Take of Iſinglaſs half a Pound, ſteep it in half a Pint of the hardeſt *French Wine* that can be got, ſo that the *Wine* may fully cover it; let them ſtand twenty-four Hours, then pull and beat the Iſinglaſs to pieces, and add more *Wines*; four times a Day ſqueeze it to Jelly, and as it thickens, add more *Wine*. When it is full and perfectly jellied, take a Pint or Quart to a Hogſhead, and ſo proportionably: then over-draw three or four Gallons of that *Wine* you intend to fine, which mix well with the ſaid Quantity of Jelly, then put this Mixture to the Piece of *Wine*, and beat it with a Staff, and fill it top-full.

Note, That *French Wines* muſt be bung'd up very cloſe, but not the *Spaniſh*; and that Iſinglaſs raiſes the Lees to the Top of ſtrong *Wines*, but in weaker, precipitates them to the Bottom.

They mend the Colour of ſound *Clarets* by adding thereto *Red-wine*, *Tent*, or *Alicant*, or by an Infuſion of *Turnſole*, made in two or three Gallons of *Wine*, and then putting it into the Veſſel, to be then (being well ſtopp'd) rolled for a Quarter of an Hour.

This Infuſion is ſometimes twice or three times repeated, according as more Colour is to be added to the *Wine*; about three Hours Infuſion of the *Turnſole* is ſufficient, but then it muſt be rubb'd and wring'd.

Claret over red is amended with the Addition of *White-wines*.

White-wines coming over ſound, but brown, are thus remedied:

Take of Alabaſter Powder, over-draw the Hogſhead three or four Gallons, then put this Powder into the Bung, and ſtir and beat it with a Staff, and fill it top-full. The more the *Wine* is ſtirr'd, the finer it will come upon the Lee, that is, the finer it will be.

To colour *Sack* white; take of white Starch two Pounds, of Milk two Gallons, boil them together two Hours; when cold beat them well with a Handful of white Salt, and then put them into a clean, but ſweet Butt, beating them with a Staff, and the *Wine* will be pure and white.

One Pound of the before-mentioned Jelly of Iſinglaſs takes away the Brownneſs of *French* and *Spaniſh Wines*, mix'd with two or three Gallons of *Wine*; according as it is brown and ſtrong, more or leſs to be uſed. Then over-draw the Piece of *Wine* about eight Gallons, and uſe the Rod; then fill the Veſſel full, and in a Day or two it will fine and be white, and mend if *qually*.

The firſt Buds of *Ribes nigra*, i. e. *Black Currants*, infuſed in *Wines*, eſpecially *Rheniſh*, make it diuretick, and more fragrant in Smell and Taſte, and ſo doth *Clary*.

The Inconvenience is, that the *Wine* becomes more heady; a Remedy for which is Elder Flowers added to the Clary, which alſo betters the Fragrancy thereof, as it is maniſeſt in Elder Vinegar. But theſe Flowers are apt to make the *Wine* ropy.

To help brown *Malaga's*, and *Spaniſh Wines*; take Powder of Orras Roots and Salt-petre, of each four Ounces, the Whites of eight Eggs, to which add as much Salt as will make a Brine; put this Mixture into *Wine*, and mix them with a Staff.

To meliorate muddy and tawny *Clarets*; take of Rain-water two Pints, the Yolks of eight Eggs, Salt an Handful, beat them well, let them ſtand ſix Hours before you put them into the Cask, then uſe the Rod, and in three Days it will come to itſelf.

To amend the Taſte and Smell of *Malaga Wine*; take of the beſt Almonds four Pounds, make an Emulſion of them with a ſufficient Quantity of the *Wine* to be cured; then take the Whites and Yolks of twelve Eggs, beat them together with an Handful of Salt, put them into the Pipe, uſing the Rod.

To amend the Smell and Taſte of *French* and *Rheniſh Wines* which are foul; take one Pound of Honey, an Handful of Elder Flowers, an Ounce of Orras Powder, one Nutmeg, a few Cloves to an Auln of the *Wine*, boil them in a ſufficient Quantity of the *Wine* to be cured, to the Conſumption of half, and when it is cold, ſtrain it, and uſe it with the Rod: Some add a little Salt. If the *Wine* be ſweet enough, add one Pound of the Spirits of *Wine* to a Hogſhead, and give the Cask a ſtrong Scent. Spirit of *Wine* makes any *Wine* briſk, and fines it, without the former Mixture.

A Lee of the Aſhes of Vine-Branches, *viz.* a Quart to a Pipe, being beaten into *Wine*, cures the Ropineſs of it, and ſo infallibly doth a Lee of Oaken Aſhes.

For *Spaniſh* ropy *Wine*, rack it from the Lees into a new-ſcented Cask, then take of Allum one Pound, of Orras Roots powdered, half a Pound, beat them well into the *Wine* with a Staff: Some add fine and well dried Sand, put warm to the *Wine*. If the *Wine* beſides prove brown, add three Pottles of Milk to a Pipe; *alias*, the *Spaen* cures ropy *Wine*, before it begins to fret.

Herrings Roes preſerve any Stum *Wines*.

To other *Rheniſh Wines* when fretting. It is commonly in *June*, that *Wine* begins to ferment and grow ſick, then have a ſpecial Care not to diſturb it, either by removing, filling the Veſſel, or giving it Vent; only open the Bung, which cover with a Slate, and as often as the Slate is foul, cleanſe it and the Bung from their Filth; and when the Fermentation is paſt, which you ſhall know by applying your Ear to the Veſſel, then give it Reſt ten or twelve Days, that the groſſer Lees may ſettle, then rack it into a freſh-ſcented Cask.

This Mixture meliorates vicious *Wines* both in Smell and Taſte, eſpecially *French*: take of the beſt Honey one Part, of Rain-water two Parts, and one Third of ſound old *Wine* of the ſame Kind; boil them on a gentle Fire to a third Part, ſcumming them often with a clean Scummer, (for which Purpoſe they have a Pail of fair Water ſtanding by, to rince it in) then put this Mixture hot into a Veſſel of fit Capacity, and let it ſtand unbung'd till cool: Some, to better this, put in a Bag of Spices. This Mixture is, by the *Dutch*, called *Soet*, and will ſerve alſo to fine any *Wine*, new or old.

2. It will mend the hard Taſte of *Wine*, *i. e.* putting a Gallon thereof to a Hogſhead, and uſing the Rod, and then let it reſt five or ſix Days at the leaſt; but if mild enough, add white Muſtard-ſeed bruiſed.

To mend and preſerve the Colour of *Clarets*; take red Beet-roots *q. ſ.* ſcrape them clean, and cut them into ſmall Pieces; then boil them in *q. ſ.* of the ſame *Wine*, to the Conſumption of the third Part; ſcum it well, and when cool, decant off what is clear, and uſe the Rod.

Alias; Take of *Wine* and *Honey* of each two Pounds, *Rain-water* a Pottle, twelve Beet-roots, ripe Mulberries four or five Handfuls, boil them to half, and when cool, decant, *&c.* as above.

To preſerve *Claret* racked from the Lees; take to a Tierce ten Eggs, make a ſmall Hole in the Top of the Shells, then put them into the *Wine*, and all will be conſumed.

To prevent *Souring* of *French Wines*; take Grains of Paradiſe *q. ſ.* beat them in a Pan, and hang them or put them looſe in a Veſſel. Some uſe Lavender Tops.

To help *Sour French Wine*; take of the beſt Wheat four Ounces, and having been boil'd in fair Water till it break, when cold, put it into a Vat in a Bag, and uſe the Rod.

Alias; Take five or ſix Cinamon Canes, bung them up well.

To help *Spaniſh Sour Wines*; firſt rack the *Wine* into a clean Caſk, and fill it up with two or three Gallons of Water, and add to it four Ounces of burnt Chalk, then rack it off after three or four Days, and fill it up again with Rain-water, if the firſt time doth not do it.

Some uſe Loom or Plaſtering; if theſe Ingredients make the *Wine* bitter, correct the Fault with Nutmegs and Cloves.

To help *Stinking Wines*; take Ginger half an Ounce, Zedoary two Drams, powder them, and boil them in a Pottle of good *Wine*, which put ſcalding hot into the Vat; bung it up, and let it lie: The Species of *Diambriæ* and *Diamoſcu Dulc.* do the ſame; and ſo Nutmegs and Cloves, which alſo give a kind of *Racineſs*.

To help *Wine* that hath an ill Savour from the Lees; firſt rack it into a clean Caſk, and if *Red* or *Claret*, give it a freſh Lee of the ſame Kind; then take of *Cloves*, *Cinamon*, *Ginger* two Ounces, *Orras* Root four Ounces; powder them groſly, hang them in a Bag, and taſte the *Wine* once in three Days, and when it is amended, take out the Bag.

Some do it thus: Take of *Cloves* half a Pound, *Maſtick*, *Ginger*, *Cubebs*, of each two Ounces, *Spica Nardi* three Drams, *Orras* Root half a Pound; make thereof a fine Powder, which put looſe into the Vat, and uſe the Rod, and make a good Fire before it.

Firing of *Wines* in *Germany* is thus performed: They have in ſome Vaults three or four Stoves, which they heat very hot; others make Fires almoſt before every Vat; by this Means the Muſt fermenteth with that Vehemency, that the *Wine* appears between the Staves; when this Ebullition, Fermentation and Working ceaſeth, they let the *Wine* ſtand ſome Days, and then rack it. This Firing is only uſed in cold Years, when the *Wine* falls out green.

Stum is nothing elſe but pure *Wine* kept from fretting by often racking, and matching it in clean Veſſels, and ſtrongly ſcented, *i. e.* new matched; by means whereof it becomes as clear, or clearer, than any other *Wine*, preſerving itſelf from both its Lees by Precipitation of them; but if thro' Neglect it once fret, it becomes good *Wine*.

The Bung of the Veſſel muſt be continually ſtopped, and the Veſſels ſtrong, leſt they break. A little *Stum* put to *Wine* decayed, makes it ferment afreſh, and gives Life and Sweetneſs to it; but offends the Head and Stomach, torments the Guts, and is apt to cauſe Looſneſſes, and ſome ſay Barrenneſs in Women.

To fine *Wine* preſently: Fill a Caſk with Shavings or Chips of Beech or Oak, (which are beſt) this is to be done with much Art, or elſe it ſeldom hits right, but laſteth long; put theſe Chips into a Caſk, which is called by the *Dutch*, *Een Spaen*, *i. e.* a Chip, into which they pour as much *Wine* as the Caſk will hold, and in twentyfour Hours the *Wine* will be fine. Or a Quart of Vinegar in three Days will fine a Hogſhead of *Wine*.

To ſet old *Wine* a fretting, being deadiſh and dull of Taſte: Take of *Stum* two Gallons to a Hogſhead, put it hot upon the *Wine*, then ſet a Pan of Fire before the Hogſhead, which will then ferment till all the Sweetneſs of the *Stum* is communicated to the *Wine*, which thereby becomes briſk and pleaſant.

Some uſe this *Stumming* at any Time; ſome in *Auguſt* only, when the *Wine* hath a Diſpoſition to fret of itſelf, more or leſs Stum to be added, as the *Wine* requires.

The beſt Time to *Rack Wine* is in the Decreaſe of the Moon, and when the *Wine* is free from fretting; the Wind being at *North-Eaſt* or *North-Weſt*, and not at *South*, the Sky ſerene, free from Thunder and Lightning.

Another *Match* for *French Clarets* and *Spaniſh Wines*: Take *Orras* Root, *Maſtick*, and *Brimſtone*, of each four Ounces; *Cloves* two Ounces; ordering it as above in Matching *Wines*; this will ſerve for all *Wines*, adding, if you pleaſe, Nutmegs, Ginger, Cinamon, and other Spices; double the Quantity of *Orras* Root is to be uſed for *Spaniſh Wines*.

To help *Malaga's* which will not fine: Take of crude Tartar powder'd, ſifted, and dried, two Pounds; mix it with the Whites of ſix Eggs; dry, powder, and ſift them again, then over-draw the Pipe as much as will ſerve to mix with this Powder, and fill the Pipe therewith, beating it with a Staff as before, and this *Wine* will be fine in ten Days.

Another ſpeedy Way to fine *French Wines*: Hang a Piece of Scent in the Caſk, and when it is burnt out, put in a Pint of the beſt Spirit of *Wine*, and ſtir it about. Some add a little Salt well dried; this fines the *Wine* in twenty-four Hours.

To keep *Muſt* a Year: take *Muſt*, put it into a Cask pitch'd within and without, half full, ſtop the Bung-hole cloſe with Mortar.

Others ſew the Cask in Skins, and ſink it for thirty Days into a Well or River; or elſe a Garland of *Polium Montanum* hung in a Veſſel; or rub the Inſide of the Veſſel with Cheeſe: All theſe preſerve *Rheniſh Muſt*.

Alum put into a Hog's Bladder, keeps *Wine* from turning flat, faint, or brown; and beaten with the Whites of Eggs, removes its Ropineſs.

Flat Wines are recover'd with Spirit of *Wine*, Raiſins, and Sugar or Melaſſes; and Sacks, by drawing them on freſh Lees.

Our *Wine*-Coopers of later Times uſe vaſt Quantities of Sugar and Melaſſes, to make them drink brisk and ſparkling, and to give them Spirits; and alſo to mend their bad Taſtes; all which Raiſins, and Cute, and Stum perform.

Country Vintners feed their fretting *Wines* with raw Beef; and in Town, their Canaries with *Malaga*, which is added more or leſs to all Canaries.

The Compoſition of *Wines* is manifold, the Vintners uſually drawing out of two or three Casks for one Pint, to accommodate it to the Palate of thoſe that drink it. Moſt of the Canary is made with *Xerez Sack*.

As for compounded *Wines*, as *Muſcadine* and *Hippocras*; the former is uſually made with thirty Gallons of *Cute*, which is *Wine* boil'd to the Conſumption of half, or the Lees and Droppings boil'd and clarified; its Flavour is made of Coriander Seeds prepared, and Shavings of Cypreſs Wood.

Some inſtead of *Cute*, make it of *Sugar*, *Melaſſes* and *Honey*, or mix them with the *Cute*.

Hippocras may be made as follows:

Take of Cardamoms, Carpobalſamum, of each half an Ounce; Coriander Seeds prepared, Nutmegs, Ginger, of each two Ounces; Cloves two Drams; bruiſe and infuſe them forty-eight Hours in Xerez and *White-wine*, of each a Gallon, often ſtirring them; then add thereto of Milk three Pints, ſtrain it thro' an Hippocras Bag, and ſweeten it with a Pound of Sugar-candy.

A certain Modern gives the following Directions for the ordering and improving of *Wines*.

When your *Wines* are preſs'd, put them into Casks that have been well cleanſed and rinced two or three Days before with Water, in which the Leaves or Flowers of Peaches have been infuſed, which gives them an agreeable Flavour.

N B. Put *White-wines* in new Casks, leſt old ones change their Colour.

If your Grapes are not *ripe enough*, or of *the laſt gathering*, or of a *ſmall Body*, about three Weeks after they are put up in Casks, *roll them* five or ſix times a Day, for four or five Days following; then two or three times a Day, for three or four Days following; once a Day, for ten Days after that; thence once in three or four Days, (and if your Grapes were gather'd very green) continue rolling them in the whole about five or ſix Weeks.

N B. This Rolling is to be perform'd diſcretionally, in proportion to the Ripeneſs or Greenneſs of the Grapes when gather'd; *viz.* If ripe, very little Rolling will ſerve, once in four or five Days for a Month is ſufficient.

This Rolling heightens the Fermentation, heats the *Wine*, cauſing it to purge and purify, and helps to ripen it better than any Method yet known. *Beſides*, this mixing it with the Lee, ſweetens and ſtrengthens it, and renders it more palatable.

When your *Wines ferment*, (which they will do in a few Days) take out the Bung of each Cask, covering it with a Cloth laid hollow over the Hole, to prevent Dirt from falling therein.

Take off the Froth, which works like Yeaſt, and put a little into thoſe Casks which are backward in fermenting, and it will greatly help their Fermentation.

It is to be obſerved, that the fineſt *Wines* ferment the ſooneſt, the reſt in proportion to their Goodneſs. The Fermentation will continue about ten or twelve Days at leaſt.

When the Fermentation is over, (which you will know by the Froth ceaſing) fill up each Cask within two Inches, and bung it up cloſe, opening at the ſame time a ſmall Vent-hole, to carry off what may be thrown up by the Fermentation's not being quite ceaſed.

Continue filling up, as before, for ten or twelve Days, till you are ſure the *Wine* has done Fermentation, leſt the

Foulneſs, which ſhould work thro' the Vent-hole, ſink down for want of Paſſage, and foul the *Wine*.

After theſe twelve Days are expired, fill the Caſk within one Inch, once in ſix Days for a Month; after which, once in fifteen Days for three Months. For tho' the Fermentation will be quite over long before this Time, yet the Caſks muſt be fill'd once a Month, as long as they are kept in the Cellar or Ware-houſe; becauſe all *Wines* will waſte in the Caſk, and if they are not kept continually fill'd up, they will grow flat and heavy.

Stop up the Vent-hole as ſoon as you are ſure the *Wines* have done working, and open them when you perceive them to work at any time. Obſervation and Diſcretion will beſt guide on theſe Occaſions.

In *Champaign* and *Burgundy*, ſuch as are curious in their *Wines* keep Warehouſes as well as Cellars, for the Advantage of keeping their *Wines* cool, into which they move them alternately twice a Year, *viz.* from *April* to *November* they keep them in their Cellars, and from *November* to *April* in Warehouſes above Ground; ſuch Warehouſes being found, by Experience, to be cooler in *Winter* than Cellars, being more expoſed to the Rigour of the Seaſon; whereas Cellars are cooleſt in *Summer*, being leſs expoſed to the Warmth of the Sun and Air.

It is a known Rule, that the cooler *Wines* are kept, the longer they will laſt good, and be more grateful to the Palate and it is beſt to keep them, as near as poſſible, in an equal Degree of Heat.

Wines kept too warm, are apt to turn ſour.

About the Middle of *December*, if your *Wines* are ſettled after working, drawing them off from the Lees for the firſt Time into freſh Caſks, cleanſed and prepared as before directed; obſerving (as before) to keep them fill'd up, and continue undiſturbed till the Middle of *February*, at which Time draw them off again as before.

Do the like at the latter End of *March*, and again in *April*, before they are laid into the Cellars to keep them cool as before directed.

Drawing off *Wines* frequently from the Lees, renders them briſk, lively, and ſparkling in the Glaſs; while the contrary produces a muddy Dreg or Sediment, makes them thick or dull, and ſometimes ropy.

To remedy which, when they draw off the *Wines* firſt, take an Ounce of fine Iſinglaſs to each fifty Gallons of *Wine*; beat it well with a Hammer; infuſe it in about a Quart of *Brandy* or *White-wine*, till it is fully diſſolved, which will be done ſooneſt over a gentle Fire, ſtrain it thro' a Sieve till it is clear from any Foulneſs, then pour it into the Bung-hole, ſtirring it well with a ſtick; but ſo as to move the Lees or Bottom as little as poſſible. This ſtirring puts the *Wine* into a Ferment, and the glutinous Parts of the Iſinglaſs ſeize all the Foulneſs, and make it ſink to the Bottom, and become fine in about ſeven Days.

When you Bottle off *Wines*, obſerve to do it in *Winter* on a froſty or dry Day; and in *Summer*, on a cool Day, hot, miſty, or rainy Weather being detrimental to them.

When your Bottles are fill'd and well cork'd, ſtrew the Floor of the Cellar or Warehouſe with Sand or Saw-duſt about three Inches thick, laying your Bottle ſlope-wiſe thereon, and not ſetting them upright, which lets in Air. It will not be amiſs to tie down the Corks, and to dip them and the Mouth of the Bottles into the Roſin and Pitch warm'd, which will prevent the Air getting in, or the *Wine* leaking out.

If the *Wine* in your Bottles ſhould prove ropy, on occaſion of the Grapes being too ripe, or any other Cauſe, move them out of the Cellars into the open Air, (into a Garret, if you have one) it will recover them quickly.

In *Champaign* they have an Invention of a Leather Pipe, which they affix to the Bung-hole of the full and empty Hogſhead; and by which means, and a Pair of Bellows contrived for the Purpoſe, they ſhift their *Wines* without diſturbing them; but our common Way of the Crane being as good, it may ſerve as well, tho' that is particularly deſcribed in the Chapter treating of *Wine-preſs* in Letter W, and alſo the Form of them is there delineated on a Copper Plate.

Theſe Rules and Inſtructions, if well obſerved, will be ſufficient for the Management of *Wines* from the Gathering the Grapes, Preſſing them, Caſking, Fining, and Preſerving the *Wine*, till it is drawn.

Red-wines prick'd or ſour may be changed to *White-wines*, and become drinkable, by the following Method practiſed by the *London* Vintners.

When *Red-wines* are prick'd or eager, take three or four Gallons of new *Milk*, let it ſtand till it creams, ſkim it clean, and ſet it again to cream, and repeat the Skimming till no more Cream will ariſe, and the Milk appear blueiſh; then take the Whites of about eighteen or twenty Eggs, beat them well, and mix them well with the Milk; then pour it into your Caſk of *eager Red-wine*, and with a Stick which reaches almoſt to the Bottom, ſtir it about as quick as you can for ſix or ſeven Minutes; then ſtop the Caſk up cloſe, and the Red Colour will all ſink to the Lees, and a clear *White-wine* will remain; which, if too weak or faint, may be helped and revived with *Aqua Vitæ*, Spirits of Wine, or other ſtrong Mixture, till it is of a Strength ſuitable to your Purpoſe, which muſt be guided by your Diſcretion and Judgment; let it ſtand ſome Time to ſettle before you draw it.

This is a common Practice at this Day, though known to few, but profeſs'd Vintners and Wine-coopers.

Having thus given an Account of the different Practices of the *Vignerons*, *Vintners*, and *Wine-coopers*, in the Management of their ſeveral *Wines*, I ſhall next offer a few Things which have occur'd to me from ſome Obſervations and Experiments, relating to the making of *Wines* in *England*.

The Grapes being ripe, ſhould be cut when they are perfectly dry, and carried into a large dry Room, where they muſt be ſpread upon Wheat-ſtraw, in ſuch a manner as not to lie upon each other; in this Place they may remain a Fortnight, three Weeks, or a Month, according as there is Conveniency, obſerving to let them have Air every Day, that the Moiſture perſpired from the Grapes may be carried off. Then, having the Preſſes and other Things in Order, you ſhould proceed in the following manner: Firſt, all the Grapes ſhould be pull'd off the Bunches, and put into Tubs, being careful to throw away ſuch as are mouldy, rotten, or not ripe, which, if mix'd with the others, will ſpoil the *Wine*; and if the Stalks of the Bunches are preſs'd with the Grapes, there will be an auſtere Juice come from them, which will render the *Wine* acid and ſharp: This, I fear, has ſpoil'd a great Quantity of *Wine* which was made in *England*, which, if otherwiſe managed, might have proved very good. For we find in *France*, and other *Wine* Countries, where Perſons are deſirous of having good *Wine*, they always pick the Grapes from off the Stalks before they are preſs'd; tho' indeed the common Vignerons, who have more regard to the Quantity than the Quality of their *Wines*, do not practiſe this. But as in *England* we labour under the Inclemency of Climate, ſo we ſhould omit nothing of Art which may be neceſſary to help the Want of Sun.

The Grapes being thus carefully pick'd off, ſhould be well preſs'd; and if it is deſign'd for *Red-wine*, the Huſks and Stones ſhould be put into the Liquor, (which muſt be put into a large Vat) where the whole ſhould ferment together five or ſix Days; after which the *Wine* ſhould be drawn off, and put into large Caſks, leaving the Bung-hole open, to give Vent to the Air which is generated by the Fermentation. But it muſt be remark'd, that after the *Wine* is preſs'd out, and put into the Vat with the Huſks, if it does not ferment in a Day or two at moſt, it will be proper to add a little Warmth to the Room by Fires, which will ſoon put it into Motion; and for want of this it often happens, where People preſs their *Wine*, and leave it to ferment in open cold Places, that the Nights being cold, check the Fermentation, and ſo cauſe the *Wine* to be foul, and almoſt ever after upon the Fret. This Huſbandry is much practiſed upon the *Rhine*, where they always have Stoves placed in the Houſes where the *Wine* is fermented, wherein they keep Fires every Night, if the Seaſon is cold, while the *Wines* are fermenting.

If *White-wine* is deſired, then the Huſks of the Grapes ſhould not remain in the Liquor above twelve Hours, which will be long enough to ſet it a fermenting. And when it is drawn off and put into other Veſſels, it ſhould not remain there above two Days before it is drawn off again; and this muſt be repeated three or four times, which will prevent its taking any Tincture from the Huſks in fermenting.

When the greateſt Fermentation is over, the *Wine* ſhould be drawn off into freſh Caſks, which muſt be fill'd within a very little of the Top, but the Bung-hole ſhould be left open three Weeks or a Month, to give Vent to the generated Air; and as the *Wine* ſubſides in the Caſks, ſo they ſhould be carefully refill'd with *Wine* of the ſame Sort from a Store Caſk, which ſhould be provided for that Purpoſe; but this muſt be done with much Care, leſt by haſtily refilling the Caſks, the Scum which is naturally produced upon all New *Wines* ſhould be broken thereby, which will mix with the *Wine* and foul it, cauſing it to take an ill Taſte; therefore it would be proper to have a Funnel, which ſhould have a Plate at the ſmall End, bored full of little Holes, that the

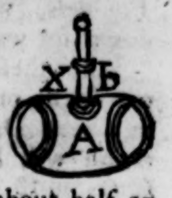
Wine may paſs thro' in ſmall Drops, which will prevent its breaking of the Scum.

After the *Wine* has remained in this State a Month or ſix Weeks, it will be neceſſary to ſtop up the Bung-hole, leſt by expoſing it too much to the Air, the *Wine* ſhould grow flat, and loſe much of its Spirit and Strength; but it muſt not be quite ſtopped up, but rather ſhould have a Pewter or Tin Tube, of about half an Inch Bore, and two Feet long, placed in the Middle of the Bung-hole. The Uſe of this Tube is to let the Air, which is generated by the Fermentation of the *Wine*, paſs off, becauſe this being of a rancid Nature, would ſpoil the *Wine*, if it were pent up in the Caſk; and in this Tube there may always remain ſome *Wine*, to keep the Caſk full, as the *Wine* ſhall ſubſide; and as it ſhall be neceſſary, the *Wine* in the Tube may be eaſily repleniſhed. For want of rightly underſtanding this Affair, a great Quantity of the choiceſt *Wines* of *Italy*, and other Countries, have been loſt: A great Complaint of this Miſfortune I received from a very curious Gentleman in *Italy*, who ſays; “ Such is the Nature of this Country *Wines* in general, (nor are the choiceſt *Chianti's* excepted) that at two Seaſons of the Year, *viz.* the Beginning of *June* and *September*, the firſt when the Grapes are in Flower, and the other when they begin to ripen, ſome of the beſt *Wines* are apt to change, (eſpecially at the latter Seaſon) not that they turn eager, but take a moſt unpleaſant Taſte, like that of a rotten Vine Leaf, which renders them not only unfit for drinking, but alſo to make Vinegar of; and is called the *Settembrine*. And what is moſt ſtrange, is, that one Caſk drawn out of the ſame Vat ſhall be infected, and another remain perfectly good, and yet both have been kept in the ſame Cellar.

“ As this Change happens not to *Wines* in Flaſks, (tho' that will turn eager,) I am apt to attribute it to ſome Fault in refilling the Caſk, which muſt always be kept full; which, either by letting alone too long, till the Decreaſe be too great, and the Scum there naturally is on all *Wines*, thereby being too much dilated, is ſubject to break, or elſe, being broken by refilling the Caſk, gives it that vile Taſte. But againſt this there is a very ſtrong Objection, *i. e.* that this Defect ſeizes the *Wine* only at a particular Seaſon, *viz. September*, over which if it gets, it will keep good many Years. So the Caſe is worthy the Inquiry of Naturaliſts, ſince it is evident that moſt *Wines* are more or leſs affected with this Diſtemper, during the firſt Year after making.”

Upon receiving this Information from *Italy*, I conſulted the Reverend Dr. *Hales* of *Teddington*, who was then making many Experiments on fermenting Liquors, and received from him the following curious Solution of the Cauſe of this Change in *Wine*, which I ſent over to my Friend in *Italy*, who has tried the Experiment, and it has accordingly anſwered his Expectation in preſerving the *Wine*, which was thus managed, perfectly good: He has alſo communicated the Experiment to ſeveral Vignerons in different Parts of *Italy*, who are repeating the ſame: Which take in Dr. *Hales*'s Words.

“ From many Experiments which I made the laſt *Summer*, I find that all fermented Liquors do generate Air in large Quantities, during the Time of their Fermentation; for, from an Experiment made on twelve cubick Inches of *Malaga* Raiſins, put into eighteen cubick Inches of Water the Beginning of *March*, there were 411 cubick Inches of Air generated by the Middle of *April*; but afterwards, when the Fermentation was over, it reſorbed a great Quantity of this Air. And from forty two cubick Inches of *Air* from the *Tun* (which had fermented thirty-four Hours before it was put into the Bolt-head) had generated 639 cubick Inches of Air from the Beginning of *March* to the Middle of *June*, after which it reſorbed 32 cubick Inches of Air: From whence it is plain, that fermented Liquors do generate Air, during the Time of their Fermentation, but afterwards they are in an imbibing State; which may, perhaps, account for the Alteration of the nice *Italian Wines*; for *Wine*, during the firſt Year after making, continues fermenting more or leſs, during which Time a great Quantity of Air is generated, until the Cold in *September* put a Stop to it; after which it is in an imbibing State. Now the Air thus generated is of a rancid Nature, (as the *Grotto del Cano*) and will kill a living Animal, if put into it. So that if, during the Fermentation of the *Wine*, there are two Quarts of this rancid Air generated, which is cloſely pent up in the upper Part of the Veſſel, when the Cold ſhall ſtop the Fermentation, the *Wine* by abſorbing this Air becomes foul, and acquires this rancid Taſte; to prevent which I would propoſe the following Experiment.



“ Suppoſe the Veſſel *A* filled with *Wine*, in the Bung-hole of this Veſſel *b*, I would have a Glaſs Tube of two Feet long, and about two Inches Bore, fixed with a Pewter Socket cloſely cemented, ſo as that there may be no Vacuities on the Sides, and into this Tube ſhould be another of about half an Inch Bore, cloſely fixed; the lower Tube ſhould always be kept about half full of *Wine*, up to *X*, which will ſupply the Veſſel, as the *Wine* therein ſhall ſubſide, ſo that there will be no Room left in the upper Part of the Veſſel to contain generated Air, which will paſs off through the upper ſmall Tube, which muſt be always left open for this Purpoſe; and the Tube being ſmall, there will be no Danger of letting in too much Air to the *Wine*.

“ As the *Wine* in the lower Tube ſhall ſubſide, it may be refilled by introducing a ſlender Funnel thro' the ſmall Tube, down to the Scum upon the Surface of the *Wine* in the larger Tube, ſo as to prevent its being broken, by the *Wine* falling too violently upon it. This Experiment being tried with Glaſs Tubes, will give an Opportunity to obſerve what Impreſſion the different States of the Air have upon the *Wine*, by its riſing or falling in the Tubes; and if it ſucceeds, it may be afterwards done by Wooden or Metal Tubes, which will not be in Danger of breaking.”

This curious Experiment having ſucceeded wherever it has been yet tried, will be of great Service in the Management of *Wines*, there being many uſeful Hints to be taken from it, particularly with regard to fermenting *Wines*; for ſince we find that *Wines* too long fermented (eſpecially thoſe which are produced in cool Countries) do ſeldom keep well; ſo by letting them ſtand in a cool Place, the Fermentation will be checked, which is agreeable to the Practice of the *Champaignoiſe*, who keep their *Wines* in *Winter* in Cellars above Ground; but when the Weather grows warmer in *Spring*, they then carry them down into their Vaults, where they are cooler than in the Cellars; and this Method of removing their *Wines* from the Cellars to the Vaults, and back again into the Cellars, as the Seaſons of the Year ſhall require, is found of great Service in preſerving the *Wines* in Perfection. For theſe *Wines* being weak, (when compared with thoſe produced in more Southern Countries) have not Body enough to maintain them, if they are permitted to ferment all the ſucceeding *Summer*, which the Heat of the Seaſon will promote where the *Wine* is expoſed to its Influence; and this ſurely muſt be worth the Trial by thoſe who do make *Wine* in this Country, ſince it is the Practice of the Northern Countries, which is the moſt proper for our Imitation, and not that of the more Southern.

But after the *Wine* has paſſed its Fermentation in the Vat, and is drawn off into the Caſks, it will require ſomething to feed upon, ſo that you ſhould always preſerve a few Branches of the beſt Grapes, which may be hung up in a Room for that Purpoſe, until there be Occaſion for them, when they ſhould be picked off the Stalks, and two or three good Handfuls put into each Caſk, according to their ſeveral Sizes: For want of this many times People make uſe of other Things, which are by no Means ſo proper for this Purpoſe.

The Vignerons of different Countries do alſo put various Sorts of Herbs into the Vat, when the *Wine* is fermenting, to give it different Flavours. Thoſe of *Provence* make uſe of *Sweet Marjoram*, *Balm*, and other Sorts of aromatick Herbs; and upon the *Rhine* they always put ſome Handfuls of a peculiar Kind of *Clary* into the Vats, from whence ariſe the different Flavours we obſerve in *Wines*, which, it is probable were made in the ſame Manner, and from the ſame Sort of Grapes. How far this might be thought worth practiſing in *England*, a few Experiments would inform us; though it is to be queſtioned, whether theſe Herbs do mend the *Wine*, becauſe it ſeems to obtain amongſt the Vignerons, purely to alter the Flavour of their *Wines*, in order to render them agreeable to the Palate of their particular Cuſtomers. But however this be, it is yet certain, that there is ſome Art uſed to alter the Flavour of the *Wine*, in moſt of the different *Wine* Countries of *France*; for it is the ſame Sort of Grape which the Curious do always plant in *Orleans*, *Champaign*, *Burgundy*, and *Bourdeaux*; and how different theſe *Wines* are in their Flavour and Quality, every one who is acquainted with them well knows; and this Difference can never be effected by the Situation of the Places, ſince there is no very great Difference in the Heat of thoſe Countries; nor do I believe their different Ways of making the *Wine* can alter their Flavour ſo much, eſpecially thoſe of *Orleans*, *Burgundy* and *Bourdeaux*, where there is little Difference

ference in their Management; but in *Champaign* there is this Difference from the reſt, that they always cut their Grapes in a Morning before the Dew is gone off, or in cloudy Weather; whereas the Vignerons of all the other Places do never cut any till they are perfectly dry, which may occaſion a great Alteration in the *Wine*.

The Method commonly practiſed to give the red Colour to *Wine*, is to let it ferment a few Days upon the Skins, which they always obſerve to preſs two or three times, in order to make them diſcharge their Contents: But where a deep-coloured rough *Wine* is deſired, there they put a Quantity of a certain Sort of Grape, whoſe Juice is red, into each Vat; this is well known in *England* by the Name of *Claret Grape*; the Leaves of this Vine do always change to a deep purple Colour as the Fruit ripens; and the Grapes are of a fine blue Colour, with a Flue over them like fine Plums; but the Juice of them is very auſtere, eſpecially if they are not very ripe.

This *Red-wine* will not require to be drawn off into Caſks more than at firſt from the Vat; for it may remain in the ſame Veſſels until it is fit to bottle off, which, I think, ſhould not be done till the *Wine* is a Year old; for the greater Quantity of *Wine* there is in each Veſſel, the more Force it will have, and ſo conſequently be in leſs Danger of ſuffering from the Injuries of Weather, eſpecially if the beforementioned Method be practiſed. But where there are large Quantities of *Wine* preſerved in cloſe Vaults, People ſhould be very cautious how they at firſt enter them, after they have been ſhut up for ſome Time, becauſe the Air of this Vault will become rancid from the Mixture of the generated Air proceeding from the *Wines*, which has often killed People who have incautiouſly entered them.

Of the Concentration of Wines, *and other fermented Liquors, ſo as to reduce them in Bulk, render them more unalterable and perfect, more durable and fit for Service, Carriage and Exportation, by Dr.* Stahl; *tranſlated by Dr.* Shaw.

Dr. *Stahl* treats this Subject to the Purpoſe following:

1. He obſerves that *Wines*, and all fermented Liquors, both before and after Fermentation, conſiſt not of ſimilar Parts, but heterogeneous ones, connected together in one certain determinate Order. Thus the Action and Eſſence of Fermentation, being a Separation and Deſtruction of the former Connexion of the Subject, and tranſpoſing its Parts anew; there muſt of Neceſſity have been a kind of firm and durable Texture in the Subject ſo disjoined, ſeparated, and new ranged.

2. For Example: Grapes being laid upon dry Straw in a cold Place, will, for ſome Time after they are ſeparated from the Vine, preſerve that Texture which gives them their ſaline, unctuous and ſlimy Sweetneſs, which the Juice alſo retains after preſſing, and becomes a clear tranſparent Muſt, without ſeparating itſelf into the heterogeneous Parts; but continuing uniformly and evenly mixed, ſo as to preſerve the different Matters it conſiſts of, intimately collected among themſelves. And in this firmly connected State it may be kept for many Months, if a Caſk be perfectly filled therewith, and ſet in a cold Place, as is evidently ſeen in Stum.

3. *Wine*, in the preciſe Chymical or Philoſophical Notion thereof, is a ſaline, clammy, oleaginous Matter, diluted with a large Proportion of Water; whereby it is ſet at a Diſtance from itſelf, or expanded; whilſt the ſaline Parts are ſaturated with, and interſperſed among the ſubtil earthy ones, that make the Slimineſs; and then together they imbibe, detain, intangle and hold the groſſer oily Parts: Beſides which, there are other oily Parts, vaſtly more ſubtil, that by Means of the highly attenuated ſaline Portion adhering to them, remain as much connected with the Water as the reſt; and theſe are what we call the ſpirituous Parts; but the Connexion of them all together is ſo ſtrong and durable, that they move for a long Time as one Body, without ſeparating, if carefully preſerved.

4. But if the ſpirituous Part be once drawn away, and ſeparated from the *Wine* by Diſtillation, though it were immediately poured back, or reſtored to the remaining Maſs from whence it came, and ever ſo finely ſhook in again therewith, the Whole by no Means recovers its former Taſte, Odour and Durability, but turns to a confuſed turbid Mixture of a different nauſeous Taſte, unnatural Smell, and approaches near to a Vapidity.

5. Again; If an inflammable Spirit, diſtilled from the ſame, or any other Kind of *Wine*, be put to a Parcel of *Wine* that was too ſaline, or not ſufficiently ſpirituous, the bare Addition or tumultuary Admixture thereof, very far from giving the fine and intimate Softneſs of a good *Wine*, will rather manifeſt its own burning Acrimony and inodorous Flavour to the Smell and Taſte, and alſo add a nauſeous Bitterneſs to the former Tartneſs and Auſterity.

6. So likewiſe any conſiderable Heat, or even a Degree of Simmering or Trepidity, will, by its inteſtine and ſubtil Agitation, that barely diſturbs the exceeding fine ſpirituous Parts, which are very ſuſceptible of the Motion of Heat, or disjoins them from the reſt, occaſion an Alteration of its Taſte, Tranſparency and Durability, as much as if the Spirit had really been drawn off, and poured back again.

7. On the other hand, *Wine* kept in a cool Vault, and well ſecured from the external Air, will preſerve its Texture entire in all the conſtituent Parts, and ſufficiently ſtrong for numerous Years, as appears not only from old *Wines*, but other foreign fermented Liquors, particularly thoſe of *China*, prepared from a Decoction of Rice, which being well cloſed down, and buried deep under Ground, continue for a long Series of Years rich, ſtrong and generous, as the Hiſtories of that Country univerſally aſſure us.

8. The like is alſo to be underſtood of Vinegar, after it has thrown off the ſuperabundant earthy Parts, and many of the oily ones that preſided while it continued *Wine*; whence the ſaline ones now get the Aſcendant, and, as it were, ſubdue and preſide over the ſpirituous; for good and perfect Vinegar, being well ſtopped down, will continue pure and unaltered for a great Length of Time.

9. But if it be left open, ſo that its fine Vapour exhales, or its more ſubtle Part be drawn off from it, and again poured back, in either Caſe it loſes its uniform Conſiſtence, and particularly its Durability, and now directly hurries into Vapidity and Corruption.

10. If either by Fraud or Accident, a larger Proportion of Water comes to be mixed with *Wine*, than is abſolutely proper for its Conſiſtence, and no way neceſſary or eſſential; this ſuperfluous Water does not only deprave the Taſte, and ſpoil the Excellence of the *Wine*, but alſo renders it leſs durable; for Humidity in general, and much more a ſuperfluous aqueous Humidity, is the primary and reſtleſs Inſtrument of all the Changes by Fermentation.

11. It may therefore, doubtleſs, be uſeful, and ſometimes very convenient, to take away this ſuperfluous Water from the other Part which ſtrictly and properly conſtitutes the *Wine*: But for the Method that this may commodiouſly be done, he firſt examines thoſe propoſed by others for that Purpoſe, and ſhews the Difficulties and Inſufficiencies, and afterwards propoſes an eaſy Way of effecting the Thing.

The Method of condenſing Wines *by Heat or Evaporation.*

1. It will be found by any Perſon who ſhall make the Experiments, that all fermented Liquors labour with an over Proportion of Water; and that, if a very conſiderable Quantity of it were taken away, they would become not only more rich, but alſo more durable, provided ſo much humidity were ſtill retained as is juſt neceſſary to preſerve the vinous Conſiſtence, keep the ſaline Part fluid, and the ſlimy and the unctuous Parts mixed in and expanded along with the reſt.

2. But as an actual and truly ſaline Matter abounds in *Wine* and *Vinegar*, and that of an acid, auſtere or tartarious kind, when the ſpirituous Part is drawn away, the *Wine* becomes ſurpriſingly more auſtere; and when a large Quantity of the watery Part is ſeparated, this ſuperabundant ſaline, tartarious Matter coagulates into a cryſtalline Form, and falls to the Bottom, or ſtrikes to the Sides of the Caſk; for the ſubtil oily Matter, which makes the ſpirituous Part in *Wine*, blunts and takes off from a tartarious Acidity, in the ſame Manner as the Addition of rectified Spirits of *Wine* blunts, ſheaths and dulcifies the corroſive and acid Spirits of *Nitre*, *Salt* and *Vitriol*.

3. But this tartarious Salt alſo abounding with an over Proportion of a groſs unctuous Matter, cannot be diſſolved or diluted without a very large Proportion of Water; which being taken away, it preſently concretes into dry ſolid Cryſtals; as in the known Caſe of *Cremor Tartar*.

And hence proceeds the Effect before obſerved, *viz.* that the Acidity and Roughneſs of the *Wine* manifeſt themſelves the more when the *Wine* is deprived of its Spirit.

And this is an Experiment familiar in the Kitchen, when *Wine* is burnt or uſed in Sauce; for boiling always gives it a much greater Degree of Auſterity.

4. And when this Water is, even by Diſtillation, plentifully drawn off from *Wine*, not of a terreſtrial and chalky, but of a tartarious Nature, a beautiful Tartar will be found to cryſtallize among the remaining Maſs, and deſtroying thoſe Properties thereof, which ought to be preſerved.

5. For, firſt, the ſpirituous Part is the Life of the *Wine*, and all fermented Liquors, and not only keeps them together, embalms the Whole, and renders it durable, or not ſubject to Corruption; but alſo in great meaſure gives them that aromatick, refreſhing and reſtorative Virtue and Effect they have upon the human Body.

6. Nor is this all; but the intimate and extremely ſubtil Union of this ſpirituous Part with the reſt, is perfectly the ſole and entire Cauſe of both the former Effects: So that it by no Means ſuffices to have the Spirit barely preſent among the other Parts; for then it might be drawn off, and returned back again without Damage to the *Wine*; but the eſſential Union is here diſſolved by taking it away, and can never be reſtored by a ſimple Reaffuſion. It is therefore deſtructive of the End propoſed, thus to break and diſſolve the Texture of the *Wine*, as this entirely ſubverts and corrupts its Nature.

7. This inevitably proves the Caſe, whenever *Wine* is evaporated or diſtilled, which conſtantly requires a Degree of Heat ſufficient to convert Water into Vapour; whence the ſpirituous Part being much more volatile than the aqueous, flies off together with, or even before it, and thus leaves the *Wine* diſſolved in its Texture, and without its Soul.

Upon which the remaining ſaline, ſlimy, unctuous Maſs is ſo diſturbed, as no longer to remain connected, but immediately turns thick and turbid, and afterwards runs impetuouſly into a Kind of Corruption, attended with Vapidity and Ropineſs.

All which Circumſtances abundantly ſhew the Method of Exhalation to be abſolutely unfit for condenſing *Wines*, as it ſo many Ways deſtroys the whole vinous Texture and Compages.

Of the Method of condenſing Wines *by Percolation.*

1. That *Wine*, ſtrictly and properly ſo called, is of a groſſer and thicker Body than Water, or that the eſſential and truly conſtituent Parts of *Wine* may be conſidered as ſeparate and diſtinct from a ſuperfluous and copious Aquoſity, appears both *a priori* and *a poſteriori*.

2. For, firſt, it is rational to conceive, that a Matter conſiſting of a Collection of ſaline, ſlimy and unctuous Parts, brought into one Maſs, ſhould have a groſſer Conſiſtence than pure and ſimple Water.

3. And next; this Groſſneſs of the proper and eſſential Particles of *Wine* manifeſts itſelf to the Eye,

1. In thoſe Diſeaſes of *Wine*, wherein they become viſcous and ropy, when they not only loſe their Tranſparency, but may be drawn out and extended like a Mucus; and do not, upon pouring out, then fall in Drops, but run down in long ropy Strings.

2. It appears again to the Eye, in *Vinegar* grown mothery, mucilaginous and tough, ſo as ſometimes to afford a denſe Skin, like Leather; which cannot well be ſuppoſed to proceed from the Water, but from the more proper and eſſential Parts of the *Wine* it was made of.

3. But becauſe theſe Inſpiſſations may poſſibly be attributed to ſome ſupernatural Diſorder of the *Wine*, we may add, That our *Method of Concentration* exhibits this Groſſneſs of Parts to the Eye, whilſt the *Wine* remains in a perfect State, free from its ſuperfluous Aquoſity: for here it appears much denſer and deeper in Colour; leſs fluid, leſs thin, leſs tranſparent, and in every reſpect of a thicker and higher Conſiſtence.

4. Laſtly, This is ſtill more evident in *Malt Liquors*, which being concentrated in our Manner, taſte full and thick, almoſt like Oil in the Mouth, and pour out like that, or a thin Syrup, being at the ſame Time alſo heightened or concentrated in Colour.

From the preceding *Phænomena* it ſhould ſeem natural, that theſe different Parts of *Wine*, which vary ſo much in Conſiſtence and Tenuity of Matter, might be ſeparated from each other by a commodious *Percolation:* So that the aqueous Parts, which appear the fineſt, ſhould run through the Pores of a proper Strainer, and leave the groſſer behind.

But the Practice hereof is clogged with great Difficulties: For,

Firſt, Thoſe thin Liquors which have a manifeſt and copious Saltneſs, as *Wine* has, are either ſo attenuated, and their groſs Part, however thick, in compariſon of Water, is yet ſo ſubtile and penetrating in itſelf, as at the ſame time to paſs the Pores of any ordinary Strainer; at leaſt, ſuch Liquors will, along with their aqueous, tranſmit the fineſt and moſt delicate of all their Parts, and leave the more ſluggiſh, the truly groſſer, or thoſe moſt tending to Ropineſs, behind.

It muſt alſo be obſerved, that moſt kinds of *Wine*, beſides their genuine, ſubſtantial, rich and eſſential Part, have conſtantly join'd with them ſome foreign, ſuperfluous and prevailing gummy or mucilaginous Matter; which the more it inviſcates the nobler Part, the thicker and groſſer it actually becomes; whilſt the other finer Portion, which is not clogg'd with ſuch a Load, remains more penetrating and active.

And hence alſo the Difficulty of condenſing *Wines* by Percolation is increaſed, as this ſubtile ſpirituous Part paſſes the Strainer along with the Water.

A contrary Difficulty attends the Uſe of a cloſe Strainer, ariſing from the groſs mucilaginous Particles, either accidentally interſperſed in the *Wine*, or cleaving to this and other fermented Liquors, but eſpecially Malt Drinks; for theſe viſcous, tenacious and clammy Particles preſently clog and ſtop the Pores of the Strainer, and by that means hinder the thinner and more watery Particles from getting away, and the natural Tenacity or Clammineſs of Liquors prepared from Malt, Honey, and the like, communicates, in the manner of a Mucilage, ſuch a Ropineſs, even to the ſuperfluous Water, and diffuſes and expands itſelf ſo much therein, that the Water itſelf is thereby thicken'd, and render'd much leſs apt to flow.

A *third* Difficulty attends this Method by *Percolation*, *viz.* that altho' it were poſſible to make the Separation, yet the Work would proceed ſo ſlow, that the more ſubtile, not ſo ſtrictly inflammable as fine, briſk, volatile and ſpirituous Parts, which give the pungent Taſte and Odour, might, in the mean time, exhale, and leave the remaining *Wine* flat and vapid: or if this Inconvenience could be prevented, yet in ſo tedious an Operation ſome prejudicial fermentative Operation would, in all Probability, happen.

And after all, there would ſtill remain a Queſtion, as to the Matter to be uſed to the *Strainer*; which they, who have never made any Experiment that way, might little dream of.

For, as the common *Filters* or *Strainers* are generally made of Paper, Linen, or ſome kind of Cloth, all theſe readily communicate and impreſs a foreign diſagreeable Taſte to the Liquor, eſpecially to *Wine*, if intended for Condenſation in this Manner.

And it may ſeem ſurpriſing, that even a momentaneous Paſſage of condenſed *Wine* thro' the cleaneſt Linen, will give it a remarkable and very diſagreeable Taſte of the Bag, that ſhall continue for many Months.

This happens in a much greater Degree to condenſed *Wine*, after the ſame manner as the higheſt rectified Spirit or Alcohal of *Wine* will, in many Caſes, perform a Solution immenſely quicker and more powerful than ſuch a phlegmy Spirit, tho' mix'd but with a tenth Proportion of Water: For ſo our concentrated, or, as we may call it, rectified *Wine*, being freed from its ſuperfluous Phlegm, has a more powerful, more immediate, and more intimate Effect upon the Parts of the Cloth, and other Bodies, by means of the Concentration of its ſpirituous and ſaline Parts, than when its Efficacy is weaken'd by being diluted with Water.

This Method, however, by *Percolation*, tho' no way ſufficient to free the *Wine* of all its ſuperfluous Water, may yet be of ſome ſmall Service, if applied with due Regard to the Difference there is between fermented Liquors, eſpecially in Point of Conſiſtence; and therefore ſome faint or imperfect Imitation of our Method may be had by means of ſuch Paper Filters, or other common Strainers.

And in this View, that common Tavern Trick, with a Piece of Liſt, when dextrouſly perform'd, might be of ſome Service: for if a long thick Woollen String be firſt ſoak'd in Water, and then one End of it plunged into *Wine*, whilſt the other End hangs a great way down without the Glaſs, it will, in an imperfect manner, draw away the Water from the *Wine*.

But all theſe, and the like Attempts, are trifling and uſeleſs in compariſon of our eaſy, expeditious and perfect Manner of effecting the Thing: To which we next proceed.

Of the Method of condenſing Wines, *and other ſaline ſpirituous Liquors, by* Cold.

Having ſhewn above what Effect the Motion of Heat and the Action of Fire have upon all fermented Liquors, and eſpecially upon the finer Parts of them, and more directly upon thoſe of *Wine*; and how much they contribute to diſſolve the intimate Union of vinous Fluids, and change their whole Nature, which conſiſts in that Union and Connexion; we paſs on to the Conſideration of *Cold*, which being oppoſite to *Heat*, may be ſuppoſed to have different

Effects, or at leaſt ſuch as better ſuit the preſent Purpoſe.

If any kind of *Wine*, but rather ſuch as has never been adulterated, be, in a conſiderable Quantity, as that of a Gallon or more, expoſed to a ſufficient Degree of Cold in froſty Weather, or in any Place where the Ice continues all the Year, and ſo be brought to freeze; the ſuperfluous Water contain'd in the *Wine* will be turn'd to Ice, and leave the proper and truly eſſential Part unfrozen, unleſs the Degree of *Cold* ſhould be very intenſe, or the *Wine* but weak and poor.

When the Froſt is moderate, the Experiment has no Difficulty, becauſe in that Caſe not above a third or fourth Part of the ſuperfluous Water will be froze in a whole Night; but if the *Cold* be very intenſe, the beſt Way is, at the End of a few Hours, when a tolerable Quantity of Ice is form'd, to pour out the remaining Liquor, and expoſe it to freeze afreſh by itſelf. And,

1. Becauſe when the Quantity of Ice grows large, more of the concentrated *Wine* will be apt to hang and lodge in it.
2. Becauſe it would otherwiſe require a longer Time to drain away from the Ice.

If the Veſſel that thus by degrees receives the ſeveral Parcels of condenſed *Wine*, be ſuffer'd to ſtand in the cold freezing Place where the Operation is perform'd, the Quantity lying thin, in pouring out, or otherwiſe, will be very apt to freeze anew; and if it be ſet in a warm Place, ſome of this aqueous Part thaws again, and ſo weakens the reſt.

The condenſed *Wine* therefore ſhould be emptied in ſome Place of a moderate Temper, as to *Cold* and *Heat*, where neither the Ice may diſſolve, nor the vinous Subſtance mix'd among it be congealable: But the beſt Expedient of all is, to perform the Operation with a large Quantity of *Wine*, as that of ſeveral Gallons, where the utmoſt Exactneſs or Prevention of all Waſte need not be ſo much regarded.

By this Method, there freezes about one Third of the whole Liquor, and is properly the more pure aqueous Part thereof; inſomuch, that when all the vinous Fluid is pour'd off, to be again expoſed to a farther Concentration, the Ice remaining behind, upon this firſt emptying, being ſet to thaw gently in a warm Place, diſſolves into a perfectly aqueous Fluid, retaining only a light Scent, but extremely little of the Taſte and Colour of the *Wine*.

If the *Wine* now once concentrated, ſhould by longer Continuance in the freezing Cold, be again congeal'd to the utmoſt, (unleſs the *Cold* were very ſevere indeed) and then again be drain'd from the Ice, there ſoon after falls to the Bottom of the Glaſs it is pour'd into, a groſs white and ſhining Powder or Tartar; and even the Icy Part remaining behind, depoſites a little more of this Powder, after thawing: and again, the ſame vinous concentrated Matter does the ſame upon ſtanding a few Days or Hours; but the more of it, as the *Wine* was auſtere or genuine, neat and unadulterated with Sugar, Brandy, or the like.

The Ice of the ſecond Operation differs in no reſpect from that of the firſt, provided the vinous Matter be perfectly drain'd away from it before the Ice is ſet to melt; whereby it runs into the very ſame kind of Phlegm, excepting only when the *Wine* was leſs ſpirituous, that it taſtes a little more ſaline than the Water ſeparated by the firſt Operation.

The Part which has eſcaped being frozen in both Operations, is a real concentrated *Wine*, as appears by its Colour, Conſiſtence, Taſte, and Smell: for it has now all thoſe Properties in a greater Degree, and a much narrower Space, than when ſo largely diluted with a ſuperfluous Water; and therefore becomes a much nobler and richer *Wine*, than without ſuch a Contrivance could poſſibly be procured: for as by this means two Third Parts of Phlegm are taken away, in the better Sort of *Wine*, or three Fourths in the weaker, what remains, muſt needs become highly rich and ſaturate.

This Operation, tho' it be perfect in *Wine*, does not ſucceed altogether ſo well in rich Malt Liquors.

Thus, for Example; Having by ſeveral Condenſations reduced a full Gallon of ſtrong Malt Liquor to the Quantity of a Pint and a half; the Ice ſeparated from it in the firſt Concentration, reſolved into a Liquor ſomewhat of the Colour and Taſte of ſmall Beer; and that obtain'd at laſt might have almoſt paſs'd for ſmall Beer, tho' a flaſhy watery Taſte manifeſtly predominated in it: but the Part that remain'd uncongeal'd was extremely rich, and, for Conſiſtence and Taſte, far exceeded the famous double *Brunſwick* Mum.

In Point of Strength or Spirituoſity, it ſeem'd perfectly aromatick and nobly flavour'd; a thing not found in common Malt Liquors; and for Conſiſtence, it reſembled a dilute Syrop, and with a pleaſing Softneſs ſheathed the Acrimony of the Spirit, and concealed the Bitterneſs of the Hop, which before was very conſiderable.

The mucilaginous Nature predominant in all Malt Liquors, here occaſions a greater Inaccuracy; as not ſuffering the condenſed Part to get clear and run from the Ice: but as this Liquor is cheaper than *Wine*, the Loſs is leſs conſiderable, and not only ſo, but if the Operation were to be perform'd in large, the thaw'd Liquor might be commodiouſly employ'd in a freſh Brewing; ſo that with a ſlight Enchareſis, all manner of Loſs may be prevented.

And thus likewiſe the Phlegm of *Wine*, ſeparated in the Operation, may, by a proper Ferment, be converted into good Vinegar, with a great deal of Eaſe, and moderate Profit.

What a large Quantity of Water abounds in Vinegar, is well known to thoſe that are ſkill'd in Chymiſtry; ſo that a great Quantity of Vinegar will ſaturate but a ſmall one of Alkaline Salt: And again, a deal of Vinegar is required to diſſolve a little Quantity of Metal.

A Pint of the ſtrongeſt Vinegar will ſcarce diſſolve above two Drams of Iron; or ſaturate more than the like Quantity of good Salt of Tartar: But our Method of Condenſation effectually remedies this Inconvenience, and ſo far deprives the Vinegar of its ſuperfluous Water, and collects its acetous penetrating Sharpneſs, as to render it extremely powerful; thus throwing out five or ſix Parts of uſeleſs Phlegm, that taſtes ſcarce perceptibly acid, and at the ſame time retaining the Strength and Virtue of the Whole, in the Part remaining uncongeal'd.

The Advantages of the Method of condenſing Wines *by Cold.*

It is certain that the beſt and nobleſt *Wines*, if expoſed for ſeveral Days to the warm open Air of the Summer, out of a Vault, or other proper Receptacle, will inevitably corrupt and ſpoil, throwing a mouldy and mucilaginous Matter to their Surface, and acquiring a Degree of Stench or Vapidity, or at beſt turning to Vinegar: On the contrary, the *Wine* condenſed in our Manner, ſuffers none of theſe Changes, upon being ſo expoſed; but remains for a long time not only uncorrupted, but even unalter'd, as we have experienced for ſeveral Years.

And as this Difference is owing to nothing more than freeing the *Wine* of its ſuperfluous Water; it may hence be fairly preſumed, that Water alone is the principal or immediate Inſtrument of all the fermentative Motions and Changes of vinous Liquors.

We condenſed in our Method a Gallon and half of poor, weak, auſtere and acid *Wine* to about a Quart, in the Winter of the Year 1696. and put it into a Glaſs Bottle, whereof a third Part remain'd empty, and ſtopp'd it only with a hard Wreath of Paper; and thus it ſtood for the Space of two Years in my Bed-chamber, where, during the Summer, when the Weather was fair, the Windows were open all Day long; and where alſo in the Winter other aqueous Liquors froze. During this Time, it was often open'd, and ſome of it pour'd out, both to taſte, and otherwiſe to uſe; and yet in all this Time it neither grew mouldy or ſour, nor ſuffer'd any Separation of Parts; only depoſited a ſmall Quantity of Tartar, but retain'd its original Conſiſtence and Taſte intire; excepting ſome ſmall Change in both for the better.

In the ſame Manner we concentrated a ſomewhat better Kind of *Wine* to a little more than a fourth Part; but the Bulk of this did not keep ſo well as the former, as having many more Taſters, than that auſtere and diſagreeable Sort.

When it was by degrees taſted away to half a Pint, I put the Remainder into a Glaſs, and tied it over with a Piece of Bladder, then ſet it in the ſame Place, near the former; but could not prevent its being ſipp'd away by degrees, till only about three Ounces were left.

This ſmall Quantity ſtood all the Summer, barely cover'd with a looſe Bladder, without Alteration, or growing in the leaſt mouldy or acid, and long after retain'd its moſt grateful Taſte and quick Smell; only the latter was ſomewhat weaken'd thro' the Bottle's remaining untied down: and that under this Inconvenience it ſhould continue ſo perfect and intire, is very ſurprizing.

I had in the Winter of the Year before, condenſed a very ſmall Quantity of the ſame Sort of *Wine* to half an Ounce, and put it into an Ounce Phial, which remain'd lightly tied down all the next Year in my ordinary Stove-Room, where it kept without corrupting, till after the End of the *Winter*, when by the unequal, and ſometimes violent heating of the Room, it became vapid and mouldy.

A Parcel of Vinegar concentrated after the ſame Manner in the *Winter* 1694. and by that means brought to a corroſive Degree of Sharpneſs, which render'd it unfit for the Table, ſtood in the ſame Room with the concentrated *Wines*, for three whole *Summers* and *Winters*, without any manner of Tendency to Corruption, or the ſmalleſt Sign either of Mouldineſs or Ropineſs.

Theſe Examples and Experiments ſufficiently ſhew, that Liquors thus concentrated may, for a long time, be kept in a State of Perfection with little Care.

But there are ſome particular Changes of *Wines* and Vinegars, thus concentrated, that happen in proceſs of Time.

1. *Wines*, upon being thus concentrated, ſeem to acquire a more auſtere Taſte than they had originally; and no Wonder, as the Condenſation brings their ſaline and rough Matter into a third or fourth of its original Compaſs; ſo that this is no new Addition or Increaſe of the rough Taſte, but perhaps ſome Degree of Mitigation thereof, in regard of the Cloſeneſs whereto this rough Matter is brought; which of itſelf ought rather to multiply the Effect in a greater Proportion.

The Change may be conceived owing to this, that all *Wines* are obſerved to grow mild and ſoft by long lying; which Effect is greatly promoted in them by a ſucceſſive Separation of their Tartar, and a gentle Evaporation of ſome Part of their Water; occaſioning that Neceſſity we find of frequently filling up the Caſks in the *Summer* Months: but in our concentrated *Wine*, tho' ſome Tartar be ſucceſſively ſeparated, yet there is found no concurrent Evaporation; for the concentrated *Wine* grows ſoft and mellow in a well-ſtopp'd Glaſs, where no ſenſible Diminution of the Quantity is perceived.

But the Effect proceeds principally upon a cloſer Combination of the groſſer with the ſpirituous Part; which now wanting Water, ſucceſſively throws off the groſſer Tartar from the reſt of the Mixture.

But beſides this, there ſeems to be another remarkable Change incident to our concentrated *Wines*, not only in the Taſte, but abundantly in the Smell; for altho' that very auſtere *Wine* above-mentioned, had a much milder Taſte the third Year than the ſecond, yet its ſpecifick Odour perfectly reſembled that of *Sack* and *Canary*, ſo as to be miſtaken for it, from the ſmell alone, by good Judges, who were acquainted with the original Flavour of the *Wine* from whence it was concentrated.

Nor is this Change of Odour peculiar to *Wine* alone; but concentrated Vinegar participates ſomewhat of it, and was obſerved for ſome time to loſe it in great meaſure, upon being left long ſtopp'd only with Paper, and the Bottle often pour'd out.

And therefore as it is plain that *Wines*, and all other fermented Liquors, become much more durable by Concentration, and yet this Durability is here confirm'd and proved from ſmall and inconſiderable Quantities, wherein they always retain their Goodneſs, it is obvious, that if the Operation were perform'd in large, a great Bulk of the Liquor thus concentrated, would be ſtill immenſely leſs ſubject to Alteration, from the Air and Heat; which are the two great Incentives to fermentative Motions; and that if ſuch ſmall Parcels ſuffer'd no Change for the worſe, much leſs would the larger.

But as theſe concentrated Liquors, by reaſon of their conſiderable Proportion of ſaline and fine ſpirituous Parts, have a leſs Tendency to Diſſolution and Corruption; ſo on the contrary, the aqueous Part ſeparated from them, has a very ſtrong Tendency thereto; for as it takes from the *Wine*, and carries off with it a little of the mucilaginous and unctuous Part, and yet is almoſt wholly a mere moveable fluid Water, that is the moſt active Inſtrument of fermentative Motion, it cannot but preſently fall into Corruption.

This Buſineſs of Congelation is not only applicable to immediate Profit, but alſo paves the Way to certain Matters of Curioſity, and ſhews one Particular, which, tho' not new, but antiently common and familiar, has yet grown ſtrangely into Diſuſe, thro' the Indolence of Mankind.

As to the Point of immediate Uſe, it needs no Explanation; for he muſt be very dull indeed, who does not immediately perceive that *Wines*, &c. by this Method may be reduced to any Degree of Vinoſity, Strength, or Perfection.

Thus, for Example; If a *Wine* of a moderate Strength, have a third Part of its Water taken away, in the Form of Ice, by Congelation, the remaining Part will thereby be doubled in Strength and Goodneſs: For if in the better Sorts of *Wines* we allow, as we may, one third Part to be good or truly vinous, and two third Parts to be Water; then that one third good Part is divided among the two aqueous Parts; whence, if one of the two aqueous Parts be taken away, that ſame third Part before divided between the two Waters, now remains collected or condenſed, in a double Proportion, along with but one of them.

But if this Condenſation be carried up to the utmoſt, and practiſed in a large Quantity, with a ſomewhat intenſe Cold, it may, perhaps, reduce good *Wines* to a Sixth, and this ſmall Quantity might commodiouſly be uſed as a Quinteſſence, to meliorate, improve, and even ſpecificate ſmaller and low-flavour'd *Wines*.

To conclude, as to the direct and immediate Uſe of our Method of Condenſation, he who has the Secret, by means of a little, dry, powdry Body, of turning Water into *Wine*, will not, perhaps, eaſily divulge the capital Uſe he may make of this Experiment.

Having given a very full Account of the Method of making Wine in ſeveral Countries where it is practiſed; as likewiſe the ſeveral Arts uſed to preſerve, amend, and adulterate Wines; ſo far as I could poſſibly get Information into theſe Affairs: I ſhall now add ſome few Obſervations and Experiments which have been lately made, and which are chiefly confined to the Wines made in *England*.

From the ſeveral Vineyards which have of late Years been planted in *England*, there has as yet been very little Wine made, that has been by the beſt Judges thought tolerably good; this in great meaſure may be attributed to the wrong Expoſition of theſe Vineyards, and to the ill Method of planting and managing of them, as hath been before obſerved. But beſides theſe, there has been a great want of Skill in the making, and after-managing of the Wines, there having been very few Perſons who have proceeded in this Affair with good Judgment, or Attention enough to obſerve the Miſtakes they have made in their ſeveral Experiments. There is one common Error, into which moſt Perſons have fallen, who have attempted to make Wines in *England*; which is by endeavouring to imitate the Wines of this or that Country, whereas there are few of the Wines which are drank in *England*, which are not brewed up to ſuit the Palates of the Drinkers. Therefore the chief Care in making of Wine, ſhould be to make a plain good wholſome Liquor, without regarding the particular Flavour (or endeavouring to imitate *Burgundy* or *Champaign* Wines, &c. as moſt People have done:) in order to which it is abſolutely neceſſary to obſerve the following Directions; firſt, To have the Grapes as duly ripened as poſſible; then to gather them in a dry Seaſon, as alſo to ſeparate them from rotten or unripe Grapes, and to pull them from the Stalks before they are preſſed: theſe are the principal Directions for the firſt Part of the Work. What remains afterward to be obſerved, is, that the Wine ferments a proper time; for if it doth not ferment long enough, or to a proper Degree, it will be continually on the Fret, ſo will not be clear or drinkable; and if it is ſuffered to ferment too long, the generous Spirit will be loſt, and the Wine will ſoon become ſour. Therefore on this Particular depends the greateſt Nicety of Judgment in the making of Wine; and for this there can be no poſitive Inſtructions given; becauſe the Seaſons, and many other Accidents, may occaſion a greater or leſs Time neceſſary for the Fermentation to be continued, in order to give the Wine its proper Strength and Flavour: ſo that it is only by a cloſe Attention, and by many repeated Experiments, a Perſon will be enabled to judge rightly when the Wine has had a proper Fermentation, as alſo how to ſtop the Fermentation, when it is too violent, or continues too long.

The Method of judging when Wine has fermented its proper Time, is chiefly by the Taſte; ſo it in a great meaſure depends on the Perſon who directs this Affair having a good Palate, to know when the Wine is in Perfection; for in hot dry Years it will require a much greater Fermentation, and to be continued longer, than in moiſt cool Seaſons; and ſome particular Sorts of Grapes will take a longer Time to ferment than others; ſo that it is by no means adviſeable to mix different Sorts of Grapes together in the Preſs, becauſe there are not any two Sorts but will require a different Degree of Fermentation; which will occaſion the Wine to be always on the Fret.

After the Fermentation is over, there muſt be great Care taken to keep the Veſſels full of Liquor; as alſo to leave a Vent in the Bung-hole of the Veſſels, for the rancid Air which is generated to paſs off; but it will not be proper to add any other Sorts of Foreign Wines to it, as is commonly practiſed, which ſeldom incorporate with this *Engliſh*

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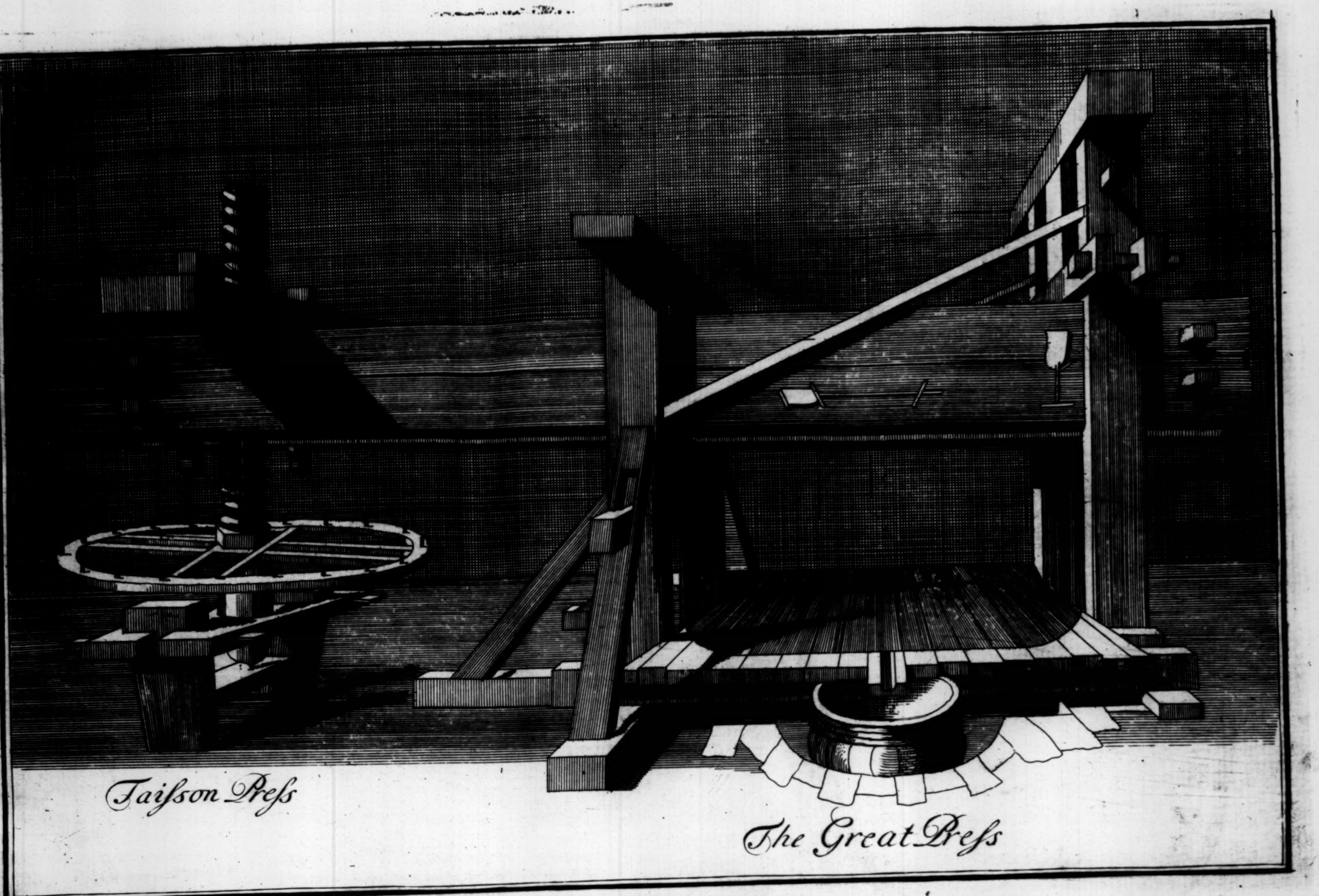

Taiſson Preſs
The Great Preſs

Place This Plate of ye Word Wine Preſs

Juice. But the beſt Method to add a Body to it, is to ferment the Juice, as ſoon as it is preſſed, upon the Lees of good *Canary*, or ſome other ſtrong generous Wines, which will greatly enrich the *Engliſh* Juice. But then great Care ſhould be taken to get the Lees pure and unmixed, otherwiſe it will have a contrary Effect.

I have been informed by Perſons who have reſided in the Countries from whence we have the ſtrongeſt Wines, That it is a common Method there in practice, to diſtil a ſtrong Spirit from the Huſks of the Grapes, which they pour into the Wine, after it has fermented a proper time; which checks the Fermentation, and adds Strength to the *Wine*. This is at preſent univerſally practiſed amongſt the *Vignerons* in *Portugal*, with this Difference only; that thoſe who are the moſt curious in the Quality of their Wines, take particular Care, in drawing off the Spirit, to have it as pure as poſſible, as alſo to rectify it very high, that the Quantity added to the Wine may be ſmall, and not ſo diſtinguiſhable on the Palate. And thoſe Years when their Vintage proves very bad, it is a common Practice for theſe *Vignerons*, or at leaſt Wine-coopers who reſide there, to procure great Quantities of Brandy from *France*, which they rectify to a higher Spirit, and mix with their Wines, before they ſhip them for *England*.

Since this is the Practice in the *Wine* Countries, it might be very well worth the Trial in *England*, to be informed of the Effects; becauſe as our Seaſons frequently prove bad, ſo there will be a greater Neceſſity of adding a Body to the *Wine*, in order to prevent its turning acid, which is too frequently the Caſe with *Engliſh Wines*.

There are ſome Perſons who add Sugar, Honey, and other Mixtures, to their *Wines*, to render them palatable; but this is a very wrong Practice, for it generally cauſes the *Wine* to fret, and always renders it diſagreeable to the Stomach: therefore I would by no means adviſe the putting any other than a few of the very beſt foreign Raiſins into the *Wine*, upon which the *Wine* may feed, which will be of great Uſe to preſerve it.

In ſome of the Iſlands of the *Archipelago*, it has been long practiſed by the Inhabitants, to boil their *Wines*, which gives them a good Body, and preſerves them a long time. Theſe *Wines* were formerly much more eſteemed in *England*, than they are at preſent, moſt Peoples Palates having been vitiated by the *French Wines*, which are thin and weak; ſo may be drank in greater Quantities, tho' the former more generous *Wines* are generally eſteemed more wholſome, when taken moderately. This Practice may be very well worth Trial in *England*, becauſe in boiling, a great Quantity of the watry Parts will be thrown off, which may give the *Wine* a Body, and preſerve it.

The adding of a Colour to the *Engliſh Wine*, is another Thing which has employed the Thoughts of many Perſons; ſome have added the Juice of Elder-berries, which, I have been inform'd, is alſo frequently practiſed abroad; others have added the Juice of Sloes, Mulberries, Blackberries, *&c.* but as none of theſe will add any Strength to the *Wine*, ſo they muſt be uſed ſparingly; for where a Colour is deſired in *Wine*, it will be a better Method to make uſe of Turnſole, which is chiefly practiſed by the Vintners and Wine-coopers, to give a Colour to their pale *Wines*, than to add too large Quantities of either of thoſe Juices. And as a ſmall Quantity of Turnſole will be ſufficient to colour a large Parcel of *Wine*; ſo it is likewiſe the cheapeſt Tincture which can be uſed.

The ſeveral Practices in Uſe amongſt the Wine-coopers, both at home and abroad to add different Flavours to their *Wines*, is a Myſtery which they by no means care to divulge; for I have been informed by ſome Perſons, who have been a little acquainted with their Arts, that they can brew up *Wines* of almoſt any Sort in ſuch a manner as to imitate the Flavour of any other Sort of *Wine*: but if theſe *Wines* are kept any time, they will become foul and ill-taſted; ſo that it may be eaſily ſuppoſed, that theſe *Wines* are not very wholſome to drink, tho' they may have an agreeable Flavour for a time. The Practice of mixing one Sort of *Wine* with another, in order to give Strength, Brightneſs or Flavour, to *Wines*, has been long in Uſe; and if there are no worſe Mixtures, there may be little Danger in drinking of theſe *Wines*: but by the Effects which ſome Perſons have obſerved, in thoſe who have drank but ſmall Quantities of theſe brewed *Wines*, there is great Reaſon to fear, that ſome unwholſome Things are often mixed with them.

That the Practice of mixing of one Sort of *Wine* with another is at preſent greatly uſed in *London*, is very obvious from the great Quantities of *Alicant* and other ſtong *Spaniſh Wines* which are imported, and bought up by the Coopers and Merchants, who are rarely known to ſell any of theſe Sorts of *Wines*, pure as they bought them. Alſo the whole Vintage of *Barabarr*, which is engroſſed by the *French* Wine-merchants in *London*, is ſuppoſed to be mixed with the low Growth of *French Wines*, to add Strength to them; ſince it is rarely, if ever known they ſell this *Wine* again, ſimple and unmixed.

Since from what has been related, it is plain, that moſt of the different Flavours of foreign *Wines* are adventitious; therefore whoever ſets about to make *Wine* of *Engliſh* Grapes, ſhould not be very ſolicitous to add particular Flavours to it; but rather have regard to the Wholſomneſs, and to give it Strength enough to preſerve it; which is what ſhould be principally regarded, becauſe afterward it will not be very difficult to add any particular Flavour, according to the Palate of the Owner, from the Inſtructions which have been exhibited. For Inſtance, that ſtrong Flavour which is obſerved in ſome *French* Clarets, is given by adding ſome dried Elder-flowers to the Juice when it is fermenting; and this may be added in a greater or leſs Degree, according to Perſons Palates. The Flavour of *Rheniſh Wines*, which many People admire, is given by adding of the Flowers of the Yellow Clary, called by ſome Botaniſts, *Colus Jovis*. The Flavour of *Frontiniac Wine* may be given by adding a Quantity of the Juice of white Elder-berries, with many other Mixtures, which need not be repeated here.

The other neceſſary Cautions to be taken, in order to preſerve *Wine* clear and in good Condition, beſides what have been exhibited, are, firſt, that the Vault in which it is placed, be under a good Building, ſo as not to be affected by the external Air; for if it be expoſed to Rain, there will be no Poſſibility of keeping *Wines* in it, tho' the Arch may be turned with the utmoſt Care; and this well clayed on the Top, and paved with ſquare Stones over the Clay; as I have ſeveral times obſerved, where all theſe have been well performed: and yet the Vaults would not keep *Wine* in any tolerable Condition, when the Rains in *Autumn* have fallen. For if the Vaults are not ſo contrived, as that Heat and Cold may not alter the Temperature of the Air; *Wines* will never continue long good in them. Therefore it will be very proper to hang Thermometers up in the Vaults, by which the Alterations of Heat and Cold may be certainly known; and if it appears, that the Spirit is ever raiſed in the *Summer*, or ſunk by cold in *Winter*, above five Diviſions from the temperate Point, there will be ſmall Hopes of preſerving the *Wine* which is placed in them. The next Caution ſhould be, not to put any Quantity of other fermenting Liquors into the ſame Vault with the *Wine*; for that will often affect the *Wines* which are near them. Nor ſhould new *Wines* be carried into the Vaults where the old *Wines* are kept, becauſe when the new *Wines* are in a ſtrong State of Fermentation, they will affect the whole Air of the Vaults, and alter its Temperature; whereby the old *Wines* will be often cauſed to fret, which will raiſe the Sediment, and foul the *Wine*; ſo that many times it becomes ſo ill-taſted, as not to be, by the greateſt Art, ever rendred ſo palatable as before. There are many other things which will occur to a careful Obſerver, who is practiſed in managing of *Wines*, very well worthy to be conſidered by the Curious, which have never fallen within my Obſervation.

WINE-PRESS. *A Deſcription of the great Taiſſon or framed Preſs.*] The Preſs, which is a Machine or moving Power, contrived to ſqueeze the Juice out of Grapes, conſiſts of an Aſſemblage of many Pieces of Timber, placed after different Diſpoſitions, which compoſe three Bodies of Timber-Work, cloſely joined to the Axis, which ſerves as a Swing, whereby it may be moved by the Vice.

The great Preſſes are thirty or thirty-three Feet long, and twelve or ſixteen wide. To make one of theſe Machines, they firſt dig a Pit in the Ground about four Feet deep, and ſixteen Feet ſquare, in the moſt commodious Place where the Preſs is deſigned. In the Middle of this Hollow, they build a ſmall Pile of Maſonry the whole Length, for a Foundation, two Feet thick, and three Feet high, in ſuch a Manner as to have only one Foot below the Surface of the Ground; then they make a parallel Wall, to ſurround the Preſs from the Right to the Left, to the Extremity of the Pit, at an equal Diſtance from the Pile in the Middle, for ſupporting ſome of the Timbers, and to prevent the Earth from falling down into the Pit. The Space between theſe three little Walls of three Feet depth, is neceſſary to give Air to the Wood, to prevent its rotting.

The Wall, which ought to be from the Sides of the Beams (which may be placed from the Right to the Left of the Preſs, according to the greateſt Conveniency of the Place) ſhould be deeper than the Hollow of the Beams; which ſhall be explained hereafter; and that which is contrived

trived on the bent Side of the Beams, ſhould be thicker than the Square of the Baſon: which will be more eaſily comprehended, by what follows.

Upon the little Wall of the Middle, they lay a Piece of Timber lengthwiſe, which they call a *falſe Stilling*; upon this, to the Side of the hollow Beams, they place a Ground-plate, which is ſupported by another Pile of Maſonry, where are joined cloſe to the Beams the Piles which they croſs: all theſe Pieces ſhould be laid level, in order to ſupport four Stillings, which are placed acroſs them at an equal Diſtance. Theſe Pieces ought to extend beyond the Wall of the Baſon, on the Side of the Beams, about three Feet, and be laid upon the Piles, to hinder them from riſing: There muſt always be allowed a Declivity of three or four Inches from the Front to the four Stillings, in order to facilitate the Draining of the Wine into the Cask, which ſhould be placed under the Middle, in the Fore-part of the Baſon, to receive it from the Side where the Holes are bored.

They afterwards place upon theſe four Stillings, croſs the Baſon of the Preſs, ſome Pieces of Wood called *Maye*; theſe ſhould have their Tops level with the Top of the Stillings, and ought to be cut in Notches of four Inches in length on both Sides the Baſon, for receiving the *Maye* in ſuch a manner, that they may be faſten'd on each Side with Wedges, after having put in the Middle of the Joints Potters Earth and Moſs, to prevent the Wine from getting out at the Crevices: Theſe Pieces of *Maye* are ſimply joined together without Fillets or Notches, that they may the better cloſe the two Ends to the Middle of the Quoins their whole Length, between the Stillings and the Side of the laſt Pieces of *Maye*: Theſe Pieces ſhould be raiſed in the Middle with a Ridge, to make a Gutter in each Joint, to facilitate the draining of the Wine: They alſo make, for the ſame Purpoſe, a Ridge or Furrow all round the Extremity of the Pieces of *Maye*.

In the Place appointed for the Beams, on the Right or Left of the Baſon, they make a Hole big enough to erect a Frame of Maſonry twelve Feet deep, eight long, and five broad; one of the three Piles of Maſonry, which ſupports the Baſon, ſerves there inſtead of one Side of the Wall to the Beams, which are driven into the Ground at the Bottom of the ſaid Frame, twelve Feet deep, and are fifteen or ſixteen Feet above the Level of the Ground: Theſe they join with the Piles which croſs 'em, upon which they put the Beams, which are all joined by Cramps of Wood, except the laſt, to which the Stillings ſerve inſtead of Braces. They afterwards erect the Maſonry, in which they incloſe the Ends of the Piles, as alſo thoſe of the Braces to prevent the Beams from riſing; theſe Piles ought to be placed contrary to the Stillings, which ſurround or croſs them every three Feet, and Dove-tail'd into the ſquare Supporters; the Space left between the Maſonry they do not fill up, that the Beams may be preſerved from rotting; and that, if Occaſion be, they may go down into the Pit. The Beams ought to be laid in ſuch a Manner, that their Sides may occupy the Middle of the Baſon, and they ſhould incline two Inches beyond it: The Front and Sides muſt be made ſmooth and even; but the Back and Tops muſt be left rough: They make at Top, under the Pieces of *Maye*, a Step of two or three Inches, for Support to the Carriage; the Top of the Beams is joined with a Croſs-beam, under which is a Spindle ſupported by a diagonal Beam, on which all the Force and Reſiſtance of the Preſs bears; this diagonal Beam ſhould be cloſely faſtened with Nails and Girders under the Heads of the Beams: In the Middle of the other Side of the Baſon, they put upon the Ground-plate, between the Ends of the Stillings, two falſe Beams a little Diſtance from the true ones, becauſe it is on this Side that the Axle-tree is notched to receive the Beams, to prevent their recoiling back; theſe are a little enlarged towards the falſe Beams; they ſuſtain theſe with four croſs Pieces, or ſtrong Jambs, two on the Front, and two on the Sides, which abut againſt them, and keep them in their Places; theſe croſs Pieces are borne by the Ground-plate and the Poſts, and let in at the other End, juſt to the Middle of the falſe Beams; theſe ought to be bored about four Feet high, that the moving Pins may be put in there for the Beam to reſt upon: Theſe falſe Beams ſhould have Holes at their Bottoms, to receive the wooden Pegs which croſs the Ground-plate, and are cut to half their Thickneſs, that they may be capable to enter the Notches, and be joined with Keys and Pins where they croſs the falſe Beams; they likewiſe bind theſe Beams at the Top with a croſs Beam, and they ſuſtain them again at the Bottom with two croſs Pieces on their Sides; theſe croſs Pieces are placed upon the Poſts which are joined into the Ground-plate by a Dove tail, and are borne up horizontally by a ſmall Piece of Maſonry of their own Size, which is chiefly hid in the Ground: There muſt alſo be on each Side a large croſs Piece to croſs the Baſon, which binds together the falſe Beams with the true, both before and behind; theſe they faſten to the Top of the Beams, allowing them a Foot and half Declivity to the Place where they are mortiſed into the falſe Beams.

They alſo make in the Ground, on the Sides of the falſe Beams, ten Feet from the Baſon, a Pit twelve Feet deep, and ten Feet ſquare, to place the two Blocks which ſhould join at Bottom, and be ſeparated by the great Ends, about two Feet above the Surface of the Ground, in ſuch a manner, that the Screw may be able to play between them; theſe muſt be joined at Bottom to the Piles by a ſtrong Dove-tail, and the Piles joined with Braces; and near the Top, about fifteen Inches from the Head, they ſhould be bound with Girders and Pins, to keep them aſunder, and prevent their parting: The Space between the Blocks and the Piles muſt be filled up with Earth, which ſhould be well ramm'd; theſe Girders ſhould be let in ſeven or eight Inches to the Body of the Blocks.

In the Middle of the Girders there ſhould be a Hole to put in the Screw, which ſhould there deſcend perpendicularly, and which is rounded to this Place, and leſſen'd to a third-part of its Thickneſs; and a Foot lower than the Girders ought to be a Rail placed as a Support, from Bottom to Top, in a Slope, for a Reſt to the Screw; there ſhould be on this Rail a Plate of Iron, and an Axis to the Screw, for its Play: The Screw muſt be twelve Feet long, and thirteen Inches thick at the Top; the Screw-tap, or the Extremity of the Spiral-line, ought to be three Inches and an half, and ſhould form an exact Square; the Screw ſhould paſs croſs a Wheel, which is placed three Feet from the Surface of the Ground, and which in this Place ſhould be ſquare, and about an Inch and an half of its Thickneſs pared off for the Play of the Wheel: This Wheel ſhould be joined with Spokes and Curbs athwart, into which they put divers Pegs, that they may be able, with five or ſix Men, to give it the neceſſary Motion.

Laſtly: There ſhould be placed, at five Feet from the Bottom of the Baſon two great Beams, which muſt paſs between the true and the falſe Beams; theſe muſt be both ſquared or pared away at the great End, on thoſe Sides where the Beams touch, where they let them into a Notch, to prevent their coming out; and at the Back-part they put a Key, to ſecure them from being diſplaced, (for they cannot put them into it); but nevertheleſs, in ſuch a Manner, that they may play between the Beams, without changing their Poſition: Theſe Beams ſhould be well fitted to their Bed, and joined with Keys, that they cannot part from each other; for they ſhould open inſenſibly from the falſe Beams, where they ought alſo to ſeparate to the right of the Screw, to give Place for it. Upon the End of theſe Beams muſt be joined the Nut of the Preſs with moveable Keys, that by this Means it may be raiſed or lowered, ſo that the Beams may riſe and fall as a kind of Swing, which has the Keys for its Centre, which are the falſe Beams, where the great Beams do reſt, and the Bag which is upon the Baſon. When they preſs, before the Preſs-man raiſes the Beam, by Means of the Screw, they lower it on the Sides of the falſe Beams a little, that they may force the Quoins between the Beams and the Spurs, which is upon the falſe Beams; then they lower it with the ſame Screw from the Side of the falſe Beams: After they have moulded the Grapes with the three Poles, the Planks and the Nave, by the Help of the Wheel which moves the Screw, they preſs the Bag ſtrongly.

Theſe Beams ſhould be two Feet and a half thick; and if that is not big enough, they put two upon each other, and ſometimes three, if it be neceſſary: Theſe they join together with Nails in different Places, both on the Bed, and in Front, that they may work together, as if there were but two; and they raiſe at the End of the Preſs, on the Side of the falſe Beams, a ſmall hanging Scaffold or Steps, to go up to ſtrike the Quoins.

Of the great Framed Preſs.

This Sort of Preſs is made like the other, except that inſtead of the Blocks, they uſe a Frame. They make a great Pit in the Earth twelve Feet deep, and nine Feet diameter; and to ſupport the Earth, they build a Wall of Stone all round it in the Form of a Well, which ought to be ſeven Feet diameter, that they may place in this Space a Frame of Wood-work of a ſquare Figure, joined together with Poſts, Joiſts, Ground-plates, and Rafters, like a St. *Andrew's* Croſs: In this Frame they put a ſolid Stone Wall of about three thouſand Weight; then they join the Screw to the Centre of the Frame, that they may be turned together, and ſo keep the Beams upon the Stock of the Wheel, to preſs the Grapes, in ſuch a Manner as if one Man was ſuſpended at one End of a Pole which is made faſt at the other, and in the Middle there is ſomething to preſs. At about two or three Feet from the Ground is a Wheel, by Means of which, and the Weight of the Frame, they make the Screw deſcend, which lowers the Beam. The Frame ſhould be ten Feet high, and four Feet nine Inches ſquare on each Front. Great Care ſhould be taken of the Block-Preſſes, not to ſcrew them too hard, leſt it break the Beams, and ſplit them to Pieces, nothing being of greater Force than a Screw. You muſt not fail to make the Dove-tails very exact: but above all, the Screw and the Nut ſhould be made artificially to their Work.

Theſe great Preſſes make at one Vat or Stowage, from twenty to twenty-five Pieces of *Wine*. One may make it leſs by a fourth Part; and it will preſs as well, when there are not above ten or fifteen Pieces of *Wine*: In this Caſe, the Pieces ſhould be proportionably diminiſhed in the Bigneſs from what has been deſcribed.

The Names, Length, and Thickneſs of the Pieces which compoſe a great Preſs.

The main Beams from thirty-two to thirty-five Feet long, and, one with another, from two Feet and a half to three Feet thick.

The Cheeks or Side-Beams twenty-eight Feet long about two Feet thick at the Bottom, and eighteen Inches at the Top.

The Piles twelve Feet long, and twelve or thirteen Inches thick. It muſt be obſerved to make theſe with counter Dovetails to thoſe of the Cheeks; the firſt is placed at fifteen Inches from the Bottom of the Cheeks; one ought to put three from the Top, to that which is in the Ground, and the latter ſhould be even with the Top of the falſe Stiller.

Upon the Piles of the Cheeks, and upon thoſe of the Blocks, are placed Braces of Wood nine Feet long, and about nine or ten Inches thick, to bind them together.

The Stillers ſix Feet long, and about fifteen or ſixteen Inches ſquare.

The Ground-plate eighteen Feet long, about eighteen Inches broad, and fifteen Inches thick.

The falſe Beams fourteen or fifteen Feet long, about thirteen or fourteen Inches broad, nine Inches thick at the Bottom, and ſix at the Top: Theſe ought to be plained to the Size of the Keys, to ſupport the main Beams.

The croſs Piece of the falſe Beams ſix Feet long, four Inches broad, and nine or ten thick.

The Keys of the Beams to the Direction of the Worm, five Feet and a half long, eight Inches thick towards the Head, but reduced to half the Size in the remaining Length.

The Pegs of the Keys fourteen Inches long, about five broad, and at leaſt one and a half thick.

The two croſs Timbers of the falſe Beams about eight Feet long, four or five Inches thick, and the ſame Breadth of the falſe Beams.

The two other croſs Timbers of the falſe Beams nine Feet long, and about eight Inches thick.

The Poſts ſix Feet long, and about eight or nine Inches thick.

The Pieces of *Maye* which are at the Baſon twelve Feet long, about nine or ten Inches broad, and ſix thick.

The great croſs Timbers, put as a Band between the falſe Beams, ſix or ſeven Inches thick.

The two Blocks, fourteen Feet long each, about ſixteen Inches thick at the Head, and twelve at the Bottom.

The Screw, fifteen Inches at the Bottom before it is ſquared, thirteen Inches, according to the Foot of the Screw which forms the Spiral-line, and twelve Feet long.

The Wheel ten Feet diameter, with Spokes of four Inches Thickneſs, the ſame as the Ribs, upon which are Wooden Pegs, for four or five Inches high, and one diameter, admitting eight or nine Men in the Circumference of the Wheel.

The Nut of the Preſs ſix Feet long, two Feet broad, and fourteen Inches thick; which ought to be creſted with Iron.

The Croſs Piece of the Cheeks ſix Feet long, about a Foot thick, and of the ſame Breadth as the Top of the Cheeks.

The Spurs, which are placed under the Spindle, between the two Cheeks, ſhould be of the ſame Breadth as the Cheeks, and thirteen or fourteen Inches thick.

The Girders, which ought to embrace the Top of the Cheeks, muſt be two Inches higher than the under Part of the Spurs, one Foot broad, and about five Inches thick.

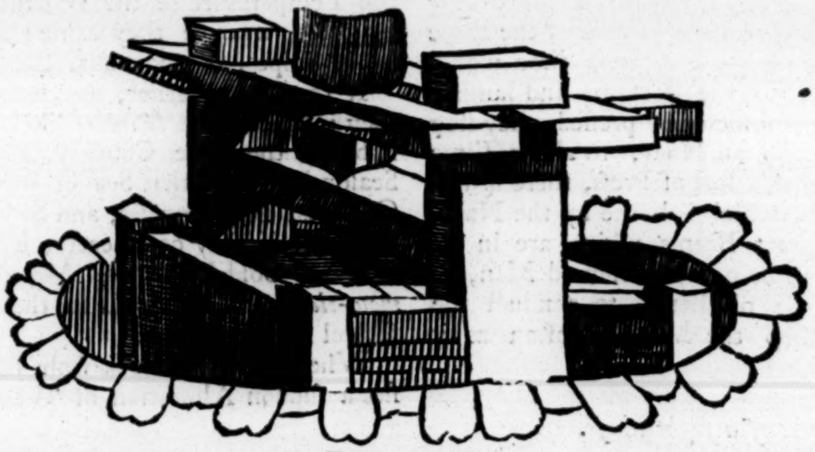
The Spindle two Feet high, and twelve or fourteen Inches thick: This is placed between the Spurs and the croſs Piece, and croſſes the Cheeks and the Spindle with a Key, which ought to be worked very exact; for there it is the whole Force of the Preſs reſides.

The Quoins two Feet long, about nine or ten Inches broad, and ſix or ſeven thick.

The Frame, in the Framed Preſs, ten Feet long or deep, and four Feet nine Inches ſquare, with four Fronts.

The Nave eight Feet and a half long, about five Inches thick one Way, and ſix the other.

All theſe Timbers ſhould be Oak, except the Screw, which ſhould be Elm, which will laſt longer, and the Spindle ſhould be of Walnut. One may make the moſt Part of theſe Timbers longer or ſhorter, according to the Size of the Wood made uſe of.



The FRAMED PRESS.

The Deſcription of a ſlight Preſs.

This Sort of Preſs is much leſs chargeable than the others; and it alſo preſſes a much leſs Quantity of *Wine*; but it is nevertheleſs of great Uſe for private Perſons, who have no great Vintage, where this will be ſufficient, for it will make eight or ten Pieces of *Wine* at each Tunning.

The Conſtruction of this ſlight Preſs, is much the ſame with that of the other Preſſes; but I ſhall explain wherein they differ.

The Pit which is made in the Earth ought to be four Feet deep, fourteen broad, and eighteen long, more or leſs, according to the Size of the intended Preſs. They make three little Walls of Free-ſtone croſs the Preſs, which occupies the Bottom of the Square of the Baſon, they make the Walls in the Middle two Feet, and thoſe on the Sides two and a half thick; an Opening muſt be left in the Middle of each of the Side-walls, about twenty Inches ſquare, to place the two Cheeks one oppoſite to the other on each Side of the Baſon, which ſhould incline an Inch and a half towards the Baſon: Theſe muſt be ſquared and plained on three Sides, from the Top of the Stillings; but the Top ſhould remain rough. In theſe Sides, which are towards the Baſon, they make a Notch at the Height of two Feet and a half from the Baſon, three Inches broad, four Inches deep, and two Feet high in aſcending towards the Head.

They place the falſe Stillings upon the middle Wall; and upon each of the other they place two Piles, which embrace the Cheeks, and are joined to them by ſquare Supporters and Dove-tails. In croſſing the Piles and the falſe Stillings, they put the four Stillings in Notches, as in the other Preſſes; thoſe of the Middle embrace the Cheeks, and are joined to them as the Piles are, and ſhould extend beyond the Piles which are behind the Cheeks eight or nine Inches: The Top of the Stillings ought to be notched an Inch and a half, fit to receive the Piles to keep the Whole together:

Then they put upon theſe the Pieces of *Maye*, which they cloſe, as hath been already ſaid; and the Baſon is the ſame with the other Preſſes.

The Spindle of the Screw ought to be ſeven or eight Inches longer than the Back of the Cheeks, and embrace them in their thickeſt Parts; this is placed upon them, and ſupported upon the Keys, which croſs the Cheeks, by Nails: This muſt be ſtay'd behind the Cheeks with a Key, and in Front with four Iron Bars, making a Square of a Foot and a half, bored at the four Corners with Pins and Nails four or five Inches long towards the Screw-tap. Upon the Spindle they lay Planks of the ſame Length, which they croſs in ſuch a manner, that their Ends are turned toward the Front of the Preſs: Upon theſe Planks they lay two croſs Pieces of the ſame Length as the Spindle, which embrace the Top of the Cheeks under their Heads, they let them in at each End in Front, where they are joined: Theſe croſs Pieces and the Cheeks ought to be nailed together; and they muſt put four croſs Timbers, which ſhould take hold of the Head of the Beams, and reach half the Length of the Head-pieces, for a Support to each.

They afterwards make a Screw with the ſame Inſtrument as that of the other Preſs, with a Square at Bottom, to join it to a Wheel, which ſhould be laid horizontally, well conſolidated with the Screw, and joined with Ribs and Spokes a Foot wide croſſwiſe; theſe Spokes ought to project out of the Ribs three or four Inches of half their Width, to be able to contain the Rope, which muſt be round the Wheel. Under the Centre of the Wheel they place a Standard of the Length of the Space between the Cheeks, and eight Inches thick, or more, to make a ſort of Tenon at each End, which goes into the Notch of the Cheeks. The Standard ſhould be ſuſtained by an Iron Pin, which goes in at the End of the Screw, to be held ſuſpended by it, in ſuch a manner, that it may waggle: In order to this, the End of the Pin, which is under the Standard, ſhould play with the Key which holds it at the other End in the Screw.

At ten or twelve Feet from the Preſs they place a Wheel, either horizontally or perpendicularly, with an Axle-tree, which ought to play in the Flyers of Wood, well fixed; they bind to the Wheel, which is at the Top of the Baſon, to one of the Spokes, or one of the Pins which is driven in for this Purpoſe, the Oelet-hole of a great Rope two Inches and a half diameter. They can turn the Wheel once or twice round with the Hand, before they take hold of the Rope: The Rope ought to go round the Wheel five or ſix times, and be faſten'd at the other End to that which is at the Side of the Preſs. They employ ſeven or eight Men to turn this Wheel. It is of great Conſequence to obſerve, that when there is no more than one Turn and a half of Rope about the Wheel, and if there is another Bag to preſs, they ſhould remit two or three Turns of the Rope to the Wheel to finiſh the Preſſing; otherwiſe they would riſque the breaking the Wheel at the Bottom, and laming the Preſſers. When the Bag is ſufficiently preſſed, they ſtop the perpendicular Wheel for half an Hour, to allow Time for the *Wine* to drain off. In this ſort of Preſs, there is nothing but the Standard-Preſſes, which is borne by the Nave, and ſupplies the Place of the great Beams which are in the other Preſſes. There ought to be one experienc'd Man, to whom the others ought to be obedient, to conduct the Preſſing, and to cut and chop the Marc as often as it ſhall need.

The particular Pieces of a ſlight Preſs.

The two Cheeks, ſixteen Feet long, and about eighteen or twenty Inches thick.

The Spindle, fifteen or ſixteen Feet long, and about three wide.

The Head-piece, ſixteen Feet long, and about thirteen or fourteen Inches thick.

The Croſs-Timbers, ſix Feet long, and about ſix or ſeven Inches thick.

The Piles, twelve Feet long, and about twelve or thirteen Inches thick.

The Screw, ſeven or eight Feet long, about thirteen Inches thick to the Spiral-line, and ſixteen Inches at the Bottom, fitted to a Square; this ſhould be notched in that Place two Inches, for placing the Wheel.

The Standard, twelve Feet and a half long, ſeventeen or eighteen Inches broad in the Middle, and ten at the Ends, and eight or ten Inches thick in the Middle, reduced to ſix or ſeven at the Ends.

The Middle Wheel, nine Feet diameter, and ten or eleven Inches thick.

The Perpendicular Wheel of an equal diameter, and five or ſix Inches thick in every Part of the Timber.

The Axle-tree ten or eleven Feet long, and eight Inches diameter.

The falſe Stillings and the Pieces of *Maye* ought to be the ſame as in the other Preſſes in every Part.

The Stillings, eighteen Feet long, and the ſame Breadth and Thickneſs as in the other Preſſes.

The Nave, as in the other Preſſes; that is to ſay, ſeven or eight Feet long, and five or ſix Inches ſquare.

This Deſcription of the different Sorts of Preſſes which are uſed in *Champaigne*, together with the annexed Plates, will, 'tis hop'd, be ſufficient to inſtruct a Workman how to erect either of the Sorts here exhibited.

WINTER. *Prognoſticks of a hard Winter.*] The Lord *Bacon* gives theſe as Signs or Forerunners of a hard *Winter:*

If Stone or Wainſcot that has been uſed to ſweat, (as it is call'd) be more dry in the Beginning of *Winter*; or the Drops of Eaves of Houſes come down more ſlowly than they uſed to do, it portends a hard and froſty *Winter*. The Reaſon is, that it ſhews an Inclination in the Air to dry Weather, which, in the *Winter*-time, is always joined with Froſt.

Generally a moiſt and cool *Summer* betokens a hard *Winter* likely to enſue. The Reaſon is, that the Vapours of the Earth not being diſſipated by the Sun in the *Summer*, do rebound upon the *Winter*.

A hot and dry *Summer*, eſpecially if the Heat and Drought extend far in *September*, betokens an open Beginning of *Winter*, and Cold to ſucceed towards the latter Part of the *Winter*, and in the Beginning of the *Spring*; for all that time the former Heat and Drought bear the Sway, and the Vapours are not ſufficiently multiply'd.

An open and warm *Winter* portends a hot and dry *Summer:* for the Vapours diſperſe into the *Winter* Showers; whereas Cold and Froſt keep them in, and tranſport them into the late *Spring* and *Summer* following.

The Country People have made this Obſervation, that thoſe Years in which there are ſtore of Haws and Heps, do commonly portend cold *Winters:* The natural Cauſe of this may be, the want of Heat, and abundance of Moiſture, in the *Summer* preceding, which puts forth thoſe Fruits, and muſt of neceſſity leave a great Quantity of cold Vapours undiſſipated, which cauſes the Cold of the following *Winter*.

When Birds lay up Haws and Sloes, and other Stores, in old Neſts and hollow Trees, it is a Sign of a hard *Winter* approaching.

If Fowls or Birds, which uſed at certain Seaſons to change Countries, come earlier than the uſual Time, they ſhew the Temperature of the Weather, according to that Country from whence they came; as the *Winter* Birds, Feldfares, Snipes, Woodcocks, *&c.*

If they come earlier, and out of the Northern Countries, they intimate cold *Winters* likely to enſue with us. And if it be in the ſame Country, they ſhew a Temperature of Seaſon like unto that Seaſon in which they come; as Bats, Cuckoes, Nightingales, and Swallows, which come towards *Summer*; if they come early, it is a Sign of a hot *Summer* to follow. Cold Dews and Morning Rains about *Bartholomew-tide*, and hoar Froſts in the Morning about *Michaelmas*, foretel a hard *Winter*.

When Sea-Pyes flock from ſalt to freſh Water, it ſignifies a ſudden Alteration of Weather to much Cold.

X A

XANTHIUM, Leſſer-burdock.

The *Characters* are;

It hath a floſculous Flower, conſiſting of many Florets, which are barren, out of which ariſes the Chive, ſupporting the Summit for the moſt part bifid. The Embryo's ariſe at a remote Diſtance from the Flowers on the ſame Plant, which become oblong Fruit, for the moſt part prickly, divided into two Cells, and pregnant with Seeds, which are alſo oblong.

The *Species* are;

1. XANTHIUM. *Dod. pempt.* 39. The Leſſer-burdock.
2. XANTHIUM *Canadenſe majus, fructu aculeis aduncis munito. Inſt. R. H.* A greater Kind of the Leſſer-burdock from *Canada*, with a Fruit armed with crooked Prickles.

3. XANTHIUM *Luſitanicum laciniatum, validiſſimis aculeis munitum. Inſt. R. H.* Jagged *Portugal* Leſſer-burdock, armed with very ſtrong Prickles.

4. XANTHIUM *Carolinienſe medium, fructu toroſiore. Hort. Elth.* Middle Carolina Leſſer-burdock, with a ſwelling Fruit.

The firſt Sort is ſometimes found wild in *England*, tho' rarely; but in ſeveral other Countries it grows plentifully by the Sides of Brooks, Ditches, and other ſtanding Waters; always delighting in a moiſt fat Soil. This Plant is placed in the Catalogue of Medicinals at the End of the College Diſpenſatory, tho' at preſent it is rarely uſed in Phyſic.

The ſecond Sort was brought from *Canada*, where it grows very plentifully; as alſo in many of the neighbouring Countries in *North America*.

The third Sort is a Native of *Portugal*, from whence the Seeds have been procured by ſome curious Botaniſts, who preſerve it in their Gardens.

The fourth Sort was diſcovered by Mr. *Catesby*, in *South Carolina*, from whence he brought the Seeds to *Europe*.

All theſe are annual Plants, which, if permitted to ſcatter their Seeds in *Autumn*, will maintain themſelves better than if they are ſown in the *Spring*; for the Seeds will remain in the Ground all the *Winter*, and the Plants will come up early the following *Spring*; when they will require no farther Care but to thin them where they are too cloſe, and to keep them clear from Weeds. In *July* their Flowers will begin to appear, and their Seeds will ripen in *September*.

The firſt is an humble Plant, ſeldom riſing above a Foot high, but the ſecond, third and fourth Sorts, will riſe to be near three Feet high; and divide into many Branches. The third Sort is often later in ripening of its Fruit, than either of the former; ſo that when the *Autumns* prove very cold, the Seeds do not come to Maturity; therefore it will be proper to raiſe a Plant or two of this Kind on a Hot-bed early in the *Spring*; which ſhould be planted in Pots, to confine their Roots, and thereby prevent their growing too luxuriant, and cauſe them to put out their Flowers and Fruit much ſooner; ſo that their Seeds will be perfectly ripe.

XERANTHEMUM, [of ξῆρος *dry*, and ἄνθος *a Flower*, q. d. *dry Flower*. *Cluſius* calls this Plant *Ptarmica*; not becauſe it cauſes Sneezing, but becauſe it ſomething reſembles the *Ptarmica* of *Dodoneus*. It is vulgarly call'd the *Immortal Herb*, becauſe the Flower of it may be kept for many Years; for it has rigid Petals, which crackle as if they were Plates of Metal] Eternal Flower, *or* Ptarmica, *vulgo*.

The *Characters* are;

It hath a ſcaly Silver-coloured Flower-cup: The Flower is dry: The Diſk conſiſting of many plain Petals, having no Embryo's affixed to them, yet are included in the ſame Empalement with the Florets: The Embryo's afterwards become Seeds, each having a leafy Head.

The *Species* are;

1. XERANTHEMUM *flore ſimplici purpureo majore. H. L.* Eternal Flower, *or* Ptarmica, with a large, ſingle, purple Flower.

2. XERANTHEMUM *flore pleno purpureo majore. H. L.* Eternal Flower, *or* Ptarmica, with a large, double, purple Flower.

3. XERANTHEMUM *flore ſimplici albo. H. L.* Eternal Flower, *or* Ptarmica, with a ſingle white Flower.

4. XERANTHEMUM *flore pleno albo. H. L.* Eternal Flower, *or* Ptarmica, with a double white Flower.

5. XERANTHEMUM *flore ſimplici purpureo minore. Tourn.* Eternal Flower, *or* Ptarmica, with a leſſer, ſingle, purple Flower.

6. XERANTHEMUM *flore purpureo ſimplici minimo, ſemine maximo. H. L.* Eternal Flower, *or* Ptarmica, with a very ſmall, ſingle, purple Flower, and a large Seed.

7. XERANTHEMUM *incanum, flore albo. H. R. Par.* Hoary Eternal-flower, with a white Flower.

8. XERANTHEMUM *flore ſimplici minimo, dilute purpuraſcente. H. L. Bat.* Eternal-flower, with the leaſt ſingle, pale, purpliſh-coloured Flower.

9. XERANTHEMUM *flore ſimplici, ex albo & rubro obſoletis mixto. Hort. Cath.* Eternal-flower, with a ſingle Flower of a mix'd Red and White.

10. XERANTHEMUM *flore pleno, ex albo & rubro obſoletis mixto. Hort. Cath.* Eternal-flower, with a double Flower mixed with White and Red.

11. XERANTHEMUM *orientale, flore minimo, calyce cylindraceo. Tourn. Cor.* Eaſtern Eternal-flower, with the leaſt Flower, having a cylindrical Cup.

Theſe Flowers were formerly much more cultivated in the *Engliſh* Gardens than at preſent, eſpecially the two Sorts with double Flowers, which the Gardeners near *London* did cultivate in great Plenty for their Flowers, which they brought to Market in the *Winter* Seaſon, to ſet in Glaſſes in Rooms, to ſupply the Place of other Flowers, which are not eaſy to be procured at that Seaſon; for theſe being gather'd when they are fully blown, and carefully dry'd, will continue freſh and beautiful many Months: but as there are no other Colours in theſe Flowers but white and Purple, ſo the Gardeners had a Method of dipping them into various Tinctures, ſo as to have ſome of a fine Blue, others Scarlet, and ſome Red, which made a pretty Variety; and if they were rightly ſtain'd, and afterwards hung up 'till they were thorough dry, they would continue their Colours as long as the Flowers endured.

All theſe Sorts are propagated by Seeds, which ſhould be ſown on a warm Border in *Auguſt*, obſerving to water and ſhade the Ground, if the Seaſon proves warm and dry, until the Plants are come up; after which they muſt be kept clear from Weeds, and in dry Weather ſhould be now and then refreſh'd with Water. When the Plants are about two Inches high, they ſhould be prick'd out into another Border under a warm Wall, Pale, or Hedge, at about four or five Inches Diſtance from each other. In this Place the Plants will endure the Cold of our ordinary *Winters* extremely well; and in the *Spring* will require no farther Care but to keep them clear from Weeds; for they may remain in the ſame Place for good. In *June* they will begin to flower, and the Beginning of *July* they will be fit to gather for drying: but a few of the beſt and moſt double Flowers of each Kind ſhould be ſuffer'd to remain for Seed, which in about a Month's time will be ripe, and the Plants will periſh ſoon after; ſo that the Seeds muſt be annually ſown, in order to preſerve them.

The Seeds of theſe Plants are many times ſown in the *Spring*: but they ſeldom grow ſo well at that Seaſon; nor will the Plants grow near ſo large, or produce near the ſame Quantity of Flowers, as thoſe which are ſown in *Autumn*; for which Reaſons that Time ſhould be preferr'd. Beſides, it often happens, that the Plants which do come up of the *Spring* ſowing, do rarely produce good Seeds, unleſs the Seaſon proves very favourable.

The ſeventh, eighth and eleventh Sorts are Plants of no very great Beauty; but are preſerved in ſome Botanic Gardens for the ſake of Variety. The ninth and tenth Sorts produce very pretty variegated Flowers, ſo are worthy of a Place in every good Garden; but at preſent theſe are very rare in the *Engliſh* Gardens, tho' in ſome of the Gardens in *Holland* they are pretty common, where the Flowers are dried and preſerved to adorn their Rooms in the *Winter* Seaſon.

XIPHION, [of Ξίφος, or Ξιφείδιον, *a ſmall two-edged Sword with a ſharp Point*, becauſe the Leaves of this Plant reſemble a little Sword] Bulbous Iris, *or* Fleur-de-Lys.

The *Characters* are;

It hath a Lily Flower, conſiſting of one Leaf, and ſhaped exactly like that of the Common Iris: *The Pointal is furniſhed with three Leaves; but the Empalement turns to a Fruit, ſhaped like that of the Common* Iris: *and the Root is bulbous, or conſiſts of many Coats.*

The *Species* are;

1. XIPHION *Perſicum præcox, flore variegato. Tourn.* Early Perſian bulbous Fleur-de-Lys, with a variegated Flower.

2. XIPHION *anguſtifolium, flore albo, labio inferiori rictus aureo. Boerh. Ind.* Narrow-leaf'd bulbous Iris, with a white Flower, and the lower Part of the Lip of a yellow Colour.

3. XIPHION *anguſtifolium, cæruleo-violaceum, non odorum. Boerh. Ind.* Common narrow-leaf'd bulbous Iris, with a blue violet-colour'd Flower, without Scent.

4. XIPHION *anguſtifolium, flore luteo inodoro. Tourn.* Narrow-leaf'd bulbous Iris, with a yellow Flower, without Scent.

5. XIPHION *anguſtifolium, flore ex violaceo-purpureo & cæruleo palleſcente, variegato, notata. Boerh. Ind.* Narrow-leaf'd bulbous Iris, with a Violet-purple and pale-blue variegated Flower.

6. XIPHION *anguſtifolium, petalis repandis albis, erectis dilutè cæruleis, incumbentibus pallidè cæruleſcentibus. Boerh. Ind.* Narrow-leaf'd bulbous Iris, whoſe Flower hath white Falls; the upright Leaves of a Sky-blue, and the under ones of a pale-bluiſh Colour.

7. Xiphion *anguſtifolium, petalis repandis aureis, incumbentibus pallide flavis, erectis dilutè cæruleis. Boerh. Ind.* Narrow-leaf'd bulbous Iris, whoſe Flower hath yellow Falls, and the upright Leaves are of a Sky-blue Colour.

8. Xiphion *anguſtifolium, flore majore dilutè cæruleo.* Narrow-leaf'd bulbous Iris, with a large Sky-blue Flower.

9. Xiphion *anguſtifolium, flore majore dilutè cæruleo, lineis rubris eleganter ſtriato.* Narrow-leaf'd bulbous Iris, with a large Sky-blue Flower, elegantly ſtriped with red.

10. Xiphion *anguſtifolium, flore majore albo.* Narrow-leaf'd bulbous Iris, with a large white Flower.

11. Xiphion *anguſtifolium, flore majore albo, lineis dilutè cæruleo, & pictis violaceo diſtincto.* Narrow-leaf'd bulbous Iris, with a large white Flower, with Sky-blue Stripes, and ſpotted with Violet.

12. Xiphion *anguſtifolium, flore majore ſaturatè violaceo.* Narrow-leaf'd bulbous Iris, with a large deep Violet-colour-ed Flower.

13. Xiphion *anguſtifolium, flore majore, petalis repandis dilutè cæruleis, erectis ſaturatè violaceo.* Narrow-leaf'd bulbous Iris, with a large Flower, whoſe Falls are of a Sky-blue, but the upright Petals are of a deep Violet Colour.

14. Xiphion *anguſtifolium, flore majore dilutè cæruleo, petalis repandis flavis.* Narow-leaf'd bulbous Iris, with a large Sky-blue Flower, with yellow Falls.

15. Xiphion *anguſtifolium, flore majore ſaturatius violaceo, ſtriis rubris eleganter variegato.* Narrow-leaf'd bulbous Iris, with a deep Violet-colour'd Flower, beautifully ſtriped with red.

16. Xiphion *anguſtifolium, flore majore, petalis repandis dilutè cæruleo, erectis flavo.* Narrow-leaf'd bulbous Iris, whoſe Flower hath pale-blue Falls, but the upright Leaves are of a yellow Colour.

17. Xiphion *latifolium acaulon odoratum, flore cæruleo. Inſt. R. H.* Broad-leav'd ſweet-ſcented bulbous Iris, with a blue Flower, without a Stalk.

18. Xiphion *latifolium acaulon odoratum, flore purpureo. Inſt. R. H.* Broad-leav'd ſweet-ſcented bulbous Iris, with a purple Flower without a Stalk.

19. Xiphion *latifolium acaulon odoratum, flore lactei coloris. Inſt. R. H.* Broad-leav'd ſweet-ſcented Bulbous Iris, with a milk white Flower without a Stalk.

20. Xiphion *album, oris cæruleis. Inſt. R. H.* White bulbous Iris, with blue Borders.

21. Xiphion *Porcellana dictum. Inſt. R. H.* Bulbous Iris, commonly called Porcellana.

22. Xiphion *Chamoletta Lavendulacea dictum. Inſt. R. H.* Bulbous Iris, called in Holland, Chamoletta Lavendulacea.

23. Xiphion *Chamoletta dictum, flore cæruleo, verſicolor. Inſt. R. H.* Bulbous Iris, with a blue variegated Flower, called Chamoletta.

24. Xiphion *Chamoletta dictum, flore purpureo, verſicolor. Inſt. R. H.* Bulbous Iris called Chamoletta, with a purple variegated Flower.

25. Xiphion *latifolium caule donatum, flore cæruleo. Inſt. R. H.* Broad-leav'd Bulbous Iris, with a blue Flower furniſhed with a Stalk.

26. Xiphion *latifolium caule donatum, flore atro-purpuraſcente. Inſt. R. H.* Broad-leav'd Bulbous Iris, with a dark purple Flower, furniſhed with a Stalk.

27. Xiphion *latifolium caule donatum, flore cæruleo, lineis violaceis aut purpureis diſtincto. Inſt. R. H.* Broad-leav'd bulbous Iris, with a blue Flower, mark'd with a violet and purple Lines, and furniſhed with a Stalk.

28. Xiphion *latifolium caule donatum, flore cinereo, violaceis ſtriis diſtincto. Inſt. R. H.* Broad-leav'd bulbous Iris, furniſh'd with a Stalk, and an aſh-coloured Flower, ſtrip'd with Violet.

29. Xiphion *latifolium candidum. Inſt. R. H.* Broad-leav'd bulbous Iris, with a white Flower.

30. Xiphion *foliis amplioribus maculatis, flore purpureo. Inſt. R. H.* Bulbous Iris with larger ſpotted Leaves, and a purple Flower.

31. Xiphion *foliis amplioribus maculatis, flore violaceo. Inſt. R. H.* Bulbous Iris with broader-ſpotted Leaves, and a violet Flower.

32. Xiphion *foliis amplioribus maculatis flore niveo. Inſt. R. H.* Bulbous Iris with broader-ſpotted Leaves, and a ſnow-white Flower.

33. Xiphion *verſicolor & multiflorum. Inſt. R. H.* Many-flower'd variegated bulbous Iris.

34. Xiphion *majus & humilius, flore amplo flavo vario. Inſt. R. H.* Greater and lower bulbous Iris, with a large yellow variable Flower.

As to the Culture of this Flower, I ſhall firſt begin with the Method of raiſing them from Seeds, that being the way to obtain new Varieties.

Having procured a Parcel of Seeds from good Flowers, the Beginning of *September*, you ſhould provide ſome flat Pans or Boxes, which muſt have Holes in their Bottoms to let the Moiſture paſs off; theſe ſhould be fill'd with freſh, light, ſandy Earth, and the Seeds ſown thereon pretty thick, obſerving to ſcatter them as equally as poſſible: Then cover them over about half an Inch thick with the ſame light freſh Earth, and place the Boxes or Pans where they may have the Morning Sun 'till eleven o' Clock; and if the Seaſon ſhould prove very dry, they muſt be now and then refreſhed with Water.

In this Situation they may remain until the Middle of *October*, when they ſhould be removed into a more open Poſition, where they may have the full Sun moſt Part of the Day; in which Place they muſt abide all the *Winter*, obſerving to keep them clear from Weeds and Moſs, which at this Seaſon are very apt to ſpread over the Surface of the Earth, in Pots, when they are expoſed to the open Air.

In the *Spring* the Plants will appear above Ground, when, if the Seaſon is dry, they muſt be now and then refreſhed with Water, and conſtantly kept clear from Weeds: And as the Seaſon advances, and the Weather becomes warm, they ſhould be again removed into their former ſhady Situation, where they may enjoy the Morning Sun only. When the Plants begin to decay, (which will be in *June*) they muſt be cleared from Weeds and dead Leaves, and ſome freſh Earth ſifted over them about half an Inch thick, ſtill ſuffering them to abide in the ſame Situation all the *Summer* Seaſon; during which time they will require no farther Care, but to keep them clear from Weeds until the Beginning of *October*, when they muſt be again removed into the Sun, and the Surface of the Earth lightly taken off, and ſome freſh Earth ſifted over them.

In this Place they muſt remain all the *Winter*, as before; and in the *Spring* they muſt be treated as was directed for the former Year.

When the Leaves are decay'd, the Bulbs ſhould be carefully taken up, (which may be beſt done by ſifting the Earth through a fine Sieve) and a Bed or two of good, light, freſh Earth ſhould be prepar'd into which the Bulbs muſt be planted, at about three Inches aſunder each way, and three Inches deep. Theſe Beds muſt be conſtantly kept clean from Weeds and Moſs; and in the *Spring*, juſt before the Plants come up, the Surface of the Beds ſhould be ſtirr'd, and ſome freſh Earth ſifted over them about half an Inch thick, which will greatly ſtrengthen the Roots.

During the *Spring* and *Summer* they muſt be conſtantly weeded; and at *Michaelmas* the Earth ſhould be again ſtirr'd, and ſome freſh ſifted over the Beds again, as before, obſerving in *Winter* and *Spring* ſtill to keep the Beds clean, which is the whole Management they will require, and in *June* following the greateſt Part of the Roots will flower; at which time you ſhould carefully look over them, and put down a Stick by all thoſe whoſe Flowers are beautiful, to mark 'em; and ſo ſoon as their Leaves are decay'd, theſe Roots may be taken up to plant in the Flower-Garden amongſt other choice Sorts.

But the Nurſery-beds ſhould ſtill remain, obſerving to keep them clear from Weeds, as alſo to ſift freſh Earth over them, as was before directed; and the following Seaſon the remaining Part of the Roots which did not flower the laſt Seaſon, will now ſhew their Bloſſoms, ſo that you may know which of them are worth preſerving in the Flower-Garden, which ſhould now be mark'd; and when their Leaves are decay'd, they muſt be taken up and planted with the other fine Sorts in an Eaſt-border of light freſh Earth: but the ordinary Sorts may be intermixed with other bulbous-rooted Flowers in the large Borders of the Pleaſure-Garden, where, during their Continuance in flower, they will afford an agreeable Variety.

But after theſe choice Flowers are obtained from Seeds, they may be increaſed by Off-ſets, as other bulbous Flowers are. Theſe Off-ſets ſhould be planted in a ſeparate Border from the blowing Roots, for one Year, until they have Strength enough to produce Flowers, when they may be placed in the Flower-Garden with the old Roots.

Theſe Bulbs need not be taken up oftener than every other Year, which ſhould always be done ſoon after their Leaves decay, otherwiſe they will ſend forth freſh Fibres, when it will be too late to remove them: nor ſhould they be kept long out of the Ground; a Week or Fortnight is full enough; for when they are kept longer, their Bulbs are ſubject to ſhrink, which cauſes their Flowers to be weak the following Year.

The Earth which theſe Flowers thrive beſt in, is a light, ſandy Loam; and if it be taken from a Paſture-ground, with the Sward, and laid in a Heap until the Graſs is throughly ly rotted, it will be ſtill better; for theſe Bulbs do not delight in a rich, dunged Soil: nor ſhould they be planted in a Situation where they may be too much expoſed to the Sun; for in ſuch Places their Flowers will continue but a few Days in Beauty, and their Roots are apt to decay; but in an Eaſt Border, where they have the Sun until eleven of the Clock, they will thrive and flower extremely well, eſpecially if the Soil be neither too wet, or over-dry. From the moſt beautiful of theſe Flowers ſhould Seeds be ſaved, and ſown every Year, which will always furniſh new Varieties, ſome of which will greatly exceed the original Kinds.

The *Perſian Iris* is greatly eſteem'd for the Beauty and extreme Sweetneſs of its Flowers, as alſo for its early Appearance in the *Spring*, it generally being in Perfection in *February*, or the Beginning of *March*, according to the Forwardneſs of the Seaſon, at which time there are few other Plants in Beauty.

This may be propagated by Seeds, in the ſame Manner as the other Sorts; but the Boxes in which they are ſown, ſhould be put under a Garden-frame in *Winter*, to ſhelter them from hard Froſts: becauſe, while the Plants are young, they are ſomewhat tender. From the Seeds of this Kind I could never obtain any Varieties, their Flowers being always the ſame.

Theſe Plants are alſo propagated by Off-ſets in the ſame Manner as the other Sorts: but their Roots ſhould not be tranſplanted oftener than every third Year: nor ſhould they be ever kept out of the Ground long; becauſe their Roots will intirely decay in a ſhort time, ſo as not to be recovered again. This Sort was formerly more common in the Gardens near *London* than at preſent; which, I ſuppoſe, has been occaſion'd by the keeping the Roots above Ground too long, which deſtroyed them.

XYLON, [ξύλον, *Wood*] The Cotton Plant.

The *Characters* are;

The Flower conſiſts of one Leaf, cut into ſeveral Segments almoſt to the Bottom, and is of the expanded Bell-ſhape: From the Centre riſes a hollow pyramidal Tube, adorned and loaded, for the moſt part, with Chives: From the Empalement ſhoots up the Pointal, fixed like a Nail in the Bottom of the Flower, and of the Tube, which is afterwards changed into a roundiſh Fruit, divided into four or more ſeminal Cells, gaping at the Top, and incloſing Seeds covered over with, and wrapped within that ſoft ductile Wool, commonly known by the Name of Cotton.

The *Species* are;

1. XYLON, *ſive Goſſypium herbaceum. J. B.* Herb, *or* Shrubby Cotton.
2. XYLON *Americanum præſtantiſſimum, ſemine vireſcente. Ligon.* The moſt excellent American Cotton, with a greeniſh Seed.
3. XYLON, *ſive Goſſypium fruteſcens annuum, folio vitis ampliori quinquefido, Inſulæ Providentiæ. Pluk. Phyt.* Annual Shrubby Cotton of the Iſland of Providence, with a large quinquefid Vine Leaf.
4. XYLON *arboreum. J. B.* The Tree Cotton.
5. XYLON *arboreum, flore flavo. Tourn.* Tree Cotton, with a yellow Flower.

There are ſeveral other Varieties of this Plant in the warm Parts of the *Eaſt* and *Weſt-Indies*, where they grow in great Plenty; ſome of which have been obſerved by the Curious in Botany, but others have eſcaped their Notice: However, theſe being what I have obſerved growing in the *European* Gardens, I ſhall not trouble the Reader with an Enumeration of the other Varieties.

The firſt Sort here mentioned is cultivated plentifully in *Candia*, *Lemnos*, *Cyprus*, *Malta*, *Sicily*, and at *Naples*; as alſo between *Jeruſalem* and *Damaſcus*, from whence the *Cotton* is brought annually into theſe Northern Parts of *Europe*. It is ſown upon tilled Grounds in the *Spring* of the Year, and cut down and reaped in Harveſt, as Corn with us: The Ground muſt be tilled and ſown again the ſucceeding Year, and managed in ſuch Sort, as we do the Tillage for Corn, and other Grain. It is an annual Plant, periſhing when it hath perfected its Fruit, as many others do.

This *Cotton* is the Wool which incloſes or wraps up the Seeds, and is contained in a Kind of brown Huſk or Seed-veſſel, growing upon this Shrub; for it is from this Sort that the vaſt Quantities of *Cotton* are taken which furniſh our Parts of the World: It is brought from the Iſlands, where the Natives take great Care of its Culture. There are ſeveral Sorts of *Cotton* ſold, which chiefly differ according to the Countries from whence they come, and the various Preparations made of them: The firſt is the *Cotton* in the Wool; that is to ſay, that which comes from the Shell, from which only we take the Seed; thoſe *Cottons* come from *Cyprus*, *Smyrna*, &c. The ſecond is the *Cotton* in the Yarn, which comes from *Damaſcus*. The *Jeruſalem Cottons*, which are called *Bazac*'s, are the beſt which are ſold. The ſecond and third Sorts are alſo annual; theſe are cultivated in the *Weſt-Indies* in great Plenty. But the fourth and fifth Sorts grow in *Egypt*; theſe abide many Years, and often arrive to be Trees of great Magnitude, from which the Inhabitants are annually furniſhed with great Quantities of *Cotton*. One of theſe Trees has a purpliſh, and the other a yellow Flower, which, I believe, is the only Difference between them.

All theſe Sorts are preſerved in the Gardens of thoſe who are curious in collecting rare Plants: They are eaſily raiſed from Seeds, (which may be obtained freſh from the Places of their Growth) theſe muſt be ſown upon a Hot-bed early in the *Spring*; and when the Plants come up, they muſt be tranſplanted out each into a ſeparate ſmall Pot, filled with light freſh Earth, and plunged into a moderate Hot-bed of Tanners-bark, obſerving to water and ſhade them until they have taken Root; after which they ſhould have Air and Water in Proportion to the Warmth of the Seaſon, and the Heat of the Bed in which they are placed: For if they are too much drawn, by keeping the Glaſſes cloſe down in the Day-time, they will run up very weak and ſlender, ſo as not to be able to ſupport themſelves; and if they are too much expoſed to the Air, they will not make any Progreſs in their Growth.

When the Plants are ſo far advanced, as to fill the Pots with their Roots, they ſhould be ſhaken out, and put into larger Pots, which ſhould be filled with the ſame light freſh Earth, and again plunged into the Hot-bed, and managed as before: Thus, from Time to Time, as the Plants advance, they muſt be removed into larger Pots; and as the Warmth of the Seaſon increaſes, ſo they ſhould have a greater Share of Air; and when they are too tall to continue under the Glaſſes of the Hot-bed Frame, they muſt be removed into the Stove, and placed in the Tan-bed amongſt other tender exotick Trees and Shrubs; in which Place the annual Sorts will produce their Flowers in *Autumn*; but they rarely produce Pods in this Country.

The Tree Kinds muſt be continued in this Bark-ſtove all the *Winter*; and if they are placed with the *All-ſpice*, *Sea-ſide Grape*, and ſuch other *Weſt-Indian* Trees, obſerving to keep the Air of the Houſe about ten Degrees above the temperate Heat marked on Mr. *Fowler*'s Botanical Thermometers, they will thrive very well, provided they are often refreſhed with Water.

XYLOSTEON, Upright Honeyſuckle.

The *Characters* are;

The Flower conſiſts of one Leaf, is tubulous, and divided into ſeveral Parts at the Top, and reſts on the Empalement; theſe are for the moſt part produced by Pairs on the ſame Foot-ſtalk. The Empalement afterward becomes a ſoft double Fruit or Berry, incloſing compreſſed roundiſh Seeds.

There is but one *Species* of this Plant at preſent known, *viz.*

XYLOSTEON *Pyrenaicum. Inſt. R. H.* Pyrenean Upright Honeyſuckle.

This Plant was diſcovered by Doctor *Tournefort* on the *Pyrenean* Mountains, who has ſeparated it from the *Chamæceraſus*, on account of the Shape of its Flower, which differs ſo little from the Flowers of thoſe Plants, that it doth not deſerve to be removed from them; ſince the Fruit agrees perfectly with thoſe of that Genus.

It grows about three or four Feet high, and divides into many Branches, after the ſame Manner as the other *Upright Honeyſuckles*: The Flowers are ſmall, and come out but ſparſedly on the Branches, ſo do not make any great Appearance. The uſual Time of its flowering is in *February*, about the ſame Time as the *Mezereon*; ſo may be admitted to have a Place in Gardens, amongſt other hardy exotick Shrubs, in order to make a Variety. This Plant may be propagated by Cuttings, which ſhould be planted at *Michaelmas* on a ſhady Border, and in a ſtrong loamy Soil; where, if they are duly watered in dry Weather, and kept clear from Weeds, they will make good Roots by the following *Michaelmas*, when they may be removed to the Places where they are deſigned to remain, which ſhould be in a ſtrong, loamy Soil, and in a cool ſhady Situation. For if theſe

Plants are planted on a light dry Soil, and in an open Situation, they will not live thro' one *Summer*, unleſs they are plentifully watered in dry Weather; and even with this Care they will make but little Progreſs.

Y E

YEW TREE; *vide* Taxus.

YUCCA; The Indian Yucca, *vulgo*.

The *Characters* are;

It hath the Appearance of an Aloe, *the Leaves ending in a ſharp Point, but will grow in the Habit of a Tree: The Flower conſiſts of one Leaf, which is Bell-ſhaped, cut into ſix Segments, and naked; theſe are produced on long Spikes: The Ovary, which is in the Centre of the Flower, afterwards become a tricapſular Fruit, as in the* Aloe.

The *Species* are;

1. YUCCA *foliis Aloes. C. B. P.* The common Yucca.
2. YUCCA *foliis filamentoſis. Moriſſ.* Yucca, with Threads growing from the Leaves.
3. YUCCA *arborea.* The Tree Yucca.
4. YUCCA *Caroliniana anguſtifolia, marginibus vix ſerratis.* The narrow-leav'd Carolina Yucca, with Leaves ſcarcely ſerrated on the Edges.

The firſt of theſe Plants is pretty hardy, and when grown ſtrong, will endure the Cold of our ordinary *Winters* in the open Air very well, provided it be planted in a dry Soil: This commonly produces its Flowers every Year, which grow very ſparſedly on the Stalks, and are leſs beautiful than thoſe of the Tree Sort, which are produced in a long, cloſe Spike, and make a very beautiful Appearance: But theſe do not flower oftener than once in four or five Years, which is always in *Autumn*; ſo that they never produce any Seeds in this Country.

The threaded Sort is not ſo common as the others in the *Engliſh* Gardens; but as it is a Native of *Virginia*, it might eaſily be procured in Plenty from thence. The *Carolina* Sort hath been raiſed of late Years from Seeds which came from thence, and is now pretty common in *England*: But the Plants are not as yet arrived to Maturity enough to produce Flowers in *England*; ſo that I cannot ſay how they differ from thoſe of the other Sorts.

All theſe Plants are either propagated by Seeds, when obtained from abroad, or elſe from Off-ſets or Heads taken from the old Plants, after the Manner of *Aloes*.

When they are raiſed from Seeds, they ſhould be ſown in Pots filled with light freſh Earth, and plunged into a moderate Hot-bed, where the Plants will come up in five or ſix Weeks after; and when they are two or three Inches high, they ſhould be tranſplanted each into a ſeparate ſmall Pot filled with light freſh Earth, and plunged into the Hot-bed, where the Plants ſhould have Air and Water in Proportion to the Warmth of the Seaſon, and the Bed wherein they are placed.

In *July* they ſhould be inured, by Degrees, to bear the open Air, into which they muſt be removed, to harden them before *Winter*, placing them in a well-ſheltered Situation, where they may remain until the Beginning of *October*, when they muſt be removed into the Green-houſe, where they may be ranged amongſt the harder Sorts of *Aloes*, and ſhould be treated in the ſame Manner as hath been already directed for them; to which the Reader is deſired to turn for further Inſtructions.

When theſe Plants have acquired Strength, they may be afterwards turned out into a warm Border, where they will endure the Cold of our ordinary *Winters* very well, eſpecially the two firſt Sorts: And I believe the other two Sorts will bear the Cold pretty well, after they are grown ſtrong and woody in their Stems.

The Off-ſets taken from the old Plants ſhould be laid in a dry Place, for a Week or ten Days before they are planted, that their Wounds may heal, otherwiſe they will be ſubject to rot with Moiſture.

Z A

ZACINTHA, Warted Succory.

The *Characters* are:

It hath a floſculous Flower, conſiſting of many Half-Florets, conſtantly reſting on the Embryo's, and included in a ſcaly Empalement. The Empalement afterward becomes a furrowed Head, whoſe ſingle Parts, or Capſule, have ſwelling Seeds adorned with a Down.

We have but one *Species* of this Plant, *viz.*

ZACINTHA *ſive cichorium verrucarium. Matth.* Warted Succory.

This Plant grows abundantly in the Iſland of *Zant*, from whence it obtained the Name: It alſo grows wild in ſeveral other warm Countries, but in *England* it is preſerved in the Gardens of ſome Perſons who are curious in Botany, for the ſake of Variety; there being little Beauty or Uſe at preſent known in this Plant.

It is an annual Plant, which periſhes ſoon after the Seeds are ripe, ſo muſt be ſown every Year, or the Seeds permitted to ſcatter on the Ground in *Autumn*, which will come up in the *Spring*, and furniſh a Supply of Plants more certainly than when the Seeds are ſown in that Seaſon; for very often the Seeds which are ſown in the *Spring*, will remain in the Ground a whole Year before the Plants come up; and ſometimes they entirely miſcarry; whereas thoſe Seeds which ſcatter in *Autumn*, or are ſown at the ſame Seaſon, rarely fail. When the Plants are come up, they will require no other Care, but to thin them where they are too cloſe, ſo as to leave them about ſix or eight Inches aſunder; and after this to keep them clear from Weeds. In *June* theſe Plants will begin to flower, and their Seeds will ripen the End of *Auguſt*, or the Beginning of *September*.

The Flowers of this Plant are ſmall, and generally produced ſingly from the Divarications of the Branches, ſomewhat after the Manner of *Succory*: The Flowers are of a yellow Colour, and reſemble thoſe of Hawkweed. After the Flowers are paſt, the Empalement ſwells to a furrowed Head, ſomewhat reſembling Warts or Excreſcences, in which the Seeds are included.

When the Seeds of this Plant are ſown in the *Spring*, it ſhould be done in Drills made about two Feet aſunder; and when the Plants are come up, they ſhould be thinned to the Diſtance of ſix Inches in the Rows; becauſe they do not thrive very well when they are tranſplanted, ſo that they ſhould remain in the Places where they are ſown; and if they are kept clear from Weeds, they will require no other Care.

ZINZIBER, [Ζιγγίβερι] Ginger.

The *Characters* are;

The Flower (for the moſt part) conſiſts of five Leaves, which are ſhaped ſomewhat like thoſe of the Iris; *theſe are produced in a Head or Club, each coming out of a ſeparate leafy Scale: The Ovary afterwards becomes a triangular Fruit, having three Cells which contain the Seeds.*

The *Species* are;

1. ZINZIBER. *C. B. P.* The Common Ginger.
2. ZINZIBER *latifolium ſylveſtre. H. L.* Broad-leaf'd wild Ginger, or Zerumbeth.

The firſt of theſe Plants is cultivated in the warm Parts of the *Weſt-Indies* in great Plenty, from whence we are annually furniſh'd with the dried Roots for Uſe. The ſecond Sort is moſt common in the *Eaſt-Indies*, tho' it grows wild in ſome Parts of the *Weſt-Indies*: There are ſmall Quantities of this Root brought into *Europe* for medicinal Uſe; but it is never uſed in the Kitchen as the other.

Theſe Plants are preſerved as Curioſities in the Gardens of thoſe who delight in rare Plants: They are both propagated by parting of their Roots; the beſt time for which is in the *Spring*, before they begin to ſhoot, when each large Shoot may be divided into ſeveral Parts, obſerving always to preſerve two or three Eyes to each Piece: Theſe ſhould be planted into Pots filled with rich light Earth, and plunged into a Hot-bed of Tanners Bark, where they muſt be frequently refreſhed with Water: And in hot Weather the Glaſſes ſhould be raiſed with a Brick, to give them Air in proportion to the Warmth of the Seaſon, and the Heat of the Bed in which they are placed; for when their Leaves are come up, if they are too much drawn, they will grow very tall and weak, and the Roots will make but very indifferent Progreſs. But when they have a due Proportion of Heat, Moiſture, and free Air, their Roots will thrive ſo faſt, as, in one Seaſon, from a ſmall Head, to ſpread over a large Pot, and ſometimes will produce Flowers in this Country.

But theſe Plants muſt be conſtantly kept in a Hot-bed of Tanners Bark; for they are too tender to endure the open Air in *England* in the warmeſt part of *Summer*; and in *Winter* they muſt be placed in a Bark Stove: For altho' their Leaves do decay in *Autumn*, and their Roots ſeem to remain in an unactive State moſt part of the *Winter*; yet, if they are not preſerved in a very warm Place during that Seaſon, they will intirely rot; as I have more than once obſerved. Nor do theſe Roots abide the *Winter* ſo well when placed upon Boards in the warmeſt Stove, as when they are plunged in the Bark-bed, tho' they are preſerved in the ſame Degree of Warmth; which I conceive to be owing to the Moiſture of the Bark, which, in Fermentation, aſcends, and entering the Holes at the Bottom of the Pots, affords an agreeable Nouriſhment to the Roots, preſerving them always plump and full; whereas thoſe in a dry Stove do often ſhrink for want of Moiſture, and ſo, many times, decay: for it is not very ſafe to give them much Water after their Leaves are decay'd, becauſe they are very apt to rot with too much Moiſture at that Seaſon.

When their Leaves are decay'd, is the proper time to take up theſe Roots: but thoſe that are deſign'd to plant again, ſhould not be diſturb'd 'till the Spring, juſt before they begin to ſhoot; which, as was before obſerv'd, is the beſt time to tranſplant them, becauſe they ſoon after ſend forth their Fibres, which will preſerve them from rotting.

ZIZIPHUS; The Jujube.

The *Characters* are;

The Flower conſiſts of ſeveral Leaves, which are placed circularly, and do expand in form of a Roſe; *out of whoſe Empalement riſes the Pointal, which afterwards becomes an oblong, fleſhy Fruit, ſhaped like an* Olive, *including a hard Shell divided into two Cells, each containing an oblong* Nut *or Kernel.*

The *Species* are;

1. Ziziphus. *Dod.* The Common manured Jujube.
2. Ziziphus *ſylveſtris. Tourn.* The Wild Jujube.
3. Ziziphus *quæ Jujube Americana ſpinoſa, loti arboris foliis & facie, fructu rotundo parvo dulci. Hort. Beaumont.* Prickly American Jujube, with Leaves like the Nettle-tree, and ſmall, round, ſweet Fruit, *commonly call'd*, in the Weſt-Indies, Mangoſteen.
4. Ziziphus *argentea Zeylanica, ſpinis carens, Walæmbilla Zeylanenſibus dicta. C. B. P.* Silver-leaf'd Jujube of Ceylon without Spines, *commonly call'd* Walæmbilla.

The firſt of theſe Plants is cultivated in the Gardens of *Italy*, and the South Parts of *France*, from whence the Fruit was formerly brought into *England* for medicinal Uſe; but of late Years it has been very little uſed in the Shops, ſo that there is rarely any of it brought over at preſent.

In thoſe warm Countries they preſerve the Fruit for the Table in the *Winter* Seaſon, when few other Kinds are in Perfection; at which time theſe, and *Services*, and ſome other Sorts, do furniſh their Deſerts.

The Fruit is ſomewhat like a ſmall *Plum*, but it has not a great Share of Fleſh upon the Stone: but it having an agreeable Flavour, is by ſome Perſons greatly eſteem'd.

The ſecond Sort grows wild in the Hedges in the South of *France*, *Italy*, and *Spain*; but in theſe colder Countries it is preſerved in the Gardens of thoſe who are curious in collecting of the various Kinds of Trees and Shrubs.

Theſe Plants may be propagated by putting their Stones into Pots of freſh light Earth ſoon after their Fruits are ripe; and in *Winter* they ſhould be placed under a common Hot-bed Frame, where they may be ſhelter'd from ſevere Froſt. In the *Spring* theſe Pots ſhould be plunged into a moderate Hot-bed, which will greatly facilitate the Growth of the Seeds: And when the Plants are come up, they ſhould be inured to the open Air by Degrees, into which they muſt be removed in *June*, placing 'em near the Shelter of a Hedge; and in very dry Weather they muſt be frequently refreſhed with Water.

In this Situation they may remain until the Beginning of *October*, when they muſt be removed either into the Green-houſe, or placed under a Hot-bed Frame, where they may be defended from Froſt, but ſhould have as much free Air as poſſible in mild Weather.

During the *Winter* Seaſon they ſhould be now and then refreſhed with Water: but after their Leaves are fallen, (as they always ſhed them in *Winter*) they muſt not be over-watered, which would rot the tender Fibres of their Roots, and cauſe the Plants to decay.

In *March*, juſt before the Plants begin to ſhoot, they ſhould be tranſplanted, each into a ſeparate ſmall Pot, fill'd with freſh light Earth; and if they are plunged into a moderate Hot-bed, it will greatly promote their taking Root: but in *May* they muſt be inured to the open Air by Degrees, into which they ſhould be ſoon after removed.

Thus theſe Plants ſhould be managed while young, during which time they are tender: but when they are three or four Years old, they may be planted in the full Ground, where, if they have a dry Soil, and a warm Situation, they will endure the Cold of our ordinary *Winters* very well.

Theſe Plants may be alſo propagated by Suckers, which the old ones do many times ſend forth from their Roots: but theſe are ſeldom ſo well rooted as thoſe produced from Seeds, and do ſeldom make ſo good Plants; for which Reaſon they are but rarely propagated that way.

The third ſort is very common in *Barbadoes*, *Jamaica*, and the other warm Parts of *America*, from whence I have ſeveral times received the Seeds, which do generally riſe very freely on a Hot-bed: but the Plants being very tender, require the Help of a Bark-bed conſtantly, without which they will not make any Progreſs; and in *Winter* they muſt be placed in the Bark-ſtove, where, if they are frequently refreſhed with Water, they will thrive extremely well. There are ſeveral Plants of this Kind in the Gardens of the Curious, but I have not obſerved any to produce Flowers as yet.

The fourth Sort was brought into *England*, from ſome curious Garden in *Holland*, many Years ago; this was rais'd in the Gardens of Mynheer *Van Beaumont*, from the Seeds which he receiv'd, from *Ceylon*, and ſince hath been communicated to many curious Perſons in *Holland* and *England*. There is no Way as yet found ſucceſsful to propagate this Plant, but from Seeds, which being never produced in theſe cold Countries, and but rarely brought from Abroad, is the reaſon it is not very common in the *European* Gardens at preſent.

This is preſerved in Pots of light freſh Earth, and placed in a Stove in *Winter*, where it may be kept in a moderate Warmth, and muſt be frequently refreſhed with Water, with which Culture the Plants will thrive very well: but I have not ſeen 'em produce any Flowers as yet in *England*, though there are ſeveral pretty old Trees in the Gardens at *Hampton-Court*.

ADDENDA.

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In this Place ſeveral Plants are treated of, which have not been mentioned in the former Part of this Work: many of them having been lately introduced into England; *therefore have not been reduced to their proper Claſſes, their Characters having never been properly examined by any ſkilful Botaniſt.*

ARBOR *baccifera laurifolia aromatica, fructu viridi calyculato racemoſo. Sloan. Cat. Jam.* The Winters-bark, or wild Cinnamon-tree.

This Tree grows in the low Lands of the Iſland of *Jamaica* in great Plenty, where it riſes to the Height of thirty Feet or more, and divides into many Branches, which are furniſhed with ſmooth pale green Leaves, about three Inches long, and an Inch and a half broad, near their Extremity, where they are broadeſt. Theſe are placed on without any Order, having ſhort Footſtalks, and one middle Rib. On the Top of the Shoots, the Flowers are produced in Bunches, which are of a purple Colour; theſe are ſucceeded by the Fruit, which are round, green, and about the Size of a large Pea, in each of which are included four ſhining black Seeds. The Leaves, Fruit, Bark, and every Part of this Tree, are very aromatic, hot and biting to the Taſte. The Bark is uſed as Spice in moſt of the *Engliſh* Plantations in *America*; and was formerly pretty much uſed in Medicine in *England*, under the Title of *Canella alba*, or white Cinnamon; but at preſent it is not much in Uſe.

In *England* this Plant is preſerved in ſome curious Gardens, but it is at preſent pretty rare. It may be propagated by Seeds, which muſt be procured from the *Weſt-Indies* (for the Plants do not produce any in *Europe*;) but theſe ſhould be brought over as freſh as poſſible, and in their Covers; otherwiſe they commonly dry up, and loſe their growing Quality. Theſe Seeds ſhould be ſown early in the *Spring*, in Pots filled with freſh light Earth, and plunged into a Hot-bed of Tanners-bark, where they muſt be conſtantly watered whenever the Earth is dry, otherwiſe the Seeds will not vegetate. The Glaſſes of the Hot-bed ſhould be covered with Mats every Night, to preſerve a proper Heat in the Bed; and in the Day-time, when the Sun is warm, the Glaſſes ſhould be raiſed to let the Steam paſs off. With this Management the Plants will appear in about five or ſix Weeks, (provided the Seeds are good) when they muſt be treated tenderly while they are young; but they muſt be frequently watered, for as they naturally grow in moiſt Places, ſo they will often require to be refreſhed with Water; tho' while they are very young, it muſt be given to them in ſmall Quantities. When the Plants are riſen an Inch high, they ſhould be carefully ſeparated, and each planted into a ſmall Pot filled with freſh Earth: and then plunged into a freſh Hot-bed of Tanners-bark, obſerving to ſhade them every Day from the Sun, until they have taken new Root, then they ſhould have freſh Air admitted to them every Day according to the Warmth of the Seaſon, and the Heat of the Bed in which they are placed. They muſt alſo be duly watered every Evening in hot Weather; but they ſhould not have too much Water given to them at one time, eſpecially while the Plants are young. In this Hot-bed the Plants may remain during the *Summer* Seaſon; but toward *Michaelmas*, when the Nights begin to be cold, they ſhould be removed into the Stove, and plunged into the Bark-bed, where if they are duly watered, and kept warm, they will thrive very well; tho' they ſeldom make any great Progreſs the firſt Year, nor are they very quick of Growth in their natural Country; for I have received Plants of this Kind from the *Weſt-Indies*, which were ſix Years old, and theſe were not above two Feet high. As this Plant is very tender, ſo it muſt be conſtantly kept in the Stove, where during the *Summer* Seaſon, it ſhould have free Air admitted to it every Day, but in *Winter* it muſt be kept very warm, otherwiſe it cannot be preſerved in this Country. This Plant retains its Leaves throughout the Year, ſo may deſerve a Place in the Stove amongſt other curious exotic Plants, tho' it doth not produce any Flowers in this Country.

ARBOR *laurifolia venenata, folio leviter ſerrato oblongè obtuſo, copioſum lac præbens. Sloan. Cat.* The Poiſon-tree, *vulgò*.

This Tree grows plentifully in *Jamaica*, and ſeveral other Places in the warmeſt Parts of *America*, where it riſes to the Height of twenty-five or thirty Feet, and divides into many Branches, which are beſet with Leaves about the Size of thoſe of the Bay-tree, of a very bright green Colour, and ſerrated on their Edges; theſe continue on the Trees throughout the Year, but I have never ſeen any Flowers produced on theſe Plants, nor have I met with any Account of their Flowers in any Authors who have mentioned the Plant. The whole Tree abounds with a milky Juice, which is accounted very poiſonous: if the Leaves of the Tree are broken, the Juice will flow out very faſt, and if it falls on Cloth, will cauſe it to waſh in Holes, much after the ſame manner as the Juice of the Manchineel-tree.

This plant is preſerved by ſome curious Perſons for the ſake of Variety; but as it is very tender, it muſt be conſtantly kept in the warmeſt Stoves, and plunged into the Hot-bed of Tanners-bark, otherwiſe it will not live thro' the *Winter* in this Country. It may be propagated by Seeds, which ſhould be ſown early in the *Spring*, in Pots filled with freſh light Earth, and plunged into a Hot-bed of Tanners-bark; and when the Plants are come up, they ſhould be treated in the ſame manner as hath been directed for the former Sort. This Plant is pretty quick of Growth; for I have raiſed them upward of two Feet high in one *Summer* from Seeds. In warm weather theſe Plants muſt be often watered; but as they are full of milky Juice, they muſt not have too much Water given to them at one time, leſt it ſhould rot their Roots.

ARBUSCULA *Africana repens, folio ad latera criſpo, ad polygana relata. Boerh. Ind. alt.* An African trailing Shrub, with curled knot-graſs Leaves, and blink Flowers, ſomewhat reſembling thoſe of Orach.

This Shrub is preſerved in many Gardens for Variety; but there is no great Beauty either in its Leaves or Flowers. It grows to the Height of three Feet or more, and ſends out many Branches, which are ſlender, and if not ſupported, are ſubject to trail on the Ground; theſe are beſet with Leaves ſhaped ſomewhat like thoſe of Knot-graſs, but are a little broader, and curled on their Edges. The Flowers are produced from the Wings of the Leaves, which have no Petals, but an herbaceous Empalement, in which are included the Chives, with their Summits, *&c.*

It is propagated by Cuttings (which ſhould be planted the latter End of *May*, or the Beginning of *June*, that they may have time to make good Roots before *Autumn*): theſe may be planted in a Border where they may have only the Morning Sun; or if they are planted in an open Bed, they muſt be ſhaded with Mats until they have taken Root; they muſt alſo be frequently refreſhed with Water in dry Weather. When theſe Cuttings are well rooted, they will require no farther Care, but to keep them clear from Weeds, until the Middle of *September*; when they ſhould be carefully taken up with Balls of Earth to their Roots, and planted into Pots filled with light freſh Earth, and placed in a ſhady Situation until they have taken new Root; after which time they may be placed among other hardy exotick Plants, in a ſheltered Situation, where they may remain till the latter End of *October*, when they ſhould be removed into Shelter for the *Winter* Seaſon.

This Shrub is always preſerved in Pots, and houſed in *Winter* with other exotic Plants: but I have found that it will live abroad in mild *Winters* without any Covering, provided it is planted in a warm Situation, and on a dry Soil. However, it is proper to preſerve a Plant or two in Pots to be ſheltered in *Winter*, leſt thoſe abroad ſhould be deſtroyed by Froſt: but theſe will require no other Shelter, than that of a common Frame; where the Glaſſes may be drawn off every Day in mild Weather, that the Plants may have as much free Air as poſſible, and only ſecured from hard Froſts: with which Management the Plants will thrive much better than when they are kept too cloſe in *Winter*.

Arbor *baccifer Canarienſis, ſyringæ cæruleæ foliis, purpurantibus venis, fructu monopyreno*; Yerva Mora *Hiſpanorum. Pluk. Almag.* A berry-bearing Tree of the *Canaries*, with Leaves like the Lilac, having purpliſh Veins; called by the *Spaniards*, *Yerva Mora*.

This Tree has been long preſerved in ſome *Engliſh* Gardens, but has not as yet produced any Flowers, as I could ever learn. It has been by ſome Gardeners called the Golden-rod-tree, but for what Reaſon I do not know, ſince by the Shoots and Leaves, there doth not appear any Analogy between this Tree, and the Golden-rods; and as to its Flowers, I have never ſeen any Deſcription of them, ſo cannot affirm any thing concerning their Structure.

It is propagated by Cuttings, which may be planted during any of the *Summer* Months, in Pots filled with rich light Earth, and plunged into a moderate Hot-bed of Tanners-bark, where they muſt be duly watered, and ſhaded from the Sun, until they have taken Root: after which time they muſt be inured to the open Air by Degrees; and afterwards may be tranſplanted each into a ſeparate Pot, filled with rich light Earth, and then placed in the Shade until they have taken new Root; after which time they may be removed into a ſheltered Situation, where they may remain till the Beginning of *October*, when they ſhould be removed into the Green-houſe, and placed amongſt other exotic Plants of the ſame Country. During the *Winter*-time (when they are generally deſtitute of Leaves) they muſt not have too much Wet, tho' they will require to be frequently refreſhed with Moiſture; but in *Summer* they muſt have plenty of Water, for they are very thirſty Plants in hot Weather.

Theſe Plants may be removed into the open Air, about the Middle of *May*, at the ſame time when the Orange-trees are placed abroad; and muſt have a warm ſheltered Situation, otherwiſe they will not make much Progreſs, for they are impatient of Cold; and if they are expoſed to ſtrong Winds, they will loſe their Leaves even in the *Summer* Seaſon. In *Winter* they muſt have a warm Green-houſe, but do not require the Warmth of a Stove, for if they are ſecured from Froſt, they will do very well.

Arbor *Americana, fraxini foliis, fructu conoide.* The Mahogony-tree.

This Tree grows chiefly on the North Side of the Iſland of *Jamaica*, from whence great Quantities of the Wood have been brought to *England* in a few Years paſt; ſo that at preſent it is one of the moſt common Woods in Uſe, for Tables and other Furniture. There are ſome of theſe Trees growing in the *Bahama* Iſlands, from whence ſome of the Wood has been brought to *England*, under the Title of *Madeira* Wood; but by the Fruit which I have received from thence, it appears to be the ſame as the Mahogony of *Jamaica*, tho' the Wood ſeems to be ſomewhat differing in Colour and Texture.

There are but few of theſe Plants in *Europe* at preſent, and as they are very tender, they cannot be preſerved thro' the *Winter* in this Country, but in the warmeſt Stoves. They are propagated by Seeds, which ſhould be obtained as freſh as poſſible, from the Countries of their natural Growth; for if they are kept a long Time out of the Ground, they will not grow. Theſe Seeds ſhould be ſown in Pots filled with rich freſh Earth, and plunged into a Hot-bed of Tanners-bark; obſerving to water the Pots frequently to keep the Earth moiſt, otherwiſe the Seeds will not vegetate; and if the Nights ſhould prove cold, the Glaſſes of the Hot-bed muſt be covered with Mats, to preſerve a proper Heat in the Bed; and in the Day-time, when the Sun is very warm, the Glaſſes ſhould be raiſed to let the Steam of the Bed paſs off, as alſo to admit ſome freſh Air to the Earth. In about five Weeks after the Seeds are ſown, you may expect to ſee the Plants appear; when they ſhould be very carefully looked after, to raiſe the Glaſſes whenever the Sun ſhines warm, as alſo to refreſh the Plants frequently with Water; but they muſt not have too much Water given to them each time, while they are very young, leſt it rot their tender Stems, and deſtroy them. They muſt alſo be kept clear from Weeds, and when the Nights are cold, the Glaſſes of the Hot-bed ſhould be covered with Mats every Evening, ſoon after the Sun is gone off from the Bed, in order to preſerve a due Temperature of Heat in the Bed. When the Plants are about two Inches high, they ſhould be carefully ſhaken out of the Pots, and parted, planting each into a ſeparate ſmall Pot filled with light rich Earth, and then plunged into a new Hot-bed of Tanners-bark; obſerving to ſhade the Plants from the Sun every Day, until they have taken new Root; after which time they muſt have freſh Air admitted to them every Day, in Proportion to the Warmth of the Seaſon, and muſt be duly watered in hot Weather.

The Plants may remain in this Bed during the *Summer* Seaſon, but towards *Autumn*, when the Nights begin to be cold, they muſt be removed into the Stove, and plunged into the Bark-bed, where they muſt be kept very warm, and frequently refreſhed with Water; but when their Leaves are fallen off, which is generally at the End of *November*, they muſt not be kept too moiſt, for that will cauſe the tender Roots to decay; but in *Spring*, when they put out new Leaves, they will require to be more plentifully ſupplied with Water. Theſe Plants muſt conſtantly remain in the Stove; for they are too tender to live in the open Air in *England*, the warmeſt Part of the Year; ſo they ſhould have a large Share of free Air admitted to them every Day in hot Weather, by opening of the Glaſſes of the Stove; but when the Air is cold, the Glaſſes muſt be kept cloſe, otherwiſe the Plants will not thrive.

As theſe Plants are of very ſlow Growth, (eſpecially in this Country) ſo they will not require to be often ſhifted into other Pots; if they are tranſplanted every *Spring* juſt before they put out new Leaves, it will be as often as they require ſhifting; at which time as much of the old Earth ſhould be taken from about their Roots, as may be ſafely done without injuring the Plants; and when they are new potted, the Bark-bed ſhould be ſtirred up, and renewed with ſome freſh Tan, which will forward the Plants in taking new Root; but if the Weather ſhould prove very warm, and the Earth ſhould have all fallen from the Roots in ſhifting; then it will be proper to ſhade the Plants from the Sun in the Heat of the Day, until they have taken Root; eſpecially if they had put out Leaves before they were ſhifted, becauſe the tender Leaves will ſoon ſhrink with the Heat, and fall off, where this Care is not taken. When the Plants come up kindly from the Seeds, and are carefully managed, they will ſometimes grow ſix Inches in Height the firſt Seaſon; but afterward they will make but ſlow Progreſs, ſeldom ſhooting above three Inches in one Year, and the whole Shoot is generally made in leſs than a Month, ſo that the Time of their Growth is but ſhort; after which their Shoots harden, and their Leaves expand; but there are no more Leaves produced the ſame Year; ſo that when any Accident happens in the *Spring* to injure their young Leaves, the Plants commonly continue bare of Leaves the whole Seaſon; for they very rarely make any new Shoots, or put out any freſh Leaves.

Altho' the Wood of this Tree is now ſo very common in *England*, yet there is not one Author to be found, who has mentioned the Tree, that I could ever learn; ſo that ſince the Characters are not known, it cannot be reduced to any Claſs of Trees; but ſo far as I can judge from the Fruit of this Tree, there are ſeveral other Trees which grow in the warm Parts of *America*, nearly allied to this; two of which have been preſerved in ſome curious Gardens in *England*, ſo I ſhall inſert them in this Place.

Cedrus *Barbadenſium, alatis fraxini foliis, non crenatis, fructu ſingulari, quinis involucris craſſis validis cochleato-cavis, totidem ſemina membranis adaucta, & columnæ canaliculatæ pentagonæ prægrandi adnata, occludentibus ornato. Pluk. Phyt. tab.* 157. *f.* 1. The Barbadoes Cedar-tree.

This Tree is very common in the Iſlands of *Barbadoes*, *Jamaica*, and in ſeveral other Places in the warm Parts of *America*; and by ſome Writers it is mentioned to grow in *Virginia*; tho' I believe they are miſtaken in this, for it is too tender to endure Cold, ſo cannot poſſibly live thro' the *Winters* in that Country, which are many times very ſevere. It grows commonly on dry ſtony Ground, and is one of the largeſt Trees in *America*. The Wood of this Tree is of a brown Colour, and is odoriferous; which occaſioned the

Inhabitants of thoſe Countries to give it the Name of *Cedar*, tho' the Tree has no Affinity to any of the Sorts of *Cedar* known in *Europe*. The Trunks of theſe Trees are hollowed to make *Canoes* and *Periaguas*, for which Purpoſe they are extremely well adapted, becauſe they grow to a very large Size, and the Wood is very ſoft, ſo may be cut out with great Facility. There are ſome *Canoes* in the *Weſt-Indies*, which were thus made of this Tree, which are near forty Feet long, and five or ſix Feet broad. The Wood of this Tree being very light, is frequently cut out for Shingles to cover the Houſes in *America*, and is found to be very durable; but as the Worms eat this Wood, it is not ſo proper for building of Veſſels, as ſome other Sorts, tho' it is often uſed for this Purpoſe, as alſo for ſheathing of Ships. It is alſo uſed ſometimes for wainſcotting of Rooms, and to make Cheſts of, becauſe Vermin do not ſo frequently eat it, or breed in it, as in many other Sorts of Wood, it having a bitter Taſte, which will communicate that Quality to whatever Things are laid near it, eſpecially while the Wood is freſh.

This Tree is propagated by Seeds, which muſt be procured from the Countries of their natural Growth, and ſhould be brought over in the Fruit as freſh as poſſible, and may be ſown in Pots filled with light freſh Earth, and plunged into a Hot-bed of Tanners-bark early in the *Spring*, and muſt be treated in the ſame Manner as hath been directed for the Mahogony, as ſhould the Plants alſo when they come up, for they require the ſame Management, and muſt likewiſe be kept in the ſame Stove: But theſe being very faſt Growers, will require to be often ſhifted, and muſt have large Pots when they arrive to a proper Size, which will be in two Years, or ſooner, if they grow kindly; for I have known theſe Plants ſhoot five Feet in Height in one Seaſon, ſo they ſhould have Room to grow; for if they are confined in ſmall Stoves they make no Figure, whereas if they have Height and Room for their Leaves to expand, they make a fine Appearance; for the Leaves, which are compoſed of many Wings, ſhaped ſomewhat like thoſe of the Aſh-tree, are often ſix Feet in Length; ſo hang down on every Side from the upper Part of the Tree, like Plumes of Feathers: And if the Plants are preſerved in a kindly Temperature of Heat, and are duly watered, the Leaves will continue green throughout the Year; but if they are expoſed to the cold Air even in the *Summer* Seaſon, they will caſt their Leaves. So it is the beſt Method to keep them conſtantly in the Stove, and let them have a large Share of Air in warm Weather, and conſtantly ſupply them with Water: If this is carefully performed, the Plants will make very great Progreſs.

I have not met with any Author who has deſcribed the Flower of this Tree, ſo that until the Characters are known it cannot be reduced to any Claſs of Plants, tho' (as I before obſerved) by the Fruit, as alſo by the Leaves, it ſeems to be nearly akin to the Mahogony-tree.

There have been ſome Perſons ſo weak as to imagine the Mahogony-tree might be cultivated in the open Air in *England*, and have accordingly procured the Seeds from *Jamaica*; but from all the Seeds which they have ſown, not one ſingle Plant hath been produced, nor is it likely there ſhould, ſince the Plant is ſo tender as not to bear the open Air in *England*, in the warmeſt Seaſon of the Year; therefore this Plant can only be preſerved as a Curioſity in *England*.

ARBOR *excelſa, coryli folio ampliore. Houſt.* A tall Tree with a larger Hazel Leaf.

By the Fruit of this Tree, it appears to be nearly allied to the former Sort; but whether the Wood is of any Uſe, I cannot learn, for it grows only at *Campeachy*, where there are few other Trees regarded than the Logwood. This Tree uſually riſes to three or fourſcore Feet in Height, and divides into a great Number of Branches, which are beſet with Leaves ſomewhat like thoſe of the Witch-hazel, but are larger and of a greyiſh white Colour underneath, having ſeveral large longitudinal Ribs. The Fruit is ſhaped ſomewhat like a Cone, but is pointed, and opens into five Cells, in each of which are lodged winged Seeds. What Flowers this Tree produces I cannot learn, having received the Seeds from *Campeachy*, which were gathered by the late Dr. *William Houſtoun*, who obſerved many of the Trees which were very large; but at the Time when he was there, their Seeds were ripe, ſo that there were no Flowers to be ſeen. Since which Time I have received another Parcel of the Seeds, which were gathered by Mr. *Robert Millar*, but have never received any Account of the Flower.

This Tree is alſo propagated by Seeds, in the ſame Manner as the two former Sorts, and the Plants muſt be treated in the ſame Way; for they are very tender, ſo muſt be conſtantly kept in a warm Stove, and plunged into the Bark-bed, otherwiſe they will not live thro' the *Winter* in this Country. If the Plants are warm, and duly refreſhed with Water, they will thrive pretty faſt, eſpecially the firſt and ſecond Years; for they will riſe three Feet high the firſt *Summer* they are ſown, and in two Years I have had ſome of the Plants upward of ſeven Feet high, but after this they made but little Progreſs.

ARBOR *in aqua naſcens, foliis latis acuminatis & non dentatis, fructu eleagni minore. Cateſb. Hiſt. Nat.* The Tupelo Tree.

This Tree grows in *Virginia*, *Maryland* and *Carolina*, where it riſes to a good Height, with an erect Trunk, and a regular Head: The Leaves are like thoſe of the Bay-tree. In the *Autumn* theſe Trees are full of oval black Berries, which are ſuſtained on long Foot-ſtalks, each Berry including a hard, flattiſh, channelled Stone. Theſe Berries have a very ſharp, bitter Taſte, yet are Food for ſeveral Animals.

It grows uſually in moiſt, ſwampy Places, ſo is pretty difficult to preſerve in *England*; for if they are planted in dry Ground, they will not live thro' one *Summer*; and when they are planted in Land which is too wet, in *Winter*, they are in Danger of ſuffering by the Cold. This Tree is propagated by Seed, which ſhould be obtained from the Countries of its natural Growth, and ſown early in the *Spring* in Pots filled with freſh Earth, which ſhould be plunged into a very moderate Hot-bed of Tanners-bark, and muſt be conſtantly watered four or five times a Week; and when the Weather is warm it muſt be watered every Day. The Glaſſes of the Hot-bed muſt alſo be covered with Mats every Day when the Sun is warm, to ſhade the Pots; otherwiſe, when the Plants are young, they will be ſoon deſtroyed, if they of are expoſed to the Sun. During the *Summer* Seaſon the Plants muſt be conſtantly watered every Evening in dry Weather, and they muſt be ſhaded from the Sun in the Heat of the Day with Mats; but they ſhould not be covered with Glaſſes after the Middle of *May*, leſt it make the Plants too tender; for they muſt be inured to bear the open Air as ſoon as poſſible, and may be expoſed thereto till the Middle or latter End of *October*, when the Pots ſhould be plunged into an old Bed of Tanners-bark, under a common Frame, where the Plants may be defended from ſevere Froſts, but ſhould be expoſed to the open Air conſtantly in mild Weather. In this Situation the Plants may remain till the Beginning of *March*, when they ſhould be carefully tranſplanted each into a ſeparate ſmall Pot filled with freſh Earth, and then plunged into a very ſlow Hot-bed, which will facilitate their taking new Root; but they muſt be ſhaded from the Sun every Day when the Weather is warm, and ſhould be conſtantly ſupplied with Water. When the Plants are well rooted in theſe Pots, they muſt be inured to the Air by Degrees; but if they are continued in the Tan-bed all the *Summer*, it will be of Service to them, provided they are arched over with Hoops, and ſhaded in the Heat of the Day from the Sun with Mats; and they muſt be duly watered in dry Weather. The following *Winter* they ſhould be ſheltered under a Frame as before; and in *March* ſome of the Plants which have made the greateſt Progreſs may be ſhaken out of the Pots, and planted in a ſheltered Situation and a moiſt Soil, where they are deſigned to remain; but the other Plants may be continued a Year longer in Pots, and managed in the ſame Manner as before.

When theſe Plants are planted in the full Ground, they muſt be placed under the Shelter of other Trees, ſo that they may be protected from ſevere cold Winds, and ſhaded from the Sun; but they muſt not be placed immediately under the Drip of thoſe Trees; and the Ground ſhould be well cleared from the Roots of other Trees, and ſome Neats-dung buried under each Tree, which will cool the Ground, and be of great Service to them in dry Weather. If every *Spring* the Ground is carefully dug about the Plants, and conſtantly cleared from all the Roots of the neighbouring Trees, and at the ſame Time ſome rotten Neats-dung buried about the Plants, it will be of great Uſe in forwarding their Growth. And in dry Seaſons they ſhould be carefully watered until the Plants have eſtabliſhed themſelves with good Roots, otherwiſe they will be in Danger of ſuffering greatly by the Drought. But when the Roots have run to a good Depth in the Ground, they will find Nouriſhment, if the Place is tolerably moiſt where they are planted.

1. CITHAREXYLUM *arbor laurifolia Americana, foliorum venis late candicantibus, ex cujus ligno citharæ & panduræ fiunt. Pluk. Phyt. tab.* 162. *f.* 1.

2. CITHA-

ADDENDA.

2. **Citharexylum** *Americanum alterum, foliis ad marginem dentatis. Pluk. Phyt. tab.* 161. *f.* 5. Another Fiddle-wood Tree, whoſe Leaves are indented on their Edges.

The firſt of theſe Trees is very common in *Jamaica*, where it grows to a very great Height, and the Wood is much uſed in their Buildings. The ſecond Sort was brought from *Barbados*, where it was formerly in great Plenty, but ſince that Iſland has been cleared from Wood, there have been but few of theſe Trees preſerved, and thoſe grow chiefly in the *Gullies*, and other waſte Places which have not been cultivated.

Theſe Plants are preſerved in ſome curious Gardens in this Country, but as they are very tender, they will not live thro' the *Winter*, unleſs they are placed in a warm Stove. They may be propagated by Seeds, which ſhould be procured from the Countries of their natural Growth, and ſowed early in the *Spring*, in Pots filled with freſh light Earth, and then plunged into a Hot-bed of Tanners-bark, obſerving to water the Pots frequently, to keep the Earth moiſt, without which the Seeds will not vegetate. If the Nights ſhould prove cold, the Glaſſes of the Hot-bed ſhould be covered with Mats every Evening, ſoon after the Sun is gone off from the Bed, in order to preſerve a proper Temperature of Heat in the Bed; but in the Middle of the Day, when it is warm, the Glaſſes ſhould be raiſed to let the Steam of the Bed paſs off, as alſo to admit freſh Air. In about five or ſix Weeks after the Seeds are ſown, the Plants will appear, when they muſt be kept clear from Weeds, and conſtantly refreſhed with Water every other Day: The Glaſſes of the Hot-bed ſhould alſo be raiſed every Day when the Weather is warm, to admit freſh Air to the Plants, otherwiſe they will draw up very weak. When the Plants are about three Inches high, they muſt be carefully turned out of the Pots and ſeparated, planting each into a ſmall Pot filled with freſh light Earth, and then plunged into the Hot-bed again; obſerving to cover the Glaſſes of the Hot-bed every Day with Mats, to ſhade the Plants until they have taken new Root, after which Time they muſt be conſtantly ſupplied with Water; and in warm Weather they ſhould have a large Share of Air admitted to them by raiſing of the Glaſſes, which will greatly ſtrengthen the Plants, and prevent their drawing up too weak. If the Plants thrive well, they will have filled theſe ſmall Pots with their Roots by the Beginning of *Auguſt*, at which Time they ſhould be ſhaken out of the Pots, and their Roots muſt be trimmed, and then planted into Pots ſomewhat larger than thoſe they before grew in, and plunged into the Hot-bed again; obſerving, as before, to give them a large Share of Air when the Weather is warm, as alſo to water them conſtantly every Day in hot Weather. In this Hot-bed the Plants may remain till about *Michaelmas*, when they ſhould be removed into the Stove, and plunged into the Bark-bed, where during the *Winter* Seaſon they ſhould be kept warm, and frequently refreſhed with Water, becauſe they are pretty thirſty Plants.

During the firſt two Years, while the Plants are young, it will be proper to continue them in the Bark-ſtove; but when the Plants are grown pretty large, they may be hardened by Degrees, ſo as to bear the open Air abroad in the Middle of the *Summer*; and in *Winter* to live in a dry Stove. But when they are placed in a dry Stove, they will require to be often watered, otherwiſe they will throw off their Leaves, which will render them unſightly: For as theſe Plants are too tender to be planted in the open Air in *England*, ſo we cannot expect ever to ſee their Flowers and Fruit, therefore the only Beauty they have is in their Leaves, which make a Variety in the Stove amongſt other tender exotic Plants.

The Flowers of the firſt Kind are extremely ſweet; theſe are produced on long Bunches, and are of a whitiſh green Colour. But theſe have not been produced in this Country, tho' there are ſome Plants of a pretty large Size in ſome curious Gardens.

The ſecond Sort has been an old Inhabitant in the Royal Gardens at *Hampton-court*. This may be propagated by Cuttings, which ſhould be planted in *May*, in Pots filled with freſh light Earth, and plunged into a Hot-bed of Tanners-bark, which ſhould be of a moderate Temperature for Heat; and if they are duly ſupplied with Water, they will take Root in two Months, and then they may be treated in the ſame Manner as the other Plants.

Cerasi *ſimilis arbuſcula Mariani, pædi folio, flore albo parvo racemoſo. Pluk. Mantiſſ.* The Cluſter black Cherry.

This Tree is very common in *Carolina* and *Penſilvania*, where it grows in the Woods, which are moiſt, in great Abundance. They uſually are about the Size of a Man's Leg in their Trunks, and divide into many Branches, which are beſet with Leaves ſhaped ſomewhat like thoſe of the large Kinds of Cherries; but are of a ſtronger Conſiſtence, and of a bright green Colour. The Leaves of theſe Trees commonly abide green all the *Winter*, and are thrown off in the *Spring*, juſt as the new Leaves are beginning to puſh out; ſo that they are ſeldom deſtitute of Leaves above a Month, and many times not near ſo long. In the *Spring* the Flowers are produced, which grow in long pendulous Bunches, like thoſe of our common Bird-cherry, which have a faint ſweet Scent: Theſe are ſucceeded by ſmall black Cherries, which are ſome of them tolerably well taſted, but others of them are bitter. They are all greedily devoured by the Birds.

This Tree may be propagated by ſowing of the Cherry-ſtones, which are frequently brought to *England*; but as they ſeldom arrive here till the *Spring*, ſo when they are ſown at that Seaſon, the Stones commonly remain in the Ground a whole Year before the Plants come up; therefore the beſt Method is to ſow the Stones in Pots of freſh Earth, and place them where they may have only the Morning Sun; and keep the Earth conſtantly clear from Weeds, and in very dry Weather they ſhould be watered. In this Situation the Pots may remain till *October*, when it will be proper to plunge them either into the Ground, or an old Bed of Tanners-bark, in a warm Situation, in order to prevent the Stones from being injured by Froſt; and if the *Winter* ſhould prove very ſevere, it will be proper to cover the Pots with ſome Peaſe-haulm, or any other light Covering, to prevent the Froſt from penetrating deep into the Earth. The Beginning of *February* theſe Pots ſhould be taken up, provided the Weather is mild, and plunged into a moderate Hot-bed, which will bring the Plants up in a ſhort Time; and if afterward the Plants are by Degrees inured to the open Air, and carefully ſupplied with Water in dry Weather, they will grow eight or nine Inches high the firſt Year.

In *October* it will be proper to place theſe Pots under a Hot-bed Frame, where they may be ſheltered from hard Froſt, becauſe while the Plants are very young they will be in Danger of ſuffering by the Cold, (tho' when they have obtained Strength they will thrive extremely well in the open Air) but during the *Winter* Seaſon the Plants ſhould be conſtantly expoſed in mild Weather, and never covered but in froſty Weather. In *February* following, juſt before the Plants put out new Leaves, they ſhould be ſhaken out of the Pots and ſeparated, planting them in a Nurſery in Rows, after the ſame Manner as hath been directed for the common Cherry-ſtocks; in which Place they may remain two or three Years to get Strength, and then they may be planted where they are deſigned to remain. During the Time the Plants remain in this Nurſery, the Ground muſt be kept clean from Weeds; and if the *Summers* ſhould prove very hot and dry, it will greatly forward the Growth of the Plants, if ſome rotten Neats-dung is ſpread on the Surface of the Ground about their Roots; for this will keep the Ground cool, and prevent the Sun and Air from penetrating to the Roots of the Plants. The Ground alſo ſhould be carefully dug between theſe Rows of Plants, as is practiſed for all other Trees in the Nurſery; at which Time the Neats-dung may be buried, which will be of great Service to the Plants.

If they are thus managed, the Plants in two Years after planting will be three Feet high, or more; when they may be tranſplanted to the Places where they are deſigned to remain. The beſt Time to remove them is in the *Spring*, juſt before they put out new Leaves: But as the Roots of theſe Trees are very full of Fibres, they muſt not remain long out of the Earth, becauſe if the Air dries their Fibres, it will greatly injure them: Therefore when theſe Trees are to be removed to a great Diſtance, they ſhould be taken up carefully with Balls of Earth, and put into Baſkets, in the ſame Manner as is commonly practiſed for moſt Ever-green Trees; by which Method they may be ſafely tranſported to a great Diſtance.

As theſe Trees continue green moſt Part of the Year, ſo they are very ornamental in Wilderneſs Quarters, and will grow very well under the Shade of larger Trees, provided they are planted in a moiſt light Soil; for in very dry Ground they will make no Progreſs: And if they are not ſupplied with Water in very hot Weather, will be in Danger of periſhing in very dry Ground.

Cistus *Virginiana, flore & odore periclymeni. D. Baniſt. Pluk. Phyt.* The Upright Virginia Honeyſuckle.

This Plant is a Native of *Virginia* and *Carolina*, where it delights to grow in a moiſt rich Soil; in which Places the

Stems will riſe twelve or fourteen Feet high, and become as large as Walking-canes; but in dry Land they are always ſlender and weak, and do not produce their Flowers in Plenty. The Leaves are ſomewhat like thoſe of the Pear-tree, and are placed alternately on the Branches. The Flowers are produced at the Extremity of the Shoots in Bunches, like our common Honey-ſuckle, and are alſo ſhaped like them. Theſe are white, red, or purple; for there are of all theſe three Varieties. The Seed-veſſels are long and pointed, containing many ſmall Seeds.

This Plant was diſcovered by Mr. *Baniſter* in *Virginia*, who gave it this Name; tho' by the Shape of the Flower and Seed-veſſel, it has little Affinity to the *Ciſtus's*: but as it hath been long continued under this Title, I did not think proper to alter it.

In *England* this Plant is preſerved in ſeveral curious Gardens, where it thrives very well in the open Air, and produces its ſweet Flowers every Summer; but it ſhould be planted in a looſe moiſt rich Soil, otherwiſe it will not thrive; for in dry Land it is frequently deſtroyed in Summer, unleſs there be great Care taken to ſupply it with Water in dry Weather. The fineſt Plants which I have ſeen of this Kind, are at the Right Honourable the Earl of *Iſlay*'s Gardens near *Twickenham*, which being a very low moiſt looſe Soil, moſt of the Trees which are Natives of *North America*, thrive there much better than I have obſerved them in any other Garden in *England*; and his Lordſhip has as large a Collection of theſe Trees and Shrubs, as are to be found in any one Garden.

This Plant may be propagated by Layers, for the Seeds never ripen in this Country. The Layers ſhould be layed down the latter End of *March*, or the Beginning of *April*; and if ſome rotten Neats-dung is laid on the Surface of the Ground about the Layers to keep the Ground cool, and prevent the Sun and Air from penetrating into the Earth, it will be of great Uſe in promoting their taking Root. In dry Weather they muſt be conſtantly ſupplied with Water, and the Ground muſt be always kept clean from Weeds; for if theſe are permitted to grow, they will rob them of their Nouriſhment, and prevent their taking Root. Theſe Layers ſhould remain undiſturbed till the next *Spring*; but if the *Winter* ſhould prove very ſevere, it will be proper to lay a little Mulch round the Layers, to prevent the Froſt from penetrating of the Ground, which ſometimes doth great Injury to the tender Roots of theſe Plants. When theſe Layers are taken off from the old Plants, they may be planted in a Nurſery, after the ſame manner as the black cluſter Cherry before-mentioned; where they may remain for a Year or two to get Strength; and then they may be tranſplanted into Wilderneſs Quarters, where they are deſigned to remain.

If theſe Plants are planted in a proper Soil, they will thrive and produce their Flowers in great Plenty; ſo will make a very agreeable Variety, when intermixed with other hardy exotic Trees and Shrubs.

BAOBAB, The Ethiopian Sour Gourd.

This Tree grows plentifully on the Coaſt of *Guiney*, from whence the Fruit have been brought to *England*; where many of the Plants have been raiſed, and ſome of them are now preſerved in the Gardens of thoſe Perſons who are curious in collecting exotic Plants.

In the Countries where this Tree naturally grows, it riſeth to a very great Height, and ſpreads out on every Side very wide, ſo as to form a large regular Tree; the Leaves which are ſometimes produced ſingly, and at other times by three's and five's, are of a bright green Colour, and about the Size of thoſe of the Lemon-tree, but are not ſo thick nor ſtrong. Theſe Leaves uſually fall away towards the *Spring*, when the Trees remain bare for about five or ſix Weeks before the new Leaves are puſhed out. The Flowers of the Tree are of a whitiſh green Colour, which are ſucceeded by Fruit as large as an ordinary Melon, pointed at both Ends; having a pretty hard tough Shell, which is covered with a ſoft greeniſh Down or Cotton; and the Inſide is full of hard brown Seeds, which are lodged in a browniſh Pulp, which is very acid. This Pulp is much uſed in thoſe extreme hot Countries, to cool and quench Thirſt, and is eſteemed very good in putrid or peſtilential Fevers, which are very common on the *African* Coaſt.

It is propagated by Seeds, which ſhould be ſown early in the *Spring*, in Pots filled with light rich Earth, and plunged into a Hot-bed of Tanners-bark; where they muſt be kept very warm, and frequently refreſhed with Water: when the Plants are come up, they muſt be treated in the ſame manner as hath been directed for the Fiddle-wood. In the *Autumn* the Plants muſt be removed into the Stove, and plunged into the Bark-bed, where during the *Winter* Seaſon they muſt be kept very warm; and ſo long as the Plants retain their Leaves, they muſt be frequently refreſhed with Water; but when their Leaves are fallen, they will not require ſo much Water: therefore it ſhould be given to them more ſparingly.

Theſe Plants are too tender to live in the open Air in *England*, ſo they muſt be conſtantly preſerved in the Stove; where in the *Summer* Seaſon, they ſhould have a large Share of freſh Air admitted to them, by opening of the Glaſſes of the Stove in warm Weather; but in the *Winter* they muſt have a temperate Warmth, otherwiſe they will not live in this Country. There are ſome of theſe Plants in the *Engliſh* Gardens, which are ſeven or eight Feet high, and of proportionable Strength; but I have not heard that any of them has produced Flowers.

AMMANIA.

The *Characters* are;

The Flower conſiſts of four Petals, which are regular, and expand in form of a Roſe; each of which is ſucceeded by a roundiſh Seed-veſſel, that is divided into four Cells, which are full of ſmall Seeds.

We know but one *Species* of this Plant; *viz.*

AMMANIA *paluſtris, caule quadrangulo, foliis anguſtis. Houſt.* Marſh Ammania, with a ſquare Stalk, and narrow Leaves.

This Plant was named by the late Doctor *Houſtoun*, in Honour to Doctor *Amman*, the preſent Profeſſor of Botany at *Peterſburg*; ſo hath no *Engliſh* Name. It grows in *Jamaica*, and ſeveral other Places in the warm Parts of *America*, but chiefly in moiſt Places where there are ſtanding Waters. The Stalks of this Plant are very ſucculent, and reſemble thoſe of Purſlain: theſe uſually grow three or four Feet high, and ſend out ſeveral Side-branches, which are ſquare, and are beſet with Leaves, which grow oppoſite, and ſurround the Stalk; having no Pedicle or Footſtalk. Theſe Leaves are oblong, narrow and ſmooth; from the Baſe of theſe Leaves, the Flowers are produced in Whorles round the Stalks, which are ſucceeded by the Seed-veſſels. This Plant periſhes ſoon after the Seeds are ripe.

It is preſerved in ſome curious Gardens for the ſake of Variety; but as the Flowers are very ſmall, ſo the only Beauty of the Plant is in its ſucculent Branches and Leaves. It is propagated by Seeds, which ſhould be ſown on a Hot-bed early in the *Spring*; and when the Plants are come up, they ſhould be each tranſplanted into a ſmall Pot filled with rich light Earth, and plunged into a Hot-bed of Tanners-bark; where they muſt have free Air admitted to them in warm Weather, and ſhould be frequently watered. When the Plants have filled theſe ſmall Pots, they ſhould be ſhaken out, and their Roots trimmed, and then put into Pots which are larger, and placed either into the Bark-bed in the Stove, or under a tall Frame, where the Plants may have Room to grow in Height; for they are too tender to thrive in the open Air in *England*: ſo they muſt conſtantly remain in the Bark-bed; but ſhould have a large Share of freſh Air admitted to them in warm Weather, and conſtantly watered every Day; with which Management the Plants will produce ripe Seeds in *September*, and will ſoon after periſh.

BUDDLEIA.

The *Characters* are;

It hath a bell-ſhap'd Flower compoſed of one Leaf, which is divided into four Parts: from the Centre ariſes the Pointal, which afterward becomes an oblong Fruit, compoſed of two Cells, which are filled with ſmall Seeds.

The *Species* are;

1. BUDDLEIA *fruteſcens, foliis conjugatis & ſerratis, floribus ſpicatis luteis. Houſt.* Shrubby Buddleia, with ſawed Leaves growing oppoſite, and yellow-ſpiked Flowers.

2. BUDDLEIA *fruteſcens, foliis oblongis mucronatis, ſubtus tomentoſis, floribus ſpicatis albis. Houſt.* Shrubby Buddleia, with oblong pointed Leaves, downy underneath, and white Flowers growing in Spikes.

The firſt of theſe Plants is very common in *Jamaica* and *Barbados*, where it grows in Gullies, and other moiſt uncultivated Places. It riſes to the Height of eight or ten Feet, and divides into many woody Branches, which are covered with a ſmooth grey Bark. The Leaves are placed by Pairs on the Branches, which are white underneath, and are ſuſtained by very ſhort Footſtalks. At the Tops of the Branches, the Flowers are produced in Spikes, about four or five Inches in Length, which are of a yellow Colour, and are incloſed in a greeniſh Empalement.

The ſecond Sort was diſcovered by the late Doctor *Houſtoun*, at *La Vera Cruz:* this grows to a greater Height than the former, and the Leaves are much larger, and are covered with a whitiſh Down underneath; the Flowers of this Sort are white, and grow on longer and looſer Spikes than thoſe of the former Sort.

Theſe are very tender Plants, ſo cannot be preſerved in this Country, unleſs they are kept in a warm Stove. They are propagated by Seeds, which muſt be obtained as freſh as poſſible from the Countries of their natural Growth, and ſowed in Pots filled with freſh light Earth, and plunged into a Hot-bed of Tanners-bark; obſerving frequently to water the Earth, in order to promote the Vegetation of the Seeds; but the Water muſt not be given to them in large Quantities, nor too haſtily, leſt thereby the Seeds ſhould be waſhed out of the Ground. When the Plants are come up, they ſhould be tranſplanted each in a ſeparate ſmall Pot filled with freſh light Earth, and then plunged into the Hot-bed again, where they muſt be ſhaded from the Sun until they have taken new Root; after which time they ſhould have a large Share of freſh Air admitted to them when the Weather is warm, and they muſt be duly ſupplied with Water. At *Michaelmas* the Plants muſt be removed into the Stove, and plunged into the Bark-bed, where they may have a moderate Temperature of Warmth in *Winter*; and if they are frequently refreſhed with Water, the Plants will retain their Leaves thro' the *Winter*; ſo will make an agreeable Variety amongſt other tender exotic Plants in the Stove. But theſe ſhould always remain in Shelter; for they are too tender to thrive in the open Air in this Country; therefore in the *Summer*-time the Glaſſes of the Stoves ſhould be opened every Day, when the Weather is good, to admit freſh Air to the Plants; but whenever the Weather is cold, or very windy, the Glaſſes muſt be kept cloſely ſhut, to guard the Plants therefrom; otherwiſe they will not thrive well, nor appear beautiful.

ARBUSCULA *Afra, folio aculeatò ilicis, caulem amplexo rigido. Boerh. Ind. alt.* Ilex-leav'd African-ſhrub.

This Plant is preſerved in ſome curious Gardens for the ſake of Variety, but as it is not very beautiful, ſo it is not greatly eſteemed. It is propagated by Cuttings during any of the *Summer* Months, which ſhould be planted in Pots filled with freſh light Earth, and plunged into a moderate Hot-bed, where they ſhould be ſhaded from the Sun in the Heat of the Day, and duly watered until they have taken Root: then they ſhould be inured to the open Air by Degrees, and afterward placed abroad in a ſheltered Situation, where they may remain until the Middle of *October*; and then they muſt be removed into the Green-houſe, placing them where they may enjoy the free Air and Sun; for if they are too much crouded by other Plants, they ſeldom thrive well. During the *Winter* Seaſon they muſt be frequently refreſhed with Water, but they ſhould not have too great a Quantity given them at each time. In cold Weather they muſt not be too much expoſed; but when the Weather is mild, they muſt have a large Share of free Air. In the *Summer* theſe Plants may be removed out of the Green-houſe, and placed in a warm Situation, amongſt other exotic Plants, where they will add to the Variety.

The Flowers of this Plant are ſmall, and of a pale white Colour, ſo do not make any great Appearance: theſe are produced from the Wings of the Leaves, and are ſo cloſely ſurrounded by the Leaves, as not to be diſcerned at any conſiderable Diſtance from the Plants. This is Male and Female in different Plants.

CAMPECHIA, Logwood.

This Tree grows in great Plenty at *Campechy*, the *Bay of Honduras*, and in other low marſhy Places in the *Weſt-Indies*, from whence the Seeds have been brought to *England*, and many of the Plants have been raiſed, and are now preſerved in ſome curious Gardens. In the Countries of its natural Growth, this Tree uſually is about ten Inches or a Foot diameter in the Stem, and generally ſhoots out many crooked irregular Branches, which are beſet with ſharp Thorns, in the ſame manner as ſome of the Sorts of *Acacia*; the Leaves are winged, and commonly contain three or four Pair of Lobes or Wings, each being ſhaped like a Heart. From the Wings of the Leaves, the Flowers are produced on ſhort ſlender Spikes; which conſiſt of five regular Leaves, and expand in form of a Roſe. Theſe Flowers are ſucceeded by oblong compreſſed winged Pods, which ſplit lengthwiſe in the Middle, and contain one, two, and ſometimes three flat Kidney-ſhap'd Seeds.

This Plant is propagated by Seeds, which ſhould be ſown early in the *Spring*, in Pots filled with light rich Earth, and then plunged into a Hot-bed of Tanners-bark; where if the Seeds are freſh, and the Earth is kept warm and moiſt, the Plants will appear in about five Weeks; when the Glaſſes of the Hot-bed ſhould be raiſed every Day in warm Weather, to admit free Air to the Plants; which will greatly ſtrengthen them, and prevent their drawing up too weak: they muſt alſo be conſtantly watered every Day in warm Weather, otherwiſe they will not thrive. When the Plants are two or three Inches high, they ſhould be carefully ſhaken out of the Pots and ſeparated, planting each into a ſmall Pot filled with light rich Earth, and plunged into a freſh Hot-bed of Tanners-bark, obſerving to ſhade them from the Sun in the Heat of the Day, until they have taken new Root, then they ſhould have a large ſhare of free Air admitted to them every Day in warm Weather, and muſt be conſtantly ſupplied with Water. During the *Summer* Seaſon theſe Plants may remain in this Hot-bed, provided there is Room enough for the Plants to grow in Height under the Glaſſes; but then the Tan ſhould be turned two or three times, to renew the Heat, whenever it is found to decline. Toward *Michaelmas*, when the Nights grow cold, the Plants ſhould be removed into the Stove, and plunged into the Bark-bed, in the warmeſt Part of the Stove; and during the *Winter* Seaſon they muſt be frequently refreſhed with Water, but in very cold Weather it muſt not be given to them in large Quantities. With this Management the Plants will retain their Leaves all the *Winter*, ſo will make a Variety amongſt other tender exotic Plants in the Stove. The firſt Year theſe Plants are raiſed from Seeds (if they are properly managed) they will riſe to the Height of two Feet, but they ſeldom make any conſiderable Shoots afterward; ſo that they do not make much Progreſs, their greateſt Growth being in lateral Branches; and theſe rarely ſhoot above four Inches in one Seaſon, and are commonly crooked, and full of Knots. There are no Plants of this Kind in *England* which are of any conſiderable Size, ſo have not as yet produced any Flowers, but the Plants are chiefly preſerved for Curioſity.

The Wood of this Tree is well known in *England*, being greatly uſed by the Dyers. This Wood is cut at *Campechy*, and in the *Bay of Honduras*; but of late Years there has been a good Number of the Trees raiſed in the Iſland of *Jamaica*, and there might be a great Quantity of them raiſed in ſome of the *Engliſh* Colonies, were they propagated in low marſhy Places, ſuch as are at preſent uncultivated, which might in time prove of great Advantage to the *Engliſh* Nation.

CARPINUS, Hornbeam.

CARPINUS *Virginiana, fructu lupulino.* The Virginian Hop-hornbeam.

There have been a great Number of Plants of this Kind lately raiſed in the *Engliſh* Gardens, which are very different in their Appearance from the common Hop-hornbeam; for they retain their decayed Leaves till *Spring*, after the ſame manner as our common-hornbeam doth; whereas the *European* Hop Horn-beam always caſts its Leaves in the *Autumn*.

This is what I ſuppoſe Mr. *Baniſter* has mentioned by the Name of *Ulmus Virginiana, fructu lupulino*; but by the Flower and Seed it agrees exactly with our Hop-hornbeam.

This Tree is propagated by Seeds, which commonly remain in the Ground a whole Year; ſo they ſhould be ſown in Pots or Tubs of freſh Earth, which may be placed where they may have the Morning Sun, and muſt be duly watered in dry Weather, and kept always clear from Weeds. In this Situation they may remain till *Autumn*, when they ſhould be removed either under a Frame, or placed on the South-ſide of a Wall, Pale or Hedge, where they may be ſheltered from cold Winds; and in hard Froſt they ſhould be covered either with Peaſe-haulm, or ſome other light Covering, to prevent the Froſt from penetrating deep into the Earth: and in the *Spring*, when the Plants begin to appear, they muſt be kept clear from Weeds; and in dry Weather, if they are duly watered, it will greatly promote their Growth. If the following *Winter* ſhould prove very ſharp, it will be proper to ſhelter theſe Plants, becauſe while they are ſo young, they may be injured by ſevere Froſts; tho' when they have obtained Strength, they will reſiſt the greateſt Cold of this Climate in the open Air.

The following *Spring*, juſt before the Plants puſh out their Leaves, they ſhould be carefully tranſplanted into a Nurſery, where they may remain two Years, and then they may be removed to the Places where they are deſigned to remain. Theſe never grow to be very large Trees; but as they thrive very well under Trees, ſo they are very proper to plant for Underwood, or in ſmall Wilderneſs Quarters, where they will make a Variety.

COLLINSONIA.

The *Characters* are;

It hath a labiated Flower, conſiſting of one Leaf, which is divided into five Parts; three of the upper Parts are convex, and divided at Top into ſeveral ſmall Parts like Threads; but the two lower are ſpread open, and are alſo divided in the ſame manner as the other. In the Centre of the Flower ariſes the Pointal, attended by two Embryo's, which afterward become globular Seeds, ſhut up in the Flower-cup.

This Plant received its Name in Honour to Mr. *Peter Collinſon*, *F. R. S.* who is a great Collector of exotic Plants.

We know but one *Species* of this Plant *viz.*

Collinsonia *Americana, urticæ foliis, floribus ex albo flaveſcentibus.* American Collinſonia, with nettle Leaves, and Flowers of a whitiſh yellow Colour.

This Plant was brought from *Maryland*, which is the Country of its natural Growth. The Root is fibrous and perennial, but the Stalks die to the Root every *Autumn*; and new Shoots are produced the following *Spring*. Theſe Stalks are ſquare, as are thoſe of all the verticillated Plants, to which this Plant hath a great Reſemblance in Stalk, Leaves and Flowers; but having never more than two Embryo's, and ſometimes but one, whereas the Verticillate Plants have four to each Flower, it is therefore removed from that Claſs. The Flowers are produced in looſe Panicles on the Tops of the Shoots, which are of a pale yellowiſh Colour, having two Chives which ſtand out a conſiderable Diſtance from the Mouth of the Flower, on which the Summits are placed.

The Seeds of this Plant ſeldom ripen in *England*; ſo the Plant is propagated by parting of the Root. The beſt time for this is in *March*, juſt before the Plants ſhoot out new Stems. Some of theſe Plants ſhould be planted in Pots filled with rich Earth, that they may be ſheltered in *Winter*; but the others may be planted in the full Ground, where they will abide the Cold of our ordinary *Winters* very well without Shelter; but in very ſevere Froſts they are ſometimes deſtroyed; for which Reaſon a few of the Plants ſhould be ſheltered to preſerve their *Species*. Thoſe Plants which are planted in the full Ground, ſhould have a moiſt rich Soil, or muſt be conſtantly ſupplied with Water in dry Weather; otherwiſe they will not thrive, nor will they produce any Flowers; for they naturally grow in moiſt ſwampy Places, ſo that when they are planted on a dry Soil, the Stems do often decay by *Midſummer*, when the Seaſon proves dry, and the Flowers do not appear. This Plant flowers in *July*, and when the Seaſon is moiſt, it continues in Flower moſt Part of *Auguſt*.

CONOCARPUS.

The *Characters* are;

It hath regular Flowers, each conſiſting of one Leaf, which are collected into a globular Head, ſomewhat like the Flowers of Acacia; theſe Flowers are ſucceeded each by a ſingle Seed, which is ſeparated by Scales; the Fruit being compoſed of many Scales reſembling the Cones of the Alder-tree.

The *Species* are;

1. Conocarpus. *Hort. Clif.* The Button-tree.
2. Conocarpus *procumbens, foliis ſubrotundis. Houſt.* Creeping Button-tree, with roundiſh Leaves.

The firſt Sort is very common in *Jamaica*, where it grows in low marſhy Places by the Sea. This riſes with a regular Trunk, near thirty Feet high, and divides into ſeveral Branches: the Leaves are produced by Pairs oppoſite to each other on the Branches, which are near three Inches long, and about half as broad. The Flowers are produced in looſe Spikes on the Tops of the Branches; which are ſucceeded by ſmall Cones, ſomewhat like thoſe of the Alder-tree.

The ſecond Sort was diſcovered by the late Doctor *Houſtoun* at the *Havanna*: this is a low Plant, whoſe Branches trail on the Ground; the Leaves of this are ſhorter and rounder than thoſe of the former Sort. The Flowers are produced in ſhort Spikes at the Ends of the Branches, which are ſucceeded by Cones that are ſmall. This alſo grows in marſhy Places near the Sea.

The firſt Sort has been often raiſed from Seeds in this Country, but the Plants have not lived thro' the *Winter*; for they do not thrive in any Place where the Salt-water doth not flow to their Roots, ſo that we cannot hope to preſerve them in *England*.

The ſecond Sort was brought to *England* by Doctor *Houſtoun*; but the Plants arriving here in *Winter*, they did not ſucceed, ſo that I have not ſeen this Sort growing with us; and by its growing in Salt-water, as the other, it will be very difficult to preſerve; for it is very impatient of Cold.

DALEA.

The *Characters* are;

It hath an irregular funnel-ſhaped Flower, conſiſting of one Leaf, which is divided into five Parts at the Top: from the Centre of the Flower ariſes the Pointal, which afterward becomes an oval Fruit, having one Cell, which is filled with ſmall Seeds.

We have but one *Species* of this Plant, *viz.*

Dalea *Americana annua erecta, foliis oblongis, floribus cæruleis.* Upright annual *American* Dalea, with oblong Leaves, and blue Flowers.

This Plant is named in Honour of Mr. *Samuel Dale*, the Author of a Book, intituled *Pharmacologia*; ſo we have no *Engliſh* Name for it.

It was diſcovered by Mr. *Robert Millar* at *Panama*, from whence he ſent the Seeds to *England*, which ſucceeded in ſeveral Gardens, and hath been ſince communicated to ſeveral other Countries.

The Seeds of this Plant muſt be ſown on a Hot-bed early in the *Spring*; and when the Plants are come up, they muſt be duly watered, and the Glaſſes of the Hot-bed ſhould be raiſed every Day when the Weather is warm, to admit freſh Air to the Plants, otherwiſe they will draw up too weak. When the Plants are large enough to tranſplant, they ſhould be planted in ſmall Pots filled with rich Earth, and plunged into a Hot-bed of Tanners-bark, where they ſhould be ſhaded from the Sun until they have taken new Root; after which time they ſhould have freſh Air admitted to them every Day when the Weather is warm, and muſt be frequently watered. When the Plants have filled theſe Pots with their Roots, they ſhould be ſhaken out of them, and their Roots trimmed, and then put into larger Pots, which ſhould alſo be filled with rich Earth; and ſhould be plunged again into the Hot-bed, in order to bring the Plants to flower; when they may be harden'd by Degrees, and then removed into the Stove or a Glaſs-caſe, where they may be ſheltered from Cold, but ſhould have a large Share of free Air in warm Weather. With this Management the Plants will flower in *July*, and continue flowering till the End of *September*, and will produce good Seeds; but if they are expoſed abroad, they are very ſubject to loſe their Leaves, and appear unſightly, nor will they produce good Seeds.

When the Seed-veſſels change to a brown Colour, the Seeds ſhould be gathered, otherwiſe they will ſoon ſcatter; ſo that after they begin to ripen, the Plants ſhould be looked over twice a Week, to take their Seeds before they are fallen.

The Flowers of this Plant are very ſubject to vary in their Colour: even on the ſame Plant there are often blue, purple, and red Flowers; and from the Seeds of the ſame Plant, there will be Plants ariſe which produce blue Flowers, others purple, and ſome red Flowers; but theſe Colours are never conſtant, ſo they are not worth obſerving.

Arbor *Americana, pinnatis fraxini foliis, fructu reniformi, phaſeolum exprimente. Pluk. Phyt. 140. f. 3.* Spaniſh Aſh, *vulgo.*

This Tree is a Native of the warmer Parts of *America*, where it riſes to the Height of twenty-five or thirty Feet, and divides into a great Number of Branches, upon which the Leaves are placed by Pairs, which are oblong and pointed, ſomewhat reſembling thoſe of the Aſh-tree, from whence it had the Name of *Spaniſh* Aſh. The Seeds grow in a flat Pod, and are ſhaped like thoſe of the Kidney-bean, but are compreſſed, and the Pods have Wings to them.

This Tree is propagated by Seeds, which ſhould be ſown early in the *Spring*, in Pots filled with light rich Earth, and plunged into a Hot-bed of Tanners-bark; where if the Earth is kept moiſt, and the Bed in a moderate Temperature of Heat, the Plants will come up in about a Month after the Seeds are ſown. Theſe Plants ſhould have freſh Air admitted to them every Day in warm Weather, to prevent their drawing up too weak, and they muſt be frequently refreſhed with Water. When the Plants are about two Inches high, they ſhould be ſhaken out of the Pots, and carefully parted, and each planted into a ſeparate ſmall Pot filled with rich light Earth, and then plunged into the Hot-bed again, obſerving to ſhade them from the Sun until they have taken new Root; after which time they ſhould be treated in the ſame manner as hath been directed for Buddleia; and being tender Plants, ſhould be conſtantly preſerved in the Stove, as hath been obſerved for all the tender Plants, which come from the ſame Country.

This Tree retains its Leaves throughout the Year, ſo will add to the Variety of tender exotic Plants in *Winter*, but it hath not produced any Flowers in this Country. In *America* there is a Gum which diſtils from this Tree, eſteemed a good Remedy for green Wounds.

CLINOPODIUM, Field-baſil.

The following *Sorts* have been lately brought into *England*.

1. **Clinopodium** *pulegii anguſto rigidoque folio Virginianum, floſculis in cymis. Pluk. Phyt. tab.* 54. *f.* 2. Virginian Field-baſil, with narrow ſtiff penny-royal Leaves, and ſmall Flowers growing on the Top of the Shoots, commonly called Snakeweed in Virginia.

2. **Clinopodium** *fiſtuloſum pumilum, Ind. occident. ſummo caule floridum. Pluk. Phyt. tab.* 164. *f.* 4. American low-fiſtulous Field-baſil, with Flowers growing on the Top of the Stalks.

3. **Clinopodium** *amaraci folio, floribus albis, Americanum. Pluk. Phyt. tab.* 85. *f.* 2. American Field-baſil, with a Marjoram-leaf, and white Flowers.

The firſt and third Sorts are very common Plants in *Virginia*, *Maryland* and *Carolina*, where they grow in moiſt Woods, and other ſhady Places. Theſe are both abiding Plants, whoſe Shoots die to the Root every *Autumn*, and there are new Shoots produced every *Spring*. The Leaves of the firſt Sort are very like thoſe of Hart-penny-royal, but are more rigid, and the whole Plant ſmells very like Penny-royal. The Flowers are produced in ſmall Heads on the Tops of the Branches, which are ſmall and white. The third Sort hath Leaves very like thoſe of Wild-marjoram; the Flowers of this Kind are of a pale red Colour, and are produced in Whorles, on the Tops of the Stalks. Both theſe Plants have been eſteemed as Remedies for the Bite of Serpents, by the Inhabitants of *America*, from whence they have been called Snake-weed.

Theſe Plants are hardy enough to live in the open Air in *England*, provided they are planted in a ſheltered Situation. They may be propagated by parting of their Roots, which ſhould be done in the Beginning of *March*, juſt before they put out their new Shoots. Theſe Plants ſhould have a freſh Soil which is light and moiſt, otherwiſe they muſt be duly watered in dry Weather; for as they naturally grow in moiſt ſwampy Places, ſo if they are planted on a dry Soil, they often die in the *Summer*, when the Seaſon proves warm; or the Shoots generally decay before the Flowers appear, unleſs they are well ſupplied with Water. The Soil ſhould alſo be pretty looſe; for if they are planted in a very ſtiff Land which holds the Water in *Winter*, the Moiſture will rot their Roots. The Seeds of theſe Plants are ſeldom perfected in this Country; ſo they are only propagated by parting of their Roots, or by Slips taken off in *Summer*; which if planted in a ſhady Border, and duly watered, will take Root, and make ſtrong Plants by *Autumn*; when they may be removed where they are deſigned to remain: but it will be proper to keep a Plant or two of each Kind in Pots, that they may be ſheltered in *Winter* under a Hot-bed Frame, becauſe in very ſevere *Winters* theſe Plants are deſtroyed where they are expoſed to the Froſt.

The ſecond Sort is an annual Plant, which periſhes in *Autumn*: this muſt be ſown early in the *Spring*, on a Bed of freſh Earth in an open Situation; and when the Plants are come up, they muſt be thinned where they are too cloſe together; if they are conſtantly kept clear from Weeds, they will require no farther Care: in *July* the Plants will flower, and if the *Autumn* proves favourable, their Seeds will ripen in *September*; but when the *Autumn* proves cold and wet, the Plants many times decay without producing Seeds, eſpecially if they are not ſown pretty early in the *Spring*.

JACEA, Knapweed.

1. **Jacea** *Virginiana, leucoii petrei folio rigido, floribus pulchre purpureis, ad nodos caulium in laxiorem ſpicam diſpoſitis. Pluk. Mantiſſ.* Virginian Knapweed, with a ſtiff Gilliflower-leaf, and fine purple Flowers growing in looſe Spikes from the Joints of the Stalks.

2. **Jacea** *altera non ramoſa, tuberoſâ radice, foliis latioribus, flores ferens pauciores, majores, ſquammis hiantibus armatos, & pediculis curtis inſidentibus. D. Baniſt.* Another unbranched Virginian tuberoſe-rooted Knapweed, with broader Leaves, and larger ſcaley Flowers, growing thinly on ſhort Footſtalks.

Both theſe Sorts are Natives of *Virginia*, *Maryland* and *Carolina*, where they grow plentifully in the Woods, and make a beautiful Appearance when they are in Flower. They have large tuberoſe Roots, about the Size of ſmall Turneps, from which their Stems ariſe; and when the Roots are ſtrong, they grow five or ſix Feet high (eſpecially thoſe of the firſt Sort). Theſe are beſet with long narrow Leaves, growing alternately from the Joints of the Stalk. The upper Part of the Stalk is furniſhed with fine purple Flowers, which are produced in Spikes from the Wings of the Leaves. When the Roots of the firſt Kind are planted in a moiſt rich Soil, the Branches of Flowers will be near three Feet long, and make a moſt beautiful Appearance. Theſe Plants do not flower in this Country until *July*, ſo that unleſs the *Autumn* proves very warm, they will not produce good Seeds.

Theſe Plants may be propagated by Seeds, which ſhould be ſown early in the *Spring*, on a Border of freſh rich Earth, in a warm Situation. The beſt Method is to ſow the Seeds thinly in Drills, about ſix Inches aſunder, covering them about half an Inch thick with light Earth; and when the Plants are come up, they muſt be conſtantly kept clear from Weeds; and in dry Weather, if they are regularly watered, it will greatly ſtrengthen the Plants. In this Bed the Plants ſhould remain till the next *Spring*: therefore when their green Leaves are quite decayed in *Autumn*, there ſhould be ſome old Tan ſpread over the Surface of the Bed about an Inch thick, which will keep out the Froſt from the Roots; but if the firſt *Winter* ſhould prove very ſevere, it will be proper to lay ſome Peaſe haulm, or any other light Covering, on the Bed, to prevent the Froſt from penetrating of the Ground to the Roots, which may injure them while they are young; tho' when they have obtained Strength, they will endure the Cold extremely well in the full Ground without any Covering.

The Beginning of *March* the Roots may be carefully taken up, and tranſplanted where they are deſigned to remain, which ſhould be in a rich Soil and a moiſt ſheltered Situation; where if they are conſtantly kept clear from Weeds, and the Ground looſened carefully about the Roots twice a Year, they will thrive extremely well, and the Roots will abide many Years. The ſecond Year after they are raiſed from Seeds, ſome of the Plants will produce Flowers; but the third Year they will flower very ſtrong, when they will make a fine Appearance, and continue a long time in Beauty; and as there is little Trouble required in their Cultivation, ſo they deſerve a Place in every good Garden.

Frutex *lauri folio pendulo, fructu tricocco, ſemine nigro ſplendente. Catesb. Hiſt. Nat.* Red-wood.

This Tree grows plentifully on the Rocks in the *Bahama Iſlands*, where it riſes to the Height of eighteen or twenty Feet, and divides into many Branches, which are beſet with Leaves about the Size of thoſe of the Bay-tree, which have pretty large whitiſh Veins. The Bark of the Tree is ſmooth, and of a ruſſet Colour: the Wood is of a fine red Colour when it is firſt cut; but after it hath been expoſed to the Air for ſome time, it changes of a paler Colour.

The Seeds of this Tree were ſent to *England* by Mr. *Catesby*, from which many Plants have been raiſed in ſome curious Gardens; and there are at preſent ſeveral of the Plants preſerved, ſome of which are upward of eight Feet high, but they have not produced any Flowers in this Country.

This Tree may be propagated by Seeds, which ſhould be ſown early in the *Spring*, in Pots filled with light rich Earth, and plunged into a Hot-bed of Tanners-bark, where (if they are duly watered, and the Bed kept to a kindly Temperature of Heat) the Plants will appear in three Weeks or a Month after the Seeds are ſown; when the Glaſſes of the Hot-bed ſhould be raiſed every Day to admit free Air to the Plants, when the Weather is warm, and they ſhould be frequently refreſhed with Water. When the Plants are about two Inches high, they ſhould be carefully tranſplanted each into a ſeparate ſmall Pot, filled with light rich Earth, and then plunged into the Hot-bed again, obſerving to ſhade them from the Sun until they have taken new Root; after which time, they may be treated in the ſame manner as hath been directed for the Fiddle-wood, with which Management they will thrive extremely well.

KATSJULA KALENGU. *Hort. Mal. tom.* 11. *p.* 81.

The Roots of this Plant were brought from *China* by Mr. *Duboiſe*, which have ſucceeded very well in ſeveral Gardens, and have been propagated ſo as to furniſh other Countries with this Plant. The Name here aſſigned is *Malabar*, where the Plant grows in great Plenty, and the Roots are much uſed in Medicine. This Plant is alſo very common in *Perſia*, where it is called *Wanhom*; and the Root is greatly eſteemed for diſcuſſing of Wind, and for hypocondriack Diſorders. We have no *Engliſh* Name for this Plant at preſent.

It is propagated by parting of the Roots, the beſt time for which is in *March*, juſt before the new Leaves are put out; for the Leaves generally decay in *Winter*, and the Roots ſend forth new Leaves the Beginning of *April*. Theſe Roots ſhould be planted in ſmall Pots, filled with freſh light rich Earth, and plunged into the Bark-bed in the Stove, where they muſt be kept warm; but in the Day-time, when the Sun is hot, there ſhould be free Air admitted to the Plants by opening ſome of the Glaſſes of the Stove. During the time that the Roots are deſtitute of Leaves, they muſt be watered ſparingly, becauſe too much Moiſture would then rot them; but when they have put out their Leaves, they muſt be frequently refreſhed with Water, eſpecially in hot Weather. Theſe Plants muſt conſtantly remain in the Bark-ſtove; for if the Pots are taken out of the Tan, and placed on Shelves in the dry Stove, the Roots will be apt to ſhrink in the *Winter*, which will cauſe them to rot, as is alſo the Caſe of Ginger, to which theſe Roots have ſome Analogy in their Conſiſtence and Flavour.

The Leaves of this Plant ariſe from the Root, having very ſhort Footſtalks, and ſpread near the Surface of the Ground: theſe Leaves are broad, roundiſh and concave, having ſeveral longitudinal Veins or Ribs, ſomewhat like thoſe of the broad-leav'd Plantain. Between theſe Leaves are produced the Flowers, which ariſe ſingly from the Root, having no viſible Footſtalk; theſe are compoſed of one Leaf, which is divided into ſeveral irregular Parts, ſomewhat reſembling the Flowers of ſome Sorts of Satyrion; are of a whitiſh Colour ſpotted with purple, and a yellow Bottom. Theſe Flowers are of a ſhort Duration, ſeldom continuing above twenty-four Hours before they decay, but are ſucceeded by new Flowers from the ſame Root, for a conſiderable time. This Plant uſually flowers in *July* and *Auguſt*, but is not ſucceeded by any Fruit or Seed in this Country: it is preſerved by ſome curious perſons for the ſake of Variety; and as it requires but little Room in the Stove, ſo it deſerves a place in every Garden where tender exotic Plants are preſerved, eſpecially as it needs no great Care in its Cultivation, and may be propagated in plenty.

The Root of this Plant is compoſed of ſeveral Tubers about the Size of Hazel-nuts, from which there are ſeveral fleſhy thick Fibres produced, like to thoſe of the Ginger-root, and every Part of the Plant is warm and aromatic.

LAURO AFFINIS *jaſmini folio alato, coſta media membranulis utrinque extantibus alata, ligni duritie ferro vix cedens. Sloan. Cat. Jam. p.* 137. Iron-wood.

There are Male and Female Trees of this Kind: the Male Trees produce ſhort Spikes of amentaceous Flowers, from the Wings of the Leaves, which have a great Number of Chives, ſupporting ſmall Summits, which are filled with Farina or Male Duſt. The Flowers of the Female Tree I have not ſeen, nor are they deſcribed by any Author I have met with. The Fruit comes out from the ſmall Branches two or three together, which are ſurrounded by a thin Pulp, under which is one pretty large Seed.

Theſe Trees are pretty common in *Jamaica*, and in ſome other Places in *America*, where they riſe about twenty Feet high or more, and divide into many Branches, which are beſet towards their Extremity with winged Leaves, whoſe *Pinnæ* are very ſmall, and are terminated by an odd Lobe: theſe are placed along the Mid-rib, which has *Appendices* or narrow Wings running the whole Length. Theſe Leaves commonly continue green thro' the *Winter*; ſo are thruſt off in the *Spring*, when the new Leaves come out.

This Tree is propagated by Seeds, which muſt be ſown in Pots filled with rich Earth, and plunged into a Hot-bed of Tanners-bark, and managed in the ſame manner as hath been directed for the Log-wood. If the Bed is in a proper Temperature of Heat, and the Seeds are freſh, the Plants will appear in about five Weeks after the Seeds are ſown; and then they ſhould have freſh Air admitted to them every Day, when the Weather is warm, to prevent their being drawn up too weak, and they muſt be frequently refreſhed with Water. When the Plants have obtained Strength enough to bear Tranſplantation, they ſhould be each placed in a ſeparate ſmall Pot, filled with light rich Earth, and then plunged into the Hot-bed again, obſerving to ſhade them from the Sun until they have taken new Root; after which they may remain in this Bed till *Autumn*, when they muſt be removed into the Stove, and plunged into the Bark-bed, where they ſhould be treated in the ſame manner as hath been directed for the Mahogony-tree; with which Management the Plants will thrive very well: but as they are naturally of ſlow Growth, ſo we can't hope to ſee them of any conſiderable Size in many Years in this Country; tho' there are ſome of the Plants preſerved by ſome curious Perſons in their Stoves, for the ſake of Variety.

The Wood of this Tree is as cloſe as that of the Box-tree, and is of a yellowiſh Colour: it is ſo hard as to break the Tools in working of it, and is very proper to make Cogs for Wheels, becauſe it is not hurt by the Sun or Wind; and is ſo heavy as to ſink in Water. It grows in Savanna's, and other low Lands, in the warmeſt Parts of *America*.

LAURO AFFINIS *terebinthini folio alato, ligno odorato candido, flore albo. Sloan. Cat. Jam. p.* 137. Lignum Rhodium, or Lignum-rorum.

This Tree grows plentifully in the mountainous Parts of *Jamaica*, and in ſome other Places in *America*; where it riſes to the Height of twenty Feet, and divides into many Branches, which are armed with many ſhort Prickles, and incline towards the Earth. The Leaves are winged like thoſe of the Aſh-trees, but the Lobes or *Pinnæ* are obtuſe and pretty broad, each containing two or three Pair of Lobes, without an odd one to terminate them. The Flowers are produced in Bunches at the Extremity of the Branches, which are white, and reſemble thoſe of the Elder-tree: theſe are ſucceeded by ſmall roundiſh Berries, in which are included black Seeds. The wood of this Tree is white, ſolid and odoriferous; from whence ſome of the Inhabitants of *America* have ſuppoſed it to be the Lignum Rhodium, tho' that is a very different Wood.

This Tree may be propagated by Seeds in the ſame manner as the former Sort, and being a very tender Plant, muſt be conſtantly preſerved in the Stove, and treated in the ſame manner as the former, and the Mahogony-tree, all of them requiring the ſame Culture. This Plant is preſerved in the Gardens of ſome curious Botaniſts, but hath not produced any Flowers in this Country.

MORUS *fructu viridi, ligno ſulphureo tinctorio. Sloan. Cat. Jam. p.* 128. Fuſtic-wood.

This Tree grows in the Iſland of *Jamaica*, and in ſeveral other Places in the warm Parts of *America*, from whence the Wood is brought to *England* for the Dyers, who uſe it in dying of Yellows and Reds, and is a very good Commodity.

It grows to be a very large Tree in *America*, riſing to be ſixty Feet high or upward, having a ſtrait Trunk, and divides toward the Top into many Branches, which are beſet with rough green Leaves ſomewhat reſembling thoſe of the Mulberry-tree, but ſmaller. The Bark of the Tree is of a light brown Colour, having ſeveral longitudinal Furrows. The Wood is ſolid, and of a fine yellow Colour. This Tree produces Katkins at remote Diſtances from the Fruit on the ſame Tree, as doth the Mulberry-tree: the Fruit is round, and about the Size of Nutmegs, having many *Acini*, in like manner as the Strawberry; but is green within and without.

There have been ſome of theſe Plants raiſed in the *Engliſh* Gardens, where ſome of the Plants are preſerved by thoſe Perſons who are curious in collecting rare Plants. They are propagated by Seeds, which ſhould be ſown early in the *Spring*, in Pots filled with rich light Earth, and plunged into a Hot-bed of Tanners-bark; and when the Plants are come up, they muſt be each tranſplanted into a ſeparate ſmall Pot, filled with light rich Earth, and then plunged into the Hot-bed again, obſerving to ſhade them from the Sun until they have taken new Root; after which time they muſt be treated in the ſame manner as the Redwood, and other tender exotic Trees: but as theſe naturally grow in very moiſt Places, ſo they muſt be frequently watered; and if they are kept conſtantly in the Bark-ſtove, where they may enjoy a good Share of Warmth in *Winter*, and in the *Summer* Seaſon have a large Share of free Air admitted to them, they will make great Progreſs, and retain their Leaves moſt Part of the Year.

Laurus tinus *Virginiana, floribus albidis eleganter bullatis. D. Baniſt. Pluk. Phyt. tab.* 305. *f.* 2. Ivy-flowering Winter-green.

This Shrub is pretty common in the Woods of *Virginia*, *Maryland* and *New-England*, where it uſually riſes about four or five Feet high, and divides into many Branches, which are furniſhed with Leaves ſomewhat like thoſe of the Laurus tinus, but are more pointed; theſe grow by Pairs, oppoſite to each other. At the Extremity of the Branches the Flowers are produced in Bunches, which are white, and ſhaped like thoſe of the Arbutus or Strawberry-tree, which are ſucceeded by roundiſh Seed-veſſels, including ſeveral ſmall Seeds.

It may be propagated by laying down of the Branches, in the ſame manner as is practiſed for the Laurus tinus, which ſhould be conſtantly watered in dry Weather, and ſome Neats-dung laid on the Surface of the Ground about the Layers, to prevent the Air and Sun from penetrating of the Earth to dry it, which would retard their making Roots. If theſe Directions are carefully practiſed, the Layers will be rooted enough to tranſplant in one Year; and as the beſt Time for laying down the Branches is in *March*, ſo by the following *March* they will be ſufficiently rooted; which is a very proper Seaſon for removing them, provided the *Spring* is mild, otherwiſe it is better to defer it until the Beginning of *April*. When theſe Layers are taken off from the old Plants, they ſhould not remain long out of the Ground; for if the Sun and Wind ſhould dry the tender Fibres of their Roots, it will greatly injure them. The Ground in which theſe are planted, ſhould be freſh, and rather moiſt than dry: it ſhould alſo be well trenched and clean'd from bad Weeds; and if ſome rotten Neats-dung is buried in it, the Ground will be cooler, and the Plants will thrive much better. Theſe Layers may be placed in Rows about three Feet Diſtance, and in the Rows about a Foot aſunder, after the ſame manner as is practiſed for other Shrubs in the Nurſery, and ſome Mulch laid on the Surface of the Ground about their Roots, to prevent the Sun and Air from penetrating to dry their tender Fibres; and if the *Spring* ſhould prove very dry, it will be proper to water them three or four times until they have taken good Root; after which time they will require no farther Care, but to keep the Ground conſtantly clean from Weeds during the *Summer* Seaſon; and in *Winter*, if the Froſt ſhould be ſevere, it will be proper to lay ſome Mulch on the Surface of the Ground, to prevent the Froſt from penetrating deep into the Earth, which often deſtroys the Plants while they are young: for altho' the *Winters* are generally more ſevere in *North America*, where theſe Plants naturally grow, than in *England*; yet as they are Natives of the Woods, ſo they are greatly ſheltered from the ſharp Air by the taller Trees; and the great Quantity of Leaves which in *Autumn* fall from thoſe Trees, prevents the Froſt from entering very deep in the Ground, and thereby theſe Plants are protected: for it is remarkable, that whenever theſe Plants are taken out of the Woods, and planted in Gardens, in any of the Settlements which are clear'd from Timber, they are frequently deſtroyed in *Winter*, tho' before they grew ſpontaneouſly on the ſame Spot. This may be alſo obſerved in ſeveral Plants, which grow naturally in the Woods in divers Parts of *England*; which, if tranſplanted into Gardens, ſeldom thrive, and never continue very long; altho' the Soil into which they are removed, is nearly the ſame as that from whence they were taken, and they are placed on a North Border in a ſhady Situation; which is a Proof of their requiring the Shelter of tall Trees.

Tho' this Shrub is more ſpeedily propagated by Layers than in any other manner, yet may it alſo be propagated by Seeds; but theſe muſt be procured as freſh as poſſible from the Countries of its natural Growth, becauſe it doth not perfect Seeds in *England*. Theſe ſhould be ſow'd in Pots or Tubs filled with freſh loamy Earth, and placed where they may have only the Morning Sun, obſerving conſtantly to water them in dry Weather, as alſo to keep the Tubs clear from Weeds; for theſe Seeds commonly remain in the Ground a whole Year, before the Plants come up, when they are ſown in the *Spring*, which muſt be conſtantly the Seaſon in this Country; becauſe if the Seeds are ſent over ſoon after they are ripe, they cannot be expected to arrive here before *Chriſtmas* at the ſooneſt, and many times it will be much later; ſo that during the firſt *Summer*, there will be no other Care required but to keep the Earth conſtantly clean from Weeds, and in very dry Weather to water it: but in *Winter* it will be proper to place theſe Pots or Tubs under a common Hot-bed Frame, where they may be ſheltered from ſevere Froſts; or where this Conveniency is wanting, they ſhould be plunged into the Earth under a warm Wall; and in hard Froſts they may be covered with Peaſe-haulm, or ſome ſuch light airy Covering, to prevent the Froſt from penetrating deep into the Earth, which might injure the Seeds. About the Middle or latter End of *February*, theſe ſhould be removed, and placed on a moderate Hot-bed, which will bring up the Plants in a ſhort time; but when the Plants appear, they muſt have a large Share of freſh Air admitted to them every Day in mild Weather; and as the Seaſon advances, ſo they ſhould by Degrees be inured to bear the open Air; and toward the latter End of *May*, they muſt be taken out of the Hot-bed, and placed in a ſheltered Situation, where they may have the Morning Sun till about Ten o'Clock, but may be ſcreened from the Sun in the Heat of the Day. In dry Weather theſe Plants will require to be frequently watered, and they muſt be conſtantly kept clear from Weeds; with this Management the Plants will make good Progreſs the firſt Seaſon; but in *October*, when the Nights begin to be froſty, they muſt be removed into Shelter; for as theſe, and many other *American* Trees and Shrubs, are very ſubject to ſhoot freely in the *Autumn*, ſo whenever there happen ſome early Froſts, which are ſharp, the Shoots being very tender are often killed by them, ſo that the leading Shoots of the Plants are deſtroyed, or ſo much injured, as to decay at their Tops; whereby the Stems become crooked, and oftentimes the Trees receive ſuch a Check hereby, as not to recover it in ſeveral Years after.

The ſecond *Spring* theſe Seedling-plants will be fit to tranſplant, when they ſhould be carefully ſhaken out of the Pots in which they were ſown, and carefully parted, planting each into a ſeparate ſmall Pot, filled with freſh rich loamy Earth, and if they are plunged into a moderate Hot-bed of Tanners-bark, it will cauſe them to take Root very ſoon, and greatly promote their Growth; but ſo ſoon as they have taken Root, they muſt have a large Share of free Air admitted to them every Day, and by Degrees they muſt be expoſed to the open Air, into which they ſhould be removed in *May*, and placed in a ſheltered Situation, expoſed only to the Morning Sun; but as theſe ſmall Pots will dry very faſt in hot Weather, ſo if they are plunged into ſome old rotten Tanners-bark, or rotten Dung, it will prevent the Sun and Air from drying the Earth, and be of great Uſe to the Plants. In this Situation the Plants may remain the *Summer* Seaſon, during which time they muſt be frequently watered in dry Weather, and kept clear from Weeds; but in the Autumn they ſhould be removed into Shelter, as in the former *Winter*, either by placing them under a Hot-bed Frame, or arching of them over with Hoops, ſo as that they may be covered with Mats in froſty Weather; but in mild Weather they ſhould be expoſed to the Air as much as poſſible, otherwiſe they will caſt their Leaves, and loſe their upper Eyes.

Toward the Middle or latter End of the following *March*, the Plants ſhould be ſhaken out of the Pots, and planted where they are deſigned to remain, which ſhould be in a well-ſheltered Situation, and a moiſt rich Soil; obſerving, when they are planted, to lay ſome Mulch on the Surface of the Ground about their Roots, as alſo to water them, if the Seaſon ſhould prove dry, until they have taken good Root; after which time they will require no farther Care, but to keep them clear from Weeds, which if permitted to grow amongſt the Plants, would ſoon overſpread and deſtroy them. As theſe Plants continue green throughout the Year, and produce many Bunches of white Flowers at the Extremity of their Branches, which make a fine Appearance for ſix Weeks; ſo they merit a Place in good Gardens, eſpecially as they will grow under Shade; where they will afford an agreeable Variety, when mixed with other evergreen Shrubs of the ſame Growth.

Loto affinis *coryli folio ſingulari. Dodart. Mem.* Birdsfoot-trefoil with a ſingle Hazel-leaf.

This is an annual Plant, which uſually grows two Feet and a half high, having ſome ſmall Side-branches. The Leaves grow alternately at a large Diſtance from each other, which are ſhap'd like thoſe of the round-leav'd Alder-tree, having many deep longitudinal Furrows in them. The Flowers are produced on long Footſtalks, coming out from the Wings of the Leaves. Theſe are collected into a roundiſh Head, and are of a purpliſh Colour, ſhaped ſomewhat like thoſe of Ladies-finger, and are ſucceeded by round browniſh Seeds.

ADDENDA.

The Seeds of this Plant muſt be ſown early in the *Spring* on a moderate Hot-bed, and when the Plants appear, they muſt be kept clear from Weeds, and frequently watered. In warm Weather the Glaſſes of the Hot-bed muſt be raiſed every Day, to admit freſh Air to the Plants, otherwiſe they will draw up too weak. When the Plants are about two Inches high, they ſhould be carefully taken up, and each planted into a ſeparate ſmall Pot filled with rich freſh Earth, and plunged into a moderate Hot-bed of Tanners-bark, obſerving to ſhade them from the Sun until they have taken new Root; after which time they muſt be frequently watered in hot Weather, and the Glaſſes ſhould be raiſed every Day to admit freſh Air to the Plants; in this Bed they may remain until the Plants have filled the Pots with their Roots; and then they ſhould be ſhaken out, and after their Roots are trimmed, they muſt be put into larger Pots, filled with freſh rich Earth, and then plunged into the Bark-bed in the Stove, where they may have room to grow in Height; and in *July* the Plants will flower, but their Seeds will not ripen till *September*; ſo that if the Plants are expoſed conſtantly to the open Air, they rarely produce good Seeds in *England*.

LUPULUS *ſylveſtris Americana, claviculis donata. Pluk. Phyt. tab.* 201. *f.* 4. Wild Hop-ſeed.

This Plant is a Native of the warm Parts of *America*, where it riſes with two or three ſlender Shoots, which trail on whatever Trees or Shrubs they grow near, and faſten themſelves to the Branches of Trees by their Tendrils, which are produced on the Sides of the Branches in the ſame manner as are thoſe of the Vine. The Leaves are oblong, rough, and terminate in a long Point. Toward the upper Part of the Shoots, the Flowers are produced, which are ſucceeded by Seed-veſſels growing together in a Head, ſomewhat like thoſe of Hops, from whence the Inhabitants of *America* gave it the Name of Hop-ſeed.

This Plant is preſerved in ſeveral curious Gardens in *Europe*, for the ſake of Variety, there being little Beauty or Uſe (at preſent known) in this Plant. It is propagated by Seeds, which muſt be ſown on a Hot bed early in the *Spring*; and when the Plants are ſtrong enough to tranſplant, they ſhould be each planted into a ſeparate ſmall Pot filled with rich light Earth, and plunged into a moderate Hot-bed of Tanners-bark, obſerving to water and ſhade them until they have taken new Root; after which time they muſt be treated in the ſame manner as hath been directed for the former Plant, during the *Summer* Seaſon; and in *Winter* they ſhould be plunged into the Bark-bed in the Stove, where they may enjoy a moderate Heat, and they muſt be frequently watered; for they naturally grow on moiſt Ground, ſo are pretty thirſty Plants; but in very cold Weather, they ſhould not have too great Quantities of Water given to them each time, leſt it ſhould kill their tender Fibres. If this be duly obſerved, the Plants will retain their Leaves thro' the *Winter*, and the following *Spring* they will make great Progreſs in their Growth; but they ſeldom produce Flowers in this Country until the third *Summer*, when, if the Plants have thriven kindly, they will be fourteen or ſixteen Feet high: but as their Branches are very ſlender, ſo they muſt be ſupported, otherwiſe they will trail over whatever Plants are placed near them; therefore theſe ſhould be placed at the Back-ſide of the Stove, to run over the Trelaſe with other climbing Plants, where they will afford Variety.

PHYLLANTHOS *Americana planta, flores è ſingulis foliorum crenis proferens. Par. Bat. prod.* American Phyllanthos, with Flowers growing on the Edges of the Leaves.

Theſe Plants are Natives of the warm Parts of *America*, where they grow on Rocks, ſo that it is very difficult to tranſplant them; for their Roots ſhoot very deep into the Fiſſures of the Rocks, by which the Plants are chiefly ſupported. They riſe with a ſlender Stem to the Height of eight or ten Feet, having a ſmooth grey Bark, ſomething like that of the Fir-tree; at the Top come out the Leaves in an irregular Order, which are winged like thoſe of the Spleenwort; and on the Edges of the Lobes the Flowers are produced on ſhort Foot-ſtalks, which at firſt appear like the ſeeding Part of the Ferns, being of a brown or ruſſet Colour: Theſe are ſucceeded by ſmall Seed-veſſels, which are filled with very ſmall Seeds.

It is preſerved in ſome curious Gardens for Variety, and by its odd Appearance doth merit a Place in ſuch Gardens where tender exotick Plants are preſerved. At preſent this Plant is very rare in *England*; for as the Seeds of this Plant do not ſucceed when brought over, ſo there is no other Method to obtain the Plants, but to dig thoſe which are young out of the Rocks, in the Places where they naturally grow, and to plant them in ſmall Tubs of Earth; by which Method they may be brought over to *England*; and when they arrive, they ſhould be placed in a warm Stove, otherwiſe they will not live thro' the *Winter* in this Country.

This Plant doth not produce many Side-branches, ſo that it cannot be eaſily propagated by Layers or Cuttings, which is the Reaſon of its being ſo very uncommon in *Europe*; for I do not remember to have ſeen more than two of the Plants, one of which was in the Phyſic-garden at *Amſterdam*, which was originally brought from *Porto Rico*, an Iſland in *America*, now poſſeſſed by the *Spaniards*. It is very impatient of Cold, ſo muſt be conſtantly kept in the Stove in this Country; and in *Summer*, when the Weather is warm, there ſhould be a large Share of free Air admitted, by opening of the Glaſſes of the Stove every Day; but in the Night they ſhould be cloſely ſhut, except in very warm Weather; and in *Winter* the Stove in which theſe Plants are placed, muſt be kept to the temperate Heat marked on Mr. *Fowler*'s Thermometers. During the *Winter* Seaſon theſe Plants muſt not have too much Water, but they ſhould have a pretty large Share of Moiſture in hot Weather, which will cauſe them to flouriſh, and produce large beautiful Leaves, when they afford an agreeable Variety amongſt other tender exotic Plants in the Stove.

PRUNIFERA, *vel nucifera, ſeu nuci-prunifera arbor Americana præcelſa, anguſtis laurinis foliis læte virentibus, maſtichen odoratum fundens. Pluk. Phyt. tab.* 217. The Maſtich Tree of Barbadoes.

This Tree grows in *Barbadoes*, *Jamaica*, and ſeveral other Places in the warmeſt Parts of *America*, where it riſes to the Height of fifty or ſixty Feet, and divides into many Branches. From the Trunk and Branches of this Tree there flows out a Balſam, which ſmells very like Maſtich, from whence it had this Name. The Leaves are pretty long, narrow, and ending in a Point, and are of the Conſiſtence of thoſe of the Bay-tree, of a ſhining green Colour, and continue throughout the Year; which renders it worthy of a Place in ſuch Stoves where tender exotic Plants are preſerved, notwithſtanding they do not produce either Flowers or Fruit in this Country. The Timber of this Tree is frequently uſed in *America*, to make Tables and other Utenſils, for which Purpoſe it is pretty much eſteemed.

This Tree is propagated by Seeds, which ſhould be procured as freſh as poſſible from the Countries of its natural Growth (for if they are kept very long out of the Earth, they rarely grow): Theſe muſt be ſown early in the *Spring*, in Pots filled with freſh light Earth, and plunged into a Hot-bed of Tanners-bark, where if the Bed is kept in a proper Temperature of Heat, and the Earth is frequently watered, the Plants will appear above Ground in about ſix Weeks or two Months, when the Glaſſes of the Hot-bed ſhould be raiſed a little every Day, to admit freſh Air to the Plants, to prevent their drawing up too weak, and they muſt be frequently refreſhed with Water. When the Plants are about two Inches high, they ſhould be carefully tranſplanted each into a ſeparate ſmall Pot filled with freſh Earth, and then plunged into a moderate Hot-bed of Tanners-bark, obſerving to water and ſhade them until they have taken new Root; after which Time they ſhould have freſh Air admitted to them every Day, in Proportion to the Warmth of the Seaſon, and muſt be frequently refreſhed with Water. In this Hot-bed the Plants may remain during the *Summer* Seaſon, but at *Michaelmas* they ſhould be removed into the Stove, and plunged into the Bark-bed; where, if they are kept in a moderate Temperature of Heat, and are frequently refreſhed with Water, their Leaves will continue of a fine Verdure all the *Winter*, and the Plants will make good Progreſs; but if they are expoſed to the Cold, they will be ſoon deſtroyed.

As theſe Plants are tender, ſo they ſhould conſtantly remain in the Stove, obſerving in the *Summer* Seaſon to admit a large Share of free Air to them; and if their Leaves contract any Filth, they ſhould be carefully waſhed with a Sponge to clear it off, otherwiſe it will retard the Growth of the Plants, and render them unſightly. In *Winter* they muſt have a moderate Heat, and frequently muſt be refreſhed with Water; but in cold Weather it muſt not be given to them in large Quantities, leſt it ſhould rot the tender Fibres of their Roots. As the Plants advance in their Growth, ſo they ſhould be removed into larger Pots, that their Roots may have Room to expand; but the Pots ſhould not be too large, for that is a greater Fault than being too ſmall; nor will theſe Plants require ſhifting oftener than once every Year, which ſhould be toward the latter End of *March*, juſt before they begin to put out new Shoots, when their

Roots muſt be carefully trimmed, and the Pots filled with freſh rich Earth; and if at this Time the Bark-bed is turned and renewed with ſome freſh Tan, it will cauſe the Plants to put out new Roots very ſoon, and greatly promote their Growth.

PYRETHRUM *flore bellidis. C. B. P.* Pellitory of Spain.

The Root of this Plant is very acrid, ſo is frequently recommended to be chewed, in order to draw cold Rheum from the Gums, when Perſons are troubled with Pains in their Jaws, for which it is greatly eſteemed, and is placed in the Catalogue of medicinal Plants. It grows in *Spain*, *Italy*, and the South of *France*, from whence the dried Roots are imported into *England*.

At preſent this Plant is not common in the *Engliſh* Gardens, tho' it deſerves a Place in the Pleaſure Garden as an Ornament, and being an uſeful Plant, ſhould render it more valuable. The Roots of this Plant run down pretty deep into the Ground, after the Manner of Carrots and Parſnips, and are uſually as large as a middling Carrot: The Leaves of the Plant are cut very fine, reſembling thoſe of Chamomile, and are of a Sea-green Colour; the Flowers are produced on the Top of the Stalks, which are as large as thoſe of the common Marygold, having a large yellow Middle, bordered round with Leaves like the Flowers of Daiſies, being white on the Inſide, and of a fine purple Colour on the Outſide, ſo that they make a beautiful Appearance; and when the Plants are ſtrong, the Flowers ſucceed each other, from the Middle of *February* (if the Seaſon is mild) until *May*, during which Time the Roots are rarely deſtitute of them; and frequently there are many Flowers open at the ſame Time upon them, which if ſupported by Sticks, to prevent their trailing on the Ground, will make a fine Appearance. By the Flowers and Seeds of this Plant, it ſhould be ranged amongſt the Chamomiles; but it is not deſcribed by any of the late Writers on Botany.

This Plant is propagated by Seeds, which ſhould be ſown on a Bed of freſh Earth in *March*; and as the Seeds are very light, ſo it will be the beſt Method to ſow it in Drills about eighteen Inches aſunder, covering them over about half an Inch with Earth; and when the Plants are come up, they ſhould be kept clear from Weeds; and if they are too cloſe together, ſome of them may be drawn out, and pricked into a ſhady Border, to give Room for the remaining Plants to grow; for they ſhould be left about four or five Inches aſunder in the Rows, which will be ſufficient for them until *Michaelmas*, when they may be thinned for good, leaving them about a Foot Diſtance, where they are deſigned to grow in a Bed by themſelves: And the Plants which are taken out, may be tranſplanted into the Borders of the Pleaſure Garden, where, if the Soil is dry, and the Situation warm, they will thrive extremely well without any Covering in *Winter*. In tranſplanting of theſe Plants, there muſt be great Care taken not to break or cut their Tap Roots, which would greatly injure them. Some few of theſe Plants may be put into Pots while they are young, which may be ſheltered under a common Frame in *Winter*, for fear thoſe which are expoſed abroad ſhould be deſtroyed: Tho' this can only happen in a very ſevere Froſt; for in our ordinary *Winters*, they thrive as well in the full Ground, as if they were in their native Country, and frequently flower about *Chriſtmas* in mild *Winters*.

The Seedling Plants will flower the following *Spring*, and produce good Seeds in Plenty, provided the firſt Flowers are not gathered; but the Roots will abide many Years, and flower in great Plenty as they grow ſtronger, and will require no other Culture but only to dig the Ground gently between the Roots every *Spring*, being very careful not to bruiſe or injure them, and to keep the Ground conſtantly clear from Weeds.

PRENANTHES, Rattle-ſnakeweed.

The *Species* are;

1. PRENANTHES *Canadenſis altiſſima, foliis variis, flore luteolo. D. Sarrazin. Vaill. Mem.* The talleſt Canada Rattle-ſnakeweed, with variable Leaves, and a yellowiſh Flower.

2. PRENANTHES *Canadenſis elatior, foliis imis variis, ſuperioribus anguſtis & mucronatis, flore luteolo. D. Sarrazin. Vaill. Mem.* Taller Canada Rattle-ſnakeweed, with the lower Leaves variable, and the upper Leaves narrow and pointed, and a yellowiſh Flower.

3. PRENANTHES *Nov' anglicanus, chenopodii foliis, floribus candidis. Vaill. Mem.* New-England Rattle-ſnakeweed, with Gooſe-foot Leaves, and white Flowers.

Theſe Plants are very common in the Woods, and other ſhady Places in moſt of the Northern Parts of *America*, but particularly in *Virginia* and *Maryland*, where the Inhabitants have an Opinion that they will cure the Bite of the Rattle-ſnake, if timely applied to the wounded Part: From whence the Name of *Rattle-ſnakeweed* has been given to them.

The Seeds of the two Sorts firſt mentioned have been brought to *England*, where the Plants are preſerved in the Gardens of ſome curious Perſons for the ſake of Variety. Theſe Plants ſeldom abide longer than two Years; but as they perfect their Seeds very well in this Country, ſo new Plants may be raiſed every Year for a Supply. The Seeds of theſe Plants ſhould be ſown in *Autumn*, ſoon after they are ripe; for if they are kept out of the Ground until *Spring*, they ſeldom grow the ſame Year, ſo that the Plants do not come up until the *Spring* following. The beſt Method is to ſow the Seeds in Drills, in a Bed of freſh Earth, making the Drills about two Feet aſunder, and cover the Seeds about half an Inch with Earth. When the Plants are come up, they muſt be kept clear from Weeds; and in the *Spring* the Plants ſhould be thinned, ſo as to leave them about ſix or eight Inches diſtant in the Rows; and if the Weeds are conſtantly cleared from them, they will require no farther Culture. In *July* the Plants will flower, and they will ripen their Seeds by the Middle or latter End of *Auguſt*.

Theſe Plants have ſome Reſemblance to the Sowthiſtle, and the Stems and Leaves abound with a milky Juice in like Manner; ſo that there is no Beauty in them, but they are preſerved in Botanick Gardens for Variety.

PSEUDO-SANTALUM *croceum. Sloan. Cat. p.* 213. Braſiletto Wood.

The Wood of this Tree is brought from the *Weſt-Indies* for the Dyers, who uſe it in Dying of Yellows and other Colours, and has formerly been a valuable Commodity, but at preſent it is not ſo much in Uſe.

This Tree grows plentifully on the North Side of the Iſland of *Jamaica*, and in ſeveral other Parts of *America*; where it uſually riſes about thirty Feet in Height, and divides into many crooked irregular Branches, which are furniſhed with winged Leaves, whoſe Ribs and Footſtalks are beſet with crooked Spines, which faſten to the Cloaths of ſuch Perſons who paſs between them, in the ſame Manner as the Bramble.

In *England* there are ſome of theſe Plants preſerved as Curioſities, in ſome curious Botanick Gardens; but as they are Natives of warm Countries, ſo they cannot be maintained here without the Aſſiſtance of Stoves; for they are too tender to live in the open Air, in the warmeſt Part of the Year. Theſe are propagated by Seeds, which ſhould be ſown early in the *Spring*, in ſmall Pots filled with freſh light Earth, and plunged into a Hot-bed of Tanners-bark; where if the Bed is kept in a proper Temperature of Heat, and the Earth frequently watered, the Plants will appear in a Month after the Seeds are ſown; when they ſhould be treated in the ſame Manner as hath been directed for the Logwood, except that they muſt not be watered ſo often, becauſe theſe Trees naturally grow on drier Ground.

If theſe Plants are properly managed, they will grow near a Foot in Height the firſt *Summer*; but afterward they make but a ſmall Progreſs, ſeldom ſhooting above three or four Inches in a Year, and commonly put out many lateral Branches, which ſtop their growing in Height. They retain their Leaves throughout the Year, when they are kept in a proper Temperature of Heat; but if the Stove is too cold, they will caſt their Leaves, and oftentimes will loſe the tender Parts of their Shoots in *Winter*.

RHUS *obſoniorum ſimilis Americana, gummi candidum fundens, non ſerrata foliorum rachi medio alata. Pluk. Phyt. tab.* 56. *f.* 1. The Gum Copal-tree, *vulgo*.

This Plant grows in *Virginia* and *Carolina*, where it riſes to the Height of twenty Feet or upwards, and divides into many Branches, which are furniſhed with winged Leaves, each having four, five, or ſix Pair of Lobes, and terminated by an odd one: Theſe are placed on a winged Midrib, having no Footſtalks. There is a white Gum iſſues out of the Tree, which is by many taken for the Copal, and is uſed in Medicine.

There are ſome of theſe Plants in the *Engliſh* Gardens, which have grown in the full Ground for ſome Years, without receiving any Injury from the Froſt, ſo that they may be ſafely planted in the open Air, as they have endured the Cold of our ordinary *Winters* for ſome Years paſt, when the Plants were but young; and if a ſevere Froſt ſhould happen, a ſlight Shelter will be ſufficient to protect them, eſpecially when the Plants have obtained Strength, provided they are placed near the Shelter of other Trees; for when theſe *American* Trees grow in Thickets, they defend each other, ſo are not ſubject to be deſtroyed in a hard *Winter*.

This Plant may be propagated by Seeds, which ſhould be ſown in Pots or Tubs of Earth, which ſhould be placed in a ſheltered Situation, where they may have the Morning Sun, and in dry Weather frequently refreſhed with Water: in this Place they may remain the *Summer* Seaſon, obſerving to keep them clear from Weeds; for the Plants ſeldom come up the firſt Year: therefore at *Michaelmas* the Pots ſhould be removed, and placed under a Hot-bed Frame, where they may be ſcreened from hard Froſts, but ſhould be expoſed in mild Weather. The following *February*, the Pots ſhould be plunged into a very moderate Hot-bed, which will bring up the Plants in a ſhort time; but the Beginning of *April*, they ſhould by Degrees be inured to the open Air; and in the Middle of *May*, they may be taken out of the Hot-bed, and placed in a ſhelted Situation, where they ſhould remain during the *Summer* Seaſon, being careful to ſupply them with Water in dry Weather, otherwiſe the Plants will not make much Progreſs. At *Michaelmas*, the Plants ſhould be removed into Shelter, under a Hot-bed Frame, where in mild Weather they ſhould be conſtantly expoſed to the open Air; but in cold Weather, they may be ſcreened with Glaſſes, and covered with Mats in very hard Weather, to prevent the Froſt from penetrating to the Roots of the Plants, which would deſtroy them while they are very young.

The following *Spring*, juſt before the Plants begin to ſhoot, they ſhould be carefully taken up, and each tranſplanted into a ſeparate ſmall Pot filled with freſh Earth, and then plunged into a moderate Hot-bed, which will promote their taking new Root; and as the *Spring* advances, and the Weather is mild, they muſt be inured to bear the open Air by Degrees; and in *May* they ſhould be quite expoſed to the Air, in a warm ſheltered Situation, expoſed to the Morning Sun; but as the Pots are ſmall in which the Plants are placed, ſo if they are plunged into old Dung, or Tanners-bark, it will prevent the Sun and Air from drying the Earth too faſt, and thereby be of great Service to the Plants, which will require to be frequently watered in dry Weather; for they naturally grow on moiſt Land.

In *Winter* theſe Plants will require to be protected from hard Froſt; ſo they may be either placed under a Hot-bed Frame as in the former Year, or elſe plunged into an old Hot-bed of Tanners-bark, in a warm Situation, and arched over with Hoops, that they may be covered with Mats and Peaſe-haulm in hard Froſt; but ſhould be expoſed in mild Weather. And in the latter End of *March*, moſt of the Plants may be turned out of the Pots, and planted into the full Ground where they are deſigned to remain; and the Surface of the Earth ſhould be covered with rotten Tanners-bark, or old rotten Dung, to prevent the Sun and Air from penetrating the Ground; and if the *Spring* ſhould prove very dry, they ſhould be watered twice a Week, which will cauſe them to make good Roots, and greatly forward their Growth. During the *Summer* Seaſon the Plants ſhould be conſtantly kept clear from Weeds, which if permitted to grow amongſt them, would ſoon overbear and deſtroy them while they are young; but when the Plants are ſtrong, they will not be in much Danger of ſuffering from any ordinary Weeds, if the Ground is kept clear from Couchgraſs and ſuch troubleſome Weeds; whoſe Roots will interfere with thoſe of the Plants, and rob them of their Nouriſhment. In the following *Autumn*, it will be proper to renew the Mulch about the Roots of the Plants, to prevent the Froſt from penetrating of the Ground to their Roots; and if the firſt *Winter* ſhould prove very ſevere, it will be proper to ſhelter the Plants with ſome Oak-boughs, whoſe Leaves remain on them, which if ſtuck into the Ground about the Plants, will greatly protect them: but as the Plants grow in Strength, ſo they will reſiſt the Cold very well without any Care. Such of the Plants as were not planted into the full Ground, ſhould be removed into larger Pots, and removed into Shelter in *Winter*; but in *Summer* they muſt be placed abroad as before. The Reaſon of my adviſing ſome Plants to be kept in Pots is, leſt thoſe abroad ſhould ſuffer by a very ſharp *Winter*; but when thoſe are well eſtabliſhed in the Ground, and out of Danger, theſe may alſo be ſhaken out of the Pots and planted in the full Ground.

Theſe Plants may alſo be propagated by laying down of the tender Branches in the *Spring*, which if duly watered in dry Weather, will take Root, and may be taken off from the old Plants, and tranſplanted the following *Spring*, where they are deſigned to remain, and ſhould be treated in the ſame Way as the Seedling Plants. As theſe Plants will live in the open Air, ſo they are worthy of a Place in large Gardens, where being intermixed with other hardy Trees and Shrubs, they will make an agreeable Variety.

RICOPHORA, Yams.

The *Species* are;

1. RICOPHORA *Indica ſeu Inhame rubra, caule alato, ſcammonii foliis nervoſis conjugatis. Par. Bat. prod.* The red-ſtalk'd Yam.

2. RICOPHORA *magna Virginiana, bryoniæ nigræ modo volubilis, ſingulari folio nervoſo flexili, caule tetragono, ad angulos elato. Pluk. Almag.* The great Virginian Yam, with a ſquare Stalk climbing like Black-bryony, and a ſingle-ribb'd Leaf.

There are ſome other Varieties of this Plant in the warm Parts of the *Eaſt* and *Weſt Indies*; but theſe two are the moſt commonly cultivated for Uſe. Theſe Plants are wild in the Woods in *Zeylon*, and are reckoned as good as thoſe which are cultivated; but as they are difficult to dig up, and grow ſcattering at a great Diſtance from each other, ſo the Inhabitants of that Iſland plant them in open Fields for Food. Theſe are alſo cultivated by the Inhabitants of *Jamaica*, and the other Iſlands in *America*, and are eſteemed a very wholſome Food. The Manner of propagating them is the ſame as for Potatoes, which is to divide the Roots into ſeveral Pieces, preſerving a Bud or Eye to each, and planting them in Drills, at about a Foot Diſtance in the Rows, and two Feet aſunder Row from Row. Theſe Drills ſhould be made a Foot deep; and after the Pieces of Roots are laid therein, muſt be covered over with the Earth which came out of the Drills. After this they require no farther Care but to keep the Ground clear from Weeds, until the Shoots are grown ſtrong, when they will over-top the Weeds, and prevent their growing. In about ten Months after the planting, the Roots will be fully grown for Uſe; when they will ſome of them weigh five or ſix Pounds *per* Root or more; when they are taken out of the Ground, they muſt be laid up in dry Sand to preſerve them for Uſe; but the Sand muſt be kept very dry, otherwiſe the Roots will grow, and oftentimes they will rot with much Moiſture. With theſe Roots the Planters feed their Negroes inſtead of Bread: and they grind the Roots to a Powder, and make Puddings of it, in the ſame manner as Wheat-flour is uſed in *England*: but the Roots muſt be well ſoaked in Water before they are uſed, to draw out the ſharp biting Taſte, which they have when taken out of the Ground.

Theſe Plants are preſerved in ſome curious Gardens in *Europe* for Variety; but as there is little Beauty in them, ſo they are hardly worthy of a Place; for they muſt be kept in a warm Stove, and plunged into the Tanners-bark, otherwiſe they will not thrive in this Country. The Shoots of theſe Plants will riſe to the Height of ten or twelve Feet, and twine about the Plants which are near them; ſo that where theſe are preſerved, they ſhould be placed near a Trelaſe on the Back-ſide of the Bark-bed; and as the Shoots are produced, they ſhould be trained up to the Poles of the Trelaſe to ſupport them, that they may not ramble over other Plants, and deſtroy them. The Shoots of theſe Plants die to the Root in *Winter*, after which time they ſhould not have much Water given to them, leſt it ſhould rot them: but during the *Summer* Seaſon they muſt be plentifully watered in hot Weather. Theſe Roots muſt be taken up in *March*, before they begin to ſhoot, and new-potted; and at the ſame time it will be proper to cut off the old decayed Parts of the Roots, preſerving only the freſh Parts which have good Eyes for planting; for if the Roots are planted again whole as they were taken up, the old Part is very apt to decay, and that frequently infects the other Parts, ſo that the whole often periſhes, which may be prevented by cutting them off; but theſe Pieces of Roots ſhould be laid by in a dry Part of the Stove for eight or ten Days, that the wounded Parts of the Roots may heal before they are planted, otherwiſe they are in Danger of rotting; nor ſhould they have much Moiſture until they have put out Shoots, for the ſame Reaſon. The Tan-bed in which theſe are plunged, ſhould be ſtirr'd up, and freſh Tan added to it to renew the Heat, which will cauſe them to take Root in a ſhort time.

TACAMAHACA *foliis crenatis, ſadelhout ſeu lignum ad ephippia conficienda aptum. Par. Bat. prod. Pluk. Phyt. tab.* 228. *f.* 2. The Tacamahaca.

This Tree grows ſpontaneouſly on the Continent of *America*, where the Inhabitants wound the Bodies of the Trees in the *Spring*, from whence there flows a Balſam, which is greatly eſteemed by the Phyſicians of thoſe Countries, and is placed amongſt the Liſt of Simples in the College Diſpenſatory, tho' at preſent it is not much uſed in *England*.

Some of the Plants of this Tree were brought from *Canada* into *France* a few Years ſince, from whence they were procured by ſome curious Perſons in the Iſland of *Jerſey*, where it is propagated in their Gardens, and was ſent to *England* by the Name of *Arbre de la Reine*, as a preſent to the late Queen.

This Tree is hardy enough to reſiſt the Cold of our ordinary *Winters* in the open Air; and if it is planted in a ſheltered Situation, I believe will not be in any Danger of ſuffering from the ſevereſt Cold of this Country, eſpecially when the Plants have obtained Strength; ſo is very proper to plant amongſt hardy exotic Trees and Shrubs in Wilderneſs Quarters, where they will add to the Variety. The Shoots of this Tree are very like thoſe of the Black-poplar, as are alſo the Leaves; and the Buds, in the *Spring*, before the Leaves come out, are covered with a dark glutinous Balſam, which ſmells very ſtrong when touched, and adheres to the Fingers. The Leaves of this Tree fall off at *Michaelmas*, and new Leaves come out at the latter End of *February*, or the Beginning of *March*; for it is one of the earlieſt Trees in coming out in the *Spring*.

It may be eaſily propagated by Cuttings, which ſhould be planted in the Middle of *February*, juſt before they put out Leaves, in a Bed of freſh rich Earth expoſed to the Morning Sun; and if the *Spring* ſhould prove dry, they muſt be frequently refreſhed with Water, which will greatly forward their putting out Roots. The Ground between theſe Cuttings ſhould be conſtantly kept clear from Weeds; and if at *Michaelmas* ſome rotten Tanners-bark is ſpread on the Surface of the Ground about three Inches thick, it will keep the Roots warm, and prevent the Froſt from entering of the Ground, which might injure the Roots while they are ſo young. In the following *February*, before the Plants have put out, they may be tranſplanted where they are deſigned to remain; which ſhould be in a freſh loamy Soil not too ſtrong or wet, and in a ſheltered Situation, where they will thrive very faſt, and being intermixed with other Trees of the ſame Growth, will have a good Effect in Wilderneſs Plantations.

This Plant is very ſubject to put out ſeveral lateral Branches near the Ground; ſo if theſe are not pruned off, the Plants will not advance in Height, but rather form themſelves into a thick Buſh: therefore thoſe which are deſigned to be trained up into Stems, ſhould have their Side-ſhoots rubbed off as faſt as they are produced, in order to encourage the leading Shoot; but this ſhould only be practiſed on a few Trees, becauſe they will appear more beautiful, when they are permitted to grow after their uſual manner; for when they have many Branches, they will fill up the Spaces under larger Trees, ſo will thicken the Quarters where they are planted, and be more uſeful than if they had but one Stem, becauſe they never riſe to be large Trees.

1. XANTHOXYLUM *ſpinoſum, lentiſci longioribus foliis, euonymi fructu capſulari, ex inſula Jamaicenſi. Pluk. Phyt. tab.* 328. *f.* 6. The Pellitory or Tooth-ach-tree, *vulgò*.
2. XANTHOXYLUM *aculeatum, fraxini ſinuoſis & punctatis foliis, Americanum. Pluk. Almageſt.* Prickly Yellow-wood, *vulgò*.

The firſt of theſe Trees grows in *South Carolina* and *Georgia*, from whence the Seeds have been brought to *England*, where many of the Plants have been raiſed, and preſerved in ſome curious Gardens. This Tree, in the natural Places of its Growth, uſually riſes about ſixteen Feet high, and hath a Trunk a Foot thick, which is covered with a rough aſh-coloured Bark, having many pyramidal Protuberances, each being concluded by a ſharp Thorn. The Leaves conſiſt of four or five Pair of Lobes, and are terminated by an odd one: theſe are about the Size of thoſe of the Aſh-tree, but rougher, deeper veined, and ſawed on their Edges. At the Extremity of the Branches are produced looſe Spikes of ſmall white Flowers, which have five Petals or Leaves, and in the Centre are ſeveral red Chives. Each of theſe Flowers is ſucceeded by four ſhining black Seeds, which are incloſed in a roundiſh green Capſule. The Leaves of this Tree ſmell like thoſe of the Orange-tree, and are very hot and aromatic, as are the Seeds and Bark of the Tree, which are uſed by the People who inhabit the Sea Coaſts of *Carolina* and *Virginia*, to cure the Tooth-ach, in the ſame manner as the Root of Pellitory of *Spain* is in *Europe*, from whence it had this Name.

This Tree may be propagated by the Seeds, which ſhould be ſown in Pots filled with freſh Earth, and plunged into a moderate Hot-bed of Tanners-bark, obſerving frequently to moiſten the Earth, which will promote the Vegetation of the Seeds. If the Seeds are freſh, and ſown early in the *Spring*, many of the Plants will come up the ſame Seaſon; but if they are ſown late in the Year, they will not come up until the following *Spring*. Therefore, whenever theſe Seeds are ſown in the *Spring*, and the Plants do not appear by the Middle of *May*, the Pots ſhould be removed out of the Hot-bed, and placed in a ſheltered Situation, expoſed only to the Morning Sun, where they ſhould remain for the *Summer* Seaſon, during which Time they ſhould be kept clear from Weeds, and in dry Weather they muſt be watered two or three times a Week. The Beginning of *October*, the Pots ſhould be removed into a warmer Situation, and either placed under a Hot-bed Frame, or plunged into ſome old Tanners-bark, under a Wall or Pale expoſed to the South Sun; and if the Froſt ſhould prove ſevere, they muſt be covered to protect the Seeds therefrom, otherwiſe they will be in Danger of periſhing. The Middle of *April* following, the Pots ſhould be plunged into a moderate Hot-bed of Tanners-bark, which will bring up the Plants in a little time; and if they are permitted to remain in the ſame Bed until the Middle of *May*, it will greatly forward them in their Growth; but during this Time, the Glaſſes of the Hot-bed ſhould be raiſed every Day in warm Weather, to admit freſh Air to the Plants; and then they ſhould be inured to bear the open Air by Degrees; for toward the Middle or latter End of *May*, the Pots ſhould be taken out of the Hot-bed, and placed in a ſheltered Situation, where they ſhould remain during the *Summer* Seaſon, obſerving to keep them conſtantly clear from Weeds, and in dry Weather they ſhould be frequently refreſhed with Water. The *Autumn* following, theſe Pots muſt be placed under a Frame, where they ſhould be expoſed every Day to the open Air in mild Weather; but in Froſts the Glaſſes muſt be put over them to ſcreen the Plants, which, while they are young, will be tender, and in Danger of ſuffering by Cold. The following *Spring*, before the Plants begin to ſhoot, they ſhould be carefully tranſplanted each into a ſeparate ſmall Pot, filled with freſh Earth. If they are plunged into a moderate Hot-bed, it will cauſe them to take new Root; and if they are kept in this Bed till the Middle of *May*, it will bring the Plants forward apace; but then they ſhould have a large Share of Air in warm Weather, otherwiſe they will draw up too weak; and in *May* they ſhould be placed in the open Air in a ſheltered Situation, where they may remain till the following *Autumn*; during which time they muſt be conſtantly ſupplied with Water in dry Weather, and muſt be conſtantly kept clear from Weeds. At *Michaelmas* the Plants ſhould be again placed under a Hot-bed Frame, to ſcreen them from the Froſt, obſerving always in mild Weather to let them have the free open Air, and never covering them but in bad Weather. The *Spring* following, moſt of the Plants may be ſhaken out of the Pots, and planted in the full Ground, among other hardy exotic Trees in Wilderneſs Quarters; where, if they are ſcreened by larger Trees, and the Soil in which they are planted is rich and moiſt, they will thrive very well, and make an agreeable Variety. Some of the Plants may be preſerved in Pots a Year or two longer, to be ſheltered in the *Winter*, leſt thoſe which are planted in the full Ground, ſhould ſuffer by a ſevere *Winter* while they are young. This Tree loſes its Leaves in *Autumn*, and puts out new Leaves the following *April*; but when the Plants grow very freely in the latter Part of the *Summer*, and ſome ſharp Froſts come on in the *Autumn*, it often kills the tender Shoots, unleſs they are well protected; ſo that where they are not well ſcreened by larger Trees, they ſhould have ſome artificial Shelter, and if ſome old Tan or Dung be laid on the Surface of the Ground about their Roots in *Autumn*, it will prevent the Froſt from penetrating of the Ground, which will be very uſeful to the Plants.

The ſecond Sort is much more tender than the former, ſo muſt be ſown on a Hot-bed early in the *Spring*; and when the Plants are come up, they ſhould be each tranſplanted into a ſmall Pot filled with freſh rich Earth, and plunged into a Hot-bed again, where they muſt be ſcreened from the Sun until they have taken new Root; after which time they muſt be treated in the ſame manner as hath been directed for the Fuſtic, which is a Native of the ſame Countries with this Plant. They muſt be kept in the Stove, and during the two firſt *Winters*, while the Plants are young, they ſhould be plunged into the Bark-bed; but when they are grown pretty ſtrong, they may be placed on Stands in the dry Stove in *Winter*, and may be expoſed abroad in the Middle of *Summer*, in a warm ſheltered Situation, where they will thrive very well. If theſe Plants are preſerved in a kindly Temperature of Warmth in *Winter*, they will retain their Leaves till the *Spring*, when they will fall off, juſt before the new Leaves come out, ſo will not remain long deſtitute of Leaves. They have not produced any Flowers in this Country as yet.

CALTHOIDES *foliis oblongis cæſiis craſſis*. *D. Shaw*. Baſtard-marygold, with thick oblong Sea-green Leaves.

This Plant was diſcovered in *Africa*, by the Reverend Doctor *Shaw*, who brought the Seeds into *Europe*; from which many of the Plants have been raiſed, which thrive extremely well, and reſiſt the Cold of this Climate in the open Air, but do not often produce their Flowers. It produces many trailing Branches (which if covered with Earth will put out Roots, and may be taken off to propagate the Plant): theſe are furniſhed with oblong ſmooth Leaves, ſomewhat reſembling thoſe of the Woad, but are thicker, and more ſucculent; the Flowers are produced at the Extremity of the Branches, which are of a bright yellow Colour, and radiated like thoſe of the Marygold: theſe are included in a ſimple plain Empalement, which is divided into five broad Segments, and as the Flower decays, enwraps the Seeds, which are oval, and furniſhed with Down.

As this Plant rarely produces good Seeds in *England*, ſo the beſt Method to propagate it is by Cuttings, which if planted in a ſhady Border, and plentifully ſupplied with Water, will take Root in about two Months, and may then be tranſplanted where they are deſigned to remain, which ſhould be in a warm Situation, and on a dry Soil; for if they are too much expoſed to cold Winds, they will ſuffer in the *Winter* therefrom; and if the Soil is moiſt, they will rot in wet Seaſons: nor ſhould the Earth be very rich, becauſe that will cauſe the Plants to grow very luxuriant, which will prevent their flowering, and render them leſs able to reſiſt the Cold; ſo that the beſt Place to plant theſe Plants, is on a dry rubbiſhy Border, expoſed to the South, and defended by Walls or Pales from the North and Eaſt Winds; in which Situation the Plants will abide ſeveral Years, and ſometimes produce their Flowers.

The Branches of theſe Plants which trail on the Ground, and put out Roots, may be alſo taken off and tranſplanted for an Increaſe; or if they are pegged down into the Earth in the ſame manner as is practiſed in making of Layers, they will take Root in about two Months, and may then be tranſplanted. The beſt time for planting of the Cuttings, or to lay down the Branches, is in *July*, that they may be rooted before *Michaelmas*; when they ſhould be tranſplanted, that they may be well rooted before the Froſt comes on. It will be proper to preſerve two or three of theſe Plants in Pots, that they may be removed into Shelter, leſt a very ſevere *Winter* ſhould deſtroy thoſe which are planted in the full Ground.

This Plant doth not riſe above ſixteen or eighteen Inches high, but is very ſubject to ſend out many lateral Branches, which trail on the Ground, and form a ſmall Buſh, which continuing green throughout the Year, makes an agreeable Variety in the *Winter* Seaſon: ſo may be allowed a Place in good Gardens.

A CATALOGUE *of ſuch* HARDY TREES *and* SHRUBS, *as ſhed their Leaves in Winter, and will thrive in the open Air in* England; *ranged according to their ſeveral Growths; whereby a Perſon may be directed how to diſpoſe them in Plantations, ſo as to render them moſt ornamental.*

IN ranging of theſe Trees, I ſhall put down all ſuch as grow fifty Feet high and upward, as thoſe of the largeſt Growth; and thoſe which grow from thirty to fifty Feet, as Trees of middling Growth; and thoſe which grow from fifteen to thirty Feet, as Trees of the ſmalleſt Growth, under which Height the others will be ranged as Shrubs. And in this I ſhall have regard to their common Growths, and not their extraordinary Heights, to which they ſometimes arrive. As in the Order of the *Dictionary* the Plants are ranged according to their moſt received *Latin* Names, ſo I ſhall obſerve the ſame Method in theſe Liſts, adding their common *Engliſh* Names, by which they are known amongſt the Gardeners.

A Liſt of the talleſt deciduous Trees.

ACER majus, multis falſo Platanus. J. B. *The Sycamore.*

Acer maximum, foliis trifidis vel quinquefidis, Virginianum. Pluk. Virginian *Aſh-leav'd Maple.*

Acer Platanoides. Munt. Hiſt. *The* Norway *Maple.*

Carpinus. Dod. p. *The Hornbeam-tree.*

Caſtanea ſativa. C. B. P. *The Cheſnut-tree.*

Ceraſus major ac ſylveſtris, fructu ſubdulci, nigro colore inficiente. C. B. *The Black Cherry-tree.*

Cupreſſus Virginiana, foliis Acaciæ deciduis. H. L. *The* American *Cypreſs-tree.*

Fagus. Dod. p. *The Beech-tree.*

Fagus Americana, latiore folio. *The* American *Beech-tree.*

Fraxinus excelſior. C. B. *The Aſh-tree.*

Fraxinus ex Novâ Angliâ, pinnis foliorum in mucronem productioribus. *The* New-England *Aſh.*

Hippocaſtanum vulgare. Inſt. *The Horſe Cheſnut-tree.*

Larix folio deciduo, conifera. J. B. *The Larch-tree.*

Larix folio deciduo, rudimentis conorum candidiſſimis. Pluk. Alm. *The Larch-tree, with white Rudiments to the Cones.*

Malus ſylveſtris, fructu valde acerbo. Inſt. *The Crab-tree.*

Morus fructu nigro. C. B. P. *The Common Black Mulberry.*

Nux juglans, ſive regia vulgaris. C. B. P. *The common Walnut-tree.*

Nux juglans fructu maximo. C. B. P. *The Walnut with the largeſt Fruit.*

Nux juglans fructu tenero, et fragili putamine. C. B. P. *The thin-ſhell'd Walnut.*

Nux juglans fructu perduro. Inſt. *The hard-ſhell'd Walnut.*

Nux juglans fructu ſerotino. C. B. P. *The late Walnut.*

Nux juglans Virginiana nigra. H. L. *The* Virginia *Black Walnut.*

Nux juglans Virginiana nigra, fructu oblongo, profundiſſime inſculpto. Rand. *The long Black* Virginia Walnut.

Platanus orientalis verus. Park. Theat. *The Eaſtern Plane-tree.*

Platanus occidentalis, aut Virginienſis. Park. Theat. *The Weſtern Plane-tree.*

Platanus orientalis, aceris folio. Tourn. Cor. *The* Spaniſh *Plane-teee.*

Populus alba, majoribus foliis. C. B. P. *The Abele-tree.*

Populus alba, minoribus foliis. Lob. Icon. *The White Poplar.*

Populus nigra. C. B. P. *The Black Poplar.*

Populus tremula. C. B. P. *The Aſpen-tree.*

Populus nigra Caroliniana, folio maximo, gemmis balſamum odoratiſſimum fundentibus. Cateſb. Hiſt. Car. *The* Carolina *Black Poplar.*

Pſeudoacacia vulgaris. Inſt. R. H. Virginian *Acacia.*

Pſeudoacacia ſiliquis glabris. Boerh. Ind. Virginian *Acacia,* with ſmooth Pods.

Pyrus ſylveſtris. C. B. P. *The wild Pear-tree.*

Pyrus ſativa, flore pleno. H. R. P. *The Pear-tree with double Flowers.*

Quercus latifolia mas, quæ brevi pediculo eſt. C. B. P. *The Oak-tree, with ſhort Foot-ſtalks to the Leaves.*

Quercus latifolia fœmina. C. B. P. *The broad-leav'd Oak, with long Footſtalks.*

Quercus calyce echinato, glande majore. C. B. P. *The Cerrus.*

Quercus Virginiana, rubris venis muricata. Pluk. Phyt. *The Scarlet Oak.*

Quercus caſtaneæ foliis, procera arbor Virginiana. Pluk. Phyt. *The* Virginian *Oak, with Cheſnut Leaves.*

Quercus (forte) Marylandica, folio trifido ad ſaſſafras accedente. Raii Hiſt. *The Black* Maryland *Oak.*

Quercus Carolinienſis, virentibus venis muricata. Cateſb. Hiſt. Nat. *The White Oak of* Carolina.

Tilia fœmina, folio majore. C. B. P. *The broad-leav'd Lime-tree.*

Tilia fœmina, folio minore. C. B. P. *The ſmall leav'd Lime-tree.*

Tilia foliis molliter hirſutis, viminibus rubris, fructu tetragono. Raij Hiſt. *The red-twigg'd Lime-tree.*

Tilia Caroliniana, folio longius mucronato. *The* Carolina *Lime-tree.*

Tulipifera Virginiana, tripartito aceris folio, mediâ laciniâ veluti abſciſſa. Pluk. Phyt. *The Tulip-tree.*

Ulmus campeſtris et Theophraſti. C. B. P. *The common* Engliſh *Elm.*

Ulmus folio latiſſimo ſcabro. Ger. Emac. *The Witch-hazel, or broad rough-leav'd Elm.*

Ulmus vulgatiſſima, folio lato glabro. Ger. Emac. *The Witch-Elm.*

Ulmus major Hollandica, anguſtis et magis acuminatis ſamarris, folio latiſſimo ſcabro. Pluk. Alm. *The* Dutch *Elm.*

Ulmus minor, folio anguſto glabro. *The* Hertfordſhire *Elm.*

Ulmus folio lato ſcabro, cortice cinereo glabro. *The White Witch-Elm, by ſome called the* Iriſh *Elm.*

Ulmus folio lato ſcabro, anguſtis ſamarris. *The* French *Elm.*

Trees of middling Growth, which caſt their Leaves in Winter.

ACacia Americana, abruæ foliis, triacanthos, ſive ad axillas foliorum ſpina triplici donata. Pluk. Mantiſſ. *The three-thorned* Acacia.

Acacia Americana paluſtris, abruæ foliis, ſpinis rarioribus. *The Water-Acacia of* Carolina.

Acacia Americana, abruæ foliis, triacanthos, capſulâ ovali ſemen unicum claudente. Cateſb. Hiſt. Nat. *The three-thorned Acacia of* America, *with oval Pods containing one Seed in each.*

Acer majus, folio rotundiore, minus laciniato, an opulus Italorum. Raii Hiſt. *The rounder-leav'd* Italian *Maple.*

Acer Virginianum, folio majore, ſubtus argenteo, ſupra viridi ſplendente. Pluk. Phyt. *The* Virginia *flowering Maple.*

Acer Virginianum, folio majore ſplendente. *The Sugar Maple.*

Alnus rotundifolia glutinoſa viridis. C. B. P. *The common or round-leav'd Alder.*

Alnus folio oblongo viridi. C. B. P. *The long-leav'd or* Dutch *Alder.*

Betula. Dod. *The Birch-tree.*

ADDENDA.

Celtis fructu nigricante. Inſt. *The Nettle-tree, with black Fruit.*

Celtis fructu obſcurè purpuraſcente. Inſt. R. H. *The* American *Nettle-tree, with purple Fruit.*

Celtis orientalis, foliis minoribus & craſſioribus, fructu flavo. Tourn. Cor. *The Eaſtern Nettle-tree, with ſmaller and thicker Leaves, and yellow Fruit.*

Celtis fructu luteo ampliori. *The Nettle-tree, with larger yellow Fruit.*

Celtis orientalis, folio ampliore, magno fructu. Tourn. Cor. *Eaſtern Nettle-tree, with a large Fruit.*

Cerafus ſativa. C. B. P. *The common Cherry-tree.*

Cratægus folio ſubrotundo ſerrato, ſubtus incano. Inſt. R. H. *The white Beam-tree, or Aria Theophraſti.*

Cratægus folio oblongo ſerrato, utrinque virente. Inſt. R. H. *The wild Service, with a longer green ſerrated Leaf.*

Cratægus folio laciniato. Inſt. R. H. *The common wild Service-tree.*

Cytiſus Alpinus latifolius, flore racemoſo pendulo. Inſt. R. H. *The Laburnum, or falſe Ebony.*

Fagus orientalis, ampliore folio. Tourn. Cor. *Eaſtern Beech-tree, with a larger Leaf.*

Fraxinus florifera botryoides. Mor. Hiſt. *The flowering Aſh.*

Fraxinus rotundiore folio. C. B. P. *The Manna Aſh.*

Fraxinus Caroliniana, latiori fructu. Rand. *The* Carolina *Aſh.*

Fraxinus orientalis, longiſſimo folio, profundè ſerrato. Tourn. Cor. *Eaſtern Aſh, with a long Leaf deeply ſerrated.*

Nux juglans Virginiana, foliis vulgari ſimilis, fructu ſubrotundo, cortice duriore lævi. Pluk. Alm. *The Hickery-tree.*

Nux juglans Virginiana alba minor, fructu nucis moſchatæ ſimilis, cortice glabro, ſummo faſtigio veluti in aculeum producto. Pluk. *The ſweet Hickery-nut.*

Nux juglans bifera. C. B. P. *The twice bearing Walnut.*

Nux juglans folio ſerrato. C. B. P. *The Walnut-tree with ſawed Leaves.*

Platanus Americanus, foliis oblongis ex adverſo ſitis. *The Button-tree.*

Prunus ſylveſtris major. J. B. *The black Bullace-tree.*

Pyrus ſativa biflora. *The Pear-tree which flowers twice every Year.*

Quercus foliis molli lanugine pubeſcentibus. C. B. P. *The Oak with woolly Leaves.*

Quercus orientalis, caſtaneæ folio, glande recondita in cupulâ craſsâ & ſquammosâ. Tourn. Cor. *The Cheſnut-leav'd Eaſtern Oak, with a thick ſcaly Cup.*

Quercus orientalis latifolia, glande maxima, cupula crinita. Tourn. Cor. *The broad-leav'd Eaſtern Oak, with a large Acorn, and a hairy Cup.*

Quercus orientalis latifolia, foliis ad coſtam pulchrè inciſis, glande maxima, cupula crinita. Tourn. Cor. *The broad-leav'd Eaſtern Oak, whoſe Leaves are finely cut, and a large Acorn having a hairy Cup.*

Quercus Mariana, muricatis caſtaneæ foliis ſubtus villoſis. Baniſt. *The Champion-cheſnut Oak.*

Quercus eſculi diviſura, foliis amplioribus aculeatis. Pluk. Phyt. *The red* Maryland *Oak.*

Quercus, an potius ilex Marylandica, folio longo anguſto ſalicis. Raii Hiſt. *The Willow-leav'd Oak of* Maryland.

Salix vulgaris alba arboreſcens. C. B. P. *The common white Willow.*

Salix vulgaris nigricans, folio non ſerrato. C. B. P. *The black Willow.*

Sorbus ſativa. C. B. P. *The true Service-tree.*

Sorbus ſativa, magno fructu nonnihil turbinato rubro. Inſt. R. H. *The red Service.*

Sorbus ſativa, magno fructu turbinato, pallide rubente. Inſt. R. *H. The Service-tree, with pale red Fruit.*

Sorbus ſativa, fructu pyriformi, medio rubente. H. Cath. *The Service-tree, with Pear-ſhaped Fruit.*

Sorbus ſativa, fructu ovato, medio rubente. H. Cath. *The Service-tree, with Egg-ſhaped Fruit.*

Sorbus ſativa, fructu ſerotino minori turbinato rubente. Inſt. *The late Service, with ſmaller Fruit.*

Sorbus orientalis, fraxini folio. Tourn. Cor. *Eaſtern Service, with an Aſh Leaf.*

Sorbus orientalis, fructu magno, compreſſo & flaveſcente. Tourn. Cor. *Eaſtern Service, with a large yellowiſh compreſs'd Fruit.*

Styrax arbor Virginiana, aceris foliis. Raii Hiſt. *The ſweet-gum Tree, or Liquid-amber.*

A Liſt of the ſmalleſt growing Trees, which ſhed their Leaves in Winter.

ACER campeſtre & minus. C. B. P. *The common Maple.*

Acer trifolium. C. B. P. *The* Montpelier *Maple.*

Acer Creticum. Proſp. Alp. *The* Candia *Maple.*

Acer orientale, hederæ folio. Tourn. Cor. *Eaſtern Maple, with an Ivy Leaf.*

Alnus folio incano. C. B. P. *The white-leav'd Alder-tree.*

Alnus montana, pallido glabro ſinuato ulmi folio. Bocc. Muſ. *The Mountain-alder, with an Elm Leaf.*

Alnus foliis eleganter inciſis. D. Breman. *The cut-leav'd Alder.*

Amygdalus ſativa, fructu majori. C. B. P. *The Almond-tree, with large Fruit.*

Amygdalus ſativa, fructu minori. C. B. P. *The Almond-tree, with ſmaller Fruit.*

Amygdalus dulcis, putamine molliore. C. B. P. *The Almond-tree, with thin Shells.*

Armeniaca fructu majori, nucleo amaro. Inſt. *The Apricock-tree.*

Carpinus orientalis, folio minori, fructu brevi. Tourn. Cor. *The Eaſtern Hornbeam, with a ſmall Leaf, and a ſhort Fruit.*

Carpinus Virginiana floreſcens. Pluk. Phyt. *The* Virginia *flowering Hornbeam.*

Carpinus ſeu oſtrya ulmo ſimilis, fructu racemoſo, lupuli ſimilis. C. B. P. *The Hop Hornbeam.*

Caſtanea humilis racemoſa. C. B. P. *Low branching Cheſnut.*

Ceraſus racemoſa ſylveſtris, fructu non eduli. C. B. P. *The Bird-cherry.*

Ceraſus racemoſa ſylveſtris, fructu non eduli rubro. H. R. Par. *The* Corniſh *Cherry.*

Ceraſus racemoſa hortenſis. C. B. P. *The cluſter Cherry.*

Ceraſus hortenſis, flore pleno. C. B. P. *The double flowering Cherry.*

Ceraſus hortenſis, flore roſeo. C. B. P. *The Cherry-tree, with very double Flowers.*

Cornus hortenſis mas. C. B. P. *The Cornelian Cherry-tree.*

Cornus hortenſis mas, fructu ceræ colore. C. B. P. *The Cornelian Cherry, with yellowiſh Fruit.*

Cornus hortenſis mas, fructu albo. C. B. P. *The white Cornelian Cherry.*

Cornus hortenſis mas, fructu ſaturatius rubente, cum oſſiculo craſſiore & breviore. C. B. P. *The Cornel-tree, with deep red Fruit, having a thick ſhort Stone.*

Cornus fœmina. C. B. P. *The Dogwood-tree.*

Cornus orientalis ſylveſtris, fructu teretiformi. Tourn. Cor. *Wild Eaſtern Dogwood, with a taper Fruit.*

Colutea veſicaria. C. B. P. *The Bladder-ſenna.*

Colutea veſicaria veſiculis rubentibus. J. B. *Bladder-ſenna, with red Pods.*

Corylus ſativa, fructu albo minore, ſive vulgaris. C. B. P. *The Hazel-nut.*

Corylus ſativa, fructu rotundo maximo. C. B. P. *The Cob-nut.*

Corylus ſativa, fructu oblongo rubente. C. B. P. *The red Philbert.*

Corylus ſativa, fructu albo. *The white Philbert.*

Corylus Hiſpanica, fructu majore anguloſo. Pluk. Alm. *The* Spaniſh *Nut.*

Corylus Bizantina. H. L. *The* Bizantine *Nut.*

Cratægus Virginiana, foliis arbuti. Inſt. R. H. *The* Virginian *Service-tree.*

Cydonia fructu oblongo læviori. Inſt. R. H. *The ſmooth Quince, of a Pear-ſhape.*

Cydonia fructu breviore & rotundiore. Inſt. R. H. *The Apple-quince.*

Cydonia latifolia Luſitanica. Inſt. R. H. *The* Portugal *Quince, with broad Leaves.*

Cydonia anguſtifolia vulgaris. Inſt. R. H. *The narrow-leav'd Quince.*

Cytiſus Alpinus anguſtifolius, flore racemoſo pendulo longiori. Inſt. R. H. *The narrow-leav'd Laburnum, with long Bunches of Flowers.*

Cytiſus Alpinus, flore racemoſo pendulo breviori. Inſt. R. H. *The Laburnum, with ſhort Bunches of Flowers.*

ADDENDA.

Elæagnus orientalis anguſtifolius, fructu parvo olivæformi ſubdulci. Tourn. Cor. *The Eaſtern wild Olive, with narrow Leaves, and ſmall Fruit.*

Elæagnus orientalis latifolius, fructu maximo. Tourn. Cor. *The Eaſtern wild Olive, with broad Leaves, and the largeſt Fruit.*

Elæagnus orientalis anguſtifolius, fructu minimo rotundiore & ſubacido. Tourn. Cor. *The narrow-leav'd Eaſtern wild Olive, with the leaſt round Fruit.*

Elæagnus non ſpinoſa, foliis longis & anguſtis, fructu olivæformi. *The wild Olive without Thorns, having long narrow Leaves.*

Evonymus vulgaris, granis rubentibus. C. B. P. *The Spindle-tree, with red Seeds.*

Evonymus granis nigris. C. B. P. *The Spindle-tree, with black Seeds.*

Evonymus latifolius. C. B. P. *The broad leav'd Spindle-tree.*

Ficus ſativa, fructu violaceo longo, intus rubente. Inſt. R. H. *The long purple Fig.*

Ficus ſativa, fructu præcoci albido fugaci. Inſt. R. H. *The* Marſeilles *Fig.*

Ficus ſativa, fructu globoſo albo mellifluo. Inſt. R. H. *The round white Fig.*

Ficus ſativa, fructu parvo fuſco, intus rubente. Inſt. R. H. *The ſmall Murrey Fig.*

Ficus ſativa, fructu longo majori nigro, intus purpuraſcente. Inſt. *The long black Fig.*

Ficus ſativa, fructu globoſo fuſco, intus rubente. *The* Brunſwick *Fig.*

Ficus orientalis, foliis laciniatis, fructu maximo albo. *The* Turkey *Fig.*

Ficus orientalis, foliis variis. *The Sycamore.*

Ficus foliis robuſtioribus, & ramis erectioribus. H. L. *The large Fig-tree.*

Fraxinus humilior, ſive altera Theophraſti, minore & tenuiore folio. C. B. P. *The dwarf Aſh-tree, with a ſmaller and narrower Leaf.*

Frutex Virginianus trifolius, ulmi ſamarris. Baniſt. *Shrub Trefoil.*

Guaiacana. J. B. *The* Indian *Date-plum.*

Guaiacana anguſtiore folio. Inſt. R. H. *The narrow-leav'd Date-plum.*

Guaiacana ſive Piſhamin Virginianum, Park. *The Perſimon.*

Liguſtrum. J. B. *The Privet.*

Lilac. Matth. *The common Lilac, with blue Flowers.*

Lilac flore albo. Inſt. R. H. *The Lilac with white Flowers.*

Lilac flore ſaturatè purpureo. Inſt. *The* Scotch *Lilac.*

Malus ſylveſtris Virginiana, floribus odoratus. *The ſweet* Virginia *Crab.*

Meſpilus Germanica, folio laurino, non ſerrato, ſive meſpilus ſylveſtris. C. B. P. *The common Medlar.*

Meſpilus folio. laurino, major. C. B. P. *The large* Dutch *Medlar.*

Meſpilus folio laurino, major, fructu præcoci ſapidiori oblongo, læviori ſeu rariori ſubſtantiâ. Hort. Cath. *The early Medlar, with oblong Fruit.*

Meſpilus folio laurino, major, fructu minori, rariori ſubſtantiâ. Hort. Cath. *The ſmall* Italian *Medlar.*

Meſpilus apii folio laciniato. C. B. P. *The* L'Azarole *or* Neapolitan *Medlar.*

Meſpilus apii folio laciniato, flore pleno. H. L. *The* L'Azarole, *with double Flowers.*

Meſpilus apii folio laciniato, fructu majore, intenſius rubro, gratioris ſaporis. Hort. Cath. *The large red* L'Azarole, *of the moſt grateful Flavour.*

Meſpilus apii folio laciniato, fructu ex albo luteſcente minori. Hort. Cath. *The* L'Azarole, *with ſmall whitiſh yellow Fruit.*

Meſpilus apii folio laciniato, fructu majore albo, grato ſapore. *The* L'Azarole, *with large white Fruit of a grateful taſte.*

Meſpilus ſpinoſa, ſive oxyacantha Virginiana. H. L. *The Cockſpur Hawthorn.*

Meſpilus aculeata pyrifolia denticulata ſplendens, fructu inſigni rutilo Virginienſis. Pluk. Phyt. *The* Virginian L'Azarole, *with red Fruit.*

Meſpilus Virginiana, apii folio, vulgari ſimilis, major, grandioribus ſpinis. Pluk. Phyt. *The* Virginian *Haw, with ſtrong thorns.*

Meſpilus Americana, apii folio, vulgari ſimilis, major, fructu luteo. *The yellow* American *Haw.*

Meſpilus prunifolia Virginiana non ſpinoſa, fructu nigricante. Pluk. Phyt. *The black* Virginian *Haw.*

Meſpilus apii folio, ſylveſtris ſpinoſa, ſive oxyacantha. C. B. P. *The White-thorn.*

Meſpilus ſpinoſa, ſive oxyacantha, flore pleno. Inſt. R. H. *The Hawthorn with double Flowers.*

Meſpilus Cretica, apii folio lucido, elegantius laciniato. Tourn. Cor. Candy *Hawthorn, with a ſhining Leaf elegantly jagged.*

Meſpilus orientalis, apii folio, ſylveſtris ſpinoſa, ſive oxyacantha, flore purpureo. Tourn. Cor. *Eaſtern Hawthorn, with a purple Flower.*

Meſpilus Cretica, folio circinato & quaſi cordiformi. Tourn. Cor. Candy *Medlar, with a roundiſh heart-ſhap'd Leaf.*

Meſpilus orientalis, ſive oxyacantha, foliis hirſutiſſimis. Tourn. Cor. *Eaſtern Hawthorn, with very rough Leaves.*

Meſpilus orientalis, apii folio villoſo, magno fructu pentagono purpureo glabro. Tourn. Cor. *Eaſtern hairy Hawthorn, with a large ſmooth five-cornered purple Fruit.*

Meſpilus orientalis, tanaceti folio villoſo, magno fructu pentagono, e viridi flaveſcente. Tourn. Cor. *Eaſtern Hawthorn, with a hairy tanſey-leaf, and a large five-corner'd yellowiſh-green Fruit.*

Morus fructu nigro minori, foliis eleganter laciniatis. Inſt. R. H. *The ſmaller black Mulberry, with leaves finely jagged.*

Morus fructu albo. C. B. P. *The white Mulberry.*

Morus fructu albo minori, ex albo purpuraſcente. Inſt. R. H. *The ſmall white Mulberry, with purpliſh white Fruit.*

Morus alba, fructu minori inſulſo. Hort. Cath. *The white Mulberry, with ſmall inſipid Fruit.*

Morus Virginienſis arbor, loti arboris inſtar racemoſa, foliis ampliſſimis. Pluk. Phyt. Virginian *Mulberry.*

Morus Caroliniana, foliis latiſſimis ſcabris, fructu rubro longiori. *The* Carolina *Mulberry, with long ſlender red Fruit.*

Nux juglans foliis laciniatis. D. Reneal. *The Walnut with jagged Leaves.*

Nux juglans fructu minimo. D. Breman. *The leaſt Walnut.*

Nux juglans Americana alba minor, fructu minimo anguloſo. *The ſmall Hickery or Pignut.*

Opulus Ruelli. *The Marſh Elder.*

Opulus flore globoſo. Inſt. R. H. *The Guelder Roſe.*

Opulus orientalis, folio ampliſſimo tridentato. Tourn. Cor. *Eaſtern Guelder Roſe, with a very large three-pointed Leaf.*

Pavia. Boerh. Ind. alt. *The ſcarlet flowering Horſe Cheſnut.*

Perſica molli carne, & vulgaris, viridis & alba. C. B. P. *The Peach-tree.*

Perſica vulgaris, flore pleno. Inſt. R. H. *The double-flowering Peach.*

Prunus ſylveſtris, fructu majore albo. Raii Syn. *The white Bullace-tree.*

Prunus flore pleno. H. R. Par. *The double flowering Plum-tree.*

Prunus ſylveſtris, fructu parvo ſerotino. *The Winter Crack.*

Prunus fructu ſubrotundo, ceraſi formâ. *The Cherry Plum.*

Quercus calyce hiſpido, glande minore. C. B. P. *The leſſer Cerrus.*

Quercus Burgundiaca, calyce hiſpido. C. B. P. *The* Burgundy *Oak.*

Quercus gallam exiguæ nucis magnitudine ferens. C. B. P. *The gall-bearing Oak.*

Quercus foliis muricatis, non lanuginoſis, gallâ ſuperiori ſimilis. C. B. P. *Another gall-bearing Oak.*

Quercus Hiſpanica, foliis magis diſſectis. *The cut-leav'd* Spaniſh *Oak.*

Quercus orientalis, glande cylindriformi, longo pediculo inſidente. Tourn. Cor. *The eaſtern Oak, with cylindrical Acorns having long Footſtalks.*

Quercus orientalis anguſtifolia, glande minori, cupula crinita. Tourn. Cor. *The narrow-leav'd eaſtern Oak, with a ſmall Acorn having a hairy Cup.*

Quercus orientalis, folio ſubrotundo minori, glande magna ſtriata. Tourn. Cor. *The round-leav'd eaſtern Oak, with a furrowed Acorn.*

ADDENDA.

Quercus orientalis, folio ſubrotundo, leviter inciſo, fructu minori cylindriformi. Tourn. Cor. *The eaſtern Oak, with roundiſh Leaves lightly jagged, and a cylindrical Acorn.*

Quercus Mariana, oleæ folio, glande parvâ compreſſo, ad apiculam eleganter radiato. Pluk. Mantiſ. *The ſwamp* Spaniſh *Oak.*

Rhamnus catharticus. C. B. P. *The Buck-thorn-tree.*

Rhus folio ulmi. C. B. P. *The Elm-leav'd Sumach.*

Rhus Virginianum. C. B. P. *The* Virginian *Sumach.*

Salix vulgaris rubens. C. B. P. *The red Oſier.*

Salix ſativa, lutea, folio crenato. C. B. P. *The yellow Oſier.*

Salix folio amygdalino, utrinque virente, aurito. C. B. P. *The green Almond-leav'd Oſier.*

Salix folio amygdalino, utrinque aurito, corticem abjiciens. Raii Syn. *The Almond-leav'd Willow, that caſts its Bark.*

Salix folio laureo, ſeu lato glabro odorato. Phyt. Brit. *The Bay-leav'd Sweet Willow.*

Salix folio longo, utrinque virente, odorato. *The long-leav'd ſweet Willow.*

Salix folio longo latoque ſplendente fragilis. Raii Syn. *The crack Willow.*

Salix latifolia rotunda. C. B. P. *The round-leav'd Sallow.*

Salix folio ex rotunditate acuminato. C. B. P. *The pointed round-leav'd Sallow.*

Salix latifolia, folio ſplendente. Raii Syn. *Broad ſhining-leav'd Willow.*

Salix orientalis, flagellis deorſum pulchre pendentibus. Tourn. Cor. *The weeping Willow.*

Sambucus fructu in umbellâ nigro. C. B. P. *The common Elder.*

Sambucus fructu in umbellâ viridi. C. B. P. *The Elder with green Berries.*

Sambucus fructu albo. Lob. *The white-berried Elder.*

Sambucus laciniato folio. C. B. P. *The Parſley-leav'd Elder.*

Siliquaſtrum. Caſt. Dur. *The Judas-tree.*

Siliquaſtrum flore albo. Inſt. R. H. *The Judas-tree with a white Flower.*

Siliquaſtrum amplioribus ſiliquis, & foliis acuminatis. Inſt. R. H. *Judas-tree, with larger Pods, and pointed Leaves.*

Siliquaſtrum Canadenſe. Inſt. R. H. *The* Canada *Judas-tree or Red-bud.*

Siliquaſtrum quæ ceratia agreſtis, mucronato folio, floribus parvis, Caroliniana. Pluk. Alm. Carolina *Judas-tree, with a pointed Leaf, and ſmall Flowers.*

Sorbus aucuparia. J. B. *The wild Service or Quicken-tree.*

Tacamahaca foliis crenatis, ſadelhout ſeu lignum ad ephippia conficienda aptum. Par. Bat. prod. *The Tacamahaca.*

Terebinthus vulgaris. C. B. P. *The Turpentine-tree.*

Terebinthus peregrina, fructu majore, piſtaciis ſimili eduli. C. B. P. *The Turpentine-tree, with larger Fruit reſembling the Piſtachia-nut.*

Terebinthus Cappadocica. H. R. Par. *The Turpentine-tree of* Cappadocia.

Terebinthus Indica Theophraſti, piſtachia Dioſcoridis. Lob. Adv. *The Piſtachia.*

Terebinthus ſeu piſtachia trifolia. Inſt. R. H. *The three-leav'd Piſtachia.*

A CATALOGUE *of* SHRUBS, *which ſhed their Leaves in* Winter.

ALNUS Alpina minor. C. B. P. *Small* Alpine *Alder.*

Alnus montana, criſpo, glutinoſo, & denticulato folio. Bocc. Muſ. *Mountain Alder, with clammy curled Leaves.*

Amygdalus Indica nana. H. R. Par. *The dwarf Almond.*

Aralia ſpinoſa arboreſcens. Vaill. Diſ. *The Angelica-tree.*

Arbor Virginiana, piſaminis folio, baccata, benzoinum redolens. Pluk. Phyt. *The Benjamin-tree.*

Arbor Zeylanica, cotini foliis ſubtus lanugine villoſis, floribus albis cuculi modo laciniatis. Pluk. Phyt. *The Snowdrop-tree.*

Azedarach. Dod. *The Bead-tree.*

Barba Jovis Americana, pſeudoacaciæ foliis, floſculis minimis purpureis. Rand. *The baſtard Indigo.*

Berberis dumetorum. C. B. P. *The Berberry or Piperidge-buſh.*

Berberis ſine nucleo. C. B. P. *The Berberry without Stones.*

Berberis latiſſimo folio, Canadenſis. H. R. Par. *The* Canada *Berberry.*

Berberis Cretica, buxi folio. Tourn. Cor. *The* Candy *Berberry with a Box-leaf.*

Berberis orientalis procerior, fructu nigro ſuaviſſimo. Tourn. Cor. *Eaſtern Berberry, with a black ſweet Fruit.*

Bignonia Americana, urucu foliis, flore ſordidè albo, intus maculis purpureis & luteis adſperſo, ſiliquâ longiſſimâ & anguſtiſſimâ. Catesb. Hiſt. *The Catalpa.*

Caprifolium Germanicum. Dod. *The common Honeyſuckle.*

Caprifolium Italicum. Dod. *The* Italian *Honeyſuckle.*

Caprifolium Italicum perfoliatum præcox. Broſs. *The early white Honeyſuckle.*

Caprifolium Germanicum, flore rubello, ſerotinum. Broſs. *The late red Honeyſuckle.*

Caprifolium non perfoliatum, foliis ſinuoſis. Inſt. R. H. *The oak-leav'd Honeyſuckle.*

Caprifolium perfoliatum ſempervirens, floribus ſpecioſius. *The evergreen Honeyſuckle.*

Caprifolium Creticum, non perfoliatum, foliis cotini, floribus inodoris, partim albis, partim flaveſcentibus. Tourn. Cor. *Eaſtern Honeyſuckle, with a Coccygria-leaf, and Flowers partly yellow, and partly white, having no Scent.*

Caſſine vera perquam ſimilis arbuſcula phillyreæ, foliis antagoniſtis, ex provincia Carolinienſi. Pluk. Mant. *The Caſſioberry-tree.*

Caſtanea pumilis Virginiana, racemoſo fructu parvo, in ſingulis capſulis echinatis unico. Baniſt. *The Chinquapin or dwarf* American *Cheſnut.*

Ceraſus ſylveſtris amara, mahaleb putata. J. B. *The perfumed Cherry.*

Ceraſus ſylveſtris Alpina, folio rotundiore. Inſt. *Wild* Alpine *Cherry, with a rounder Leaf.*

Chamærhododendron Alpinum glabrum. Inſt. *Smooth Roſe-laurel of the* Alps.

Chamærhododendron Alpinum ſerpyllifolium. Inſt. *Roſe-laurel of the* Alps, *with a Mother of Thyme-leaf.*

Chamærhododendron Alpinum villoſum. Inſt. *Hairy Roſe-laurel of the* Alps.

Chamæceraſus Alpina, fructu gemino rubro, duobus punctis notato. C. B. P. *The greater red-berried upright Honeyſuckle, commonly called the Fly-honeyſuckle.*

Chamæceraſus dumetorum, fructu gemino rubro. C. B. P. *The upright red-berried Honeyſuckle.*

Chamæceraſus Alpina, fructu nigro gemino. C. B. P. *The black-berried upright Honeyſuckle.*

Chamæceraſus montana, fructu ſingulari cœruleo. C. B. P. *The blue-berried upright Honeyſuckle.*

Chamæceraſus orientalis, lauri folio. Tourn. Cor. *Eaſtern upright Honeyſuckle, with a Bay-leaf.*

Colutea orientalis, flore ſanguinei coloris, luteâ maculâ notato. Tourn. Cor. *Eaſtern bladder Senna, with a bloody Flower ſpotted with Yellow.*

Cornus fœmina laurifolia, fructu nigro cœruleo, oſſiculo compreſſo, Virginiana. Pluk. Phyt. *The* Virginia *Dogwood.*

Cornus mas, odorato folio, trifido margine plano, ſaſſafras dicta. Pluk. Phyt. *The Saſſafras.*

Cornus fœmina Virginiana, anguſtiore folio. *The narrow-leav'd* Virginia *Dogwood.*

Cornus mas Virginiana, foliis oblongis, fructu rubro majore. *The* Virginia *Cornel-tree.*

Cornus mas Virginiana, floſculis plurimis albidis ex involucro tetrapetalo rubro irrumpentibus. Baniſt. Virginiana *Dogwood, with many white Flowers incloſed in a red Empalement.*

Coriaria. Act. Acad. Reg. Par. *The myrtle-leaved Sumach.*

Cotinus coriaria. Dod. *The Coceygria.*

Cytiſus glabris foliis ſubrotundis, pediculis breviſſimis. C. B. P. *The* Cytiſus ſecundus Cluſii, vulgo.

Cytiſus glaber viridis. C. B. P. *Cytiſus with ſmooth green Leaves.*

Cytiſus glaber nigricans. C. B. P. *Cytiſus with dark green Leaves.*

A D D E N D A.

Diervilla Acadienſis fruticoſa, flore luteo. Acad. Reg. Par. *Yellow upright Fly-honeyſuckle.*

Empetrum montanum, fructu nigro. Inſt. R. H. *Black-berried Heath.*

Empetrum Luſitanicum, fructu albo. Inſt. R. H. Portugal *white-berried Heath.*

Emerus. Cæſalp. *Scorpion Senna.*

Emerus minor. Inſt. R. H. *Small ſcorpion Senna.*

Erica vulgaris glabra. C. B. P. *Common Heath.*

Erica vulgaris glabra, flore albo. C. B. P. *Common Heath, with a white Flower.*

Erica fruteſcens peregrina. C. B. P. *Shrubby* Italian *Heath.*

Erica humilis, cortice cinereo, arbuti flore. C. B. P. *Dwarf Heath, with an Arbutus Flower.*

Erica tenuifolia. Ger. *Narrow-leav’d Heath.*

Erica vulgaris hirſuta. C. B. P. *Hairy common Heath.*

Frangula. Dod. *Black berry-bearing Alder.*

Frangula rugoſiore & ampliore folio. Inſt. R. H. *Berry-bearing Alder, with a larger and rougher Leaf.*

Frangula montana pumila ſaxatilis, folio ſubrotundo. Inſt. R. H. *Low mountain berry-bearing Alder with a roundiſh Leaf.*

Frangula montana pumila ſaxatilis, folio oblongo. Inſt. R. H. *Low mountain berry-bearing Heath, with an oblong Leaf.*

Gale frutex odoratus, ſeptentrionalium, elæagnus cordo, chamæleagnus Dodonæi. J. B. *Sweet Gale, or* Dutch *Myrtle.*

Gale quæ myrto Brabanticæ ſimilis, Carolinienſis baccata, fructu racemoſo ſeſſili monopyreno. Pluk. Phyt. *The Candleberry-tree.*

Gale quæ myrto Brabanticæ ſimilis, Carolinienſis mas. *The male candle-berry tree.*

Gale quæ myrto brabanticæ ſimilis, Carolinienſis humilior, foliis latioribus & magis ſerratis. Catesb. Hiſt. *The broad-leav’d dwarf Candleberry-tree with ſawed Leaves.*

Geniſta juncea. J. B. *The* Spaniſh *Broom.*

Geniſta Hiſpanica pumila odoratiſſima. Inſt. R. H. *Dwarf* Spaniſh *Broom, with the ſweeteſt Flowers.*

Geniſta humilior Pannonica. Inſt. R. H. *Lower* Hungarian *Broom.*

Geniſta Luſitanica, parvo flore luteo. Inſt. R. H. Portugal *Broom, with a ſmall yellow Flower.*

Geniſta tinctoria Germanica. C. B. P. *Green-wood or Wood-waxen.*

Geniſta tinctoria Auſtriaca maxima. Boerh. *The greater Wood-waxen of* Auſtria.

Geniſta tinctoria Germanica, foliis anguſtioribus. C. B. P. *Narrow leav’d* German *Wood-waxen.*

Geniſta tinctoria latifolia Lucenſis. Inſt. R. H. *Broad-leav’d Dyers-Weed of* Luca.

Geniſta tinctoria fruteſcens, foliis incanis. C. B. P. *Shrubby Wood-waxen, with hoary Leaves.*

Geniſta tinctoria Luſitanica maxima, Piurna Luſitanorum. Inſt. R. H. *Great* Portugal *Wood-waxen, called* Piurna of the *Portugueſe.*

Geniſta ramoſa, foliis hyperici. C. B. P. *Branching Broom, with St. Johns wort Leaves.*

Geniſta radiata, ſive ſtellaris. J. B. *Starry Broom.*

Geniſta ſive ſpartium purgans. J. B. *Purging Broom.*

Geniſta minor aſphalathoides, vel geniſta ſpinoſa Anglica. C. B. P. *Needle-Furz or Petty-whin.*

Groſſulari ſimplici acino, vel ſpinoſa ſylveſtris. C. B. P. *The common or wild Gooſeberry.*

Groſſularia ſpinoſa ſativa. C. B. P. *The Garden Gooſeberry.*

Groſſularia fructu obſcure purpuraſcente. Cluſ. *The purple-hairy Gooſeberry.*

Groſſularia ſive uva criſpa alba maxima rotunda. Hort. Ed. *The large round white Gooſeberry.*

Groſſularia maxima ſubflava oblonga. Hort. Ed. *The Amber Gooſeberry.*

Groſſularia fructu rotundo maximo vireſcente. *The large green Gooſeberry.*

Groſſularia fructu rubro majore. Boerh. Ind. alt. *The large red Gooſeberry.*

Groſſularia ſpinoſa ſativa, foliis flaveſcentibus. *The yellow-leav’d Gooſeberry.*

Hypericum fœtidum fruteſcens. Inſt. R. H. *Stinking ſhrubby St. John’s-wort.*

Hypericum fruteſcens Canarienſe multiflorum. H. Amſt. *Shrubby many-flowering St. John’s-wort of the* Canaries.

Jaſminoides ſive rhamnus, ſpinis oblongis, flore candicante. C. B. P. *Baſtard Jaſmine with a white Flower.*

Ketmia Syrorum quibuſdam. C. B. P. *Althæa frutex,* vulgo.

Ketmia Syrorum flore purpureo violaceo. Inſt. R. H. *Althæa frutex with a purple Flower.*

Ketmia Syrorum flore albo. Boerh. Ind. alt. *Althæa frutex with a white Flower.*

Ketmia Syrorum floribus ex albo & rubro variis. Inſt. R. H. *Althæa frutex with variegated Flowers.*

Lilac liguſtri folio. Inſt. R. H. *The* Perſian *Lilac.*

Lilac liguſtri folio, flore albo. *The* Perſian *Lilac with a white Flower.*

Lilac laciniato folio. Inſt. R. H. *The cut-leav’d* Perſian *Lilac.*

Meſpilus folio rotundiori, fructu nigro ſubdulci. Inſt. R. H. *The Amelanchier or dwarf Medlar with purple Fruit.*

Meſpilus folio ſubrotundo, fructu rubro. Inſt. *The dwarf Medlar, with red Fruit.*

Paliurus. Dod. p. *The Chriſt’s-thorn.*

Periploca foliis oblongis. Inſt. R. H. *The* Virginian *Silk,* vulgo.

Perſica Africana nana, flore incarnato ſimplici. Inſt. R. H. *The Dwarf Almond,* vulgo.

Perſica Africana nana, flore incarnato pleno. Inſt. R. H. *The dwarf Almond, with double Flowers.*

Punica quæ malum granatum fert. Cæſalp. *The Pomegranate.*

Punica flore pleno majore. Inſt. R. H. *The Pomegranate with a large double Flower.*

Punica ſylveſtris. Cord. Hiſt. *The wild Pomegranate.*

Punica fructu dulci. Inſt. R. H. *The ſweet Pomegranate.*

Punica flore pleno minore. Inſt. R. H. *The Pomegranate with a ſmaller double Flower.*

Punica flore pleno majore variegato. Inſt. R. H. *The Pomegranate with a large double ſtrip’d Flower.*

Quercus pedem vix ſuperans. C. B. P. *The dwarf Oak.*

Quercus humilis, gallis binis, ternis aut pluribus ſimul junctis. C. B. P. *Dwarf Oak bearing ſeveral Galls joined together.*

Quercus pumilis, caſtaneæ folio, Virginienſis. Pluk. Phyt. *The dwarf Cheſnut-leav’d Oak of* Virginia.

Quercus humilior, ſalicis folio breviore. Catesb. Hiſt. Nat. *The dwarf willow-leav’d Oak of* America.

Rhamnoides florifera, ſalicis folio. Inſt. R. H. *Male Sea Buckthorn.*

Rhamnoides fructifera, foliis ſalicis, baccis leviter flaveſcentibus. Inſt. R. H. *Sea Buckthorn with Willow-leaves, and light yellowiſh Berries.*

Rhamnus catharticus minor. C. B. P. *The dwarf Buckthorn.*

Rhamnus catharticus minor, folio longiori. Inſt. R. H. *Dwarf Buckthorn, with a longer Leaf.*

Rhamnus tertius, flore herbaceo, baccis nigris. C. B. P. *Buckthorn with a green Flower.*

Rhamnus Hiſpanicus, buxi folio ampliore. Inſt. R. H. Spaniſh *Buckthorn, with a larger Box-leaf.*

Rhamnus orientalis, amygdali folio ampliore. Tourn. Cor. *Eaſtern Buckthorn with a larger Almond Leaf.*

Rhus Americanus, paniculâ ſparſâ herbacea, ramis patulis glabris. Hort. Elth. American *Sumach with looſe green Panicles, commonly called* New England *Sumach.*

Rhus tenuifolius Virginianus humilis: rhus anguſtifolius. C. B. P. *Dwarf narrow-leav’d* Virginian *Sumach.*

Ribes vulgaris, fructu rubro. H. Eyſt. *The common red Currant.*

Ribes major, fructu rubro. H. Eyſt. *The* Dutch *red Currant.*

Ribes major, fructu incarnato. *The* Champaign *Currant.*

Ribes fructu albo. H. Eyſt. *The common white Currant.*

Ribes fructu majore albo. *The white* Dutch *Currant.*

Ribes Alpinus dulcis. J. B. *The Gooſeberry leav’d Currant.*

Ribes nigrum vulgo dictum, folio olente. J. B. *The black Currant.*

ADDENDA.

Ribes Americana, fructu nigro. *The* American *Black Currant.*

Ribes fructu parvo. Mer. Pin. *The ſmall* Engliſh *wild Currant.*

Roſa rubra ſimplex. C. B. P. *The ſingle red Roſe.*

Roſa rubra multiplex. C. B. P. *The double red Roſe.*

Roſa ſylveſtris inodora, ſeu canina. Park. Theat. *The Wild-briar or Dog-roſe.*

Roſa ſylveſtris, fructu majore hiſpido. Raii Syn. *The wild Roſe, with a large prickly Hip.*

Roſa ſylveſtris pomifera major noſtras. Raii Syn. *The great Apple-bearing* Engliſh *Roſe.*

Roſa pumila ſpinoſiſſima, foliis pimpinellæ glabris, flore albo. J. B. *The dwarf burnet-leav'd Roſe.*

Roſa ſylveſtris, foliis odoratis. C. B. P. *The ſweet-briar or Eglantine.*

Roſa ſylveſtris odora, ſive eglanteria, flore duplici. Park. Par. *The ſweet-briar with a ſemidouble Flower.*

Roſa ſylveſtris, foliis odoratis, flore pleno. *The Sweet-briar with a double Flower.*

Roſa pimpinella minor Scotica, floribus ex albo & carneo eleganter variegatis. Pluk. Alm. *The* Scotch *Roſe with variegated Flowers.*

Roſa pimpinella minor Scotica, floribus rubris. *The red* Scotch *Roſe.*

Roſa Damaſcena. Park. Parad. *The Damaſk Roſe.*

Roſa Provincialis ſive Hollandica Damaſcena. Park. Parad. *The Damaſk* Provence *Roſe.*

Roſa Provincialis major, flore pleno ruberrimo. Boerh. Ind. alt. *The large Red* Provence *Roſe.*

Roſa centifolia Batavica. Cluſ. Hiſt. *The* Dutch *hundred-leav'd Roſe.*

Roſa Provincialis ſpinoſiſſima, pedunculo muſcoſo. Boerh. Ind. *The moſs* Provence *Roſe.*

Roſa Provincialis rubra. Park. Parad. *The common* Provence *Roſe.*

Roſa holoſericea ſimplex. Park. Parad. *The ſingle velvet Roſe.*

Roſa holoſericea multiplex. Park. Parad. *The double velvet Roſe.*

Roſa odore cinnamomi, flore pleno. C. B. P. *The double cinnamon Roſe.*

Roſa odore cinnamomi, ſimplex. C. B. P. *The ſingle cinnamon Roſe.*

Roſa lutea ſimplex. C. B. P. *The ſingle yellow Roſe.*

Roſa lutea multiplex. C. B. P. *The double yellow Roſe.*

Roſa ſylveſtris Auſtriaca, flore phœnicio. Park. Theat. *The* Auſtrian *Roſe.*

Roſa ſylveſtris Auſtriaca, flore luteo. *The yellow* Auſtrian *Roſe.*

Roſa uno ramo luteos, cæteris puniceos flores gerens ſimplices. Boerh. Ind. *The* Auſtrian *Roſe, bearing yellow Flowers on one Branch, and ſcarlet on the other.*

Roſa alba vulgaris major. C. B. P. *The common white Roſe.*

Roſa alba minor. C. B. P. *The ſmaller white Roſe.*

Roſa candida ſemiplena. J. B. *The ſemi-double white Roſe.*

Roſa incarnata. Park. Parad. *The bluſh Roſe.*

Roſa Præneſtina variegata plena. Hort. Eyſt. *The* York *and* Lancaſter *Roſe.*

Roſa rubro & albo variegata, roſa mundi vulgo dicta. Raii Hiſt. *The Roſe of the World.*

Roſa Francofurtenſis. Park. Parad. *The* Francfort *Roſe.*

Roſa ſempervirens. Park. Parad. *The Evergreen Roſe.*

Roſa omnium calendarum. H. R. Par. *The monthly Roſe.*

Roſa omnium calendarum, flore variegato. *The ſtriped monthly Roſe.*

Roſa ſine ſpinis, flore minore. C. B. P. *The Roſe without Thorns.*

Roſa ſine ſpinis, flore majore ruberrimo. *The Royal Virgin Roſe.*

Roſa ſylveſtris Virginienſis. Raii Hiſt. *The wild* Virginia *Roſe.*

Roſa moſchata, ſimplici flore. C. B. P. *The ſingle muſk Roſe.*

Roſa moſchata, flore pleno. C. B. P. *The double muſk Roſe.*

Roſa moſchata ſempervirens. C. B. P. *The Evergreen muſk Roſe.*

Roſa Belgica ſive vitrea, flore rubro. Rea. Flor. *The red* Belgic *Roſe.*

Roſa Belgica ſive vitrea, flore rubicante. Rea. Flor. *The bluſh* Belgic *Roſe.*

Roſa marmorea. Rea. Flor. *The marbled Roſe.*

Roſa Damaſcena, flore ſimplici. *The ſingle Damaſk Roſe.*

Roſa ſylveſtris Virginiana, flore majore pallido. *The wild* Virginia *Roſe, with a large pale Flower.*

Roſa Americana moſchata, flore minore. *The ſmall* American *muſk Roſe.*

Roſa Americana odoratiſſima ſerotina, flore pallido pleno. *The moſt ſweet late-flowering* American *Roſe, with a pale double Flower.*

Roſa campeſtris, ſpinis carens, biflora. C. B. P. *The wild Virgin Roſe, which flowers twice a Year.*

Rubus vulgaris major, fructu nigro. J. B. *The common Bramble or Blackberry.*

Rubus minor, fructu cœruleo. J. B. *The dwarf Bramble or Dewberry.*

Rubus vulgaris major, fructu albo. Raii. Syn. *The Bramble with white Fruit.*

Rubus vulgaris, ſpinis carens. H. R. Par. *The ſmooth Bramble.*

Rubus flore albo pleno. H. R. Par. *The Bramble with double white Flowers.*

Rubus Idæus ſpinoſus, fructu rubro. J. B. *The Raſpberry-buſh.*

Rubus Idæus ſpinoſus, fructu albo. J. B. *The Raſpberry with white Fruit.*

Rubus Idæus ſpinoſus, fructu rubro ſerotino. *The late red Raſpberry.*

Rubus Idæus, fructu nigro, Virginianus. Baniſt. *The* Virginian *Raſpberry, with black Fruit.*

Rubus Americanus magis erectus, ſpinis rarioribus, ſtipite cœruleo. Pluk. Alm. *The* American *Raſpberry with blue Stems.*

Rubus odoratus. Cornut. Virginian *flowering Raſpberry.*

Rubus Alpinus humilis. J. B. *Dwarf Bramble of the* Alps.

Rubus ſpinoſus, foliis & flore eleganter laciniatis. Inſt. R. H. *The common Bramble, with Leaves and Flower curiouſly jagged.*

Rubus non ſpinoſus, fructu nigro majore, Polonicus. Barr. Icon. *The* Poland *ſmooth Bramble, with a large black Fruit.*

Salix folio longiſſimo anguſtiſſimo utrinque albido. C. B. P. *The white Sallow, with very long narrow Leaves.*

Salix humilis anguſtifolia. C. B. P. *The dwarf narrow-leav'd Willow.*

Salix oblongo incano acuto folio. C. B. P. *The Willow with an oblong hoary pointed Leaf.*

Salix fragilis. C. B. P. *The crack Willow.*

Salix ſubrotundo argenteo folio. C. B. P. *Round ſilver-leav'd Willow.*

Salix humilis latifolia erecta. C. B. P. *The upright broad-leav'd dwarf Willow.*

Salix latifolia repens. C. B. P. *The broad-leav'd creeping Willow.*

Salix pumila Alpina rotundifolia repens, infernè ſubcinerea. C. B. P. *Low round-leav'd creeping Willow of the* Alps, *whoſe Leaves are aſh-coloured on their Under-ſide.*

Salix pumila, folio rotundo. J. B. *Low round-leav'd Willow.*

Salix Alpina, alni rotundo folio, repens. Bocc. Muſ. *The creeping Willow of the* Alps, *with a round Alder-leaf.*

Salix pumila, folio utrinque glabro. J. B. *Low Willow, with ſmooth Leaves.*

Salix pumila latifolio incana. C. B. P. *Low Willow, with a broad hoary Leaf.*

Salix pumila linifolia incana. C. B. P. *Low Willow, with a hoary flax Leaf.*

Salix pumila, brevi anguſtoque folio incano. C. B. P. *Low Willow, with a ſhort narrow hoary Leaf.*

Salix Alpina anguſtifolia repens non incana. C. B. P. *Creeping narrow-leav'd green Willow.*

Sambucus racemoſa rubra. C. B. P. *Red berried mountain Elder.*

Spartium tertium, flore albo. C. B. P. *White* Spaniſh *Broom.*

Spartium alterum monoſpermum, ſemine reni ſimile. C. B. P. *Another yellow* Spaniſh *Broom, with one Seed in each Pod.*

Spiræ ſalicis folio. Inſt. R. H. *Spiræa frutex*, vulgò.

Spiræa opuli folio. Inſt. R. H. Virginia *Guelder-roſe*, vulgò.

Spiræa hyperici folio non crenato. Inſt. R. H. *Hypericum frutex*, vulgò.

Spiræa Hiſpanica, hyperici folio crenato. Inſt. R. H. *Hypericum frutex with notch'd Leaves*, vulgò.

Staphylodendron.

ADDENDA.

Staphylodendron. Matth. *The Bladder-nut.*

Staphylodendron Virginianum trifoliatum. H. L. *The three leav'd* Virginian *Bladder-nut.*

Syringa alba, ſive Philadelphus Athenæi. C. B. P. *The Syringa or mock Orange.*

Syringa flore albo pleno. C. B. P. *The Syringa with a double Flower.*

Thymelæa lauri folio deciduo, ſive laureola fœmina. Inſt. R. H. *The purple flowering Mezereon.*

Thymelæa lauri folio deciduo, flore albido, fructu flaveſcente. Inſt. R. H. *The white flowering Mezereon.*

Thymelæa lauri folio deciduo, flore rubente. *The Mezereon, with pale red Flowers.*

Thymelæa foliis lini. C. B. P. *Spurge Olive, with Flax-leaves.*

Toxicodendron triphyllum glabrum. Inſt. R. H. *Smooth three-leav'd Poiſon-oak.*

Toxicodendron triphyllum, folio ſinuato pubeſcente. Inſt. R. H. *Three-leav'd Poiſon-oak, with a downy indented Leaf.*

Toxicodendron rectum, foliis minoribus glabris. Hort. Elth. *Upright Poiſon-oak, with ſmaller ſmooth Leaves.*

Toxicodendron rectum pentaphyllum glabrum, foliis latioribus. *Five-leav'd upright Poiſon-oak, with broad ſmooth Leaves.*

Toxicodendron foliis alatis, fructu rhomboide. Cateſb. Hiſt. *The Poiſon-aſh.*

Viburnum. Matth. *The Way-faring, or Pliant Mealy-tree.*

Viburnum Carolinianum, floribus purpuraſcentibus ex foliorum alis. Carolina *Way-faring-tree, with purpliſh Flowers coming out from the Wings of the Leaves.*

Vitis Idæa magna quibuſdam, ſive myrtilus grandis. J. B. *The great Bilberry.*

Vitis Idæa, foliis oblongis crenatis, fructu nigricante. C. B. P. *Black Whorts, or Whortle-berry.*

Vitex latiore folio. C. B. P. *The broad-leav'd Chaſte-tree.*

Vitex foliis anguſtioribus, cannabis modo diſpoſitis. C. B. P. *The narrow-leav'd Chaſte-tree.*

Vitex foliis anguſtioribus, cannabis modo diſpoſitis, floribus cœruleis. H. L. Bat. *Narrow-leav'd Chaſte-tree, with blue Flowers.*

Vitex ſive agnus, flore albido. H. R. Par. *The Chaſte-tree with white Flowers.*

Vitex ſive agnus minor, foliis anguſtiſſimis. H. R. Par. *The leſſer Chaſte-tree, with very narrow Leaves.*

Xanthoxylum ſpinoſum, lentiſci longioribus foliis, euonymi fructu capſulari, ex inſula Jamaicenſi. Pluk. Phyt. *The Pellitory, or Tooth-ach-tree.*

A CATALOGUE *of* HARDY DECIDUOUS TREES *and* SHRUBS, *with variegated Leaves.*

As the Variegation, in the Leaves of Trees and Shrubs, proceeds from a Diſtemper in the Plants, ſo it weakens them, and renders them of leſs Growth than thoſe whoſe Leaves are plain; for which reaſon I omitted inſerting them in the former Catalogue: but as there are many Perſons who are curious in collecting of all the Sorts of ſtrip'd Trees and Shrubs, ſo for their Inſtruction I have put them down in a ſeparate Liſt, which may be with more Eaſe conſulted, than if they had been diſtributed in the general Catalogue. In this I ſhall not obſerve the Method of the former, in ranging of them according to their ſeveral Growths; ſince the former Catalogue will be a ſufficient Inſtruction to any Perſon who is inclinable to make a ſeparate Plantation of theſe Trees; for it is but conſulting the Height of the ſame Sorts of Trees and Shrubs, which have plain Leaves, and rangeing theſe accordingly.

Acer majus, foliis eleganter variegatis. Hort. Edin. *The ſtrip'd Sycamore.*

Acer platanoides, foliis eleganter variegatis. *The ſtrip'd* Norway *Maple.*

Acer campeſtre & minus, foliis variegatis. *The ſtrip'd Maple.*

Armeniaca malus, fructu majore, foliis ex luteo variegatis. *The Apricock with ſtrip'd Leaves.*

Carpinus foliis ex luteo variegatis. *The ſtrip'd Horn-beam.*

Caprifolium non perfoliatum, foliis ſinuoſis & variegatis. *The wild Honeyſuckle, with indented ſtrip'd Leaves.*

Caprifolium perfoliatum, foliis variegatis. *The ſtrip'd* Italian *Honeyſuckle.*

Caſtanea ſativa, foliis eleganter variegatis. *The ſtrip'd Cheſnut-tree.*

Celtis orientalis minor, foliis minoribus & craſſioribus, fructu flavo, foliis ex luteo variegatis. *The eaſtern Nettle-tree, with ſtrip'd Leaves.*

Ceraſus hortenſis, foliis eleganter variegatis. *The ſtrip'd-leav'd Cherry-tree.*

Cornus fœmina, foliis variegatis. H. L. *The Dogwood with ſtrip'd Leaves.*

Cytiſus Alpinus latifolius, flore racemoſo pendulo, foliis variegatis. Inſt. R. H. *The ſtrip'd-leav'd Viburnum.*

Euonymus vulgaris, granis rubentibus, foliis variegatis. *The Spindle-tree with ſtrip'd Leaves.*

Fagus foliis variegatis. *The ſtrip'd-leav'd Beech-tree.*

Fraxinus vulgaris, foliis ex luteo variegatis. *The ſtrip'd Aſh.*

Frangula foliis variegatis. *The ſtrip'd berry-bearing Alder.*

Groſſularia hortenſis, foliis ex luteo variegatis. *The yellow-ſtrip'd Gooſeberry.*

Groſſularia hortenſis, foliis ex albo variegatis. *The white-ſtrip'd Gooſeberry.*

Hippocaſtanum vulgare, foliis ex luteo variegatis. *The yellow-ſtrip'd Horſe Cheſnut-tree.*

Hippocaſtanum vulgare, foliis ex albo variegatis. *The white-ſtrip'd Horſe Cheſnut.*

Jaſminum vulgatius, flore albo, foliis ex luteo elegantiſſimè variegatis. *The gold-ſtrip'd Jaſmine.*

Jaſminum vulgatius, flore albo, foliis ex albo elegantiſſimè variegatis. *The ſilver-ſtrip'd Jaſmine.*

Ketmia Syrorum, foliis ex albo eleganter variegatis. *Althæa frutex with ſtrip'd Leaves.*

Liguſtrum foliis ex luteo variegatis. H. R. Par. *Yellow-ſtrip'd Privet.*

Liguſtrum foliis argentatis. Breyn. prod. *Silver-ſtrip'd Privet.*

Lilac flore albo, foliis ex luteo variegatis. *The white Lilac, with yellow-ſtrip'd Leaves.*

Lilac flore albo, foliis ex albo variegatis. *The white Lilac, with white-ſtrip'd Leaves.*

Malus ſylveſtris, foliis ex albo eleganter variegatis. *The Crab-tree with ſtrip'd Leaves.*

Malus ſativa, foliis eleganter variegatis. *The Apple-tree with ſtrip'd Leaves.*

Nux juglans ſive regia vulgaris, foliis ex luteo variegatis. *The Walnut-tree with ſtrip'd Leaves.*

Opulus flore globoſo, foliis variegatis. *The Guelder-roſe with ſtrip'd Leaves.*

Populus alba, majoribus foliis variegatis. *The ſtrip'd Abele-tree.*

Populus alba, folio minore variegato. *The ſtrip'd white Poplar.*

Prunus fructu nigro, carne durâ, foliis eleganter variegatis. *The ſtrip'd Perdrigon-plum.*

Pyrus ſativa, foliis eleganter variegatis. *The Pear-tree with ſtrip'd Leaves.*

Quercus vulgaris, foliis ex albo variegatis. *The Oak-tree, with ſtrip'd Leaves.*

Ribes vulgaris, foliis ex albo variegatis. *The Currant with white ſtrip'd Leaves.*

Ribes fructu albo, foliis ex luteo variegatis. *The red Currant with yellow ſtrip'd Leaves.*

Roſa pumila ſpinoſiſſima, foliis pimpinellæ glabris ex luteo & viridi eleganter variegatis. *The ſtrip'd burnet-leav'd Roſe.*

ADDENDA.

Rubus vulgaris major, folio variegato. *The ſtrip'd-leav'd Bramble.*

Salix latifolia rotunda variegata. *The ſtrip'd Oſier.*
Sambucus humilior fruteſcens, foliis eleganter variegatis. H. Edin. *The dwarf ſtrip'd Elder.*
Sambucus vulgaris, foliis ex luteo variegatis. *The blotch'd Elder.*
Sorbus ſylveſtris, foliis ex luteo variegatis. *The Quick-beam with ſtrip'd Leaves.*
Syringa foliis ex luteo variegatis. *The ſtrip'd Syringa or mock Orange.*

Thymelæa lauri folio deciduo, foliis ex albo variegatis. *Mezereon with ſtrip'd Leaves.*

Tilia fœmina, folio majore variegato. *The Lime-tree with ſtrip'd Leaves.*

Viburnum folio variegato. *The ſtrip'd Viburnum, or Pliant Mealy-tree.*
Ulmus minor, folio variegato. *The ſtrip'd* Engliſh *Elm.*
Ulmus folio glabro, eleganter variegato. *The ſtrip'd Witch-elm.*
Ulmus major Hollandica, anguſtis & magis acuminatis ſamarris, folio latiſſimo ſcabro variegato. *The ſtrip'd* Dutch *Elm.*
Ulmus minor, foliis flaveſcentibus. *The yellow-leav'd Elm.*

A CATALOGUE *of* CLIMBING SHRUBS, *which ſhould be planted againſt* TREES, *whereby they may climb, or muſt be ſupported by Stakes, or a Wall,* &c.

Bignonia Americana, fraxini folio, flore amplo phœnicio. Inſt. R. H. *The common Trumpet-tree.*
Bignonia Americana minor, fraxini folio, flore coccineo. Cateſb. Hiſt. *The leſſer Trumpet-tree, with a ſcarlet Flower.*
Bignonia Americana, capreolis donata, ſiliquâ breviori. Inſt. R. H. American *Trumpet-tree, having Claſpers, and a ſhort Pod.*

Clematitis ſylveſtris latifolia. C. B. P. *Travellers-joy.*
Clematitis ſylveſtris latifolia, foliis non inciſis. Inſt. R. H. *Broad whole-leav'd Travellers-joy.*
Clematitis peregrina, foliis pyri inciſis. C. B. P. Spaniſh *Travellers-joy.*
Clematitis cœrulea, vel purpurea repens. C. B. P. *Virgins Bower.*
Clematitis cœrulea, flore pleno. C. B. P. *The double-Virgins Bower.*
Clematitis purpuro-cœrulea, flore pleno. C. B. P. *Purple double Virgins Bower.*
Clematitis Canadenſis trifolia dentata, flore albo. H. R. Par. Canada *Virgins Bower, with a trifoliated indented Leaf, and a white Flower.*
Clematitis purpurea repens, petalis florum coriaceis. Baniſt. *Creeping* American *Travellers-joy, with a purple Flower, and thick ſtrong Petals.*

Frutex ſcandens, petroſelini foliis, Virginianus, claviculis donatus. Pluk. Ma. *The Pepper-tree,* vulgò.
Frutex ſcandens Americanus, foliis latis alternatim ſitis, fructu euonymi. *Climbing* American *Spindle-tree.*

Granadilla pentaphyllos, flore cœruleo magno. Boerh. Ind. alt. *The broad-leav'd Paſſion-Flower.*
Granadilla pentaphyllos, anguſtioribus foliis, flore minore pallidè cœruleo. *The narrow-leav'd Paſſion-flower, with a ſmaller paler Flower.*
Granadilla Hiſpanis, flos paſſionis Italis. Col. in Rech. *Three-leav'd Paſſion-flower.*
Granadilla folio tricuſpido, flore parvo flaveſcente. Inſt. *The Paſſion with a ſmall yellow Flower.*

Hedera arborea. C. B. P. *Common Ivy.*
Hedera arborea, foliis cymis flaveſcentibus. *The Ivy with yellow Leaves.*
Hedera communis minor, foliis ex albo & viridi variis. Boerh. Ind. alt. *The ſilver-ſtrip'd Ivy.*
Hedera communis minor, foliis ex luteo variegatis. *The yellow-ſtrip'd Ivy.*

Jaſminum vulgatius, flore albo. C. B. P. *The common white Jaſmine.*
Jaſminum humile luteum. C. B. P. *The yellow* Italian *Jaſmine,* vulgò.
Jaſminum luteum, vulgò dictum bacciferum. C. B. P. *The common yellow Jaſmine.*
Jaſminum humilius, magno flore. C. B. P. *The* Spaniſh *Jaſmine.*

Meniſpermum Canadenſe ſcandens, hederaceo folio. Act. R. Par. *Climbing* Canada *Moonſeed, commonly called* Canada *Ivy.*
Meniſpermum Canadenſe ſcandens, umbilicato folio. Act. R. Par. *Climbing* Canada *Moonſeed, with an umbilicated Leaf.*
Meniſpermum folio hederaceo. Hort. Elth. Carolina *Moonſeed.*

Periclymenum perfoliatum Virginianum, ſempervirens & florens. H. L. Virginian *Trumpet-honeyſuckle.*
Phaſeoloides fruteſcens Carolinienſe, foliis pinnatis, floribus cœruleis ſpicatis. *The* Carolina *Kidney-bean-tree.*

Toxicodendron amplexicaule, foliis minoribus glabris. Hort. Elth. *Creeping Poiſon-oak.*

Vitis ſylveſtris labruſca. C. B. P. *The wild Grape.*
Vitis laciniatis foliis. Cornut. *The Parſley-leav'd Grape.*
Vitis ſylveſtris Virginiana. Park. Theat. *The wild* Virginia *Grape.*
Vitis vulpina dicta, Virginiana alba. Pluk. Alm. *The Fox Grape.*
Vitis quinquefolia Canadenſis ſcandens. Inſt. R. H. *The* Virginia *Creeper.*

A CATALOGUE *of ſuch* EVER-GREEN TREES *and* SHRUBS, *as will thrive in the open Air in* England; *ranged according to their ſeveral Growths.*

The LARGEST GROWING TREES.

ABIES taxi folio, fructu ſurſum ſpectante. Inſt. R. H. *The Silver or Yew-leav'd Fir.*
Abies tenuiori folio, fructu deorſum inflexo. Inſt. R. H. *The* Norway *or Spruce Fir.*
Abies foliis prælongis, pinum ſimulans. Raii Hiſt. *The long-leav'd Fir.*
Abies piceæ foliis brevioribus, conis parvis biuncialibus laxis. Rand. *The white Spruce Fir of* America.
Abies taxi folio, ſubtus argenteo, fructu longiſſimo deorſum inflexo. *The long con'd* Corniſh *Fir,* vulgò.
Abies taxi foliis, odore balſami Gileadenſis. Raii Hiſt. *The Balm of* Gilead *Fir.*
Abies maxima Sinenſis, pectinatis taxi foliis, apiculis non ſpinoſis. Pluk. *The greateſt* China *Fir, with Yew-leaves.*
Cedrus magna, ſive Libani, conifera. J. B. *The Cedar of* Libanus.

ADDENDA.

Ilex oblongo ſerrato folio. C. B. P. *The ever-green Oak, with an oblong ſawed Leaf.*

Ilex folio rotundiore molli, modiceque ſinuato, ſive ſmilax Theophraſti. C. B. P. *The ever-green Oak, with a rounder Leaf a little indented.*

Magnolia altiſſima, lauroceraſi folio ampliſſimo, flore ingenti candido. Cateſb. Hiſt. *The great laurel-leav'd Tulip-tree.*

Pinus ſativa. C. B. P. *The manured Pine.*

Pinus ſylveſtris. C. B. P. *The wild Pine or Pinaſter.*

Pinus ſylveſtris, foliis brevibus glaucis, conis parvis albentibus. Raii Hiſt. *The* Scotch *Pine, commonly called the* Scotch *Fir.*

Pinus ſylveſtris montana tertia. C. B. P. *The third wild Mountain Pine.*

Pinus ſylveſtris montana altera. C. B. P. *Another wild Mountain Pine.*

Pinus Americana, foliis prælongis, ſubinde ternis conis plurimis confertim naſcentibus. Rand. *The Cluſter Pine.*

Pinus conis erectis. Inſt. R. H. *The Pine-tree, with erect Cones.*

Pinus Hieroſolymitana, prælongis & tenuiſſimis viridibus ſetis. Pluk. Alm. *The* Aleppo *Pine*, vulgo.

Pinus Virginiana, prælongis foliis tenuioribus, cono echinato. Pluk. Alm. Virginia *Pine, with long narrow Leaves and a prickly Cone.*

Pinus Americana, ex uno folliculo ſetis longis tenuibus triquetris, ad unum angulum per totam longitudinem, minutiſſimis crenis aſperatis. Pluk. Alm. *Lord* Weymouth's *Pine*, vulgo.

Pinus ſylveſtris maritima, conis firmiter ramis adhærentibus. J. B. *The wild maritime Pine, whoſe Cones cloſely adhere to the Branches.*

Quercus latifolia, perpetuò virens. C. B. P. *Broad-leav'd ever-green Oak.*

Quercus latifolia, ſubtus argentea, glande minore, calyce hiſpido. *The* Nottingham *Oak*, vulgo.

Suber latifolium perpetuò virens. C. B. P. *The Cork-tree with broad Leaves.*

Suber anguſtifolium, non ſerratum. C. B. P. *The narrow-leav'd Cork-tree.*

Trees of middling Growth.

ABIES minor, pectinatis foliis, Virginiana, conis parvis ſubrotundis. Pluk. *The Yew-leav'd* Virginia *Fir, with ſmall roundiſh Cones.*

Abies piceæ foliis brevibus, conis minimis. Rand. *The red Spruce Fir*, vulgo.

Abies pectinatis foliis, Americana, conis parvis laxis. *The Hemlock Fir.*

Abies orientalis, folio brevi & tetragono, fructu minimo deorſum inflexo. Tourn. Cor. *Eaſtern Fir, with a ſhort four-corner'd Leaf, and a ſmall Fruit hanging downward.*

Alaternus. Cluſ. Hiſp. *The common Alaternus.*

Alaternus Hiſpanica latifolia. C. B. P. *The broad-leaved* Spaniſh *Alaternus.*

Aquifolium baccis rubris. H. L. *The common Holly-tree.*

Arbutus folio ſerrato. C. B. P. *The Strawberry-tree.*

Arbutus fructu turbinato, folio ſerrato. Inſt. R. *Strawberry-tree, with a rounder Fruit.*

Arbutus folio ſerrato, flore oblongo, fructu ovato. D. Michel. *The Strawberry-tree, with an oblong Flower and an Egg-ſhaped Fruit.*

Arbutus folio ſerrato, flore duplici. *The Strawberry-tree, with a double Flower.*

Cedrus folio cupreſſi, major, fructu flaveſcente. C. B. P. *The greater Berry-bearing Cedar, with yellow Fruit.*

Cedrus Hiſpanica procerior, fructu maximo nigro. Inſt. R. H. Spaniſh *Berry-bearing Cedar, with the largeſt black Fruit.*

Cupreſſus metâ in faſtigium convolutâ, quæ fœmina Plinii. Inſt. R. H. *The common or upright Cypreſs.*

Cupreſſus ramos extra 'ſe ſpargens, quæ mas Plinii. Inſt. R. H. *The Male ſpreading Cypreſs.*

Ilex folio anguſto, non ſerrato. C. B. P. *The Olive-leav'd Ilex.*

Ilex folio agrifolii. Bot. Monſp. *The Ilex, with a Holly-leaf.*

Juniperus major, baccâ rufeſcente. C. B. P. *The greater Juniper, with a brown Berry.*

Juniperus Virginiana, foliis inferioribus juniperinis, ſuperioribus ſabinam vel cupreſſum referentibus. Boerh. Ind. alt. *The* Virginia *Cedar, with the lower Leaves like Juniper, and the upper Leaves like Savin.*

Juniperus Bermudiana. H. L. *The* Bermudas *Cedar.*

Juniperus Virginiana, folio ubique juniperino. Boerh. Ind. alt. *The* Virginia *Juniper, or Cedar with the whole Leaves like Juniper.*

Laurus vulgaris. C. B. P. *The common Bay.*

Laurus vulgaris, flore pleno. H. R. Monſp. *The Bay-tree, with a double Flower.*

Laurus vulgaris, folio undulato. H. R. Par. *The common Bay, with a waved Leaf.*

Laurus latifolia, Dioſcoridis. C. B. P. *The broad-leav'd Bay.*

Lauroceraſus. Cluſ. Hiſt. *The Laurel-tree.*

Phillyrea latifolia lævis. C. B. P. *The broad-leav'd ſmooth Phillyrea.*

Phillyrea latifolia ſpinoſa. C. B. P. *The broad-leav'd prickly Phillyrea.*

Pinus maritima minor. C. B. P. *The ſmall maritime Pine.*

Pinus humilis, iulis vireſcentibus, aut palleſcentibus. Inſt. R. H. *Dwarf Pine, with greeniſh and pale Katkins.*

Pinus humilis, iulo purpuraſcente. Inſt. R. H. *Dwarf Pine, with a purple Katkin.*

Pinus orientalis, foliis durioribus amaris, fructu parvo peracuto. Inſt. Cor. *Eaſtern Pine, with hard bitter Leaves, and a ſmall pointed Cone.*

Pinus Virginiana, tripilis ſternis plerumque ex uno folliculo ſetis, ſtrobilis major. Pluk. Alm. *The Frankincenſe-tree.*

Pinus Virginiana, binis brevioribus & craſſioribus ſetis, minori cono, ſingulis ſquammarum capitibus aculeo donatis. Pluk. Alm. *The* Jerſey *Pine*, vulgo.

Quercus ſempervirens, foliis oblongis non ſinuatis. Baniſt. *The* American *live Oak.*

Taxus. J. B. *The Yew-tree.*

The third Growth of Ever-green Trees.

ALATERNUS ſeu Phylica, foliis anguſtioribus & profundius ſerratis. H. L. *The narrow ſawed-leav'd Alaternus.*

Alaternus minore folio. Inſt. R. H. *The ſmall-leaved Alaternus.*

Aquifolium baccis luteis. H. L. *The yellow-berried Holly.*

Aquifolium baccis albis. *The white-berried Holly.*

Aquifolium echinatâ folii ſuperficie. Corn. *The Hedgehog Holly.*

Aquifolium foliis parvis, interdum vix ſpinoſis. *The Bagſhot Holly.*

Aquifolium Carolinienſe, foliis dentatis, baccis rubris. Cateſb. Hiſt. *The Dahoon Holly.*

Buxus arboreſcens. C. B. P. *The common Box-tree.*

Buxus arboreſcens anguſtifolia. *The narrow-leav'd Box-tree.*

Buxus longioribus foliis, in acumen luteum deſinentibus. H. R. Par. *The Box-tree, with longer Leaves terminating in yellow Points.*

Cedrus folio cupreſſi, media, majoribus baccis. C. B. P. *The middle Berry-bearing Cedar, with large Berries.*

Ceraſi ſimilis arbuſcula Mariana, pædi folio, flore albo parvo racemoſo. Pluk. Mant. *The* Maryland *Bird-cherry, with black Fruit.*

Cupreſſus Luſitanica patula, fructu minore. Inſt. R. H. *Spreading* Portugal *Cypreſs, with a ſmaller Fruit.*

Euonymus Virginianus, pyracanthæ foliis, ſempervirens, capſulâ verrucarum inſtar aſperata rubente. Pluk. Phyt. *The ever-green Spindle-tree of* America.

Juniperus vulgaris, arbor. C. B. P. *The* Swediſh *Juniper.*

Juniperus major, baccâ cœruleâ. C. B. P. *The greater Juniper, with blue Berries.*

Magnolia ampliſſimo flore albo, fructu cœruleo. Plum. *The Umbrella-tree.*

ADDENDA.

Olea maximo fructu. Inſt. R. H. *The* Spaniſh *Olive-tree.*

Olea fructu oblongo atro-virente. Inſt. R. H. *The Olive-tree, with oblong deep-green Fruit.*

Olea fructu albo. Inſt. R. H. *Olive-tree, with white Fruit.*

Olea fructu majuſculo & oblongo. Inſt. R. H. *Olive-tree, with large oblong Fruit.*

Olea fructu majori, carne craſsâ. Inſt. R. H. *The Royal Olive-tree.*

Olea maxima ſubrotunda. H. R. Monſp. *The largeſt round Olive.*

Olea ſylveſtris, folio duro, ſubtus incano. C. B. P. *The wild Olive.*

Phillyrea folio leviter ſerrato. C. B. P. *The true Phylyrea, with Leaves lightly ſawed.*

Phillyrea anguſtifolia prima. C. B. P. *The narrow leav'd Phillyrea.*

Phillyrea anguſtifolia ſecunda. C. B. P. *The ſecond narrow-leav'd Phillyrea.*

Phillyrea folio liguſtri. C. B. P. *The privet-leav'd Phillyrea.*

Phillyrea oleæ Epheſiacæ folio. Pluk. Phyt. *The olive-leav'd Phillyrea.*

Phillyrea anguſtifolia ſpinoſa. H. R. Par. *Narrow-leav'd prickly Phillyrea.*

Phillyrea longiore folio, profundè crenato. H. R. Par. *Long-leav'd Phillyrea, with a deeply notch'd Leaf.*

Phillyrea folio buxi. H. R. Par. *The box-leav'd Phillyrea.*

Phillyrea Hiſpanica, lauri folio ſerrato & aculeato. Inſt. R. H. Spaniſh *Phillyrea, with a ſawed and prickly Bay-leaf.*

Phillyrea Hiſpanica, nerii folio. Inſt. R. H. Spaniſh *Phillyrea, with an Oleander-leaf.*

Tamariſcus Narbonenſis. Lob. Icon. *The narrow leav'd Tamariſk.*

Tamariſcus Germanicus. Lob. Icon. *The* German *Tamariſk.*

Thuya Theophraſti. C. B. P. *The* Arbor Vitæ, *vulgò.*

A CATALOGUE *of* Ever-green Shrubs, *which will thrive in the open Air in* England.

Bupleurum arboreſcens, ſalicis folio. Inſt. R. H. *Seſeli Æthiopicum frutex.*

Caprifolium perfoliatum ſempervirens, floribus ſpecioſius. *The ever-green Honeyſuckle.*

Caſſine vera Floridanorum, arbuſcula baccifera, alaterni fermè facie, foliis alternatim ſitis, tetrapyrene. Pluk. Mant. *Ever-green Caſſine, or* South-Sea *Thea.*

Chamælæa tricoccos. C. B. P. *The Widow-wail.*

Chamærhododendron Ponticum maximum, folio laurocerasi, flore è cœruleo purpuraſcente. *The* Pontic *Roſe-bay with a Laurel-leaf, and a blue purpliſh Flower.*

Chamærhododendron Americanum, lauroceraſi folio, floribus albis. American *Roſe-bay, with a Laurel-leaf, and white Flowers.*

Cytiſo-geniſta ſcoparia vulgaris, flore luteo. Inſt. R. H. *The common Broom.*

Cytiſo-geniſta ſcoparia vulgaris, flore albo. Inſt. R. H. *The common Broom, with a white Flower.*

Cytiſus ſpinoſus. H. L. *Thorny Cytiſus.*

Geniſta-ſpartium ſpinoſum majus primum, flore luteo. C. B. P. *The* French *Furz or Whin.*

Geniſta-ſpartium ſpinoſum majus ſecundum, flore pallido. C. B. P. *The Furz or Whin, with a pale Flower.*

Geniſta-ſpartium ſpinoſum majus tertium hirſutum. C. B. P. *Hairy Furz or Whin.*

Geniſta-ſpartium majus, brevioribus & longioribus aculeis. C. B. P. *The common Furz or Whin.*

Geniſta-ſpartium minus Anglicum. Inſt. R. H. *The ſmaller* Engliſh *Furz or Whin.*

Hedera arborea. C. B. P. *Common Ivy.*

Ilex aculeata cocciglandifera. C. B. P. *The Kermes, or Holm-oak.*

Ilex media cocciferæ ilici plane ſuppar, folio aquifoliæ. Lob. Ad. *Small Shrub ever-green Oak.*

Juniperus vulgaris fruticoſa. C. B. P. *The common Juniper.*

Juniperus minor montana, folio latiore, fructuque longiore. C. B. P. *Smaller mountain Juniper, with a broader Leaf, and a longer Fruit.*

Lauroceraſus Luſitanica minor. Inſt. R. H. *The ſmall* Portugal *Laurel, commonly call'd* Portugal *Cherry.*

Lauruſtinus Virginiana floribus albidis eleganter bullatis. D. Baniſter. *Ivy-flowering Winter-green.*

Magnolia lauri folio, ſubtus albicante. Cateſb. Hiſt. *The ſmall Laurel-leaved Tulip-tree, or ſweet Bay.*

Meſpilus ſpinoſa, pyri folio. H. L. *The* Pyracantha, *or ever-green Thorn.*

Myrtus latifolia Romana. C. B. P. *Common broad-leav'd Myrtle.*

Myrtus flore pleno. Corn. *The double-flowering Myrtle.*

Myrtus communis Italica. C. B. P. *Common* Italian *Myrtle.*

Olea fructu oblongo minori. Inſt. R. H. *The Olive-tree, with ſmall oblong Fruit.*

Olea fructu minore & rotundiore. Inſt. R. H. *The Olive-tree, with ſmaller and rounder Fruit.*

Olea minor rotunda racemoſa. H. R. Par. *The ſmall Olive-tree, with round Fruit growing in Cluſters.*

Olea minor rotunda rubro-nigricans. H. R. Par. *The ſmall Olive-tree, with round dark red Fruit.*

Olea minor Lucenſis, fructu odorato. Inſt. R. H. *The* Luca *Olive-tree.*

Olea Africana, folio buxi craſſo atro-viridi lucido, cortice albo ſcabro. Boerh. Ind. alt. *The* African *Box-leav'd Olive.*

Roſmarinus hortenſis, latiore folio. Mor. Hiſt. *The broad-leav'd Garden Roſemary.*

Roſmarinus hortenſis, anguſtiore folio. C. B. P. *The narrow-leav'd Garden Roſemary.*

Ruſcus myrtifolius aculeatus. Inſt. R. H. *The Butchers-broom, or Kneeholm.*

Ruſcus myrtifolius aculeatus, folio anguſtiore. *Narrow-leav'd Butchers-broom, or Kneeholm.*

Ruſcus vulgaris, folio ampliore. Hort. Piſ. *Broader-leav'd Butchers-broom, or Kneeholm.*

Ruſcus latifolius, fructu folio innaſcente. Inſt. R. H. *Broad-leav'd* Alexandrian *Laurel, with the Fruit growing on the Leaf.*

Ruſcus anguſtifolius, fructu folio innaſcente. Inſt. R. H. *Narrow-leav'd* Alexandrian *Laurel, with the Fruit growing on the Leaf.*

Ruſcus anguſtifolius, fructu ſummis ramulis innaſcente. Inſt. R. H. *Narrow-leav'd* Alexandrian *Laurel, with the Fruit growing on the Tops of the Branches.*

Sabina folio tamariſca Dioſcoridis. C. B. P. *The Savin.*

Sabina folio cypreſſi. C. B. P. *The Cypreſs-leav'd Savin.*

Senecio Virginianus arboreſcens, atriplicis folio. Par. Bat. *The Groundſel-tree.*

Thymelæa laurifolia ſempervirens, ſeu laureolo mas. Inſt. R. H. *The Spurge Laurel.*

Thymelæa Alpina linifolia humilior, flore purpureo odoratiſſimo. Inſt. R. H. *The Cneorum of* Matthiolus.

Tinus prior. Cluſ. Hiſt. *The Baſtard ſhining-leav'd Lauruſtinus.*

Tinus alter. Cluſ. Hiſt. *The rough-leav'd Lauruſtinus.*

Tinus tertius. Cluſ. Hiſt. *The ſmall-leav'd Lauruſtinus.*

Tinus prior Cluſii, folio atro-viridi ſplendente. *The ſhining-leav'd Lauruſtinus.*

Vermicularis frutex major. Ger. Emac. *The ſtone Crop-tree.*

Vitis Idæa ſempervirens, fructu rubro. J. B. *Red Whorts, or Whortle-berries.*

Vitis Idæa Caroliniana, foliis ſubrotundis hirſutis ex adverſo naſcentibus, floribus minimis herbaceis, fructu parvo rubello. *St. Peter's-wort Shrub*, vulgò.

Uva Urſi. Cluſ. Hiſt. Spaniſh *red Whort.*

A CATA-

ADDENDA.

A CATALOGUE *of* Ever-green Trees *and* Shrubs, *with variegated Leaves.*

ALaternus aurea, ſeu foliis ex luteo variegatis. H. R. Par. *The blotch'd Alaternus, commonly called blotch'd Phillyrea.*

Alaternus argentea, ſeu foliis ex albo variegatis. H. R. Par. *The ſilver-blotch'd Alaternus.*

Alaternus foliis anguſtioribus & profundius ſerratis, limbis argenteis. *The ſilver-edg'd narrow-leav'd Alaternus.*

Alaternus foliis anguſtioribus & profundius ſerratis, limbis aureis. *The gold-edged Alaternus.*

Aquifolium foliis ex albo variegatis. H. L. *The ſilver-ſtrip'd Holly.*

Aquifolium foliis ex luteo variegatis. H. R. Par. *The yellow blotch'd Holly.*

Aquifolium echinatâ folii ſuperficie, foliis ex luteo variegatis. *The hedge-hog Holly, with yellow-ſtrip'd Leaves.*

Aquifolium echinatâ folii ſuperficie, foliis ex albo variegatis. *The ſilver-ſtrip'd hedge-hog Holly.*

Aquifolium foliis longioribus, limbis & ſpinis ex unico tantum latere per totum argenteo pictis. Pluk. Broderick'*s Holly*, vulgo.

Aquifolium foliis ſubrotundis, limbis & ſpinis utrinque argentatis, aquifolium elegans. D. Doct. Eales. Pluk. Alm. Eales'*s Holly.*

Aquifolium foliis oblongis lucidis, ſpinis & limbis argenteis. *Sir* Thomas Franklin'*s Holly.*

Aquifolium foliis ſubrotundis, limbis argenteis, ſpinulis & marginalibus purpuraſcentibus. Bridgman'*s Holly.*

Aquifolium foliis oblongis, ſpinis & limbis flaveſcentibus. Longſtaff'*s beſt Holly.*

Aquifolium foliis & ſpinis majoribus, limbis flaveſcentibus. *Fine Phyllis.*

Aquifolium foliis minoribus, ſpinis & limbis argenteis. *Painted Lady-holly.*

Aquifolium foliis anguſtioribus, ſpinis & limbis flaveſcentibus. Fuller'*s Cream-holly.*

Aquifolium foliis oblongis, ex luteo & aureo elegantiſſimè variegato. *The milk-maid Holly.*

Aquifolium foliis oblongis viridibus, maculis argenteis notatis. Capel'*s Mottled Holly.*

Aquifolium foliis latiſſimis, ſpinis & limbis flaveſcentibus. *Glory of the Eaſt Holly.*

Aquifolium foliis oblongis, ſpinis majoribus, foliis ex aureo variegatis. *Glory of the Weſt Holly.*

Aquifolium foliis oblongis, ſpinis & limbis argenteis. *The* Hertfordſhire *white Holly.*

Aquifolium foliis longioribus, ſpinis & limbis argenteis. *The Union Holly.*

Aquifolium foliis parvis, interdum vix ſpinoſis, limbis foliorum argentatis. Whitmill'*s Holly.*

Buxus foliis ex luteo variegatis. H. R. Par. *The yellow-ſtrip'd Box-tree.*

Buxus major, foliis per limbum aureis. H. R. Par. *The gold-edged Box-tree.*

Buxus major, foliis per limbum argenteis. *The ſilver-edged Box-tree.*

Hedera communis minor, foliis ex albo & viridi variegatis. *The ſilver ſtrip'd Ivy.*

Hedera communis minor, foliis ex aureo variegatis. *The yellow-ſtrip'd Laurel.*

Laurocераſus foliis ex luteo variegatis. *The yellow-ſtrip'd Laurel.*

Laurocераſus foliis ex albo variegatis. *The white-ſtrip'd Laurel.*

Phillyrea latifolia lævis, foliis ex luteo variegatis. *The true Phillyrea, with yellow-ſtrip'd Leaves.*

Roſmarinus anguſtiore folio, argenteus. H. R. Par. *The ſilver Roſemary.*

Roſmarinus ſtriatus ſive aureus. Park. Theat. *The gold-ſtrip'd Roſemary.*

Sabina folio variegato. *The ſtrip'd Savin.*

Taxus foliis variegatis. *The ſtrip'd Yew.*

Thuya Theophraſti, foliis eleganter variegatis. *The ſtrip'd* Arbor Vitæ.

Thymelæa lauri folio, ſempervirens, foliis ex luteo variegatis. *The ſtrip'd Spurge Laurel.*

Tinus prior Cluſii, foliis ex albo variegatis. *The ſtrip'd ſhining-leav'd Lauruſtinus.*

Tinus ſecundus Cluſii, foliis ex luteo variegatis. *The ſtrip'd rough-leav'd Lauruſtinus.*

I Shall next add a Liſt of ſuch ever-green Shrubs as will thrive in the open Air in *England*, provided they are planted in a warm Situation, and on a dry Soil ; but as theſe are ſometimes deſtroyed by very ſharp *Winters*, ſo they are not proper to intermix with the before-mentioned Sorts ; becauſe if theſe ſhould be deſtroyed after having grown ſix or eight Years, it will occaſion ſuch Chaſms in the Plantation, as would render it very unſightly. Therefore the better Way is to range theſe in Clumps, in ſome warm Situations, where they may continue ſeveral Years, and make a handſome Appearance ; and if they ſhould be deſtroyed, they may ſoon be repaired again, where there are ſome Plants of each Kind preſerved in Shelter.

Abſinthium arboreſcens. Lob. Icon. *The Wormwood-tree.*

Alaternoides Africana, ericæ foliis, floribus albicantibus & muſcoſis. H. Amſt. *The* African *Alaternoides.*

Althæa fruteſcens, folio acuto, parvo flore. C. B. P. *Shrubby Marſh-mallow, with a pointed Leaf, and a ſmall Flower.*

Althæa fruteſcens Luſitanica, folio ampliore, minus incano. Inſt. R. H. Portugal *ſhrubby Marſh-mallow, with a larger and leſs hoary Leaf.*

Althæa fruteſcens, folio bryoniæ. C. B. P. *Shrubby Marſh-mallow, with a Bryony-leaf.*

Althæa fruteſcens Luſitanica, folio rotundiori undulato. Inſt. R. H. Portugal *ſhrubby Marſh-mallow, with a rounder waved Leaf.*

Althæa maritima arborea Gallica. Inſt. R. H. *The Mallow-tree.*

Anagyris vera fœtida. J. B. *The ſtinking Bean-trefoil.*

Anonis purpurea verna, ſeu præcox, perennis fruteſcens, flore rubro amplo. Mor. Hiſt. *Shrubby vernal Reſt-harrow, with a large red Flower.*

Atriplex latifolia, ſive halimus fruticoſus latifolius. Mor. H. *The Sea Purſlain-tree.*

Barba Jovis pulchrè lucens. J. B. *The Silver-buſh.*

Ciſtus mas major, folio rotundiore. J. B. *Greater male Ciſtus, or Rock-roſe, with a rounder Leaf.*

Ciſtus mas, folio breviore. C. B. P. *Rock-roſe, with a ſhorter Leaf.*

Ciſtus mas Luſitanica, folio ampliſſimo incano. Inſt. R. H. Portugal *Rock-roſe, with a larger hoary Leaf.*

Ciſtus mas, folio oblongo incano. C. B. P. *Rock-roſe, with an oblong hoary Leaf.*

Ciſtus mas, foliis undulatis & criſpis. Inſt. *Rock-roſe with waved and curled Leaves.*

Ciſtus ladanifera Monſpelienſium. C. B. P. *Narrow-leav'd Gum Ciſtus of* Montpelier.

Ciſtus ladanifera Cretica, flore purpureo. Tourn. Cor. *The true Gum Ciſtus of* Candy.

Ciſtus ladanifera, latiore folio acuminato, flore majore albo. *The broad-leav'd Gum Ciſtus.*

Coluteo Æthiopica, flore phœnicio, folio barbæ Jovis. Breyn. Cent. *The ſcarlet flowering Colutea.*

Coronilla maritima, glauco folio. Inſt. R. H. *Jointed podded Colutea.*

Cytiſus hirſutus. J. B. *Hairy Cytiſus.*

Dorycnium Monſpelienſium. Lob. Icon. *Shrub Trefoil of* Montpelier.

Jaſminoides Africanum, jaſmini aculeati foliis & facie. Raii. African *Baſtard Jaſmine.*

Medicago trifolia fruteſcens incana. Inſt. R. H. *Hoary Moon-trefoil, or Cytiſus.*

Melianthus Africanus. H. L. *The Honey-tree.*

Melianthus Africanus minor fœtidus. Com. R. *Smaller ſtinking Honey-tree.*

ADDENDA.

Phlomis fruticoſa, ſalviæ folio latiore & rotundiore. Inſt. R. H. *The broad-leav'd* Jeruſalem *Sage-tree.*

Phlomis fruticoſa, ſalviæ folio longiore & anguſtiore. Inſt. R. H. *Narrow-leav'd Tree-ſage.*

Phlomis fruticoſa humilis latifolia candidiſſima, floribus luteis. Rand. *Dwarf Sage-tree, with broad woolly Leaves, and yellow Flowers.*

Siliqua edulis. C. B. P. *The Carob, or St. John's-bread.*

Teucrium Hiſpanicum, latiore folio. Inſt. R. H. *Broad-leav'd* Spaniſh *Tree-germander.*

Teucrium multis. J. B. *Common Tree-germander.*

Teucrium Bæticum. Cluſ. Hiſp. Spaniſh *Tree-germander.*

Trifolium bitumen redolens. C. B. P. *Stinking ſhrub Trefoil.*

Trifolium bituminoſum arboreum, anguſtifolium ac ſempervirens. H. Cath. *Narrow-leav'd Tree-trefoil of a bituminous Scent.*

A CATALOGUE *of* HARDY PERENNIAL FLOWERING PLANTS, *which will thrive in Common Borders without any Covering; and are not of too large Growth to be admitted into the Flower-Garden, nor are ſubject to ſpread by their Roots, and do not require to be taken up every Year.*

Aconitum lycoctonum luteum. C. B. P. *Yellow Wolfſbane or Monkſhood.*

Aconitum ſalutiferum ſeu anthora. C. B. P. *Wholſome Monkſhood.*

Aconitum Pyrenaicum, ampliore folio tenuius laciniato. Inſt. R. Pyrenean *Monkſhood, with a larger Leaf finely jagged.*

Aconitum comâ inflexâ, foliis anguſtioribus. C. B. P. *Narrow-leav'd Monkſhood, with a bending Spike.*

Aconitum violaceum, ſeu napellus 2. C. B. P. *Violet-colour'd Monkſhood.*

Adonis hellebori radice, buphthalmi flore. H. L. *Perennial Adonis, with a large yellow Flower.*

Anonis Caroliniana perennis non ſpinoſa, foliorum marginibus integris, floribus in thyrſo candidis. Martyn. Cent. *Perennial Reſt-harrow of* Carolina, *with white Flowers growing in Spikes.*

Apocynum erectum Canadenſe anguſtifolium. Par. Bat. *Upright* Canada *Dogſbane, with a narrow Leaf.*

Aquilegia hortenſis multiplex, flore magno cœruleo. C. B. P. *Double Garden Columbine, with a large blue Flower.*

Aquilegia hortenſis multiplex, flore magno violaceo. C. B. P. *Double Garden Columbine, with a large violet Flower.*

Aquilegia hortenſis multiplex, flore magno ſaturatè rubente. C. B. P. *Double Garden Columbine, with a large deep red Flower.*

Aquilegia hortenſis multiplex, flore magno variegato. C. B. P. *Double Garden Columbine, with a large variegated Flower.*

Aquilegia flore roſeo multiplici. *The double roſe Columbine.*

Aquilegia ſtellata, flore pleno purpureo. *The double ſtarry Columbine, with a purple Flower.*

Aſphodelus albus ramoſus mas. C. B. P. *Great white branching Kingſpear.*

Aſphodelus albus ramoſus minor, ſeu ramoſus alter. H. R. Par. *Small white branching Kingſpear.*

Aſphodelus albus non ramoſus. C. B. P. *White unbranched Kingſpear.*

Aſter Atticus cœruleus vulgaris. C. B. P. Italian *Starwort.*

Aſter tripolii flore. C. B. P. *Starwort with a Flower like Tripolium.*

Aſter Virginianus pyramidatus, hyſſopi foliis aſperis, calycis ſquamulis foliaceis. Rand. *Late-flowering* Virginia *Starwort, with narrow Leaves and large blue Flowers.*

Aſter Novæ Angliæ, linariæ folio, chamæmeli floribus. Par. Bat. New-England *narrow-leav'd Starwort, with Chamomile Flowers.*

Aſteroides Alpina, ſalicis folio. Cor. Inſt. Alpine *Baſtard Starwort, with a Willow Leaf.*

Buphthalmum tanaceti minoris foliis. C. B. P. *Yellow Ox-eye, with Tanſey Leaves.*

Buphthalmum orientale, tanaceti minoris folio, flore luteo ampliſſimo. Tourn. Cor. *Eaſtern Ox-eye, with a larger yellow Flower.*

Buphthalmum orientale, tanaceti minoris folio incano, flore ſulphureo ampliſſimo. Boerh. *Eaſtern Ox-eye, with a hoary Tanſey Leaf, and a large Brimſtone-colour'd Flower.*

Buphthalmum orientale, tanaceti minoris folio, flore albo ampliſſimo. Tourn. Cor. *Eaſtern Ox-eye, with a large white Flower.*

Campanula pyramidata altiſſima. Inſt. R. H. *The talleſt pyramidal Bell-flower.*

Campanula perſicæ folio. Cluſ. Hiſt. *The Peach-leaved Bell-flower.*

Campanula perſicæ folio, flore albo. H. Eyſt. *The white Peach-leaved Bell-flower.*

Campanula perſicæ folio, flore pleno cœruleo. Inſt. R. H. *The Peach-leaved Bell-flower, with a double blue Flower.*

Campanula perſicæ folio, flore albo pleno. Inſt. R. H. *The Peach-leaved Bell-flower, with a double white Flower.*

Cardamine pratenſis, magno flore pleno. Inſt. R. H. *Double Ladyſmock.*

Clematitis cœrulea erecta. C. B. P. *Upright blue Virgins-bower.*

Clematitis ſive flammula ſurrecta alba. C. B. P. *Upright white Virgins-bower.*

Clematitis Hiſpanica ſurrecta, altera & humilior, flore albicante. H. R. Par. *Upright dwarf* Spaniſh *Virgins-bower, with a white Flower.*

Cyanus anguſtiore folio & longiore, Belgicus. H. R. Par. *Narrow-leaved perennial Blue-bottle.*

Cyclamen hederæ folio. C. B. P. *The common Sow-bread.*

Cyclamen hederæ folio, flore albo. *The Sow-bread with white Flowers.*

Digitalis latifolia, flore ferrugineo. H. R. Par. *Broad-leav'd Iron-colour'd Fox-glove.*

Digitalis anguſtifolia, flore ferrugineo. C. B. P. *Narrow-leav'd Iron-colour'd Fox-glove.*

Ephemerum Virginianum, flore cœruleo majori. Inſt. R. H. Virginian *Spiderwort, with a larger blue Flower.*

Ephemerum Virginianum, flore purpureo majori. Inſt. R. H. Virginian *Spiderwort, with a larger purple Flower.*

Ephemerum Virginianum, flore albo majori. Inſt. R. H. Virginian *Spiderwort, with a larger white Flower.*

Eryngium montanum amethyſtinum. C. B. P. Alpine *Sea-holly, with an amethyſt Flower.*

Eryngium Alpinum amethyſtinum, capitulo majore palleſcente. Inſt. R. H. Alpine *Sea-holly, with a larger and paler Head.*

Fraxinella. Cluſ. Hiſt. *White Dittany.*

Fraxinella purpurea major multiflora. H. R. Par. *Greater white Dittany, with many purple Flowers.*

Fraxinella minor purpurea Belgarum. H. R. Par. *Smaller white Dittany of the* Dutch, *with purple Flowers.*

Fraxinella niveo flore. Cluſ. Hiſt. *White Dittany with a ſnow Flower.*

Fumaria ſempervirens & florens, flore albo. Flor. *Evergreen Fumitory, with a white Flower.*

Fumaria lutea. C. B. P. *Yellow Fumitory.*

Fumaria bulboſa, radice cavâ, major. C. B. P. *The greater Hollow-Root.*

Fumaria bulboſa, radice non cavâ, major. C. B. P. *Greater bulbous rooted Fumitory.*

Gentiana major lutea. C. B. P. *The great yellow Gentian.*

Gentiana Alpina, magno flore. J. B. *The Gentianella.*

Gentiana aſclepiadis folio. C. B. P. *Gentian with a ſwallow-wort Leaf.*

Gentiana paluſtris anguſtifolia. C. B. P. *Narrow-leav'd marſh Gentian.*

Gentiana pratenſis, flore lanuginoſo. C. B. P. *Meadow Gentian, with a woolly Flower.*

Geranium batrachoides, Gratia Dei Germanorum. C. B. P. *Cranesbill with a Crowfoot-leaf.*

A D D E N D A.

Geranium ſanguineum, maximo flore. C. B. P. *The bloody Cranesbill.*

Geranium hæmatodes Lancaſtrienſe, flore eleganter ſtriato. Raii Hiſt. *The* Lancaſter *Cranesbill, with a ſtrip'd Flower.*

Geranium nodoſum. *Knotty Cranesbill.*

Geranium orientale columbinum, flore maximo, aſphodeli radice. Cor. Inſt. *Eaſtern doves-foot Cranesbill, with a large Flower, and an aſphodel Root.*

Geranium Alpinum, coriandri folio, longius radicatum, flore purpureo maximo. Michel. Alpine *Cranesbill, with a Coriander-leaf, a long Root, and a large purple Flower.*

Geranium Romanum verſicolor, ſive ſtriatum. Park. Parad. *The* Roman *Cranesbill, with a ſtrip'd Flower.*

Geum folio ſubrotundo majori, piſtillo floris rubro. Inſt. R. H. London *Pride.*

Geum folio ſubrotundo minori, piſtillo floris rubro. Inſt. R. H. *Smaller* London *Pride.*

Geum rotundifolium majus. Inſt. R. H. *Great round-leav'd* London *Pride.*

Hedyſarum triphyllum Canadenſe. Cornut. *Three-leav'd* Canada French *Honeyſuckle.*

Heleniaſtrum folio longiore & anguſtiore. Vaill. *Baſtard Elecampane, with a longer and narrower Leaf.*

Heleniaſtrum folio breviore & latiore. Vaill. *Baſtard Elecampane, with a ſhorter and broader Leaf.*

Helenium ciſti folio, non crenato, magno flore. Vaill. *Yellow Starwort, with a large Flower.*

Helleborus niger flore albo, etiam interdum valdè rubente. J. B. *The* Chriſtmas *Roſe, or true black Hellebore.*

Helleborus niger, anguſtioribus foliis. Inſt. R. H. *Narrow-leav'd black Hellebore.*

Helleborus niger trifoliatus. Hort. Farn. *Three-leav'd black Hellebore.*

Helleborus niger, ranunculi folio, flore globoſo majore. Inſt. R. H. *The yellow Globe-flower, or Lockergowlans.*

Hepatica trifolia, cœruleo flore. Cluſ. H. *The ſingle blue Hepatica.*

Hepatica trifolia, cœruleo flore pleno. Cluſ. H. *The double blue Hepatica.*

Hepatica trifolia, rubro flore. Cluſ. Hiſt. *The ſingle peach-colour'd Hepatica.*

Hepatica trifolia, flore rubro pleno. Boerh. Ind. *The double peach-colour'd Hepatica.*

Hepatica trifolia, flore albo ſimplici. Boerh. Ind. *The ſingle white Hepatica.*

Hermodactylus folio quadrangulo. Tourn. Cor. *The Snakeshead Iris*, vulgò.

Heſperis flore purpureo pleno. H. R. Par. *The double purple Rocket.*

Heſperis flore albo pleno. H. R. Par. *The double white Rocket.*

Iris vulgaris violacea, ſive purpurea ſylveſtris. J. B. *The common blue Iris, or Flower-de-luce.*

Iris hortenſis latifolia. C. B. P. *Broad-leav'd garden Flower-de-luce.*

Iris hortenſis alba Germanica. C. B. P. *The garden white Flower-de-luce.*

Iris alba Florentina. C. B. P. *The white* Florentine *Iris.*

Iris Suſiana, flore maximo, ex albo nigricante. C. B. P. *The* Calcedonian *Iris, or Flower-de-luce.*

Iris Dalmatica major. C. B. P. *The great* Dalmatian *Flower-de-luce.*

Iris latifolia Pannonica, colore multiplici. C. B. P. *The* Hungarian *Flower-de-luce.*

Iris anguſtifolia maritima major. C. B. P. *Great narrow-leav'd Sea-iris.*

Iris anguſtifolia maritima minor. C. B. P. *Smaller narrow leav'd Sea-iris.*

Iris anguſtifolia hortenſis verſicolor. C. B. P. *Narrow-leav'd Garden-iris, with a ſtrip'd Flower.*

Iris anguſtifolia prunum redolens minor. C. B. P. *Small narrow-leav'd Iris, ſmelling like Plums.*

Iris Americana verſicolor, ſtylo non crenato. Hort. Elth. *Strip'd* American *Iris, with an intire Style.*

Iris Americana verſicolor, ſtylo crenato. Hort. Elth. *Strip'd* American *Iris, with a notch'd Style.*

Iris humilis minor, flore purpureo. Inſt. R. H. *The dwarf Iris.*

Iris Aſiatica cœrulea polyanthos. C. B. P. *Blue* Aſiatic *Iris, with many Flowers.*

Iris peregrina ſubrubens inodora. C. B. P. *Reddiſh foreign Iris without Scent.*

Iris peregrina, odore oxyacanthæ. C. B. P. *Foreign Iris, ſmelling like white Thorn.*

Iris Dalmatica minor. C. B. P. *Small* Dalmatian *Iris.*

Iris Byzantina purpuro-cœrulea. C. B. P. *Purple blue Flower-de-luce of* Conſtantinople.

Iris latifolia Germanica ochroleucos. C. B. P. *Broad-leav'd* German *Iris, with a whitiſh yellow Flower.*

Iris latifolia humilior verſicolor. C. B. P. *Dwarf ſtrip'd Flower-de-luce.*

Lilio-aſphodelus luteus. Par. *The yellow Day-lily.*

Lilio-narciſſus luteus autumnalis major. Inſt. R. H. *The larger yellow autumnal Narciſſus.*

Lilio-narciſſus luteus autumnalis minor. Inſt. R. H. *The ſmaller yellow autumnal Narciſſus.*

Lilio-hyacinthus vulgaris, flore cœruleo. Inſt. R. H. *The common blue Lily-hyacinth.*

Lilio-hyacinthus vulgaris, flore niveo. Inſt. R. H. *The common white Lily-hyacinth.*

Lilio-hyacinthus vulgaris, flore rubello. Inſt. R. H. *Common Lily hyacinth, with a reddiſh Flower.*

Lychnis hirſuta, flore coccineo, major. C. B. P. *The ſingle ſcarlet Lychnis.*

Lychnis Chalcedonica, flore pleno miniato, ſeu aurantiaco. Mor. *The double ſcarlet Lychnis.*

Lychnis coronaria ſativa multiplex. C. B. P. *The double Roſe Campion.*

Lychnis alba multiplex. C. B. P. *The double white Batchelor's-button.*

Lychnis purpurea multiplex. C. B. P. *The double purple Batchelor's-button.*

Lychnis pratenſis, flore laciniato pleno ampliore purpureo. Inſt. R. H. *The double ragged Robin.*

Lychnidea Virginiana, holoſtii ampliore folio, floribus umbellatis purpureis. Act. Phil. *The* Virginian *Lychnidea, with purple Flowers growing in an Umbel.*

Lychnidea Caroliniana, floribus quaſi umbellatim diſpoſitis, foliis lucidis craſſis acutis. Martyn. *The* Carolina *Lychnidea.*

Lyſimachia ſpicata, flore albo, ſalicis folio. Inſt. R. H. *Spiked Looſeſtrife, with white Flowers, and a Willow-leaf.*

Moly latifolium liliflorum. C. B. P. *Broad-leav'd Moly of* Theophraſtus.

Moly latifolium Indicum. C. B. P. *Broad-leav'd* Indian *Moly.*

Moly latifolium Hiſpanicum. C. B. P. *Broad-leav'd* Spaniſh *Moly.*

Moly latifolium, flavo flore. Cluſ. App. *The broad-leav'd yellow Moly.*

Moly anguſtifolium umbellatum. C. B. P. Homer'*s Moly.*

Moly anguſtifolium, foliis reflexis. C. B. P. *The ſerpent Moly.*

Moly moſchatum, capillaceo folio. C. B. P. *The ſweet Moly of* Montpelier.

Moly narciſſinis foliis 1. Cluſii Hiſt. *Moly with Daffodil-leaves.*

Moly narciſſinis foliis, altera ſpecies. Cluſ. Hiſt. *Another Moly, with Daffodil-leaves.*

Narciſſo-leucoium trifolium majus. Inſt. R. H. *The great early Snowdrop.*

Narciſſo-leucoium flore patulo. Inſt. R. H. *Snowdrop with an open Flower.*

Narciſſo-leucoium pratenſe multiflorum. Inſt. R. H. *Many flower'd Meadow Snow-drop.*

Obeliſcotheca integrifolia, radio aureo, umbone atro-rubente. Hort. Elth. *The dwarf* Virginia *Sunflower*, vulgò.

Omphalodes pumila verna, ſymphyti folio. Inſt. *Dwarf ſpring Navelwort, with a Comfrey-leaf.*

Ornithogalum anguſtifolium majus, floribus ex albo vireſcentibus. C. B. P. *Great narrow-leav'd Star of* Bethlehem, *with a greeniſh white Flower.*

Ornithogalum majus ſpicatum album. C. B. P. *The great white Star of* Bethlehem.

Ornithogalum latifolium maximum. C. B. P. *The greateſt broad-leav'd Star of* Bethlehem.

Ornithogalum medium umbellatum anguſtifolium. C. B. P. *The middle narrow-leav'd umbellated Star of* Bethlehem.

Ornithogalum luteum. C. B. P. *The yellow Star of* Bethlehem.

Ornithogalum anguſtifolium ſpicatum maximum. C. B. P. *The ſpiked Star of* Bethlehem, *with narrow Leaves.*

ADDENDA.

Ornithogalum ſpicatum, ſeu comoſum, flore lacteo. C. B. P. *Spiked or branched Star of* Bethlehem, *with a white Flower.*

Ornithogalum luteum, magno flore. C. B. P. *Yellow Star of* Bethlehem, *with a large Flower.*

Ornithogalum umbellatum maximum. C. B. P. *The Star Flower of* Alexandria.

Orobus Venetus. Cluſ. Hiſt. *The* Venetian *Vetch.*

Orobus ſylvaticus, foliis viciæ. C. B. P. *The Everlaſting-tare,* vulgò.

Pæonia folio nigricante ſplendido, quæ mas. C. B. P. *The male Piony.*

Pæonia fœmina, flore pleno rubro majore. C. B. P. *Female Piony, with a large red double Flower.*

Pæonia flore pleno rubro minore. C. B. P. *Smaller double red Piony.*

Pæonia fœmina, flore albo pleno majore. C. B. P. *The larger double white Piony.*

Pancratium maritimum, floribus albis. *The Sea-daffodil,* vulgò.

Pancratium floribus rubris. Lob. *The Red-ſea-daffodil.*

Papaver orientale hirſutiſſimum, magno flore. Tourn. Cor. *Great hairy eaſtern perennial Poppy.*

Phalangium parvo flore, ramoſum. C. B. P. *Branching Spiderwort, with a ſmall Flower.*

Phalangium parvo flore, non ramoſum. C. B. P. *Unbranched Spiderwort, with a ſmall Flower.*

Polemonium vulgare cœruleum. Inſt. R. H. *Blue* Greek *Valerian.*

Polemonium vulgare album. Inſt. R. H. *White* Greek *Valerian.*

Populago flore pleno. Inſt. R. H. *The double marſh Marygold.*

Primula veris flore pleno. Hor. Eyſt. *The double Primroſe.*

Primula veris flore rubro pleno. *The double Red Primroſe.*

Ptarmica vulgaris, pleno flore. Cluſ. Hiſt. *The double Sneezwort.*

Pulſatilla folio craſſiore, & majore flore. C. B. P. *The larger Paſque-Flower.*

Pulſatilla flore minore nigricante. C. B. P. *The ſmaller Paſque-flower.*

Pulſatilla flore albo. C. B. P. *The white Paſque-flower.*

Pulſatilla flore violaceo duplici fimbriato. H. R. Par. *The Paſque-flower, with a double violet-fringed Flower.*

Ranunculus radice tuberoſâ, flore pleno & prolifero. C. B. P. *The double childing Crowfoot.*

Ranunculus montanus, aconiti folio, albo flore minore. C. B. P. *The mountain Crowfoot, with a ſmall white Flower.*

Ranunculus folio aconiti, flore albo multiplici. C. B. P. *The double white mountain Crowfoot.*

Ranunculus hortenſis erectus, flore pleno. C. B. P. *The double upright garden Crowfoot.*

Ranunculus magnus hirſutus repens, flore pleno. J. B. *The great hairy creeping Crowfoot, with a double Flower.*

Ruyſchiana flore cœruleo magno. Boerh. Ind. alt. *Ruyſchiana with a large blue Flower.*

Saxifraga rotundifolia alba, flore pleno. Boerh. Ind. alt. *The double Saxifrage.*

Saxifraga Alpina ericoides, flore cœruleo. Inſt. R. H. *Heathlike Saxifrage of the* Alps, *with a blue Flower.*

Saxifraga ſedi folio anguſtiore ſerrato. Tourn. *Narrow ſaw'd houſeleek-leav'd Saxifrage.*

Saxifraga ſedi folio, flore albo multiplici. Inſt. R. H. *Houſeleek-leav'd Saxifrage, with many white Flowers.*

Saxifraga foliis ſubrotundis ſerratis. Inſt. R. H. *Saxifrage with roundiſh ſaw'd Leaves.*

Scrophularia Hiſpanica, ſambuci folio glabro. Inſt. R. H. Spaniſh *Figwort, with a ſmooth Elder-leaf.*

Scrophularia maxima Luſitanica, ſambuci folio lanuginoſo. Inſt. R. H. *The largeſt* Portugal *Figwort, with a woolly Elder-leaf.*

Thalictrum Alpinum, aquilegiæ foliis, florum ſtaminibus purpuraſcentibus. Inſt. R. H. *Feather'd Columbine, with purple Chives.*

Thalictrum Alpinum majus, aquilegiæ foliis, florum ſtaminibus albis, caule viridi. Inſt. R. H. *Greater feather'd Columbine, with white Chives, and a green Stalk.*

Thalictrum Canadenſe, caule purpuraſcente, aquilegiæ foliis, florum ſtaminibus albis. Inſt. R. H. Canada *feather'd Columbine, with a purpliſh Stalk, and white Chives to the Flowers.*

Valeriana rubra. C. B. P. *Garden red Valerian.*

Valeriana rubra anguſtifolia. C. B. P. *Narrow-leav'd red Valerian.*

Valeriana marina latifolia, ſive major alba. Mor. Hiſt. *Great white Valerian.*

Veratrum flore ſubviridi. Inſt. R. H. *White Hellebore, with a green Flower.*

Veratrum flore atro-rubente. Inſt. R. H. *White Hellebore, with a dark-red Flower.*

Veronica ſpicata Cambro-Britannica, bugulæ ſubhirſuto folio. Raii Syn. *Spiked* Welſh *Speedwell.*

Veronica erecta anguſtifolia. Park. Theat. *Narrow-leav'd upright Speed-well.*

Veronica major latifolia erecta. Mor. Hiſt. *Great broad-leav'd upright Speedwell.*

Veronica multicaulis Pannonica. Inſt. R. H. Hungarian *Speedwell, with many Stalks.*

Veronica longifolia Virginiana altiſſima, foliis ternis profundis ſerratis caulem amplexantibus, ſpicâ multiplici cœruleâ. Royen. *The talleſt long-leav'd* Virginia *Speedwell, with many Spikes of blue Flowers.*

Veronica Virginiana altiſſima, ſpicâ multiplici, floribus candidis. Flor. Bat. *Talleſt* Virginia *Speedwell, with many Spikes of white Flowers.*

Virga aurea anguſtifolia, paniculâ ſpecioſâ, Canadenſis. H. R. Par. *Narrow-leav'd* Canada *Golden-rod, with a ſpecious Panicle.*

Virga aurea rugoſis foliis, Virginiana, paniculâ florum ampliſſimâ. Pluk. Virginia *Golden-rod, with rough Leaves, and an ample Panicle of Flowers.*

Virga aurea Canadenſis, aſteriſci folio. Par. Bat. Canada *Golden-rod, with an Aſteriſcus-leaf.*

Virga aurea Marylandica cæſia glabra. Hort. Elth. *Smooth* Maryland *Golden-rod.*

Virga aurea Americana ſerrata, floribus ad foliorum alas conglobatis. Breyn. *Sawed* American *Golden-rod, with Flowers growing in Cluſters from the Wings of the Leaves.*

Virga aurea limonii folio, paniculâ uno verſu diſpoſitâ. H. R. Par. *Golden-rod with a ſea-lavender Leaf, and the Flowers ranged on one Side of the Panicle.*

Virga aurea foliis anguſtis lævibus non ſerratis, paniculâ ſpecioſâ, floribus magnis. Boerh. Ind. *Smooth narrow-leav'd Golden-rod, with a ſpecious Panicle of large Flowers.*

Virga aurea Americana hirſuta, radice odoratâ. Joncq. *Hairy* American *Golden-rod, with a ſweet Root.*

Ulmaria flore pleno. Jeſſ. *Meadow-ſweet with a double Flower.*

In this Catalogue I have only enumerated ſuch particular Species of Plants, whoſe Flowers are elegant, therefore merit a Place in the Borders of the Flower-garden; and all thoſe Sorts which grow too ramping for the Flower-garden, and only merit a Place in large Wood-walks, will be inſerted in a ſeparate Catalogue. I have alſo omitted mentioning the ſeveral Species of common bulbous and tuberoſe-rooted Flowers, which are known to every Perſon the leaſt acquainted with the Flower-garden, becauſe it would have ſwelled the Catalogue to too great a Bulk; ſo have only mentioned ſuch Sorts as will thrive with very little Culture, neither requiring to be taken up every Year, as moſt of the bulbous-rooted Flowers ſhould; nor to be laid down for an Increaſe, as the Pinks, Carnations, *&c.* require. So that when the Borders are dug between theſe, there ſhould be Care taken not to injure their Roots, and they may remain three or four Years without tranſplanting.

A CATA-

ADDENDA.

A CATALOGUE *of ſuch* PLANTS *as will grow in great Shade under* TREES *in Woodwork or Wilderneſſes.*

AConitum pyramidale multiflorum. H. R. Par. *Common Monkſhood.*

Agrimonia officinarum. Inſt. R. H. *Common Agrimony.*

Anapodophyllon Canadenſe Morini. Inſt. R. H. *May-apple or Ducksfoot.*

Androſæſum maximum fruteſcens. C. B. P. *Tutſan or Park-leaves.*

Anemonoides flore albo. Boerh. Ind. *Wood Anemone with a white Flower.*

Anemonoides flore ex purpurâ rubente. Boerh. Ind. *Wood Anemone with a purpliſh-red Flower.*

Anemonoides flore majore intenſiore cœruleo. Boerh. Ind. *Wood Anemone with a larger deep blue Flower.*

Anemonoides flore albo pleno. Boerh. Ind. *Wood Anemone with a double white Flower.*

Aquilegia ſylveſtris. C. B. P. *Wild Columbine.*

Ariſtolochia clematitis recta. C. B. P. *Upright climbing Birthwort.*

Aſcyrum magno flore. C. B. P. *Sir* George Wheeler's *Tutſan.*

Aſperula odorata, flore albo. C. B. P. *Woodroof with a white Flower.*

Betonica purpurea. C. B. P. *Common Betony.*

Betonica major Danica. Park. Theat. *Great* Daniſh *Betony.*

Bugloſſum latifolium ſempervirens. C. B. P. *Broad-leav'd ever-green Bugloſs.*

Bugula. Dod. *The Bugule.*

Campanula maxima, foliis latiſſimis, flore cœruleo. C. B. P. *Great Throatwort or Bell-flower.*

Campanula vulgatior, foliis urticæ, vel major & aſperior. C. B. P. *Common rough Bell-flower, with Nettle-leaves.*

Campanula rotundifolia. Ger. *Round-leav'd Bell-flower.*

Caryophyllata vulgaris. C. B. P. *Common Avens or Herb-bennet.*

Caryophyllata montana, flore luteo nutante. H. R. Par. *Mountain Avens, with a yellow nodding Flower.*

Caryophyllata Alpina lutea. C. B. P. *Yellow* Alpine *Avens.*

Chamænerion glabrum majus. Inſt. R. H. *Greater ſmooth Looſeſtrife.*

Chamænerion glabrum minus. Inſt. R. H. *Leſſer ſmooth Looſeſtrife.*

Chamænerion anguſtifolium glabrum. Inſt. R. H. *Narrow-leav'd ſmooth Looſeſtrife.*

Chelidonium majus vulgare. C. B. P. *Common Celandine.*

Chelidonium majus, foliis quernis. C. B. P. *Oak-leav'd Celandine.*

Chelone Acadienſis. Act. R. Par.

Chriſtophoriana vulgaris noſtras, racemoſa & ramoſa. Mor. Hiſt. *Herb Chriſtopher.*

Circæa Lutetiana. Lob. Icon. *Inchanters Nightſhade.*

Circæa minima. Col. *The leaſt Inchanters Nightſhade.*

Cyanus montanus latifolius, vel verbaſculum cyanoides. C. B. P. *Greater blue Bottle.*

Dentaria pentaphyllos, foliis mollioribus. C. B. P. *Smooth five-leav'd Toothwort.*

Dentaria heptaphyllos baccifera. C. B. P. *Berry-bearing Toothwort, with ſeven Leaves.*

Digitalis purpurea. J. B. *Common purple Fox-glove.*

Digitalis flore magno candido. J. B. *White Fox-glove.*

Doronicum radice ſcorpii. C. B. P. *Leopards-bane.*

Doronicum plantaginis folio. C. B. P. *Plantain-leav'd Leopards-bane.*

Doronicum plantaginis folio, alterum. C. B. P. *Another plantain-leav'd Leopards-bane.*

Dracunculus polyphyllos. C. B. P. *The Dragon.*

Elichryſum Americanum latifolium. Inſt. R. H. *Common Everlaſting.*

Ephedra maritima major. Inſt. R. H. *Shrubby Horſe-tail.*

Epimedium. Dod. *Barren-wort.*

Galeopſis procerior fœtida ſpicata. Inſt. R. H. *Stinking Hedge-nettle.*

Galeopſis ſive urtica iners, flore luteo. J. B. *Yellow Dead-nettle.*

Geranium batrachoides montanum noſtras. Ger. *Mountain Cranesbill, with a Crowfoot-leaf.*

Geranium ſanguineum, maximo flore. C. B. P. *Bloody Cranesbill.*

Geranium phæum ſive fuſcum, petalis reflexis. Mor. Hiſt. *Brown Cranesbill.*

Helleborine latifolia montana. C. B. P. *Common baſtard Hellebore.*

Helleborine altera, atro-rubente flore. C. B. P. *Baſtard Hellebore, with a dark-red Flower.*

Helleborine flore albo. Ger. *Baſtard Hellebore with a white Flower.*

Helleborine latifolia, flore albo clauſo. Raii. Syn. *Broad-leav'd baſtard Hellebore, with a white cloſed Flower.*

Helleborine foliis prælongis anguſtis acutis. Raii. Syn. *Baſtard Hellebore, with long narrow-pointed Leaves.*

Helleborine montana anguſtifolia purpuraſcens. C. B. P. *Purple narrow-leav'd mountain baſtard Hellebore.*

Helleborus niger fœtitdus. C. B. P. *Bearsfoot or ſtinking black Hellebore.*

Helleborus niger hortenſis, flore viridi. C. B. P. *Green-flower'd black Hellebore.*

Helleborus niger tuberoſus, ranunculi folio, flore luteo. Inſt. R. H. *Winter Aconite.*

Herba Paris. Dod. *Herb True-love or One-berry.*

Hieracium minus, præmorſa radice. Park. Theat. *Long-rooted Hawkweed.*

Hieracium fruticoſum latifolium hirſutum. C. B. P. *Broad leav'd hairy ſhrubby Hawk-weed.*

Hieracium fruticoſum latifolium glabrum. Park. Theat. *Smooth broad-leav'd ſhrubby Hawkweed.*

Hieracium fruticoſum anguſtifolium majus. C. B. P. *Greater narrow-leav'd ſhrubby Hawkweed.*

Hieracium Sabaudum altiſſimum, foliis latis brevibus, crebrius naſcentibus. Mor. Hiſt. *Talleſt* Savoy *Hawkweed, with ſhort broad Leaves.*

Hieracium murorum, folio longiore diſſecto, maculis lividis aſperſo. Vaill. *Long-leav'd ſpotted Hawkweed.*

Hyacinthus Anglicus. Ger. Engliſh *Hair-bells.*

Hyacinthus non ſcriptus, flore candido. Dod. *White* Engliſh *Hair-bells.*

Hyacinthus Anglicus, flore incarnato. Hort. Eyſt. *Freſh-colour'd* Engliſh *Hair-bells.*

Hypericum elegantiſſimum non ramoſum, folio lato. J. B. *Elegant unbranched St. John's-wort, with a broad-Leaf.*

Hypericum minus erectum. C. B. P. *The leaſt upright St. John's-wort.*

Hypericum villoſum erectum, caule rotundo. Inſt. R. H. *Upright hairy St. John's-wort with a round Stalk.*

Jacea nigra vulgaris laciniata. Park. Theat. *Common black Knapweed, with jagged Leaves.*

Iris fœtidiſſima, ſeu xyris. Inſt. R. H. *Stinking Gladwin.*

Leucanthemum vulgare. Inſt. R. H. *Common Ox-eye-daizy.*

Leucanthemum Alpinum majus, rigido folio. Inſt. R. H. *Greater ſtiff Ox-eye daizy of the* Alps.

Leucanthemum radice repente, foliis latioribus ſerratis. Inſt. R. H. *Ox-eye-daizy with a creeping Root, and broad ſaw'd Leaves.*

Lilio-aſphodelus puniceus. Park. Parad. *Red Day-lily.*

Lilium purpuro-croceum majus. C. B. P. *The Orange lily.*

Lilium purpuro-croceum minus. C. B. P. *The ſmall Orange lily.*

Lilium bulbiferum latifolium majus. C. B. P. *The greater bulb-bearing fiery Lily.*

Lilium convallium album. C. B. P. *The white Lily of the Valley.*

Lilium convallium latifolium. C. B. P. *The broad-leav'd Lily of the Valley.*

Lilium convallium flore rubente. C. B. P. *Lily of the Valley, with a pale-red Flower.*

ADDENDA.

Lilium convallium latifolium, flore pleno variegato. Didac. Inſt. R. H. *Broad-leav'd Lily of the Valley, with a double variegated Flower.*

Lychnis ſylveſtris quæ ſaponaria, vulgo. Inſt. R. H. *Sopewort.*

Lychnis ſeu ſaponaria flore pleno. Inſt. R. H. *Double Sopewort.*

Lyſimachia bifolia, flore globoſo luteo. C. B. P. *Two-leav'd Looſeſtriſe, with a yellow globular Flower.*

Melampyrum luteum latifolium. C. B. P. *Broad-leav'd yellow Cow-wheat.*

Melampyrum luteum anguſtifolium. C. B. P. *Narrow-leav'd yellow Cow-wheat.*

Melampyrum purpuraſcente comâ. C. B. P. *Cow-wheat with a purpliſh Top.*

Mercurialis montana teſticulata. C. B. P. *Teſticulated Dogs-mercury.*

Mercurialis montana ſpicata. C. B. *Spiked Dogs-mercury.*

Moſchatellina foliis fumariæ bulboſæ. J. B. *Tuberous Moſchatel.*

Narciſſus ſylveſtris pallidus, calyce luteo. C. B. P. *Wild Daffodil, with a pale Flower, and yellow Cup.*

Narciſſus medio-luteus vulgaris. Park. Theat. *Primroſe-peerleſs.*

Narciſſus latifolius pallidus, calyce amplo aureo. C. B. P. *Broad-leav'd pale Daffodil, with a large golden Cup.*

Narciſſus major totus luteus, calyce prælongo. C. B. P. *The yellow* Spaniſh *Daffodil, with a longer Cup.*

Narciſſus multiplex, totus flavus. C. B. P. *The double yellow Daffodil.*

Nummularia lutea major. C. B. P. *Herb Two-pence.*

Onagra latifolia. Inſt. R. H. *Broad-leav'd Tree-primroſe.*

Onagra latifolia, floribus amplis. Inſt. R. H. *Broad-leav'd Tree-primroſe, with large Flowers.*

Onagra anguſtifolia. Inſt. R. H. *Narrow-leav'd Tree-primroſe.*

Onagra anguſtifolia, caule rubro, flore minori. Inſt. R. H. *Narrow-leav'd Tree-primroſe, with a red Stalk, and a ſmaller Flower.*

Ophris bifolia. C. B. P. *Twyblade.*

Orchis morio mas, foliis maculatis. C. B. P. *Common male Satyrion.*

Orobus ſylvaticus noſtras. Raii Syn. *Wood Bitter-vetch.*

Orobus purpureus ſylvaticus vernus. C. B. P. *Spring purplewood Bitter-vetch.*

Oxys flore albo. Inſt. R. H. *Wood-ſorrel with a white Flower.*

Oxys flore purpuraſcente. Inſt. R. H. *Wood-ſorrel with a purpliſh Flower.*

Pervinca vulgaris latifolia, flore cœruleo. Inſt. R.H. *Broad-leav'd Perywinkle, with a blue Flower.*

Pervinca vulgaris latifolia, flore albo. Inſt. R. H. *Broad-leav'd Perywinkle with a white Flower.*

Pervinca vulgaris anguſtifolia, flore cœruleo. Inſt. R. H. *Common narrow-leav'd Perywinkle with a blue Flower.*

Pervinca vulgaris anguſtifolia, flore albo. Inſt. R. H. *Common narrow-leav'd Perywinkle, with a white Flower.*

Pervinca vulgaris anguſtifolia, flore pleno ſaturatè purpureo. Inſt. R. H. *Common narrow-leav'd Perywinkle, with a double purple Flower.*

Polygonatum latifolium vulgare. C. B. P. *Common broad-leav'd Solomon's-ſeal.*

Polygonatum hellebori albi folio, caule purpuraſcente. Raii. Syn. *Solomon's-ſeal with a white Hellebore-leaf, and a purpliſh Stalk.*

Primula veris vulgaris. Park. Theat. *The common Primroſe.*

Primula veris Conſtantinopolitana, flore albo. Inſt. R. H. *The paper-white Primroſe,* vulgò.

Primula veris flore pleno. Hort. Eyſt. *The double Primroſe.*

Ptarmica vulgaris, folio longo ſerrato, flore albo. J. B. *Sneezwort.*

Ptarmica vulgaris, pleno flore. Cluſ. Hiſt. *Double Sneezwort or Maudlin.*

Pyrola rotundifolia major. C. B. P. *Great round-leav'd Winter-green.*

Pyrola minor. Riv. *Smaller Winter-green.*

Pyrola folio mucronato ſerrato. C. B. P. *Winter-green with a pointed ſawed Leaf.*

Ranunculus nemoroſus dulcis ſecundus Tragi. Park. Theat. *Sweet-wood Crowfoot.*

Scabioſa folio integro glabro, flore cœruleo. Inſt. R. H. *Wood Scabious, or Devils-bit.*

Scabioſa virgæ paſtoris folio. C. B. P. *Scabious with a Teaſel-leaf.*

Scabioſa Alpina, foliis centaurii majoris. C. B. P. Alpine *Scabious, with a greater Centaury-leaf.*

Scordium alterum, ſive ſalvia agreſtris. C. B. P. *Wild Wood-ſage.*

Scrophularia nodoſa fœtida. C. B. P. *Stinking knobbed-rooted Figwort.*

Scrophularia ſcorodoniæ folio. Mor. Hiſt. *Figwort with a wood-ſage Leaf.*

Scrophularia nemorenſis, folio urticæ rugoſo, flore atro-punicante. Hort. Cath. *Wood Figwort with a rough Nettle-leaf, and a dark-red Flower.*

Senecio Jacobææ folio. Mor. H. R. Blæſ. *Groundſel with a Ragwort-leaf.*

Serratula. C. B. P. *Saw-wort.*

Serratula flore candido. C. B. P. *Saw-wort with a white Flower.*

Sium aromaticum, ſiſon officinarum. Inſt. R. H. *Baſtard-hone Parſnip.*

Smilax unifolia humillima. Inſt. R. H. *One-blade.*

Smilax aſpera, fructu rubente. C. B. P. *Rough Bindweed with reddiſh Berries.*

Smilax aſpera, minus ſpinoſa, fructu nigro. C. B. P. *Rough Bindweed, with black Berries.*

Smilax viticulis aſperis, foliis longis anguſtis mucronatis lævibus, auriculis ad baſim rotundioribus. Pluk. Phyt. *Rough-ſtalk'd Bindweed, with long narrow ſmooth Leaves, having round Ears at their Baſe.*

Smilax foliis latis, in margine ſpinoſis, Caroliniana, ſtipite leni quadrato. Pluk. Phyt. *Rough windweed, with broad Leaves from* Carolina.

Solanum ſcandens, ſeu dulcamara. C. B. P. *Woody-nightſhade or Bitter-ſweet.*

Solanum ſcandens, ſeu dulcamara, flore albo. C. B. P. *Woody-nightſhade with a white Flower.*

Tamnus racemoſa, flore minore luteo-palleſcente. Inſt. R. H. *The Male black Briony, with a ſmall yellowiſh Flower.*

Tamnus baccifera, flore majore albo. Inſt. R. H. *The Female or berry-bearing black Briony.*

Tanacetum vulgare luteum. C. B. P. *Common Tanſey.*

Tithymalus characias amygdaloides. C. B. P. *Wood Spurge.*

Tithymalus marinus, folio retuſo, Terracinenſis. Bar. Obſ. *Sea-ſpurge with a broad blunt Leaf.*

Tithymalus follis pini, fortè Dioſcoridis pityuſa. C. B. P. *Pine-leav'd Spurge.*

Tormentilla ſylveſtris. C. B. P. *Tormentil.*

Valeriana ſylveſtris major montana. C. B. P. *Wild mountain Valerian.*

Veronica mas ſupina & vulgatiſſima. C. B. P. *Male Speedwell.*

Veronica chamædrys ſylveſtris dicta. Raii Syn. *Wild Germander or Speedwell.*

Vicia multiflora. C. B. P. *Many-flower'd Vetch.*

Vicia ſylvatica multiflora maxima. Phyt. Brit. *The greateſt many-flower'd Wood-vetch.*

Viola Martia purpurea, flore ſimplici odoro. C. B. P. *Common Violet.*

Viola Martia alba. C. B. P. *The white Violet.*

Viola Martia, obſoleto flore. Park. *Violet with a purpliſh Flower.*

Viola Martia major hirſuta inodora. Mor. Hiſt. *Great hairy Violet without Scent.*

Viola Martia inodora ſylveſtris. C. B. P. *Dog Violet.*

Virga aurea vulgaris. Park. Theat. *Common Golden-rod.*

In this Liſt there are many Plants enumerated, which are eſteemed common Weeds, having little Beauty either in their Leaves or Flowers, ſo would be by many Perſons rejected. But as theſe are deſigned to grow in ſuch cloſe ſhady Places, where better Plants will not thrive, ſo they are not to be deſpiſed, ſince any thing green appears much better, than the Sight of the naked Ground under Trees; therefore it is I have mentioned them. As theſe are moſt of them to be found in the Woods in *England*, ſo from thence their Roots may be tranſplanted at *Michaelmas*; and when they have once taken Root, they will ſpread and multiply exceedingly without any Care; ſome by their creeping Roots, and others from their Seeds, which will ſcatter on the Ground. Moſt of theſe Plants will thrive better on a pretty ſtrong poor Soil, than in light rich Land.

A CATALOGUE *of ſuch* TALL FLOWERING PLANTS *as will thrive under large Trees in open Groves, or on the Sides of Wilderneſs Walks, where they are not too cloſely ſhaded by the Trees.*

Acanthus ſativus, vel mollis Virgilii. C. B. P. *Garden Bearsbreech.*

Acanthus aculeatus. C. B. P. *The prickly Bearsbreech.*

Acanthus Luſitanicus, ampliſſimo folio lucido. Jeſſieu. Portugal *Bearsbreech, with a large ſhining Leaf.*

Acanthus rarioribus & brevioribus aculeis munitus. Inſt. R. H. *Bearsbreech armed with ſhorter Prickles.*

Aconitum lycoctonum luteum. C. B. P. *Yellow Wolfsbane.*

Aconitum Pyrenaicum, ampliore folio tenuius laciniato. Inſt. R. H. Pyrenean *Monkſhood, with a larger Leaf finely jagged.*

Aconitum violaceum ſeu napellus ſecundus. C. B. P. *Violet-coloured Wolfsbane, or Monkſhood.*

Aquilegia hortenſis multiplex, flore magno cœruleo. C. B. P. *Double garden Columbine, with a large blue Flower.*

Aquilegia hortenſis multiplex, flore magno variegato. C. B. P. *Double garden Columbine, with a large variegated Flower.*

Aſphodelus albus ramoſus mas. C. B. P. *White branched Kingſpear.*

Aſphodelus albus ramoſus minor, ſeu ramoſus alter. H. R. Par. *Smaller branching white Kingſpear.*

Aſphodelus albus non ramoſus. C. B. P. *White unbranched Kingſpear.*

Aſphodelus luteus & flore & radice. C. B. P. *Yellow Kingſpear.*

Aſter Novæ Angliæ umbellatus, floribus dilutè violaceis. H. L. New-England *Starwort, with violet-coloured Flowers growing in an Umbel.*

Aſter Novæ Angliæ latifolius paniculatus, floribus ſaturatè violaceis. H. L. *Broad-leav'd* New-England *Starwort, with dark violet-coloured Flowers, growing in a Panicle.*

Aſter Americanus latifolius, puniceis caulibus. H. L. *Broad-leav'd* American *Starwort, with red Stalks.*

Aſter cœruleus ſerotinus fruticeſcens Tradeſcanti. Raii Hiſt. *Late blue ſhrubby Starwort of* Tradeſcant.

Aſter Virginianus ſerotinus, parvo albente flore. Park. *Late* Virginia *Starwort, with a ſmall white Flower.*

Aſter Americanus, belvideræ foliis, floribus ex cœruleo albicantibus, ſpicis prælongis. Pluk. Alm. American *Starwort, with Summer Cypreſs Leaves, and long Spikes of blueiſh-white Flowers.*

Centaurium majus, folio in lacinias plures diviſo. C. B. P. *Greater Centaury, with a Leaf divided into many Parts.*

Centaurium foliis cinaræ. Cornut. *Greater Centaury, with Artichoke-leaves.*

Centaurium Alpinum luteum. C. B. P. *Yellow* Alpine *Centaury.*

Chamænerion latifolium vulgare. Inſt. R. H. *The* French *Willow,* vulgò.

Chamænerion latifolium vulgare, flore albo. Inſt. R. H. *The* French *Willow, with a white Flower.*

Corona imperialis, flore pulchrè rubente. Inſt. R. H. *Crown Imperial, with a fine reddiſh Flower.*

Corona imperialis, flore è luteo palleſcente. Inſt. R. H. *Crown Imperial, with a pale yellow Flower.*

Corona imperialis, flore luteo ſtriato. Inſt. R. H. *Crown Imperial, with a yellow-ſtrip'd Flower.*

Corona imperialis major. Inſt. R. H. *The larger Crown Imperial.*

Corona imperialis, duplici coronâ. Inſt. R. H. *The Crown Imperial, with a double Crown of Flowers.*

Corona imperialis, flore pleno. Inſt. R. H. *Crown Imperial, with a double Flower.*

Corona ſolis perennis & vulgaris. Vaill. *The Everlaſting Sun-flower.*

Corona ſolis trachelii folio, radice repente. Inſt. R. H. *Sun-flower with a throatwort Leaf, and a creeping Root.*

Corona ſolis altiſſima, voſacan dicta. Vaill. *The talleſt Sun-flower called Voſacan.*

Corona ſolis altiſſima, caule alato. Inſt. R. H. *The talleſt Sun-flower, with a winged Stalk.*

Corona ſolis foliis aſperis, tribus vel quaternis ad genicula ſitis. Mor. Hiſt. *Sun-flower with rough Leaves, growing by Threes or Fours at each Knot.*

Corona ſolis foliis amplioribus laciniatis. Inſt. R. H. *Sun-flower with larger jagged Leaves.*

Corona ſolis foliis anguſtioribus laciniatis. Inſt. R. H. *Sun-flower with narrower jagged Leaves.*

Doria Narbonenſium. H. Eyſt. *The* Narbonne *Doria or Ragwort.*

Doria quæ jacobæa, foliis integris & mucronatis. Mor. Hiſt. *Doria or Ragwort, with entire pointed Leaves.*

Doria quæ jacobæa orientalis, limonii folio. Tourn. Cor. *Eaſtern Doria with a ſea-lavender Leaf.*

Echinopus major. J. B. *The Globe Thiſtle.*

Eupatorium cannabinum. C. B. P. *Hemp Agrimony.*

Eupatorium folio oblongo rugoſo, caule purpuraſcente. Inſt. R. H. *Hemp Agrimony, with an oblong rough Leaf, and a purpliſh Stalk.*

Eupatorium Novæ Angliæ urticæ foliis, floribus purpuraſcentibus, maculato caule. Par. Bat. New-England *Hemp Agrimony, with Nettle Leaves, and a ſpotted Stalk.*

Gladiolus major Byzantinus. C. B. P. *The great Corn-flag of* Conſtantinople.

Gladiolus utrimque floridus. C. B. P. *Corn-flag with Flowers growing on every Side of the Stalk.*

Gladiolus floribus uno verſu diſpoſitis, major & procerior, flore purpuro-rubente. C. B. P. *Greater Corn-flag with purpliſh red Flowers growing on one Side of the Stalk.*

Iris vulgaris violacea, ſive purpurea ſylveſtris. J. B. *The common blue Flower-de-luce.*

Iris hortenſis latifolia. C. B. P. *The broad-leav'd garden Flower-de-luce.*

Iris paluſtris lutea. Tab. Icon. *Yellow marſh Flower-de-luce.*

Lilium album, flore erecto, & vulgare. C. B. P. *The common white Lily.*

Lilium album, floribus dependentibus, ſive peregrinum. C. B. P. *The Foreign white Lily, with Flowers hanging downward.*

Lilium floribus reflexis, montanum, flore rubente. C. B. P. *The Martagon or Turks-cap, with a reddiſh Flower.*

Lilium floribus reflexis, montanum, flore pleno. H. R. Monſp. *The double Martagon.*

Lilium floribus reflexis, montanum, flore albicante. C. B. P. *The white Martagon.*

Lilium floribus reflexis, montanum, flore maculis rubris inordinatis aſperſo. C. B. P. *The ſpotted Martagon.*

Lilium floribus reflexis, flore flavo, maculis nigris aſperſo. *The yellow ſpotted Martagon.*

Lyſimachia lutea major, quæ Dioſcoridis. C. B. P. *Yellow Looſeſtrife.*

Lyſimachia Canadenſis, folio jalappæ. Cornut. Canada *Looſeſtrife.*

Malva roſea. C. B. P. *The Holly-hock of all Sorts.*

Narciſſus. *Daffodils of moſt Sorts.*

Pæonia fœmina, flore pleno rubro majore. C. B. P. *The great double red Piony.*

Pæonia flore exalbido pleno, major. C. B. P. *The great double Piony, with a pale Flower.*

Pœonia flore pleno rubro minore. C. B. P. *The ſmall double red Piony.*

Polygonatum latifolium, hellebori albi foliis. C. B. P. *Broad-leav'd Solomon's-ſeal, with white Hellebore-leaves.*

Polygonatum latifolium, flore duplici odoro. H. R. Par. *Broad-leav'd Solomon's ſeal, with a double ſweet Flower.*

ADDENDA.

Ruſcus myrtifolius aculeatus. Inſt. R. H. *Kneeholm or Butchers-broom.*

Ruſcus latifolius, fructu folio innaſcente. Inſt. R. H. *Broad-leav'd* Alexandrian *Laurel, with the Fruit growing on the Leaf.*

Ruſcus anguſtifolius fructu folio innaſcente. Inſt. R. H. *Narrow-leav'd* Alexandrian *Laurel, with the Fruit growing on the Leaf.*

Ruſcus anguſtifolius, fructu ſummis ramulis innaſcente. Inſt. R. H. *Narrow-leav'd* Alexandrian *Laurel, with Fruit growing at the Ends of the Branches.*

Valeriana hortenſis, phu folio oluſatri Dioſcoridis. C. B. P. *Garden Valerian, or Phu of* Dioſcorides.

Veronica major latifolia erecta. Mor. Hiſt. *Greater broad-leav'd upright Speedwell.*

Veronica erecta anguſtifolia. Park. Theat. *Upright narrow-leav'd Speedwell.*

Veronica multicaulis Pannonica. Inſt. R. H. Hungarian *Speedwell with many Spikes.*

Virgo aurea Novæ Angliæ altiſſima, paniculis nonnunquam reflexis. Flor. Bat. *The talleſt* New-England *Golden-rod, with bending Spikes.*

Virga aurea altiſſima ſerotina, paniculâ ſpecioſâ patulâ. Rand. *The talleſt late-flowering Golden-rod, with a ſpecious ſpreading Spike.*

Virga aurea Marylandica, ſpicis florum racemoſis, foliis integris ſcabris. Martyn. Maryland *Golden-rod, with branching Spikes of Flowers and entire rough Leaves.*

Virga aurea Virginiana, foliis anguſtioribus aſperis, paniculâ minus ſpecioſâ. Pluk. Alm. Virginian *Golden-rod, with rough narrow Leaves and a leſs ſpecious Panicle.*

Virga aurea rugoſis foliis, Virginiana, paniculâ florum ampliſſimâ. Pluk. *Rough-leav'd* Virginia *Golden-rod, with the largeſt Panicles of Flowers.*

Virga aurea Canadenſis, aſteriſci folio. Par. Bat. Canada *Golden-rod, with an Aſteriſcus Leaf.*

Virga aurea Americana ſerrata, floribus ad foliorum alas conglobatis. Breyn. prod. American *ſawed Golden-rod, with Flowers growing in Cluſters from the Wings of the Leaves.*

Virga aurea Noveboracenſis glabra, caulibus rubentibus, foliis anguſtis glabris. Flor. Bat. *Smooth* New-England *Golden-rod, with red Stalks, and narrow ſmooth Leaves.*

Virga aurea floribus fiſtuloſis, ſenecionis inſtar, foliis anguſtioribus non ſerratis. Hiſt. Ox. *Golden rod with piped Flowers reſembling Groundſel, and narrow entire Leaves.*

Virga aurea Novæ Angliæ, foliis longiſſimis glabris. Flor. Bat. New-England *Golden-rod, with very long ſmooth Leaves.*

Theſe Plants having abiding Roots, when they are well eſtabliſhed in the Ground, will maintain themſelves without Care, and only require to have the great Weeds kept down from over-ſpreading them; and if the Ground is dug about them every *Spring*, it will cauſe them to flower ſtrong.

A CATALOGUE *of ſuch* PLANTS *as will not live in the open Air in* Winter, *but only require to be protected from ſevere Froſt; therefore ſhould have as much free Air as poſſible in mild Weather.*

Acetoſa arboreſcens, ſubrotundo folio, ex Inſulis Fortunatis. Pluk. Phyt. *The Sorrel-tree.*

Adhatoda Zeylanenſium. H. L. *The Malabar-nut.*

Adhatoda Indica, folio ſaligno, flore albo. Boerh. Ind. *The Snap-tree.*

Alaternoides Africana, lauri ſerratæ folio. Com. Præl. African *Baſtard-alaternus, with a ſaw'd Bay Leaf.*

Alaternoides Africana, ericæ foliis, floribus albicantibus & muſcoſis. H. A. African *Baſtard-alaternus, with Heath Leaves and white Flowers.*

Alaternoides Africana, telephii legitimi imperati folio, flore viridi. H. A. African *Baſtard-alaternus, with a true Orpine Leaf and a green Flower.*

Alcea Afra fruteſcens, folio groſſulariæ, flore parvo rubro. Boerh. Ind. alt. *Shrubby* African *Vervain-mallow, with a Gooſeberry Leaf and a ſmall red Flower.*

Alkekengi fructu parvo verticillato. Inſt. R. H. *Shrubby Winter-cherry, with ſmall Fruit growing in Whorles.*

Aloe Americana muricata. J. B. *The common* American *Aloe.*

Anemonoſpermos Africana, folio jacobææ, flore luteo extus puniceo. Boerh. Ind. African *Anemonoſpermos, with a Ragwort Leaf and a yellow Flower, of a reddiſh Colour on the Outſide.*

Anemonoſpermos Africana, cardui benedicti folio, florum radiis intus albicantibus. H. A. African *Anemonoſpermos, with a Carduus Leaf, and the Rays of the Flowers white on their Inſide.*

Anemonoſpermos Afra, folio jacobææ tenuiter laciniato, flore aurantio pulcherrimo. Boerh. Ind. alt. African *Anemonoſpermos, with a finely jagged Ragwort Leaf, and a beautiful Orange-colour'd Flower.*

Anemonoſpermos Afra, folio oblongo ſerrato rigido, flore intus ſulphureo, extus puniceo. Boerh. Ind. alt. African *Anemonoſpermos, with an oblong ſtiff ſawed Leaf, and a Flower of a Brimſtone Colour within, and a purpliſh on the Outſide.*

Apocynum erectum fruticoſum, folio ſubrotundo viridante. Par. Bat. *Upright ſhrubby Dogsbane, with a roundiſh green Leaf.*

Apocynum erectum Africanum, folio ſalicis anguſto glabro, fructu villoſo. Par. Bat. *Upright* African *Dogsbane, with a narrow ſmooth Willow Leaf, and a hairy Fruit.*

Apocynum Afrum ſcandens, folio rotundo ſubincano nummulariæ. Boerh. Ind. alt. *Climbing* African *Dogsbane, with an Herb-two-pence Leaf whitiſh underneath.*

Ariſtolochia piſtolochia dicta. C. B. P. *Ever-green Birthwort.*

Ariſtolochia piſtolochia altera. J. B. *Another ever-green Birthwort.*

Ariſtolochia violæ fruticoſæ foliis, Virginiana, cujus radix ſerpentaria dicitur. Pluk. Phyt. *The* Virginia *Snakeroot.*

Arum Africanum, flore albo odorato. Par. Bat. prod. African *Arum, with a white ſweet Flower.*

Arundo Indica variegata, ſeu Laconica Theophraſti. C. B. P. *The ſtrip'd Cane.*

Aſcyron Balearicum fruteſcens, maximo flore luteo, foliis minoribus ſubtus verrucoſis. Salvador. *Shrubby St. Peter's-wort, with a large yellow Flower, and very ſmall warted Leaves.*

Aſparagus aculeatus, ſpinis horridus. C. B. P. *Prickly Aſparagus.*

Aſparagus Africanus ſcandens, myrti folio anguſtiore. Hort. Piſſ. *Climbing* African *Aſparagus, with a narrow Myrtle Leaf.*

Aſparagus Africanus tenuifolius, viminalibus virgis, foliis laricis inſtar ex uno puncto numeroſis, ſtellatim diſpoſitis. Pluk. Al. *Narrow-leav'd* African *Aſparagus, with ſlender Shoots and Leaves like the Larch-tree, ariſing many from one Centre, which expand like a Star.*

Aſteriſcus fruteſcens, leucoii foliis ſericeis & incanis. Hort. Elth. *Shrubby Aſteriſcus, with ſilvery Leaves.*

Aſteriſcus fruteſcens, leucoii foliis viridibus & ſplendentibus. Hort. Elth. *Shrubby Aſteriſcus, with ſhining green Leaves.*

Barba Jovis pulchrè lucens. J. B. *Jupiter's-beard, or Silver-buſh.*

Barba Jovis Africana, foliis viridibus pinnatis, flore cœruleo. Boerh. Ind. alt. African *Jupiter's-beard, with green winged Leaves, and a blue Flower.*

Barba Jovis Græca, linariæ folio argenteo, ampliori flore luteo parvo. Tourn. Cor. Greek *Jupiter's-beard, with a broad ſilvery toad-flax Leaf, and a ſmall yellow Flower.*

Bryonia Africana glabra, foliis in profundas lacinias diviſis, flore luteo. Olden. *Smooth* African *Briony, with Leaves deeply jagged, and a yellow Flower.*

Calamintha incana, ocymi foliis. C. B. P. *Hoary Calamint, with Baſil Leaves.*

Caltha Africana, foliis croci anguſtis, florum petalis externè purpuraſcentibus, internè albis. Boerh. Ind. alt. African *Marygold with narrow Saffron Leaves, and Flowers whoſe Petals are purple on their Outſide, and white within.*

Calthoides Africana, glaſti folio. Jeſſieu. African *Baſtard-marygold, with a Woad Leaf.*

Cannacorus

ADDENDA.

Cannacorus latifolius vulgaris. Inſt. R. H. *Common broad-leav'd* Indian *Reed.*

Chenopodium ambroſoides Mexicanum. Inſt. R. H. *Oak of* Jeruſalem, *vulgo.*

Chenopodium ambroſoides Mexicanum fruticoſum. Boerh. Ind. alt. *Shrubby Oak of* Jeruſalem, *vulgo.*

Chenopodium ſempervirens, foliis tenuiter laciniatis. Hort. Elth. *Ever-green Oak of* Jeruſalem, *with finely jagged Leaves.*

Chryſanthemoides Africanum, populi albæ foliis. Mem. Acad. Scien. African *hard-ſeeded Chryſanthemum, with white Poplar Leaves.*

Ciſtus ladanifera Hiſpanica, ſalicis folio, flore candido. Inſt. R. H. Spaniſh *Gum-ciſtus, with a white Flower.*

Ciſtus ladanifera Hiſpanica, ſalicis folio, flore albo maculâ punicante inſignito. Inſt. R. H. *Willow-leav'd* Spaniſh *Gum-ciſtus, with a ſpotted Flower.*

Ciſtus fœmina, folio ſalviæ, elatior & rectus virgis. C. B. P. *Broad-leav'd Gum-ciſtus,* vulgo.

Ciſtus ledon, foliis populi nigræ, major. C. B. P. *Great Gum-ciſtus, with black Poplar Leaves.*

Ciſtus ledon, foliis populi nigræ minor. C. B. P. *Small Gum-ciſtus, with black Poplar Leaves.*

Ciſtus ledon latifolium Creticum. J. B. *Broad-leav'd Gum-ciſtus of* Crete.

Ciſtus ledon hirſutum. C. B. P. *Hairy Gum-ciſtus.*

Clutia Æthiopica fruteſcens, portulacæ folio, flore ex albido vireſcente. Boerh. Ind. alt. *Shrubby* Æthiopian *Clutia, with a Purſlane Leaf and a greeniſh-white Flower.*

Colutea Æthiopica, flore phœnicio, folio barbæ Jovis. Breyn. Cent. Æthiopian *Bladder-ſenna, with a Scarlet Flower and a Silver-buſh Leaf.*

Coma aurea Africana fruticans, foliis linariæ anguſtis. major. Hort. Amſt. *Shrubby* African *Goldylocks, with narrow toad-flax Leaves.*

Coma aurea Africana fruticans, foliis glaucis in extremitate trifidis. Hort. Amſt. *Shrubby* African *Goldylocks, with Sea-green Leaves divided into three Parts at their Extremities.*

Coma aurea Africana fruticans, foliis crithmi marini. Hort. Amſt. *Shrubby* African *Goldylocks, with Samphire Leaves.*

Coma aurea Africana fruticans, foliis glaucis longis tenuibus multifidis, apice pinnularum trifido. Boerh. Ind. alt. *Shrubby* African *Goldylocks, with long narrow Leaves divided into many Parts, each being trifid.*

Convolvulus major rectus Creticus argenteus. Mor. Hiſt. *Great upright Convolvulus, with ſilvery Leaves.*

Convolvulus Canarienſis ſempervirens, folio molli incano, flore ex albo purpuraſcente. Hort. Amſt. *Ever-green* Canary *Bindweed, with a Sage Leaf and a purpliſh Flower.*

Conyza Africana fruteſcens, foliis ſalviæ, odoræ camphoræ. Inſt. R. H. African *ſhrubby Fleabane, with a Sage Leaf ſmelling like Roſemary.*

Cyclamen hyeme & vere florens, folio anguloſo, amplo flore albo, baſi purpureâ, Perſicum dictum. H. R. Par. *The* Perſian *Sow-bread, with a large white Flower having a purple Bottom.*

Cyclamen hyeme & vere florens, folio anguloſo, amplo flore carneo, baſi purpureâ. H. R. Par. Perſian *Sowbread, with a large Fleſh-colour'd Flower, having a purple Bottom.*

Cytiſus hirſutus. J. B. *Hoary Tree-trefoil.*

Cytiſus ſpinoſus. H. L. *Prickly baſe Tree-trefoil.*

Cytiſus minoribus foliis, ramulis tenellis villoſis. C. B. P. *Woolly baſe Tree-trefoil, with very ſmall Leaves.*

Cytiſus Monſpeſſulanus, medicæ folio, ſiliquis denſe congeſtis & villoſis. Inſt. R. H. Montpelier *baſe Tree-trefoil, with thick hairy Pods growing in Cluſters.*

Cytiſus foliis argenteis. Wheel. Itin. *Silvery-leav'd baſe Tree-trefoil.*

Cytiſus Africanus hirſutus anguſtifolius. Old. *Narrow-leav'd, hairy* African *baſe Tree-trefoil.*

Cytiſus Africanus argenteus, flore atro-purpureo. Old. *Silvery* African *baſe Tree-trefoil, with a dark purple Flower.*

Cytiſus ſpinoſus, ſiliquâ villoſâ incana. Tourn. Cor. *Prickly baſe Tree-trefoil, with hoary Pods.*

Dictamnus Creticus. C. B. P. *Dittany of* Crete.

Dictamnus Montis Sipyli, origani foliis. Flor. Bat. *Dittany of* Mount Sipylus, *with wild Marjoram-leaves.*

Doria Africana arboreſcens, craſſius & ſucculentis foliis atriplicem referentibus. Boerh. Ind. alt. *Shrubby* African *Doria, with fleſhy Leaves like thoſe of Orach.*

Doria quæ jacobæa Africana fruteſcens, coronopi folio. Hort. Amſt. African *ſhrubby Doria, with a bucks-horn Leaf.*

Doria quæ jacobæa Africana, hederæ terreſtris folio, repens. Hort. Amſt. African *trailing Doria, with a ground-ivy Leaf.*

Elichryſum orientale. C. B. P. *The yellow Everlaſting-flower,* vulgo.

Elichryſum Africanum, folio oblongo, ſubtus cano, ſupra viridi, flore luteo. Boerh. Ind. alt. African *Eternal, with an oblong Leaf, white underneath, and a yellow Flower.*

Elchryſum Africanum, folio oblongo anguſto, flore rubello, poſtea aureo. Boerh. Ind. alt. African *Eternal, with a narrow oblong Leaf, and a reddiſh Flower, which afterward changes yellow.*

Euonymo adfinis Æthiopica ſempervirens, fructu globoſo ſcabro, foliis ſalicis rigidis ſerratis. H. L. *Ever-green* Æthiopian *Spindle-tree, with a rough globular Fruit, and a ſtiff ſawed Willow-leaf.*

Eupatorium Americanum ſcandens, haſtato magis acuminato folio. Vaill. *Climbing* American *Hemp-agrimony, with a ſpear-ſhap'd Leaf.*

Eupatorium Americanum, teucrii folio, flore niveo. Vaill. American *Hemp-agrimony, with a Germander-leaf, and a ſnowy Flower.*

Fabago Africana arboreſcens, flore ſulphureo, fructu rotundo. Com. Rar. African *Tree-bean-caper, with a Brimſtone-flower, and a round Fruit.*

Fabago Afra fruteſcens minor, flore flavo magno, unguibus petalorum fuſcis. Boerh. Ind. alt. *Smaller ſhrubby Bean-caper, with a large yellow Flower, having dark Spots in the Bottom.*

Frangula ſempervirens, folio rigido ſubrotundo. Hort. Elth. *Ever-green berry-bearing alder, with a ſtiff roundiſh Leaf.*

Geranium Africanum arboreſcens, ibiſci folio rotundo, carlinæ odore. H. L. African *Tree Cranesbill, with a round Mallow-leaf, ſmelling like the Carline-thiſtle.*

Geranium Africanum arboreſcens, ibiſci folio anguloſo, flore amplo purpureo. Act. Phil. African *Tree Cranesbill, with an angular Mallow-leaf, and a large purple Flower.*

Geranium Africanum arboreſcens, alchimillæ hirſuto folio, floribus rubicundis. Com. Præl. African *Tree Cranesbill, with a hairy Ladies-mantle-leaf, and reddiſh Flowers.*

Geranium Africanum arboreſcens, alchimillæ hirſuto folio elegantiſſimè variegato, floribus rubicundis. Com. Præl. African *Tree Cranes-bill, with a hairy Ladies-mantle-leaf, curiouſly variegated, and red Flowers.*

Geranium Africanum arboreſcens, malvæ folio plano lucido, flore elegantiſſimo kermeſino. Di Van Leur. Boerh. Ind. *The ſcarlet Geranium,* vulgo.

Geranium Africanum fruteſcens, malvæ folio odorato laciniato. H. L. *Shrubby* African *Cranesbill, with a jagged ſweet-ſcented Mallow-leaf.*

Geranium Africanum fruteſcens, malvæ folio laciniato, odorato inſtar meliſſæ, flore purpuraſcente. H. L. *Shrubby* African *Cranesbill, with a jagged Mallow-leaf ſmelling like Balm, and a purpliſh Flower.*

Geranium Africanum fruteſcens, folio craſſo & glauco, acetoſæ ſapore. Com. Præl. *Shrubby* African *Cranesbill, with a fleſhy ſea-green Leaf, taſting like Sorrel.*

Geranium Africanum, folio alceæ, flore coccineo fulgidiſſimo. Boerh. Ind. African *Cranesbill, with a Vervain-mallow-leaf, and a deep ſcarlet Flower.*

Geranium Africanum, foliis inferioribus aſari, ſuperioribus ſtaphidis agriæ maculatis ſplendentibus, & acetoſæ ſaphore. Com. Præl. African *Cranesbill, whoſe upper Leaves are like Aſarabacca, and the under Leaves like Staveſacre.*

Geranium Africanum, alchimillæ hirſuto folio, floribus albidis. H. L. African *Cranesbill, with a hairy Ladies-mantle-leaf, and whitiſh Flowers.*

Geranium Africanum, folio malvæ craſſo molli odoratiſſimo, floſculo albo. Boerh. Ind. alt. African *Cranesbill, with a thick ſoft ſweet-ſcented Mallow-leaf, and a ſmall white Flower.*

Geranium Africanum arboreſcens, malvæ folio mucronato, petalis florum inferioribus vix conſpicuis. Act. Phil. African *Tree Cranesbill, with a pointed Mallow-leaf, and the two under Petals of the Flower ſcarce diſcernible.*

Geranium Africanum fruteſcens, chelidonii folio, petalis florum anguſtis albidis, caudice carnoſo. Act. Phil. *Shrubby* African *Cranesbill, with a Celandine-leaf, and a fleſhy Stalk.*

Geranium Africanum noctu olens, tuberoſum & nodoſum, aquilegiæ foliis. H. L. *Night-ſmelling* African *knobby Cranesbill, with Columbine-leaves.*

Geranium Africanum noctu olens, radice tuberoſâ, triſte. Corn. *Night-ſmelling* African *Cranesbill, with a tuberous Root.*

ADDENDA.

Geranium Africanum noctu olens, radice tuberoſâ, foliis paſtinacæ incanis lanuginoſis anguſtioribus, flore pallide flaveſcente. H. L. *Night-ſmelling* African *Cranesbill, with narrow hoary Carrot-leaves, and a yellowiſh Flower.*

Geranium Africanum noctu olens, folio vitis hirſuto, tuberoſum. Hort. Amſt. *Tuberous* African *night-ſmelling Cranesbill, with a hairy Vine-leaf.*

Guidonia ulmi foliis, flore roſeo. Plum. Nov. Gen. *Guidonia with Elm-leaves, and a Roſe-flower.*

Heliotropium Canarienſe arboreſcens, ſcorodoniæ folio. Hort. Amſt. *Tree* Canary *Turnſole, with a wood-ſage Leaf.*

Heliotropium arboreſcens, folio teucrii, flore albo, in capitula denſa congeſto. Boerh. Ind. alt. *Tree-turnſole with a Germander-leaf, and a white Flower, collected in a thick Head.*

Hermannia fruteſcens, folio oblongo ſerrato. Inſt. R. H. *Shrubby Hermannia, with an oblong ſaw'd Leaf.*

Hermannia fruteſcens, folio oblongo ſerrato latiori. Boerh. Ind. *Shrubby Hermannia, with a broader ſawed Leaf.*

Hermannia fruteſcens, folio ibiſci hirſuto molli, caule piloſo. Boerh. Ind. *Shrubby Hermannia, with a ſoft hairy Mallow-leaf, and a hairy Stalk.*

Hermannia fruteſcens, folio groſſulariæ parvo hirſuto. Boerh. Ind. alt. *Shrubby Hermannia, with a ſmall hairy Gooſeberry-leaf.*

Hermannia fruteſcens, folio lavendulæ latiori & obtuſo, flore parvo aureo. Boerh. Ind. alt. *Shrubby Hermannia, with a broad and blunt Lavender-leaf, and a ſmall golden Flower.*

Jacea Epidaurica, candidiſſima & tomentoſa. Inſt. R. H. *White woolly Knapweed.*

Jacobæa Africana fruteſcens, foliis inciſis & ſubtus cineraceis. Com. Prælud. *Shrubby* African *Ragwort, with cut Leaves, which are aſh-coloured on their Underſide.*

Jaſminum Hiſpanicum, flore majore, externè rubente. J. B. *The* Spaniſh *Jaſmine.*

Jaſminum Azoricum trifoliatum, flore albo odoratiſſimo. H. Amſt. *The ivy-leav'd* Azorian *Jaſmine.*

Jaſminum Africanum, folio ilicis, flore ſolitario, ex alis foliorum proveniente, albo. Com. Præl. African *Jaſmine, with an Ilex-leaf.*

Laurus latifolia πλατύτερα Dioſcoridis. C. B. P. *The broad-leav'd* Indian *Bay.*

Laurus Indica. Ald. Hort. *The Royal-bay,* vulgò.

Laurus tenuifolia. Tab. Icon. *The narrow-leav'd Bay.*

Lentiſcus vulgaris. C. B. P. *The Maſtick-tree.*

Leonurus perennis Africanus, ſideritidis folio, flore phœnicio majore. Breyn. prod. African *Lions-tail, with a large red Flower.*

Leonurus minor, Capitis Bonæ Spei, vulgò. Boerh. Ind. alt. *The ſmaller Lions-tail, from the* Cape of Good Hope.

Leonurus perennis Africanus, ſideritidis folio variegato, flore phœnicio majore. *The ſtrip'd Leonurus, or Lions-tail.*

Leucanthemum Canarienſe, foliis chryſanthemi, pyrethri ſapore. Inſt. R. H. Canary *Ox-eye-daizy, commonly called Pellitory of* Spain.

Limonium Siculum lignoſum, gallas ferens & non ferens. Bocc. Rar. Plant. *Shrubby Sea-lavender of* Sicily.

Limonium Ægyptiacum lignoſum, halimi folio. Jeſſieu. Ægyptian *woody Sea-lavender, with a ſea-purſlane Leaf.*

Lotus polyceratos fruticoſa Cretica argentea, ſiliquis longiſſimis propendentibus rectis. Mor. Hiſt. *Shrubby ſilvery Lotus of* Crete, *with very long Pods.*

Majorana rotundifolia ſcutellata exotica. H. R. Par. *Round-leav'd foreign Marjoram.*

Marrubium Hiſpanicum ſupinum, calyce ſtellato & aculeato. Inſt. R. H. *Low Spaniſh Hore-hound, with a ſtarry and prickly Empalement.*

Marum Syriacum vel Creticum. H. L. *The* Syrian *Marum or Cats-thyme.*

Medicago trifolia fruteſcens incana. Inſt. R. H. *Hoary ſhrubby Moon-trefoil.*

Moldavica Americana trifolia, odore gravi. Inſt. R. H. *Three-leav'd* Moldavian *Balm, commonly called Balm of* Gilead.

Nerium floribus rubeſcentibus. C. B. P. *The red Oleander, or Roſe-bay.*

Nerium floribus albis. C. B. P. *The white Oleander, or Roſe-bay.*

Polygala Africana fruteſcens, buxi folio, maximo flore. Olden. *Shrubby* African *Milkwort, with a Box-leaf, and a large Flower.*

Ptarmica incana, pinnulis criſtatis. Tourn. Cor. *Hoary Sneezwort, with creſted Wings to the Leaves.*

Ptarmica orientalis, foliis criſtatis. Tourn. Cor. *Eaſtern Sneezwort, with creſted Leaves.*

Ptarmica orientalis, ſantolinæ folio, flore majore. Tourn. Cor. *Eaſtern Sneezwort, with a lavender-cotton Leaf, and a larger Flower.*

Ptarmica orientalis, foliis tanaceti incanis, flore aureo. Tourn. Cor. *Eaſtern Sneezwort, with hoary Tanſey-leaves, and a golden Flower.*

Ptarmica orientalis, foliis argenteis conjugatis. Tourn. Cor. *Eaſtern Sneezwort, with ſilvery Leaves growing oppoſite.*

Ptarmica Cretica fruteſcens, ſantolinæ facie. Inſt. R. H. *Shrubby Sneezwort of* Crete, *with the Face of Lavender-cotton.*

Rapuntium maximum, coccineo ſpicato flore. Col. in Recc. *Great ſcarlet Cardinal-flower.*

Rapuntium Americanum, flore dilutè cœruleo. Acad. Reg. S. *The blue Cardinal-flower.*

Rhus Africanum trifoliatum majus, foliis ſubtus argenteis acutis margine inciſis. Pluk. Phyt. *Three-leav'd* African *Sumach, with Leaves which are whitiſh on their Underſides, and cut ſharply on their Edges.*

Rhus Africanum trifoliatum minus glabrum, ſplendente folio ſubrotundo integro, fortè lentiſcus Africanus triphyllos quorundam. Pluk. Phyt. *Leſſer three-leav'd* African *Sumach, with a ſmooth ſhining roundiſh Leaf.*

Rhus Africanum trifoliatum majus, folio ſubrotundo integro. *Greater three-leav'd* African *Sumach, with a roundiſh intire Leaf.*

Ruſcus latifolius, foliorum ſinu florifer & fructifer. Hort. Elth. *Broad-leav'd* Alexandrian *Laurel, bearing Flowers and Fruit on the Edges of the Leaves.*

Salvia orientalis latifolia, abſinthium redolens, flore carneo magno. Boerh. Ind. alt. *Broad-leav'd eaſtern Wormwood-ſage, with a large fleſh-coloured Flower.*

Salvia Africana fruteſcens, folio ſubrotundo glauco, flore aureo magno. Hort. Amſt. *Shrubby* African *Sage, with a roundiſh ſea-green Leaf, and a large golden Flower.*

Salvia Africana fruteſcens, folio ſcorodoniæ, flore violaceo. Hort. Amſt. *Shrubby* African *Sage, with a wood-ſage Leaf, and a violet-coloured Flower.*

Scabioſa Africana fruteſcens. Par. Bat. African *Tree Scabious.*

Scabioſa ſtellata, folio non diſſecto. C. B. P. *Starry Scabious, with an undivided Leaf.*

Scabioſa Sicula fruticans, laureolæ folio ſubtus incano. Inſt. R. H. *Shrubby* Sicilian *Scabious, with a ſpurge-laurel Leaf, hoary on the Underſide.*

Scilla vulgaris, radice rubra. C. B. P. *The red Squill, or Sea-onion.*

Scilla radice albâ. C. B. P. *The white Squill, or Sea-onion.*

Senecio Africanus, folio retuſo. Hort. Cath. African *Groundſel, with a blunt Leaf.*

Senecio Africanus arboreſcens, folio ſerrato. Boerh. Ind. alt. African *Tree-groundſel, with a ſawed Leaf.*

Siliqua edulis. C. B. P. *The Carob, or St. John's-bread.*

Solanum pomiferum fruteſcens Africanum ſpinoſum nigricans, boraginis flore, foliis profunde laciniatis. H. L. *Shrubby* African *Nightſhade, commonly called* Pomum Amoris.

Solanum dulcamarum ſcandens Africanum, foliis craſſis hirſutis. Hort. Elth. *Climbing* African *Nightſhade, with thick hairy Leaves.*

Solanum fruticoſum bacciferum. C. B. P. *Shrubby berry-bearing Nightſhade, commonly called* Amomum Plinii.

Spartium tertium, flore albo. C. B. P. *The white Spa*niſh *Broom.*

Spartium orientale humile, fructu villoſo & roſtrato. Tourn. Cor. *Dwarf eaſtern Broom, with a hoary beak'd Fruit.*

Spartium orientale, ſiliquâ compreſſâ glabrâ & annulatâ. Tourn. Cor. *Eaſtern Broom, with a ſmooth flat round Pod.*

Spirea Africana, foliis piloſis. Com. Rar. Plant. African *Spirea, with hairy Leaves.*

Staphylodendron Africanum, folio ſingulari lucido. Par. Bat. African *Bladder-nut, with a ſingle ſhining Leaf.*

Styrax folio mali cotonei. C. B. P. *The true Storax-tree.*

Tana-

ADDENDA.

Tanacetum Africanum arboreſcens, foliis lavendulæ, multifido folio. Hort. Amſt. African *Tree-tanſey, with Leaves like the multifid Lavender.*

Tanacetum Africanum fruticans multiflorum, foliis tanaceti vulgaris decuplo minoribus. Boerh. Ind. *Shrubby* African *many flower'd Tanſey, with Leaves like the common Tanſey, but ten times ſmaller.*

Tetragonocarpos Africana fruticans, foliis longis & anguſtis. Hort. Amſt. *Shrubby* African *Tetragonocarpos, with long narrow Leaves.*

Teucrium Bæticum. Cluſ. Hiſp. Spaniſh *Tree-germander.*

Teucrium Hiſpanicum, latiore folio. Inſt. R. H. Spaniſh *Tree-germander, with a broader Leaf.*

Thlaſpi montanum ſempervirens. C. B. P. *Ever-green mountain Treacle Muſtard.*

Thlaſpidium fruticoſum, leucoii folio, ſemper florens. Inſt. R. H. *The* Candy *Tuft tree.*

Thlaſpidium Hiſpanicum, ampliore flore, folio craſſo dentato. Hort. Elth. Spaniſh Candy *Tuft-tree, with a larger Flower, and a thick indented Leaf.*

Thymbra legitima. Cluſ. Hiſt. *The true Thymbra of* Cluſius.

Thymbra Sancti Juliani, ſive ſatureia vera. Lob. Icon. *The Thymbra of St.* Julian, *or the true Savory of* Lobel.

Tithymalus Creticus characias anguſtifolius, villoſus & incanus. Tourn. Cor. Candy *Wood ſpurge, with narrow hoary and woolly Leaves.*

Tithymalus arboreus. Alp. Exot. *Tree-ſpurge.*

Tithymalus arboreus altiſſimus, folio ſalicis, caulibus rubentibus. Boerh. Ind. *Talleſt Tree-ſpurge, with a Willow-leaf, and red Stalks.*

Tithymalus arboreus, caule corallino, folio hyperici, pericarpio barbato. Boerh. Ind. alt. *The Spurge, with a Coralline-ſtalk, a St. Johns-wort-leaf, and a bearded Cover to the Fruit.*

Yucca foliis aloes. C. B. P. *The common Yucca, or* Adams *Needle*, vulgo.

Yucca arboreſcens, foliis rigidioribus rectis ſerratis. Hort. Elth. *Tree-yucca, with upright ſtiff ſawed Leaves.*

Yucca draconis folio ſerrato reflexo. Hort. Elth. Carolina *Yucca, with a ſaw'd reflex'd Leaf like the Dragon-tree.*

Ziziphus. Dod. *The Jujube-tree.*

The Plants which are enumerated in this Catalogue, are ſuch as will thrive much better in an open airy Glaſs-caſe, than in a Green-houſe amongſt Orange-trees; becauſe, as theſe are very apt to ſhoot in the *Winter* Seaſon whenever the Weather is mild, ſo if they have not a large Share of free Air admitted to them at ſuch Times, their Shoots will be very weak, and apt to grow mouldy, whenever the Air is excluded from them. And as theſe Plants only require to be protected from Froſt, ſo there will be no occaſion for any artificial Warmth, and conſequently no other Uſe for a Thermometer in the Houſe, than to ſhew the freezing Point, that Shutters or Mats may be put over the Glaſſes, whenever there is Danger of the Froſt entring to the Plants. As moſt of the Plants mentioned in this Liſt, are ſuch as require a pretty large Share of Moiſture, ſo I have omitted ſuch ſucculent Plants, as are apt to rot with too much Wet in *Winter*, tho' they are not in other reſpects more tender than the former; ſo ſhould be placed in ſuch an airy Glaſs-caſe in a Part by themſelves, that they may not receive too much Water, nor imbibe the Moiſture which may ariſe from the other Plants. Therefore I ſhall enumerate theſe ſucculent Plants in the Liſt next following.

ASclepias Africana aizoides. Inſt. R. H. *Fritillaria craſſa*, vulgo.

Aſclepias Africana aizoides, flore pulchrè fimbriato. Com. Præl. *Greater Fritillaria craſſa, with a hairy Flower.*

Cacalianthemum folio nerii glauco. Hort. Elth. *The Cabbage-tree, or Carnation-tree*, vulgò.

Cacalianthemum Africanum, ficoidis folio. African *Cacalianthemum, with a fig-marygold Leaf, commonly called the Balm of* Gilead *Tree.*

Cotyledon Africana fruteſcens, foliis orbiculatis, limbo purpureo cinctis. Inſt. R. H. *Shrubby* African *Navelwort, with round Leaves edged with Purple.*

Cotyledon Afra arboreſcens major, foliis glaucis oblongioribus, flore luteo. Boerh. Ind. alt. *Greater* African *Tree-navelwort, with longer ſea-green Leaves, and a yellow Flower.*

Cotyledon major arboreſcens Afra, foliis orbiculatis glaucis, limbo purpureo, & maculis viridibus ornatis. Boerh. Ind. alt. *Greater* African *Tree-navelwort, with roundiſh Leaves edged with Purple, and ſpotted with Green.*

Cotyledon Africana fruteſcens, folio longo & anguſto, flore flaveſcente. Com. Rar. Plant. *Shrubby* African *Navelwort, with a long narrow Leaf, and a yellowiſh Flower.*

Cotyledon Africana fruteſcens, flore umbellato coccineo. Com. Rar. Plant. *Shrubby* African *Navelwort, with ſcarlet Flowers growing in an Umbel.*

Cotyledon Capenſis, folio ſemiglobato. Hort. Elth. *Navelwort of the* Cape of Good Hope, *with a half round Leaf.*

Craſſula anacampſerotis folio. Hort. Elth. *Craſſula with an Orpine-leaf.*

Craſſula portulacæ facie, arboreſcens. Hort. Elth. *Tree-like Craſſula, with a Purſlane-leaf, commonly called the Purſlane-tree.*

Craſſula cepoſa longifolia. Hort. Elth. *Onion-like Craſſula, with a long Leaf.*

Craſſula cauleſcens, foliis ſempervivi cruciatis. Hort. Elth. *Stalky Craſſula, with ſengreen Leaves, commonly called a Ficoides.*

Craſſula meſembryanthemi facie, foliis longioribus aſperis. Hort. Elth. *Craſſula with the Face of a Ficoides, having long rough Leaves.*

Craſſula orbicularis repens, foliis ſempervivi. Hort. Elth. *Round-creeping Craſſula, with ſengreen Leaves.*

Craſſula portulacæ facie, repens. Hort. Elth. *Creeping Craſſula, with the Appearance of Purſlane.*

Ficoides. *All the Sorts enumerated in the Dictionary.*

Opuntia vulgò herbariorum. J. B. *The common* Indian *Fig.*

Phalangium Africanum, foliis cepaceis, floribus ſpicatis aureis. Boerh. Ind. alt. African *Kingſpear, with Onion-leaves, and golden Flowers growing in Spikes.*

Phalangium Africanum, foliis aloes, floribus luteis ſpicatis. Hort. Elth. African *Kingſpear, with Aloe-leaves, and yellow Flowers growing in Spikes.*

Phalangium Æthiopicum ramoſum, floribus albis, petalis reflexis. Hort. Amſt. *Branching* Æthiopian *Kingſpear, with white Flowers, whoſe Petals are reflexed.*

Sedum majus arboreſcens. J. B. *The Tree-houſleek.*

Sedum majus arboreſcens, foliis elegantiſſimè variegatis tricoloribus. Boerh. Ind. alt. *The ſtrip'd Houſleek-tree.*

Sedum Canarinum, foliis omnium maximis. Hort. Amſt. Canary *Houſleek, with the largeſt Leaves.*

Sedum Afrum montanum, foliis ſubrotundis, dentibus albis ſerratis, confertim natis. Boerh. Ind. alt. African *Houſleek, with roundiſh Leaves indented and ſawed on their Edges.*

Sedum Afrum ſaxatile, foliolis ſedi vulgaris, in roſam verè compoſitis. Boerh. Ind. alt. African *Rock-houſleek, with ſmall Leaves like the common Sort, collected like a Roſe.*

ADDENDA.

A CATALOGUE *of ſuch* PLANTS *as are proper to place in a warm Green-houſe amongſt Orange-trees, which do not require any artificial Heat in* Winter, *but muſt not have ſo large a Share of Air admitted to them, as thoſe Plants before-mentioned.*

ABUTILON Altheoides, flore carneo, fructu globoſo. Hort. Elth. *Abutilon like the* Althæa frutex, *with a fleſh-coloured Flower, and a globular Fruit.*

Aloe Americana minor. Munt. *Small* American *Aloe.*

Aloe Africana cauleſcens, foliis ſpinoſis, maculis ab utraque parte albicantibus notatis. Hort. Amſt. African *ſtalky Aloe, with prickly Leaves marked on every Part with white Spots, commonly called the* Carolina *Aloe.*

Aurantium acri medulla, vulgare. Fer. Heſp. *The* Seville *Orange.*

Aurantium medulla dulci vulgare. Fer. Heſp. *The ſweet* Seville *Orange.*

Aurantium Sinenſe. Fer. Heſp. *The* China *Orange.*

Aurantium criſpo folio. Fer. Heſp. *The curled-leav'd Orange.*

Aurantium criſpo folio, elegantiſſimè variegato. Boerh. Ind. alt. *The ſtrip'd curled leav'd Orange.*

Aurantium corniculatum. Fer. Heſp. *The horned Orange.*

Aurantium folio variegato, vulgare, Anglicum dictum. Boerh. Ind. alt. *The common ſtrip'd-leav'd Orange.*

Aurantium hermaphroditum, partim aurantium, partim citreum. Heſp. Nor. *The Hermaphrodite Orange.*

Aurantium anguſto ſalicis folio dictum. Boerh. Ind. alt. *The willow-leav'd Orange, commonly called the* Turkey *Orange.*

Aurantium anguſto ſalicis folio, elegantiſſime variegato. *The ſtrip'd* Turkey *Orange.*

Aurantium anguſto & acuminato folio, fructu parvo odoratiſſimo, mela roſa dictum. Claric. cult. Plant. *Orange-tree with a narrow pointed Leaf, and a ſmall ſweet-ſcented Fruit, called* Mela Roſa.

Aurantium flore pleno. *The Orange-tree, with a double Flower.*

Aurantium fœtiferum. Fer. Heſp. *The childing Orange.*

Aurantium fructu multiplici. Inſt. R. H. *The cluſter Orange.*

Aurantium Sinicum pumilum. Camell. Syll. *The dwarf* China *Orange, commonly called the Nutmeg Orange.*

Citreum vulgare. Inſt. R. H. *The common Citron.*

Citreum dulci medullâ. Inſt. R. H. *The ſweet Citron.*

Citreum magno fructu. Inſt. R. H. *The large Citron.*

Citreum Florentinum, fructu ſuaviſſimo. Till. *The Chedrati.*

Citreum Florentinum, folio ſinuato & ſerrato, fructu oviformi. Hort. Maur. Florentine *Citron, with an indented and ſawed Leaf, and an egg-ſhap'd Fruit.*

Citreum moſchum redolens, fructu multiformi. Claric. cult. Pl. *Citron ſmelling like Muſk, with a many-ſhap'd Fruit.*

Liguſtrum Capenſe ſempervirens, folio craſſo ſubrotundo. Hort. Elth. *Ever-green Privet from the* Cape, *commonly called the* Hottentot *Cherry.*

Limon vulgaris. Fer. Heſp. *The common Lemon.*

Limon dulci medullâ, vulgaris. Fer. Heſp. *The ſweet Lemon.*

Limon acris. Fer. Heſp. *The Lime or ſour Lemon.*

Limon pyri effigie. Fer. Heſp. *The pear-ſhap'd Lemon.*

Limon citratus. Fer. Heſp. *The citron Lemon.*

Limon citratus, altero fœtus. Inſt. R. H. *The childing Lemon.*

Limon fructu racemoſo. Inſt. R. H. *The cluſter Lemon.*

Limon flore pleno. Boerh. Ind. alt. *The double flowering Lemon.*

Limon vulgaris, foliis ex aureo variegatis. *The gold-ſtrip'd Lemon.*

Limon incomparabilis. Fer. Heſp. *The incomparable Lemon.*

Limon imperialis. Fer. Heſp. *The imperial Lemon.*

Molle. Cluſ. in Monard. *The* Arbor Molle, *or* Peruvian *Maſtick-tree.*

Myrtus latifolia Bætica 1. vel foliis laurinis. C. B. P. *Broad-leav'd* Spaniſh *Myrtle, commonly called the bay-leav'd Myrtle.*

Myrtus latifolia Bætica 2. vel foliis laurinis, confertim naſcentibus. C. B. P. *The orange-leav'd Myrtle,* vulgo.

Myrtus balſamica, foliis mali granatæ. H. L. *Pomegranate-leav'd Myrtle.*

Myrtus foliis odore nucis moſchatæ, cauliculis rubentibus, vulgò odore citri. Schuyl. Cat. *The Nutmeg Myrtle.*

Myrtus anguſtifolia Bætica. C. B. P. *The roſemary-leav'd Myrtle.*

Myrtus odore nucis moſchatæ, cauliculis rubentibus, foliis ex luteo variegatis. *The ſtrip'd Nutmeg Myrtle.*

Myrtus minor vulgaris. C. B. P. *The box-leav'd Myrtle.*

Myrtus minor vulgaris, foliis ex albo variegatis. *The ſtrip'd box-leav'd Myrtle.*

Myrtus foliis minimis & mucronatis. C. B. P. *The thyme-leav'd Myrtle.*

Nerium Indicum anguſtifolium, floribus odoratis ſimplicibus. H. L. Bat. *Narrow-leav'd ſweet-ſcented* Indian *Oleander.*

Nerium Indicum latifolium, floribus odoratis plenis. H. L. *Broad-leav'd* Indian *Oleander, with double ſweet-ſcented Flowers.*

Nerium Indicum, flore variegato odorato pleno. Hort. Amſt. Indian *Oleander, with a double ſtrip'd ſweet-ſcented Flower.*

Staphylodendron Americanum, foliis lauri anguſtis. Plum. American *Bladder-nut, with narrow Bay-leaves.*

Ziziphus argentea Zeylanica, ſpinis carens, Walæmbilla Zeylanenſibus dicta, C. B. P. *Silvery Jujube of* Ceylon, *without Thorns.*

A CATALOGUE *of ſuch* PLANTS *as ſhould be placed in a Stove, but require the leaſt Degree of Heat in* Winter. *Theſe are what are mark'd on Mr.* Fowler's *Botanical Thermometers, as the firſt Claſs of Stove Plants; ſo that the Spirits in the Tube ſhould not be permitted to ſink much below the aſſigned Point, nor muſt they be raiſed more than eight or ten Degrees above it, during the* Winter *Seaſon.*

ACacia vera, J. B. *The true* Egyptian *Acacia.*

Acacia Indica Farneſiana. Ald. *The* Indian *Acacia, with reſinous Pods.*

Acacia non ſpinoſa, flore albo, foliorum pinnis latiuſculis glabris, ſiliquis longis planis. Houſt. *Smooth Acacia, with a white Flower, broad ſmooth Wings to the Leaves, and long flat Pods.*

Acacia cornigera, floribus globoſis. Houſt. *The horned Acacia, with round Flowers.*

Acacia cornigera, floribus oblongis. Houſt. *The horned Acacia, with oblong Flowers.*

Alkekengi Bonarienſe repens, bacca turbinata viſcoſa. H. Elth. *Creeping Winter Cherry of* Buenos Ayres, *with a clammy top-ſhap'd Berry.*

Alkekengi Americanum fruteſcens, fructu globoſo rubro, veſicâ atropurpureâ. Houſt. *Shrubby* American *Winter Cherry,*

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ry, with a round red Fruit, having a purple Bladder over it.

Aloe vulgaris. C. B. P. *The common* Barbados *Aloe.*

Aloe ſuccotrina anguſtifolia ſpinoſa, flore purpureo. Breyn. prod. *The ſuccotrine, or purging Aloe.*

Aloe Africana cauleſcens, foliis ſpinoſis, maculis ab utraque parte albicantibus obſcurioribus, magis glaucis. Boerh. Ind. alt. *Stalky* African *Aloe, with prickly dark-green Leaves, ſpotted on every Side with white.*

Aloe Africana, foliis glaucis, margine & dorſi parte ſuperiore ſpinoſis, flore rubro. Com. Prælud. African *Aloe, with ſea-green Leaves beſet with Prickles on the Edges, and at the Extremity of the under Part, and a red Flower.*

Aloe Africana arboreſcens montana, non ſpinoſa, folio longiſſimo plicatili, flore rubro. Hort. Amſt. *Smooth* African *Tree-aloe, with a long flat Leaf, and a red Flower.*

Aloe Africana cauleſcens, foliis glaucis caulem amplectentibus. Hor. Amſt. African *ſtalky Aloe, with ſea-green Leaves, embracing the Stalk.*

Aloe Africana cauleſcens foliis minus glaucis, caulem amplectentibus, dorſi parte ſupremâ ſpinoſâ. Com. Prælud. *Stalky* African *Aloe, with Leaves embracing of the Stalk, which have Spines on the Back at their Extremity.*

Aloe Africana cauleſcens, foliis glaucis, caulem amplectentibus, latioribus & undequâque ſpinoſis. Com. Præl. *Stalky* African *Aloe, with broader ſea-green Leaves embracing the Stalk, and prickly on every Side.*

Aloe Africana cauleſcens, foliis glaucis brevioribus, caulem amplectentibus, foliorum parte internâ & externâ nonnihil ſpinoſâ. Com. Præl. *Stalky* African *Aloe, with ſhorter ſea-green Leaves embracing the Stalk, and prickly on every Side.*

Aloe Africana cauleſcens, foliis glaucis breviſſimis, foliorum ſummitate internâ & externâ nonnihil ſpinoſâ. Com. Præl. African *ſtalky Aloe, with the ſhorteſt ſea-green Leaves, which are prickly on every Side at their Ends.*

Aloe Africana, flore rubro, folio maculis albicantibus ab utraque parte notato. H. A. *The common Tongue-aloe,* vulgò.

Aloe Africana cauleſcens, folio craſſo obſcurè viridi, ſpinis ad latera & in dorſo armato. Boerh. Ind. alt. African *ſtalky Aloe, with a thick dark-green Leaf, armed with Prickles on the Backſide.*

Aloe Africana, flore rubro, folio triangulari, & verrucis albicantibus ab utrâque parte notato. Hort. Amſt. *The triangular Aloe,* vulgò.

Aloe Africana, foliis planis conjugatis carinatis verrucoſis, caule & flore corallii colore. Boerh. Ind. alt. *The narrow-leav'd Tongue-aloe,* vulgò.

Aloe Africana, foliis planis latioribus conjugatis carinatis, flore rubro. *The broad-leav'd Tongue-aloe,* vulgò.

Aloe Africana, foliis longis conjugatis, ſupra cavis margaritiferis, flore rubro elegantiſſimo. Boerh. Ind. alt. *The pearl-tongue Aloe,* vulgò.

Aloe Africana erecta, rotundo folio parvo, & in acumen acutiſſimum exeunte. Com. Præl. *The upright Aloe, with a ſharp pointed Leaf.*

Aloe Africana erecta triangularis, & triangulari folio viſcoſo. Com. Præl. *The upright triangular Aloe.*

Aloe Africana minima atroviridis, ſpinis herbaceis numeroſis ornata. Boerh. Ind. alt. *The leaſt herbaceous Aloe,* vulgò.

Aloe Africana humilis, foliis ex albo & viridi variegatis. Com. Præl. *The partridge-breaſt Aloe,* vulgò.

Aloe Africana humilis, ſpinis inermibus & verrucis obſita. Com. Præl. *The hedge-hog Aloe.*

Aloe Africana margaritifera minor. Hort. Amſt. *The ſmall Pearl-aloe.*

Aloe Africana, folio in ſummitate triangulari, margaritifera, flore ſubviridi. Hort. Amſt. *The greater Pearl-aloe,* vulgò.

Aloe Africana, breviſſimo craſſiſſimoque folio, flore ſubviridi. Hort. Amſt. *The Cuſhion-aloe,* vulgò.

Aloe Africana humilis arachnoidea. Com. Rar. *The Cob-web-aloe.*

Apocynum Americanum erectum, foliis oblongis acuminatis, floribus ex albo vireſcentibus. Houſt. *Upright* American *Dogsbane, with oblong pointed Leaves, and greeniſh white Flowers.*

Apocynum Americanum, foliis amygdali longioribus. Plum. American *Dogsbane, with longer Almond-leaves.*

Apocynum Americanum ſcandens hirſutiſſimum, foliis oblongis, ſiliquis maximis glabris. *Climbing hairy* American *Dogsbane, with oblong Leaves, and the largeſt ſmooth Pods.*

Aſteriſcus fruteſcens, laureolæ folio. Houſt. Cat. *Shrubby Aſteriſcus, with a ſpurge-laurel Leaf.*

Aurantium fructu maximo, Indiæ orientalis. Boerh. Ind. alt. *The Shaddock, or Pumple-moes.*

Camara ſpinoſa, flore variegato. Plum. Nov. Gen. *Prickly* American *Viburnum, with a variable Flower.*

Camara meliſſæ folio, flore variabili. Hort. Elth. American *Viburnum, with a Balm-leaf, and a variable Flower.*

Camara trifolia, purpuraſcente flore. Plum. Nov. Gen. *Three-leav'd* American *Viburnum, with a purpliſh Flower.*

Camara ſalviæ foliis mucronatis, ſubtus villoſis, flore minore luteo. Houſt. American *Viburnum, with pointed Sage-leaves, which are hairy underneath, and a ſmall yellow Flower.*

Camara non ſpinoſa, ſalviæ folio, rotundo & rugoſo, flore minore pallido. Houſt. *Smooth* American *Viburnum, with a round rough Leaf, and a ſmaller pale Flower.*

Camara ſalviæ foliis, floribus incarnatis. American *Viburnum, with Sage-leaves, and a freſh-colour'd Flower.*

Camara non ſpinoſa, urticæ folio bullato, flore aureo. Houſt. *Smooth* American *Viburnum, with a ſtudded Nettle-leaf, and a golden Flower.*

Camara non ſpinoſa, urticæ folio minore, flore albo. Houſt. *Smooth* American *Viburnum, with a ſmaller Nettle-leaf, and a white Flower.*

Camara non ſpinoſa, ſalviæ folio rugoſo, flore purpuraſcente. Houſt. *Smooth* American *Viburnum, with a rough Sage-leaf, and a purpliſh Flower.*

Campanula Canarienſis, atriplicis folio, radice tuberoſâ. Inſt. R. H. Canary *Campanula.*

Camphora officinarum. C. B. P. *The Camphire-tree.*

Cannacorus flore coccineo ſplendente. Inſt. R. H. Indian *Reed, with a ſplendid ſcarlet Flower.*

Cannacorus flore luteo punctato. Inſt. R. H. Indian *Reed, with a ſpotted yellow Flower.*

Cannacorus ampliſſimo folio, flore rutilo. Inſt. R. H. Indian *Reed, with a very large Leaf, and a red Flower.*

Cannacorus latifolius vulgaris, foliis ex albo variegatis. Indian *Reed, with broad ſtrip'd Leaves.*

Cannacorus longiſſimo folio, flore luteo majore. Indian *Reed, with a very long Leaf, and a large yellow Flower.*

Cereus erectus altiſſimus Syrinamenſis. Par. Bat. *The largeſt Torch-thiſtle.*

Corallodendron Carolinianum, floribus ſpicatis coccineis, radice craſſiſſimâ. Carolina *Coral-tree, with ſcarlet Flowers growing in a Spike, and a very thick Root.*

Cotyledon Afra, folio craſſo lato laciniato, floſculo aureo. Boerh. Ind. alt. African *Navelwort, with a broad thick jagged Leaf, and a ſmall golden Flower.*

Craſſula altiſſima perforata. Hort. Elth. *The talleſt thorough-leaf Craſſula.*

Digitalis Canarienſis acanthoides fruteſcens, flore aureo. Hort. Amſt. *Shrubby* Canary *Fox-glove, with a golden Flower.*

Euphorbium tetragonum & pentagonum ſpinoſum Canarinum. Boerh. Ind. alt. *The ſquare-branching Euphorbium,* vulgò.

Euphorbium Afrum, facie fructûs pinis. Boerh. Ind. *The little Meduſa's-head,* vulgò.

Euphorbium Afrum, caule craſſo ſquamoſo, ramis in capitis Meduſæ ſpeciem cincto. Boerh. Ind. alt. *The greater Meduſa's-head,* vulgò.

Euphorbium Afrum, caule ſquamoſo tuberoſo, minus. Boerh. Ind. alt. African *Euphorbium, with a ſmall ſcaly and tuberous Stalk.*

Euphorbium quod anteuphorbium. Dod. *The Anti-euphorbium,* vulgò.

Ficus Bengalenſis, folio ſubrotundo, fructu orbiculato. Hort. Amſt. *Roundiſh-leav'd Fig-tree of* Bengall, *with a round Fruit.*

Hæmanthus Africanus. H. L. *The Blood-flower, or Cape-tulip.*

Hæmanthus colchici foliis, perianthio herbaceo. Hort. Elth. *Blood-flower, with meadow-ſaffron Leaves, and an herbaceous Empalement, commonly called Baſtard-dragon.*

Ketmia Sinenſis, fructu ſubrotundo, flore ſimplici. Inſt. R. H. *The ſingle* China *Roſe,* vulgò.

Ketmia Sinenſis, fructu ſubrotundo, flore pleno. Inſt. R. H. *The double* China *Roſe.*

Liguſtroides, quod liguſtrum Americanum aculeatum, fructu teſticulato. Plum. Cat. *Prickly* American *baſtard Privet, with teſticulated Fruit.*

ADDENDA.

Malpighia mali punici facie. Nov. Gen. Barbadoes *Cherry*, vulgo.

Montia arboreſcens, abutili folio ſerrato, fructu racemoſo. Houſt. *Tree-like Montia, with a ſawed yellow Mallow Leaf, and branching Seeds.*

Opuntia major, validiſſimis ſpinis munita. Inſt. R. H. *The greater* Indian *Fig, armed with ſtrong Spines.*

Opuntia folio oblongo, media. Inſt. R. H. *The middle* Indian *Fig, with an oblong Leaf.*

Opuntia maxima, folio ſpinoſo latiſſimo & longiſſimo. Inſt. R. H. *The greateſt* Indian *Fig, with the longeſt and broadeſt Leaves.*

Opuntia latifolia, craſſiori folio, ſpinis albis numeroſis armato. Boerh. Ind. alt. *Broad thick-leav'd* Indian *Fig, armed with many white Spines.*

Opuntia folio ſpinoſo longiſſimo & anguſto. H. L. Indian *Fig, with a long narrow prickly Leaf.*

Palma Dactylifera major vulgaris. Johnſt. Dend. *Greater Date-bearing Palm-tree.*

Palma humilis, ſeu chamæriphes. J. B. *The dwarf Palm, or Palmetto.*

Periploca Americana ſcandens, folio convolvuli, fructu alato. Plum. Cat. *Climbing baſtard Dogs-bane, with a Bindweed Leaf and a winged Fruit.*

Petiveria ſolani foliis, loculis ſpinoſis. Plum. Nov. Gen. Guinea *Hen Weed*, vulgo.

Plumbago Americana, betæ folio ampliore. Plum. Cat. American *Leadwort, with a larger Beet Leaf.*

Sclarea Mexicana altiſſima, facie heliotropii. Hort. Elth. *Talleſt* Mexican *Clary, with the Face of Turnſole.*

Solanoides Americana, circææ foliis glabris. Act. Reg. S. American *baſtard Nightſhade, with ſmooth Inchanter's Nightſhade Leaves.*

Solanoides Americana, circææ foliis hirſutis. Act. Reg. S. American *baſtard Nightſhade, with hairy Inchanter's Nightſhade Leaves.*

Solanum ſpinoſum maxime tomentoſum. Bocc. Rar. Pl. *Prickly Nightſhade, with the moſt woolly Leaves.*

Solanum Americanum fruteſcens tomentoſum, flore albo umbellato, fructu parvo rubro. Houſt. *Shrubby woolly* American *Nightſhade, with white Flowers growing in an Umbel, and a ſmall red Fruit.*

Solanum Americanum fruteſcens & ſpinoſum, quercus folio. Houſt. *Shrubby and thorny* American *Nightſhade, with an Oak Leaf.*

Solanum arboreſcens & ſpinoſum, foliis tomentoſis, flore magno cœruleo. Houſt. *Thorny Tree-nightſhade, with woolly Leaves, and a large blue Flower.*

Solanum lignoſum Africanum ſempervirens, laurinis foliis. Hort. Amſt. African *woody Nightſhade, with ever-green Bay Leaves.*

Solanum Bahamenſe arboreſcens, folio ſinuato. Hort. Elth. *Tree-like Nightſhade of the* Bahama *Iſlands, with an indented Leaf.*

Tithymalus arboreus Africanus. Inſt. R. H. African *Tree-ſpurge.*

Urtica racemifera maxima Sinarum, foliis ſubtus argenteis, lanugine villoſis. Pluk. Amalth. *The greateſt branching* China *Nettle, whoſe Leaves are covered with a ſilvery Down on their Backſide.*

Citharexylum arbor laurifolia Americana, foliorum venis latè candicantibus, ex cujus ligno citharæ & panduræ fiunt. Pluk. Phyt. *The Fiddle-wood of* Barbadoes.

Several of the Plants which are enumerated in the above Catalogue, may be preſerved in a good Green-houſe, without any artificial Heat; but then they will not flower ſo well, nor become ſo vigorous, as when they have this moderate Share of Warmth aſſigned them on the Thermometer; and a ſmall Expence of Fuel will be ſufficient to keep a pretty large Stove to the Heat.

A CATALOGUE *of ſuch* Exotick Plants *as require to be kept in the Heat aſſigned for the ſecond Claſs on Mr.* Fowler*'s Thermometers.*

ACacia arborea major ſpinoſa, pinnis quatuor majoribus ſubrotundis, ſiliquis varie intortis. Sloan. Cat. *Greater prickly Acacia, with four broad roundiſh Wings to each Leaf, and the Pods variouſly twiſted.*

Acacia Americana, humilis & ſpinoſa, pinnis foliorum acuminatis, floribus herbaceis, ſiliquis variè intortis. *Dwarf prickly Acacia, with ſharp pointed Leaves, greeniſh Flowers, and Pods variouſly twiſted.*

Acacia ſpinoſa humilis, ſiliquis teretibus & reſinoſis. Houſt. *Dwarf prickly Acacia, with taper reſinous Pods.*

Acacia non ſpinoſa, floribus globoſis albis, foliorum pinnis tenuiſſimis glabris, ſiliquis ad ſingula grana tumidis. Houſt. *Smooth Acacia, with round white Flowers, very narrow ſmooth Leaves, and Pods which ſwell in the Place where each Seed is lodged.*

Acacia Americana ſpinoſa, ſiliquis longis recurvis luteis. Houſt. *Prickly Acacia, with long yellow bending Pods.*

Acacia non ſpinoſa, flore albo, ſtaminibus longis, foliorum pinnis latiuſculis glabris & auritis. Houſt. *Smooth Acacia, with a white Flower, having long Chives and broad ſmooth ear'd Wings to the Leaves.*

Acacia humilis non ſpinoſa, foliis ſubtus incanis, florum ſtaminibus longis rubentibus. Houſt. *Dwarf ſmooth Acacia, with Leaves hoary on their Underſide, and long reddiſh Chives to the Flower.*

Acacia Americana non ſpinoſa, flore purpureo, ſtaminibus longiſſimis, ſiliquis planis villoſis, pinnis foliorum tenuiſſimis. Houſt. *Smooth* American *Acacia, with a purple Flower, having very long Chives, flat hairy Pods, and very narrow Leaves.*

Acacia ſpinoſa, foliorum pinnis tenuiſſimis glabris, floribus globoſis luteis, ſpinis longiſſimis. Houſt. *Prickly Acacia, with narrow ſmooth Leaves, yellow round Flowers, and very long Thorns.*

Acacia non ſpinoſa tenuifolia villoſa, floribus globoſis albis, ſiliquis brevibus hirſutis. Houſt. *Smooth Acacia, with narrow hairy Leaves, round white Flowers, and ſhort hairy Pods.*

Acacia non ſpinoſa, latiore folio villoſo, floribus globoſis albis, ſiliquis brevibus hirſutis. Houſt. *Smooth Acacia, with broad hairy Leaves, round white Flowers, and ſhort hairy Pods.*

Acacia Americana, flore luteo globoſo, ſpinis exiguis, foliorumque pinnis tenuiſſimis pubeſcentibus. Houſt. American *Acacia, with a round yellow Flower, ſmall Spines, and very narrow woolly Wings to the Leaves.*

Acacia ſpinoſa tenuifolia, floribus ſpicatis luteis, ſiliquis longiſſimis compreſſis flavis. Houſt. *Smooth narrow-leav'd Acacia, with yellow Flowers growing in Spikes, and very long flat yellowiſh Pods.*

Acacia ſpinoſa tenuifolia, ſpinis ſingulis cornu-bovinum per longitudinem fiſſum referentibus. Houſt. *Prickly narrow-leav'd Acacia, with ſingle Thorns reſembling the Horn of an Ox, ſplit thro' the Middle.*

Acacia Americana, faginis foliis, tetraphylla, floſculis ſtaminoſis, in ſpicum diſpoſitis. Pluk. Amalth. *Broad four-leav'd Acacia, with ſtamineous Flowers diſpoſed in a Spike.*

Acacia humilis latifolia, non ſpinoſa, ſtaminibus florum longiſſimis rubentibus. Houſt. *Broad-leav'd Acacia, without Thorns and Flowers, having very long red Chives.*

Acacia Americana non ſpinoſa latifolia, ſiliquis marginatis & ad ſingula grana tumidis. Houſt. *Broad-leav'd* American *Acacia without Thorns, and Pods which are bordered and ſwell where each Seed is lodged.*

Acacia ſpinoſa tenuifolia, ſiliquis latis, ſpinis minimis recurvis ſolitariis. Houſt. *Narrow-leav'd prickly Acacia, with broad Pods, and ſmall crooked Thorns growing ſingly.*

Acacia non ſpinoſa tetraphylla latifolia, ſtaminibus florum longiſſimis rubentibus. *Broad four-leav'd Acacia without Thorns, and long red Chives to the Flower.*

Acacia non ſpinoſa tenuifolia, ſiliquis variè intortis. *Narrow-leav'd Acacia without Thorns, and variouſly twiſted Pods.*

Acacia Americana tetraphylla & ſpinoſa, floribus globoſis, ſtaminibus florum longis rubentibus. Houſt. *Four-leav'd Acacia without Thorns, and round Flowers, having long red Chives.*

ADDENDA.

Aloe Americana ſobolifera. H. L. *The childing Aloe*, vulgo.

Aloe Americana, ex Vera Cruce, foliis anguſtioribus, minus glaucis. Hort. Beaum. *Narrow leav'd Aloe, of* Vera Cruce.

Aloe Americana, folio viridi rigidiſſimo fœtido, piet dicta indigenis. Hort. Beaum. American *Aloe with ſtiff green Leaves, commonly called Piet in* America.

Aloe Americana, folio viridi rigidiſſimo, margine ſpinoſo ſilk-graſs dicta. American *Aloe, with a ſtiff green Leaf, having Spines on the ſides, commonly called Silk-graſs.*

Aloe Guineenſis, radice geniculatâ, foliis è viridi & atro undulatim variegatis. Hort. Amſt. *The* Guinea *Aloe*, vulgo.

Aloe Zeylanica pumila, foliis variegatis. Par. Bat. prod. *The dwarf* Ceylon *Aloe.*

Apocynum fibroſa radice, petalis coccineis, corniculis croceis. Hort. Amſt *Dogsbane with a fibrous Root and ſcarlet Flowers, having Saffron-colour'd Middles, commonly called Ipecacuana.*

Apocynum Americanum ſcandens, foliis citri, ſiliquis maculatis. Plum. *Climbing* American *Dogs-bane, with Citron Leaves and ſpotted Pods.*

Ariſtolochia Americana ſcandens, foliis cordatis, fructu tereti. *Climbing* American *Birthwort, with Heart-ſhaped Leaves and a taper Fruit.*

Ariſtolochia Americana ſcandens, foliis laurinis anguſtis, fructu maximo. *Climbing* American *Birthwort, with narrow Bay Leaves, and the largeſt Fruit.*

Ariſtolochia Americana erecta, flore atro-purpureo, foliis anguſtis, radice repente. Plum. *Upright* American *Birthwort, with long narrow Leaves, a dark purple Flower, and creeping Root.*

Arum maximum Ægyptiacum, quod vulgo, colocaſia. Sloan. Cat. *Greateſt* Egyptian *Arum, called Colocaſia.*

Arum minus, nymphææ foliis, eſculentun. Sloan. Cat. *Smaller Arum, with water-lily Leaves, and an eatable Root.*

Arum maximum Ægyptiacum, quod vulga colocaſia, cauliculis nigricantibus, Zeylanica. H. L. *Greateſt* Egyptian *Arum, with dark purple Footſtalks.*

Arundo ſaccharifera. C. B. P. *The ſugar Cane.*

Arundo Indica arborea, Mambu vel Bambu dicta. *The* Bambu *Cane*, vulgo.

Arundo arborea Indica, amplo pediculato folio, Bámbu altera ſpecies. Raii. Hiſt. *The falſe* Bambu *Cane.*

Baniſtera ſcandens, foliis laurinis. Houſt. *Climbing Maple*, vulgo.

Baniſtera Americana ſcandens, folio ſubrotundo, flore ex aureo coccineo. Houſt. *Climbing Maple, with a roundiſh Leaf, and a golden ſcarlet Flower.*

Baniſtera Americana ſcandens, foliis citri, flore cœruleo ſpicato. Houſt. *Climbing Maple, with a Citron-leaf, and a blue Flower growing in Spikes.*

Baniſtera Americana ſcandens, foliis ſubrotundis, ſubtus pubeſcentibus. Houſt. *Climbing Maple, with roundiſh Leaves woolly underneath.*

Baniſtera Americana ſcandens, pſeudoacaciæ folio, flore purpuraſcente. Houſt. *Climbing* American *Maple, with a falſe Acacia-leaf, and a purpliſh Flower.*

Barba Jovis Americana ſcandens, floribus cœruleis, ad alas foliorum conglobatis. *Climbing* American *Jupiter's-beard, with blue Flowers growing in Cluſters from the Wing of the Leaf.*

Barnardia folio ſubrotundo, mas. Houſt. *Round-leav'd male Barnardia.*

Barnardia folio ſubrotundo, fœmina. Houſt. *Round-leav'd female Barnardia.*

Baſſella. Hort. Mal. *Climbing Nightſhade of* Malabar.

Baſſella flore albo, foliis & caulibus viridibus. *Climbing* Malabar *Nightſhade, with a white Flower, and green Leaves and Stalks.*

Baſſella Sinica, foliis & caulibus viridibus, minus ſucculentis, fructu minore. Jeſſieu. China *climbing Nightſhade, with green Leaves and Stalks, which are leſs ſucculent, and a ſmaller Fruit.*

Bauhinia non aculeata, folio ampliori & bicorni. Plum. Nov. Gen. *Mountain Ebony*, vulgo.

Bauhinia non aculeata, folio nervoſo bicorni, floribus albicantibus. Houſt. *Smooth Bauhinia, with a nervoſe Leaf, and whitiſh Flowers.*

Bauhinia non aculeata, folio ſubrotundo majore rigido & bicorni, flore purpuraſcente. Houſt. *Smooth Bauhinia, with a large ſtiff Leaf, and purpliſh Flower.*

Bauhinia ſcandens & fruteſcens, folio ſubrotundo & bicorni, flore albo. *Shrubby climbing Bauhinia, with a roundiſh Leaf, and a white Flower.*

Bermudiana palmæ folio, radice bulboſâ. D. Lign. *Bermudiana with a Palm-leaf, and a bulbous Root.*

Bignonia ſcandens tetraphylla, fructu maximo echinato. Houſt. *Climbing Trumpet-flower, with four Leaves, and the largeſt prickly Fruit.*

Bignonia Americana arboreſcens pentaphylla, flore roſeo, major, ſiliquis planis. Plum. Cat. *The white Wood, or Tulip-flower.*

Bignonia ſcandens tetraphylla, flore racemoſo carneo. Houſt. *Four-leav'd climbing Trumpet-flower, with a branching fleſh-colour'd Flower.*

Bignonia Americana, ſcandens, foliis pinnatis hirſutis & marginibus ſinuatis, ſiliquis longiſſimis & anguſtiſſimis. *Climbing* American *Trumpet Flower, with hairy winged Leaves, which are indented, and long, narrow Pods.*

Bignonia Americana, ſcandens, triphylla & pentaphylla, lobis amplioribus, mucronatis & ſerratis, ſiliquis longis compreſſis marginatis. *Climbing* American *Trumpet Flower, with three, and five Leaves, which are large pointed, and ſawed, and long, flat, bordered Pods.*

Bontia Laureolæ facie. Hort. Elth. *The Barbados Wild Olive.*

Brunsfelſia flore albo, fructu croceo molli. Plum. Nov. Gen. *Brunſfelſia with a white Flower, and a ſoft, Saffron-coloured Fruit.*

Caapeba folio orbiculari & umbilicato lævi. Plum. Nov. Gen. *Caapeba, with a round, ſoft, umbilicated Leaf.*

Caapeba folio orbiculari & umbilicato tomentoſo. Plum. Nov. Gen. *Caapeba, with a round, woolly umbilicated Leaf.*

Caapeba folio orbiculari non umbilicata. Plum. Nov. Gen. *Caapeba, with a round Leaf, not umbilicated.*

Cæſalpina polyphylla, aculeis horrida. Plum. Nov. Gen. *Many-leav'd Ceſalpina, with ſtrong Thorns.*

Cainito folio ſubtus aureo, fructu Maliformi. Plum. Nov. Gen. *The Star-Apple*, vulgo.

Cainito folio ſubtus aureo, fructu Olivæformi. Plum. Nov. Gen. *Cainito, with Olive ſhap'd Fruit.*

Calaba folio Citrii ſplendente. Plum. Nov. Gen. *The* Indian *Maſtick Tree.*

Caſſia fiſtula, Alexandrina. C. B. P. *The purging Caſſia, or Pudding-pipe Tree.*

Caſſia fiſtula, Braſiliana. C. B. P. *The wild Caſſia of* America.

Caſſia Americana, tetraphylla, latifolia. Houſt. *Four-leav'd* American *Caſſia, with broad Leaves.*

Caſtorea repens, ſpinoſa. Plum. Nov. Gen. *Creeping, prickly Caſtorea.*

Caſtorea racemoſa, flore cœruleo, fructu croceo. Plum. Nov. Gen. *Branching Caſtorea, with a blue Flower, and Saffron-colour'd Fruit.*

Ceiba Viticis foliis, caudice aculeato. Plum. Nov. Gen. *Silk-cotton Tree, with a prickly Trunk.*

Ceiba Viticis foliis, caudice glabro. Plum. Nov. Gen. *Silk-Cotton Tree, with a ſmooth Trunk.*

Centaurium minus, maritimum, amplo flore cæruleo. Plum. Cat. American *leſſer Centaury, with a large blue Flower.*

Chamærhododendron Indicum, flore amplo coccineo. Inſt. R. H. Indian *Roſebay, with a large, ſcarlet Flower.*

Cereus erectus, altiſſimus, Syrinamenſis, ſpinis albis. Boerh. Ind. alt. *The talleſt Torch-Thiſtle of* Surinam, *with white Spines.*

Cereus erectus, quadrangulus, coſtis alarum inſtar aſſurgentibus. Boerh. Ind. alt. *The ſquare Torch-Thiſtle.*

Cereus maximus, fructu ſpinoſo, rubro. *Dadus* Par. Bat. *The greateſt Torch-Thiſtle, with a prickly red Fruit.*

Cereus erectus, fructu rubro, non ſpinoſo. Par. Bat. *Upright Torch-Thiſtle, with a ſmooth, red Fruit.*

Cereus erectus, gracilis, ſpinoſiſſimus, ſpinis flavis, polygonus, lanugine alba palleſcente. Boerh. Ind. alt. *The ſmaller Upright Torch-Thiſtle with many Angles, yellowiſh Spines, and pale white down on the Top.*

Cereus erectus, gracilior, ſpinoſiſſimus, ſpinis albis polygonus. Boerh. Ind. alt. *Smaller upright Torch-Thiſtle with many Angles, beſet with white Spines.*

Cereus criſtatus, erectus, foliis triangularibus, profundè canaliculatis. Pluk. Phyt. *The triangular climbing Torch-Thiſtle.*

Cereus ſcandens, minor, trigonus, articulatus, fructu ſuaviſſimo. Par. Bat. *The triangular creeping Torch-Thiſtle, commonly called Prickly Pear.*

Cereus ſcandens, minor, polygonus, articulatis. Par. Bat. *The joynted ſmall climbing Torch-Thiſtle, with many ſides.*

A D D E N D A.

Cereus minimus, articulatus, polygonus, ſpinoſus. Boerh. Ind. alt. *The leaſt prickly climbing Torch-Thiſtle, with many Angles.*

Cereus ſcolopendriæ folio brachiato. Hort. Elth. *The Torch-Thiſtle with a ſcolopendria Leaf, commonly called an Opuntia.*

Conyzo fruticoſa, Ciſti odore, floribus pallide purpureis, ſummitatibus ramulorum inſidentibus, capitulis & ſemine minoribus. Sloan. Cat. *Shrubby* American *Fleabane, ſmelling like the Rock Roſe, with pale purple Flowers, growing on the Top of the Branches, and ſmaller Heads and Seeds.*

Conyza fruticoſa, Ciſti odore, floribus pallide purpureis, ſummitatibus ramulorum inſidentibus, capitulis & ſemine majoribus. Sloan Cat. Jam. *Shrubby* American *Fleabane, ſmelling like the Rock Roſe, with pale purple Flowers growing at the ends of the Shoots, and larger Heads and Seeds.*

Conyza arboreſcens, tomentoſa, foliis oblongis, floribus in ſummitatibus ramulorum racemoſis ſparſis albicantibus. Houſt. *Wooly Tree Fleabane, with oblong Leaves, and white Flowers, growing on thin Branches.*

Conyza juteſcens, flore luteo, umbellato. Houſt. *Shrubby* American *Flea-bane with a yellow, umbellated Flower.*

Conyza arboreſcens, foliis oblongis, floribus ſingulis, tribus floſculis conſtantibus. Houſt. *Tree* American *Fleabane, with oblong Leaves, and each Flower having three Florets.*

Conyza ſcandens, Lauri foliis aſperſis, capitulis ſpicatis rotundis, floribus albis. Houſt. *Climbing Fleabane, with rough Bay Leaves, round ſpiked Heads, and white Flowers.*

Conyza fruticoſa, flore pallide purpureo, capitulis & lateribus ramulorum ſpicatim exeuntibus. Sloan. Cat. *Shrubby Fleabane, with a pale purple Flower growing in a Spike from the ſide of the Branches.*

Copaiba folio ſubrotundo, flore rubro. *The Balſam of* Capevi.

Corallodendron triphyllum, Americanum, ſpinoſum, flore ruberrimo. Inſt. R. H. *Prickly three-leaved* American *Coral-Tree, with a very red Flower.*

Corallodendron triphyllum, Americanum, minus, ſpinis & ſeminibus nigricantibus. Inſt. R. H. *Smaller three-leav'd* American *Coral-Tree, with blacker Seeds and Spines.*

Corallodendron triphyllum, Americanum, non ſpinoſum. Inſt. R. H. *Three leav'd* American *Coral-Tree, without ſpines.*

Corallodendron Americanum, minus, foliis acutioribus. Houſt. *Small* American *Coral-Tree, with pointed Leaves.*

Corallodendron triphyllum, Americanum, non ſpinoſum, foliis acutioribus flore rubente. *Three leav'd* American *Coral-Tree without Thorns, having ſharp-pointed Leaves, and a rediſh Flower.*

Corallodendron triphyllum, Americanum, caudice & nervis foliorum ſpinis armantibus. *Three-leav'd* American *Coral-Tree, whoſe Stems and Ribs of the Leaves are armed with ſpines.*

Cornus racemoſa, trifolia & quinquefolia, foliis foraminulatis. Plum. Cat. *Branching* American *Dogwood, with three, and five Leaves.*

Cornutia flore pyramidato cæruleo, foliis incanis. Plum. Nov. Gen. *Cornutia with hoary Leaves, and a blue pyramidal Flower.*

Coronilla ſcandens pentaphylla. Plum. Manuſ. *Five-leav'd climbing* American *jointed-podded Colutea.*

Cytiſus Americanus, ſpinoſus, floribus luteis ad alas naſcentibus. Plum. Cat. *Prickly* American *Baſe Tree trefoil, with yellow Flowers growing from the Wings of the Leaves.*

Cytiſus Americanus, juteſcens, ſericeus. Plum. Bat. *Shrubby* American *Baſe Tree trefoil, with ſilky Leaves.*

Cytiſus Americanus, arboreſcens, fructu eduli albo. Plum. Cat. *The Pigeon-Pea*, vulgo.

Dalechampia ſcandens, Lupuli foliis, fructu hiſpido tricocco. Plum. Nov. Gen. *Climbing Dalechampia with Hop Leaves, and a prickly three ſeeded Fruit.*

Dioſcorea ſcandens, foliis Tamni, fructu racemoſo. Plum. Nov. Gen. *Climbing Dioſcorea, with black Briony Leaves, and branching Fruit.*

Dioſcorea ſcandens, folio haſtato, fructu racemoſo. Houſt. *Climbing Dioſcorea with a ſpear-ſhap'd Leaf, and branching Fruit.*

Dioſcorea ſcandens, folio ſubrotundo acuminato, fructu racemoſo. Houſt. *Climbing Dioſcorea with a roundiſh pointed Leaf, and branching Fruit.*

Dorſtenia dentariæ radice, Sphondilii folio, placenta ovali. Houſt. *Contrayerva with a Toothwort Root, a Cow-Parſnip Leaf, and an Oval Placenta.*

Dorſtenia dentariæ radice, folio minus laciniato, placenta quadrangulari & undulato. Houſt. *Contrayerva with a Toothwort Root, a leſs jagged Leaf, and a ſquare waved Placenta.*

Douglaſſia juteſcens & ſpinoſa, liguſtri folio, flore albo. Houſt. *Shrubby and prickly Douglaſſia with a Privet-leaf, and a white Flower.*

Dracunculus Indicus, trifido folio. Inſt. R. H. Indian *Dragon, with a trifid-leaf.*

Dracunculus Indicus, folio quinquefido. Inſt. R. H. Indian *Dragon-wort with a quinquefid leaf.*

Dracunculus Americanus, Colacaſiæ foliis laciniatis. Inſt. R. H. American *Dragon with a jagged Colocaſia-leaf.*

Dracunculus Americanus, ſcandens, triphyllus & auritus. Inſt. R. H. *Climbing* American *Dragon with three-eared Leaves.*

Eupatorium Americanum, ſcandens, foliis ſubrotundis, lucidis, floribus ſpicatis albis. Houſt. *Climbing* American *Hemp-Agrimony, with roundiſh ſhining Leaves, and white, ſpiked Flowers.*

Eupatorium Americanum, arboreſcens, Mori folio, floribus albicantibus. Houſt. *Tree* American *Hemp-Agrimony, with a Mulberry-leaf, and white Flowers.*

Eupatorium Americanum, juteſcens, Balſaminæ luteæ foliis, nigris maculis notatis. Houſt. *Shrubby* American *Hemp-Agrimony, with a yellow Balſamine-leaf, ſpotted with black.*

Eupatorium Peruvianum, folio ſubrotundo trinervi utrinque acuto flore cœruleo. Vaill. Mem. *Peruvian Hemp-Agrimony with a roundiſh pointed-leaf, and a blue Flower.*

Euphorbium Cerei effigie. Hort. Amſt. *Euphorbium with the Appearance of the Torch-Thiſtle.*

Euphorbium Cerei effigie, caulibus gracilioribus. Boerh. Ind. alt. *Euphorbium having the Appearance of the Torch-Thiſtle, and a ſlender ſtalk.*

Euphorbium verum Antiquorum, Scadida Calli. Hort. Mal. Hort. Amſt. *The true Euphorbium of the Antients.*

Euphorbium trigonum & tetragonum, ſpinoſum, ramis compreſſis. Diſnard. *Euphorbium with three or four angles and flat branches.*

Euphorbium anguloſum, foliis Nerii latioribus. Boerh. Ind. alt. *Angular Euphorbium with broad Oleander-leaves.*

Ficus Malabarenſis, folio cuſpidato, fructu rotundo, parvo, gemino. Pluk. Phyt. *Malabar Fig, with a long-pointed-leaf, and ſmall, round fruit, growing double.*

Fuchſia triphylla, flore coccineo. Plum. Nov. Gen. *Three-leav'd Fuchſia with a ſcarlet Flower.*

Granadilla folio tricuſpidi, flore parvo flaveſcente. Inſt. R. H. *Paſſion-flower with a three-corner'd-leaf, and a ſmall, yellowiſh Flower.*

Granadilla fructu Citriformi, foliis oblongis. Inſt. R. H. *The Water-Limon*, vulgo.

Granadilla latifolia, fructu Maliformi. Inſt. R. H. *The broad-leav'd Paſſion-flower with an Apple-ſhap'd Fruit, commonly called Granadilla.*

Granadilla quæ Coanenepilli, ſeu Contrayerva Hernan. Houſt. *Paſſion-flower called Contrayerva by* Hernandez.

Granadilla folio haſtato, holoſerico, petalis Candicantibus, fimbriis ex purpureo & luteo variis. Martyn. Cent. I. *Paſſion-flower with a ſilky ſpear-ſhap'd Leaf, and white Leaves to the Flowers, with purple and yellow Fringes.*

Granadilla folio oblongo ſerrato, flore purpureo. Houſt. *Paſſion-flower with an oblong ſawed Leaf, and a purple Flower.*

Granadilla folio glabro, tricuſpidi & anguſto, flore vireſcente minimo. Inſt. R. H. *Paſſion-flower with a ſmooth, narrow, three corner'd Leaf, and the leaſt greeniſh Flower.*

Granadilla folio tricuſpidi, flore ex purpurâ nigricante. Inſt. R. H. *Paſſion-flower with a three-pointed Leaf, and a black, purple Flower.*

Granadilla folio tricuſpidi, flore magno flaveſcente. Inſt. R. H. *Paſſion-flower with a three-pointed Leaf, and a large yellowiſh Flower.*

Granadilla flore ſuaverubente, folio bicorni. Inſt. R. H. *Paſſion-flower with a horned Leaf, and a ſoft, red Flower.*

Granadilla Androſæmi folio, fructu jujubino. Inſt. R H. *Paſſion-flower with a Tuſan Leaf, and a Fruit like the Jujube.*

Guajava alba, dulcis H. L. *The ſweet white Guava.*

Guajava rubra, acida, fructu rotundiori. H. L. *The round, red Guava.*

Guidonia Aurantii foliis, aculeata. Plum. Nov. Gen. *Prickly Guidonia with Orange-Leaves.*

Guidonia Nucis juglandis foliis, major. Plum. Nov. Gen. *Greater Guidonia with Walnut-tree Leaves.*

Guidonia Nucis juglandis foliis, minor. Plum. Nov. Gen. *Small Guidonia with Walnut-tree Leaves.*

ADDENDA.

Hedyſarum arboreſcens, foliis Mimoſæ. Plum. Cat. *Tree French Honey-ſuckle, with ſenſitive Plant Leaves.*

Hedyſarum triphyllum, fruteſcens, foliis ſubrotundis ſericeis, flore purpureo. Houſt. *Three-leav'd Shrubby French Honey-ſuckle with round ſilky Leaves, and a purple Flower.*

Helianthemum fruteſcens, portulacæ folio. Plum. Cat. *Shrubby Dwarf Ciſtus with a Purſlane Leaf.*

Helleborine purpurea, tuberoſâ radice. Plum. Nov. Gen. *Purple Baſtard Hellebore, with a tuberous Root.*

Helleborine foliis Liliaceis, Aſphodeli radice. Plum. Cat. *Baſtard Hellebore, with Leaves like the Lilly, and an Aſphodel Root.*

Hernandia amplo hederæ folio, umbilicato. Plum. Nov. Gen. *Jack in a Box*, vulgo.

Jaſminoides Laureolæ folio, flore candido, interdiu odorato. Hort. Elth. *Baſtard Jaſmine, with a Spurge Laurel Leaf, and a white Flower, ſmelling ſweet in the Day.*

Jaſminoides folio Piſhaminis, flore vireſcente, noctu odoratiſſimo. Hort. Elth. *Baſtard Jeſmine, with a greeniſh Flower, ſmelling ſweet in the Night, called by the* Spaniards *Dama di Noche.*

Jaſminum, ſive Sambach Arabum, Alpini. J. B. *The ſingle* Arabian *Jaſmine*, vulgo.

Jaſminum, ſive Sambach Arabum, flore duplici. *The common* Arabian *Jaſmine, with a half double Flower.*

Jaſminum arboreſcens, foliis laurinis, flore umbellato. Houſt. *Tree Jaſmine, with Bay-Leaves, and an umbellated Flower.*

Jaſminum Americanum, foliis conjugatis, floribus ſpicatis albis. Houſt. American *Jaſmine, with Leaves growing oppoſite, and white ſpiked Flowers.*

Jaſminum Malabaricum, foliis Mali Aurantii, flore niveo odoratiſſimo. Com. Malabar *Jaſmine, with Orange Leaves, and a very ſweet, ſnowy Flower.*

Iſora Altheæ foliis, fructu breviori & craſſiori. Plum. Nov. Gen. *The Screw Tree, with ſhort, thick Fruit.*

Iſora Altheæ foliis, fructu longiori & anguſtiori. Plum. Nov. Gen. *The Screw-Tree, with longer and ſlenderer Fruit.*

Iſora Altheæ folio ampliſſimo, fructu craſſiſſimo & villoſo. Houſt. *The Screw-Tree, with a very large Marſh-Mallow Leaf, and a very thick, hairy Fruit.*

Juſticia fruteſcens, floribus ſpicatis majoribus, uno verſu diſpoſitis. Houſt. *Shrubby Juſticia, with larger ſpiked Flowers, placed on one Side of the Stalk.*

Laurus Americana, mas, foliis ſubrotundis, floribus in capitulum collectis. Houſt. *Male* American *Bay-Tree, with roundiſh Leaves and Flowers collected in a Head.*

Laurus Americana, fœmina, foliis ſubrotundis fructu albo umbellato Houſt. *Female* American *Bay-Tree, with roundiſh Leaves, and a white Flower growing in an Umbel.*

Leucanthemum Americanum, fruteſcens, foliis latis conjugatis, & aſperſis, flore albo, capitulis ſquamoſis. Houſt. *Shrubby* American *Ox-Eye, with broad, rough Leaves growing oppoſite, and a white Flower having a ſcaly Head.*

Lilio-Aſphodelus Americanus, ſempervirens, maximus, polyanthos albus. Houſt. *Greateſt Evergreen* American *Lilly Aſphodel, with many white Flowers.*

Lilio-Aſphodelus Americanus, flore umbellato albo, coſtâ purpureâ notato. Plum. Cat. American *Aſphodel Lilly, with a white umbellated Flower, and the Stalk marked with Purple.*

Lilio-Aſphodelus Americanus, foliis Scillæ, flore umbellato maximo purpureo. Plum. Cat. American *Aſphodel Lilly, with Squil Leaves and a large purple Flower growing in an umbel.*

Lilio-Aſphodelus Americanus, bifoliis, flore ſingulari purpureo. Plum. Cat. *Two-leav'd* American *Aſphodel Lilly, with a ſingle purple Flower.*

Lilio-Narciſſus Indicus, ſaturato colore purpuraſcens. Mor. Hiſt. Indian *Lilly-Daffodil, with a deep purple Flower.*

Lilio-Narciſſus Jacobœus, latifolius, Indicus, rubro flore. Mor. Hiſt. *Broad-leav'd* Indian *Lilly-Daffodil, commonly called* Narciſſus Jacobœus.

Lilio-Narciſſus Indicus, maximus, Sphæricus, floribus plurimis rubris Liliaceis. Mor. Hiſt. *The greateſt Spherical* Indian *Lilly Daffodil, with many red Lilly-ſhaped Flowers.*

Lilio-Narciſſus Indicus. pumilus, polyanthos. Mor. Hiſt. *Dwarf* Indian *Lilly-Daffodil, with many Flowers.*

Lilio-Narciſſus Indicus, pumilus, monanthos albus. Mor. Hiſt. *Dwarf* Indian *Lilly-Daffodil, with a ſiugle white Flower.*

Lilio-Narciſſus Zeylanicus, latifolius, flore niveo externâ lineâ purpureâ ſtriato. Herm. *Broad-leav'd Lilly-Daffodil of* Ceylon, *with a white Flower, ſtrip'd with Purple on the outſide.*

Lippia arboreſcens, foliis conjugatis, oblongis, capitulis ſquamoſis & rotundis. Houſt. *Tree-like Lippia, with oblong Leaves growing oppoſite, and round ſcaly Heads.*

Lobelia fruteſcens, portulacæ folio. Plum. Nov. Gen. *Shrubby Lobelia, with a Purſlane Leaf.*

Malpighia anguſtifolia, folio ſubtus ſpinoſo. Plum. Nov. Gen. *The Cow-itch Cherry*, vulgo.

Malpighia folio rotundo, fructu majore. *The large Barbados Cherry.*

Malpighia humilis Ilicis Cocci-glandiferæ foliis. Plum, Nov. Gen. *Dwarf Barbados Cherry, with Holm-Oak Leaves.*

Manihot Theveti, Juca & Caſſavi. J. B. Inſt. R. H. *The Caſſava.*

Manihot Americana, ſpinoſiſſima, folio vitigineo. Plum. Cat. *The moſt prickly Caſſava, with a Chaſte-Tree Leaf.*

Manihot arboreſcens, minus ſpinoſa, floribus albis umbellatis, foliis aconiti urentibus. Houſt. *Tree-like Caſſavi, with leſs Spines, white Flowers growing in an umbel, and ſtinging Wolfs-bane Leaves.*

Manihot fruteſcens, non ſpinoſa, foliis glabris & minus laciniatis. Houſt. *Smooth ſhrubby Caſſavi, with ſmooth Leaves, leſs jagged.*

Maranta Arundinacea, Cannacori folio. Plum. Nov. Gen. *Reed-like* Indian *Arrow-Root, with a Leaf of the* Indian *Cane.*

Maranta Cannacori folio, flore albo minimo. Houſt. Indian *Arrow-root*, vulgo.

Melocatus Americanus, minor. Boerh. Ind. alt. *The ſmall Melon-Thiſtle.*

Methonica Malabarorum. H. L. *The Superb Lilly.*

Montia arboreſcens, Abutili folio ſerrato, fructu racemoſo. Houſt. *Tree-like Montia, with a ſawed yellow-leaf, and branching ſeed.*

Muntingia folio ſericeo, molli, fructu majore. Plum. Nov. Gen. *Muntingia, with a ſoft, ſilky Leaf, and a larger Fruit.*

Muntingia folio Ulmi aſpero, fructu minimo glomerato. Plum. Nov. Gen. *Muntingia, with a Dogwood-leaf, and a ſmall Fruit.*

Murucuia folio lunato. Inſt. R. H. *Murucuia, with a horned Leaf.*

Muſa fructu Cucumerino breviori. Plum. Nov. Gen. *The Banana.*

Muſa fructu Cucumerino longiori. Plum. Nov. Gen. *The Plantane Tree.*

Myrtus arborea, aromatica, foliis Laurinis. Sloan. Cat. *The All-ſpice Pimento, or Jamaica Pepper.*

Opuntia Curaſſavica, minima. Hort. Beaum. *The leaſt* Indian *Fig.*

Opuntia maxima, folio oblongo rotundo, majore, ſpinulis obtuſis mollibus & innocentibua obſito, flore ſtriis rubris variegato. Sloan. Cat. Jam. *The greateſt ſmooth* Indian *Fig, with red ſtriped Flowers.*

Opuntia major ſpinoſa, cauleſcens, flore minore rubro clauſo, fructu parvo coccineo. Houſt. *The great prickly* Indian *Fig, with a ſmall, cloſe, red Flower, and ſmall, ſcarlet Fruit.*

Opuatia cauleſcens, foliis ampliſſimis tenuibus compreſſis, ſpinis longiſſimis confertiſſimis, gracilibus & albicantibus armatis. Houſt. *Stalky* Indian *Fig, with large, narrow, compreſs'd Branches, which are cloſely armed with white Spines, commonly called* Robinſon Cruſo's *Fig.*

Orobus Americanus, latifolius, argenteus, flore purpureo. Houſt. *Broad ſilver-leav'd* American *Bitter-Vetch, with a purple Flower.*

Orobus Americanus, erectus, foliorum pinnis anguſtis & ſubtus incanis, ſiliquis glabris. Houſt. *Upright* American *Bitter-Vetch, with narrow Leaves, hoary on the under ſide, and ſmooth Pods.*

Orobus Americanus, procumbens & hirſutis, flore purpureo. Houſt. *Traing, hairy,* American *Bitter-Vetch, with a purple Flower.*

Palma Braſilienſis, Prunifera, folio plicatili, ſeu flabelliformi, caudice ſquammato. Raii Hiſt. *The Palmetto Tree.*

Palma foliorum pediculis ſpinoſis, fructu pruniformi luteo oleoſo. Sloan. Cat. *The Oil-Palm, or, Negro-Oil*, vulgo.

Palma Prunifera, foliis Yuccæ, fructu in racemis congeſtis Ceraſi formi duro cinereo, Piſi magnitudine, cujus lachryma ſanguis Draconis eſt dicta. Com. Hort. Amſt. *The Dragon-Tree.*

ADDENDA.

Palma Japonica, ſpinoſis pediculis, Polypodii folio. Par. Bat. *Palm-tree of* Japan, *with prickly Footſtalks and a Polypody Leaf.*

Palma Dactylifera, latifolia. Plum. Nov. Gen. *The broad leav'd Date-bearing Palm-tree.*

Palma Dactylifera, aculeata, minima. Plum. Nov. Gen. *The leaſt, prickly, Date-bearing Palm-tree.*

Palma Coccifera coſtarum lateribus aculeatis. Plum. Nov. Gen. *Nut-bearing Palm tree, with prickly Stalks.*

Palma prunifera, Japonenſis. H. L. *Plumb-bearing Palm-tree of* Japan.

Palma montana, Malabarica, folio magno complicato, acuto, flore albo racemoſo, fructu rotundo. Plum. Nov. Gen. *Mountain Pabn-tree of* Malabar, *with a large folded Leaf, and white round Fruit growing in Cluſters.*

Palma altiſſima, non ſpinoſa, fructu pruniformi minore, racemoſo ſparſo. Sloan. Cat. *The Cabbage-tree,* vulgo.

Palma tota ſpinoſa, major, fructu pruniformi. Sloan. Cat. *The great Macaw-tree,* vulgo.

Palma altiſſima, non ſpinoſa, fructu oblongo. Houſt. *The Mountain Cabbage-tree,* vulgo.

Palma Dactifera & Vinifera. Plum. Nov. Gen. *The Date and Wine-bearing Palm-tree.*

Palma Malabarica, floſculis ſtellatis, fructu longo ſquamato. Plum. Nov. Gen. *Palm-tree of* Malabar, *with ſmall ſtarry Flowers, and a long ſcaly Fruit.*

Palma Dactylifera, fructu acerrimo. Plum. Nov. Gen. *The Date-bearing Palm-tree, with very ſharp Fruit.*

Palma minor. C. B. P. *The ſmall Palm-tree.*

Palma Indica, Coccifera, anguloſa. C. B. P. *The Cocoa Nut-tree.*

Palma Americana, acaulos, fructu clavato polypyreno. Houſt. American *Palm without a Stalk, and many Fruit, growing in Form of a Club.*

Pancratium Americanum, floribus albis, odore Balſami Gileadenſi. American *Sea-daffodil, with white Flowers, ſmelling like Balm of* Gilead.

Pancratium Americanum, foliis latiſſimis, floribus niveis majoribus odore Balſami Peruviani. American *Sea-daffodil, with very broad Leaves and larger white Flowers, ſmelling like Balſam of* Peru.

Pancratium Zeylanicum, flore albo odorato. *Sea-daffodil of* Ceylon, *with a ſweet white Flower.*

Papaya fructu Melopeponis effigie. Plum. Cat. *The Papaw-tree, with a Mekin-ſhaped Fruit.*

Papaya mas. Boerh. Ind. alt. *The Male Papaw-tree.*

Papaya fructu maximo, Peponis effigie. Plum. Cat. *The Papaw-tree, with the largeſt Fruit, ſhaped like a Pumpkin.*

Pereskia aculeata flore albo, fructu flaveſcente. Plum. Nov. Gen. *The* Barbadoes *Gooſeberry,* vulgo.

Periploca Americana, latifolia, ſiliquâ durâ oblonga tumida & glabra. Inſt. R. H. *Broad-leav'd* American *Baſtard Dogsbane, with a hard, ſmooth, oblong Pod.*

Periploca Americana, fructu molliter echinato. Inſt. R. H. American *baſtard Dogsbane, with a ſofter prickly Fruit.*

Periploca Americana, ſcandens, folio Convolvuli, fructu alato. Plum. *Climbing* American *Dogsbane, with a Bindweed Leaf, and a winged Fruit.*

Petiveria Solani foliis, loculis ſpinoſis. Plum. Nov. Gen. *Guinea Hen-Weed,* vulgo.

Plumbago Americana, Betæ folio ampliori. Plum. Cat. American *Lead-Wort, with a larger Beet Leaf.*

Randia fruteſcens, ſpinis bijugis, foliis ſubrotundis, floribus albis. Houſt. *Shrubby Randia, with round Leaves and white Flowers.*

Ricinoides Americana, Goſſypii folio. Inſt. R. H. *The Phyſick Nut.*

Ricinoides arbor, Americana, folio multifido. Inſt. R. H. *The* French *Phyſick Nut,* vulgo.

Ricinoides Americana ſtaphiſagriæ folio. Inſt. R. H. *The Wild Caſſavi.*

Ricinoides fruteſcens, Althææ folio. Plum. Cat. *Shrubby Phyſick Nut, with a Marſhmallow Leaf.*

Ricinoides fruteſcens, Linariæ foliis obtuſis. Plum. Cat. *Shrubby Phyſick Nut, with blunt Toad-flax Leaves.*

Ricinoides fruteſcens, Lauri folio, calyce ampliſſimo viridi. Houſt. *Shrubby Phyſick Nut, with a Bay Leaf, and a large green Empalement.*

Rondeletia arboreſcens Tini facie. Plum. Nov. Gen. *Tree-like Rondeletia, with the Appearance of* Lauruſtinus.

Ruellia Americana, humilis, parvo flore cœruleo, capſulis teretibus. Houſt. *Dwarf* American *Ruellia, with a ſmall blue Flower, and taper Pod.*

Ruellia Americana, humilis. Aſphodeli radice. Plum. Nov. Gen. *Dwarf* American *Ruellia, with an Aſphodel Root.*

Saururus alius humilis, folio carnoſo, ſubrotundo. Plum. Nov. Gen. *Low Lizard's Tail, with a roundiſh fleſhy Leaf.*

Saururus racemoſus, ſeu botryites major. Plum. Nov. Gen. *Great branching Lizard's Tail.*

Saururus racemoſus, ſeu botryites minor. Plum. Nov. Gen. *Leſſer branching Lizard's Tail.*

Saururus cauda adunca. Plum. Nov. Gen. *Crooked Lizard's Tail.*

Saururus foliis Plantagineis, caudi breviori. Plum. Nov. Gen. *Lizard's Tail, with Plantane Leaves, and a ſhorter Tail.*

Saurus foliis amplis rotundis & umbilicatis. Plum. Nov. Gen. *Lizard's Tail, with large, round, umbilicated Leaves.*

Saururus foliis amplis cordatis, non umbilicatis. Plum. Nov. Gen. *Lizard's Tail, with large Heart-ſhap'd Leaves.*

Saururus fruteſcens, Lauro-ceraſi folio, fructu breviori & craſſiore. Houſt. *Shrubby Lizard's Tail, with a Laurel Leaf and a ſhort thick Fruit.*

Saururus arboreſcens, latifolia, villoſa, fructu gracili. Houſt. *Broad-leav'd hairy tree Lizard's Tail, with a ſlender Fruit.*

Saururus repens, folio orbiculari, nummulariæ facie. Plum. Nov. Gen. *Creeping Lizard's Tail, with a round Leaf, having the Appearance of Moneywort.*

Senna ſpuria arborea, villoſa, foliis latis mucronatis, ſiliquis articulatis. Houſt. *Hairy-tree Baſtard Senna, with broad pointed Leaves and jointed Pods.*

Senna ſpuria Americana, arborea, ſiliquis compreſſis anguſtis, longiſſimis pendulis. Houſt. *Tree* American *Baſtard Sena, with long, narrow, flat, hanging Pods.*

Senna ſpuria Americana, fruteſcens, Mimoſæ foliis, flore parvo, ſiliquis hirſutis breviſſimis, pediculis inſidentibus. Houſt. *Shrubby* American *Baſtard Sena, with Leaves like the ſenſitive Plant, a ſmall Flower, and ſhort hairy Pods.*

Senna ſpuria Americana, fruteſcens, & procumbens, flore maximo, ſiliquis glabris. Houſt. *Shrubby and trailing* American *Baſtard Sena, with a large Flower, and ſmooth Pods.*

Senna ſpuria fruteſcens, foliorum pinnis latioribus, caulibus piloſis, ſiliquis longiſſimis pediculis inſidentibus. Houſt. *Shrubby Baſtard Sena, with broader Leaves, hairy Stalks, and long Pods.*

Serjania ſcandens, polyphylla & racemoſa. Plum. Nov. Gen. *Climbing and branching Serjania, with many Leaves.*

Serjania ſcandens enneaphylla & racemoſa. Plum. Nov. Gen. *Climbing and branching Serjania, with nine Leaves.*

Serjania ſcandens triphylla & racemoſa. Plum. Nov. Gen. *Climbing three-leav'd branching Serjania.*

Sherardia fruteſcens, nodiflora. Houſt. *Shrubby naked-flower'd Sherardia.*

Siſyrinchium Africanum, flore albo, radice venenatâ: African *Siſyrinchium, with a white Flower and a poiſonous Root.*

Spartium Americanum, Portulacæ foliis aculeatum. Ebeni Materie. Plum. American *Baſtard Ebony.*

Spartium Americanum, ſcandens, Citrii foliis, floribus albis, confertim naſcentibus. Plum. Cat. *Climbing* American *Broom, with Citron Leaves, and white Flowers growing in Cluſters.*

Suriana foliis Portulacæ anguſtis. Plum. Nov. Gen. *Suriana with narrow Purſlane Leaves.*

Tithymalus Indicus, fruteſcens. Raii Hiſt. *Shrubby* Indian *Spurge.*

Tithymalus Indicus, vimineus, penitus aphyllos. Boerh. Ind. alt. *Twiſting* Indian *Spurge, without Leaves.*

Tithymalus Curaſſavicus, Salicis & Atriplicis foliis glabris, caulibus viridantibus. Par. Bat. Prod. *Spurge from Curaſſo, with lower Leaves, like Sallow, and upper Leaves, like Orach, and a green Stalk.*

Tragia alia ſcandens, Urticæ folio. Plum. Nov. Gen. *Climbing Tragia, with a Nettle Leaf.*

Tragia ſcandens, longo Betonicæ folio. Plum. Nov. Gen. *Climbing Tragia, with a long Betony Leaf.*

Triumfetta fructu echinato, racemoſo. Plum. Nov. Gen. *Triumfetta, with a rough, branching Fruit.*

Triumfetta fructu echinato, racemoſo, minor. Millar. *Triumfetta, with a ſmaller, rough, branching Fruit.*

Turnera fruteſcens, Ulmi-folia. Plum. Nov. Gen. *Shrubby Turnera, with an Elm Leaf.*

Turnera fruteſcens, folio longiore & mucronato. *Shrubby Turnera, with a longer pointed Leaf.*

Viburnum Americanum, latifolium, floribus albis, ramulis Tomentoſis. *Broad-leav'd* American *Way-faring-tree, with white Flowers and woolly Branches.*

A D D E N D A.

Arbor baccifera, Laurifolia, aromatica, fructu viridi calyculato, racemoſo. Sloan. *The Winters-bark, or Wild Cinamon.*

Arbor Laurifolia, venenata, folio leviter ſerrato, oblongo, obtuſo, copioſum lac præbens. Sloan. Cat. *The Poiſon-tree*, vulgo.

Cedrus Barbadenſium, alatis Fraxini foliis, *&c.* Pluk. Phyt. *The* Barbadoes *Cedar*, vulgo.

Baobab Alp. Egypt. *The* Ethiopian *ſoure Gourd.*

Frutex Lauri folio, pendulo, fructu tricocco, ſemine nigro ſplendente. Cateſb. Hiſt. Nat. *The Red Wood.*

Katsjula Kalengu. Hort. Mal.

A CATALOGUE *of the* MOST TENDER EXOTICK PLANTS, *which require to be kept in the Degree of* Heat *in* Winter, *marked on Mr.* Fowler'*s botanical Thermometer, for the Third Claſs of* PLANTS.

ACajou. Thevet. Franc. Antarct. *The Caſhew-Tree.*

Ahouai Nerii folio flore luteo. Plum. Nov. Gen. *Ahouai, with an Oleander-leaf, and a Yellow Flower.*

Ananas. Plum. *The Ananas or Pine-Apple, all the kinds.*

Barleria Solani folio, flore coccineo. Plum. Nov. Gen. *Barleria, with a Night-ſhade-leaf and a ſcarlet Flower.*

Barleria aculeata, ſolani folio anguſtiore, flore cœruleo. Plum. Nov. Gen. *Prickly Barleria, with a narrow Night-ſhade-leaf and a blue Flower.*

Bauhinia aculeata, folio rotundo emarginato. Plum. Nov. Gen. *The* Indian *Savin-tree*, vulgo.

Bauhinia aculeata, folio rotundo emarginato, flore magno albo. Houſt. *Prickly Bauhinia, with a round indented Leaf and a large white Flower.*

Bauhinia, flore luteo, ſpicato, folio ſubrotundo bicorni. Houſt. *Bauhinia, with a Yellow ſpiked Flower and a round divided Leaf.*

Bellonia fruteſcens, folio Meliſſæ, aſpero. Plum. Nov. Gen. *Shrubby Bellonia, with a rough Baum Leaf.*

Bignonia Americana, arbor, flore luteo, folio Fraxini. Plum. Cat. American *Tree Bignonia, with a Yellow Flower and an Aſh-tree-leaf.*

Bihai ampliſſimis foliis, florum vaſculis coccineis. Plum. Nov. Gen. *Bihai, with very large Leaves and a ſcarlet covering to the Flower.*

Bihai ampliſſimis foliis, florum vaſculis ſubnigris. Plum. Nov. Gen. *Bihai, with very large Leaves and a Black covering to the Flower.*

Bocconia racemoſa, ſphondilii folio tomentoſo. Plum. Nov. Gen. *Branching Bocconia, with a woolly Cow-parſnip Leaf.*

Bonduc vulgare, majus, polyphyllum. Plum. Nov. Gen. *The yellow Nikar-tree*, vulgo.

Bonduc vulgare, minus, polyphyllum. Plum. Nov. Gen. *The aſh-colour'd Nikar-tree*, vulgo.

Breynia Amygdali foliis latioribus. Plum. Nov. Gen. *Breynia, with broad Almond-tree Leaves.*

Breynia Elœagni foliis. Plum. Nov. Gen. *Breynia, with Leaves like thoſe of Wild Olive.*

Cacao. Cluſ. Exot. *The Chocolate-nut-tree.*

Coa ſcandens, fructu trigemino ſubrotundo. Plum. Nov. Gen. *Climbing Coa, with a roundiſh Fruit opening in three parts.*

Courbaril bifolia, flore pyramidato. Plum. Nov. Gen. *The Locuſt-tree of* Jamaica.

Cuiete foliis oblongis, anguſtis, magno fructu ovato. Plum. Nov. Gen. *The Calabaſh-tree, with long narrow Leaves, and a large oval Fruit.*

Cuiete latifolia, fructu putamine fragili. Plum. Nov. Gen. *Broad-leav'd Calabaſh-tree, with a tender ſhell.*

Cuiete minima, fructu duro. Plum. Nov. Gen. *The leaſt Calabaſh-tree, with a hard Fruit.*

Cuiete anguſtifolia, fructu minori, globoſo. Plum. Nov. Gen. *Narrow-leav'd Calabaſh-tree, with the leaſt round Fruit.*

Cuiete anguſtifolia, fructu minori ovato. Plum. Nov. Gen. *Narrow leav'd Calabaſh-tree, with the leaſt oval Fruit.*

Geſnera arboreſcens, amplo flore fimbriato & maculoſo. Plum. Nov. Gen. *Tree like Geſnera, with a large furbelow'd and ſpotted Flower.*

Geſnera amplo Digitalis folio tomentoſo. Plum. Nov. Gen. *Geſnera, with a large Woolly Fox-glove leaf.*

Guaiabara alia racemoſa, foliis oblongis. Plum. *Sea-ſide Grape, with an oblong Leaf.*

Guaiabara alia racemoſa, foliis latiſſimis. Houſt. *Sea ſide Grape, with very broad Leaves.*

Guaiabara foliis minoribus & longioribus, fructu racemoſo minimo atro-purpureo. Houſt. *Sea-ſide Grape, with ſmaller and longer Leaves, and the leaſt purple Fruit.*

Guajacum flore cœruleo, fructu ſubrotundo. Plum. Nov. Gen. *Lignum-vitæ, with a roundiſh, blue Fruit.*

Guajacum flore cœruleo fimbriato, fructu tetragono. Plum. Nov. Gen. *Lignum vitæ, with a blue fringed Flower, and a ſquare Fruit.*

Guanabanus folio ampliſſimo, flore roſeo, fructu purpureo ſquamato. *Cherimonias, with a large Leaf, a roſe-colour'd Flower, and a Scaley purple Fruit.*

Guanabanus fructu e viridi luteſcente, molliter aculeato. Plum. Nov. Gen. *The Sour-Sop*, vulgo.

Guanabanus fructu aureo & molliter aculeato. Plum. Nov. Gen. *The Cuſtard-Apple*, vulgo.

Guanabanus fructu ſubcœruleo. Plum. Nov. Gen. *The Sweet Sop.*

Guanabanus Perſeæ folio, flore intus albo, exterius vireſcente, fructu nigricante ſquamato vulgo cherimolia. Fueill. Obſ. *The Cherimolias, or Cherimonias*, vulgo.

Guazuma arbor Ulmi-folia, fructu ex purpura-nigro. Plum. Nov. Gen. *The Baſtard Cedar-tree*, vulgo.

Hura Americana, Abutili Indici folio. Hort. Amſt. *The Sand-box-tree*, vulgo.

Jaſminum Arabicum, Caſtaneæ folio, flore albo odoratiſſimo, cujus fructu Coffy in officinis dicuntur nobis. Com̄. Cat. *The Coffee-Tree.*

Icaco fructu ex albo rubeſcente. Plum. Nov. Gen. *The Maiden Plum-tree*, vulgo.

Icaco fructu nigro. Plum. Nov. Gen. *The* Jamaica *Plum-tree*, vulgo.

Icaco fructu purpureo. Plum. Nov. Gen. *The Purple Plum-tree.*

Icaco fructu luteo. Plum. Nov. Gen. *The Hog Plum-tree*, vulgo.

Inga flore albo fimbriato, fructu dulci. Plum. Nov. Gen. *Inga, with a white fringed Flower, and a ſweet Fruit.*

Karatas foliis altiſſimis & aculeatis. Plum. Nov. Gen. *The Penguin*, vulgo.

Mamei magno fructu Perſicæ ſapore. Plum. Nov. Gen. *The Mammee-tree, with a large Fruit.*

Mançanilla Pyri facie. Plum. Nov. Gen. *The Manchineel-tree.*

Mançanilla Aquifolii foliis. Plum. Nov. Gen. *The Manchineel-tree, with Holly-leaves.*

Mançanilla lauri foliis oblongis. Plum. Nov. Gen. *The Manchineel-tree, with oblong Bay-leaves.*

Melocactus Americanus, major, ſpinis albis longiſſimis recurvis. *The great Melon-thiſtle, with long, crooked, white ſpines.*

Melocactus Americanus, major, ſtriis in ſpiram intortis, ſpinis brevibus aduncis. *The great Melon-thiſtle, with ſpiral Ribs, and ſhort crooked Spines.*

Melocactus Americanus, major, ſpinis tenuibus flaveſcentibus. *Great Melon-Thiſtle, with narrow, yellowiſh Spines.*

Melocactus Mexicanus, ſpinis creberrimis corallinis latis & recurvis. Houſt. *Great Melon-thiſtle from* Mexico, *with broad, crooked Spines.*

Mimoſa ſive frutex ſenſibilis. Inſt. R. H. *The ſenſitive Plant.*

A D D E N D A.

Mimoſa Humilis & fruteſcens, & ſpinoſa, ſiliquis conglobatis. Plum. Cat. *The Humble Plant.*

Mimoſa folio lato ſennæ ſpinoſo. Boerh. Ind. alt. *The broad-leav'd, ſenſitive Plant.*

Mimoſa fruteſcens & ſpinoſa, tenui Acaciæ folio, floſculis plurimis villoſis in capitulum congeſtis. Houſt. *Shrubby, and Prickly ſenſitive Plant, with a Narrow Acacia-Leaf, and many ſmall Flowers collected in a hairy Head.*

Mimoſa herbacea, procumbens & ſpinoſa, caule anguloſo, ſiliquis quadrivalvibus. Houſt. Cat. *Trailing, Prickly, herbaceous, ſenſitive Plant, with an angular Stalk and Square Pods.*

Mimoſa latifolia, ſiliquis latis articulatis. Houſt. *Broad-leav'd ſenſitive Plant, with broad, jointed Pods.*

Mimoſa fruteſcens ſpinoſa & hirſuta, tenui Acaciæ foliis, ſiliquis articulatis. *Shrubby, Prickly and hairy, ſenſitive Plant, with narrow Acacia Leaves and jointed Pods.*

Mitella Americana, maxima, tinctoria. Inſt. R. H. *Arnotto, or Anotto.*

Monbin arbor, foliis Fraxini, fructu luteo racemoſo. Plum. Nov. Gen. *The* Jamaica *Hog-Plum-tree.*

Parkinſonia aculeata, foliis minutis uni coſtæ adnexis. Plum. Nov. Gen. *Prickly Parkinſonia, with very ſmall Leaves fixed to one Midrib.*

Perſea. Cluſ. Hiſt. *The Avocado or Avogatto Pear*, vulgo.

Piſonia aculeata, mas. Houſt. *The Male Fingrigo*, vulgo.

Piſonia aculeata, fructu glutinoſo & racemoſo. Plum. Nov. Gen. *The Female Fingrigo, with a branching, glutinous Fruit.*

Pittonia arboreſcens, chamædryfolia, major. Plum. Nov. Gen. *Greater Tree Pittonia, with a Germander Leaf.*

Pittonia arboreſcens Chamædryfolia, minor. Plum. Nov. Gen. *Smaller Tree Pittonia, with a Germander Leaf.*

Pittonia fruteſcens, folio carnoſo, hirſuto & obtuſo. Plum. Nov. Gen. *Shrubby Pittonia, with a hairy, fleſhy, obtuſe Leaf.*

Pittonia racemoſa, Nicotianæ foliis fætidiſſimis. Plum. Nov. Gen. *Branching Pittonia, with the moſt ſtinking Tobacco Leaves.*

Plumeria flore roſeo odoratiſſimo. Inſt. R. H. *The Red Jaſmine-tree*, vulgo.

Plumeria flore majore odorato & incarnato. *The Japan-Tree*, vulgo.

Plumeria flore niveo, foliis longis anguſtis & acuminatis. Inſt. R. *Plumeria, with a ſnow-white Flower, and long, narrow-pointed Leaves.*

Plumeria foliis longiſſimis, & minus ſucculentibus, flore pallido. Houſt. *Plumeria, with very long, leſs ſucculent Leaves, and a pale Flower.*

Plumeria folio latiore obtuſo, flore luteo minore. *Plumeria, with a broad obtuſe Leaf, and a ſmaller Yellow Flower.*

Poinciana flore pulcherrimo. Inſt. R. H. *The* Barbadoes *Flower-fence, with a beautiful ſtrip'd Flower.*

Poinciana flore luteo. Houſt. *The yellow Flower-fence.*

Poinciana flore rubente. Houſt. *The reddiſh Flower-fence.*

Poinciana ſpinoſa, vulgo *Tara.* Feuill. obſ. *Prickly Flower-fence, commonly called* Tara.

Pſeudoacacia Americana, flore pyramidato coccineo. Plum. Cat. Gen. American *Falſe Acacia, with a pyramidal ſcarlet Flower.*

Pſeudoacacia Americana, ſiliquis alatis. Plum. Cat. *The Dogwood Tree of* Jamaica.

Pſeudoacacia Americana, latifolia, floribus purpureis. Plum. Cat. *Broad-leav'd* American *falſe Acacia, with purple Flowers.*

Pſeudoacacia Americana, ingens, fructu coccineo, nigrâ maculâ notato. Plum. Cat. American *Falſe-Acacia, with a ſcarlet Fruit, ſpotted with Black.*

Pſeudoacacia Americana, Fraxini folio, floribus violaceis. Plum. Cat. American *Falſe Acacia, with Aſh-tree-Leaves, and violet Flowers.*

Rauvolfia tetraphylla, latifolia. Plum. Nov. Gen. *Four leav'd Rauvolfia, with broad Leaves.*

Rauvolfia tetraphylla, anguſtifolia. Plum. Nov. Gen. *Four-leav'd Rauvolfia, with narrow Leaves.*

Sapindus foliis coſtæ innaſcentibus. Inſt. R. H. *The Sopeberry-tree.*

Sapota fructu turbinato minori. Plum. Nov. Gen. *Sapota, with a ſmaller, Top-ſhap'd Fruit.*

Sapota fructu ovato, majori. Plum. Nov. Gen. *The Mammee Sapota.*

Tabernemontana lacteſcens, citrii foliis undulatis. Plum Nov. Gen. *Milky Tabernemontana, with waved citron Leaves.*

Tabernemontana lacteſcens, Lauri folio, flore albo, ſiliquis rotundioribus. Houſt. *Milky Tabernemontana, with a Bay-leaf, a white Flower, and rounder Pods.*

Tamarindus. Raii. Hiſt. *The Tamarin-Tree.*

Tapia arborea, tryphylla. Plum. Nov. Gen. *The Garlick Pear*, vulgo.

Telephoides Americanum, arboreſcens, fructu parvo, foliis acuminatis. Houſt. *Tree-*American *Baſtard orpine, with a ſmall Fruit and pointed-leaves.*

Telephoides Americanum, arboreſcens, foliis latis ſubrotundis & ſubtus incanis, fructu maximo. Houſt. *Tree* American *Baſtard-orpine, with broad roundiſh Leaves, hoary underneath, and the largeſt Fruit.*

Telephoides Americanum, arboreſcens, foliis latioribus ſubrotundis, fructu majore ex longo pediculo pendulo. Houſt. *Tree* American *Baſtard-Orpine, with broader, roundiſh Leaves and a large Fruit hanging on a long footſtalk.*

Terebinthus major, Betulæ cortice, fructu triangulari. Sloan. Cat. *The Greater Turpentine tree, commonly called Birch-tree, in* Jamaica.

Tithymaloides Lauro-Ceraſi folio, non ſerrato. Hort. Elth. *The Poiſon Buſh of* Barbadoes.

Tithymaloides fruteſcens, folio Anacampſerotis. Plum. Cat. *Shrubby Poiſon-Buſh, with an Orpine-leaf.*

Vanilla flore viridi & albo, fructu nigreſcente. Plum. Nov. Gen. *Vanilla, with a green and white Flower and a black Fruit.*

Vanilla flore violaceo, fructu breviori rubro. Plum. Nov. Gen. *Vanilla, with a Violet Flower, and a ſhort red Fruit.*

Vanilla flore albo, fructu breviori corallino. Plum. Nov. Gen. *Vanilla, with a white Flower and a ſhort coral-coloured Fruit.*

Xylon arboreum. J. B. *The Cotton-Tree.*

Xylon Americanum, fructu oblongo acuminato Lign. Inſt. R. H. American *Cotton-ſhrub, with an oblong pointed Fruit.*

Zinziber. C. B. P. *The Ginger-Plant.*

Zinziber latifolium, ſylveſtre. H. L. *The Broad-leav'd wild Ginger, or Zerumbeth.*

Ziziphus quæ jujube Americana, ſpinoſa, Loti arboris foliis & facie, fructu rotundo parvo, dulci. Cat. H. Beaum. *The* American *Jujube, commonly called Mangoſtens.*

Arbor Americana, fraxini foliis, fructu conoide. *The Mahogony-tree.*

Arbor excelſa, Coryli folio ampliore. Houſt. *The Baſtard Mahogony-tree.*

Buddleja fruteſcens, foliis conjugatis & ſerratis, floribus ſpicatis luteis. Houſt. *Shrubby Buddleja, with ſaw'd leaves growing by pairs, and ſpiked yellow Flowers.*

Buddleja fruteſcens, foliis oblongis, mucronatis, ſubtus tomentoſis, floribus ſpicatis albis. Houſt. *Shrubby Buddleja, with oblong pointed Leaves woolly on their underſide and ſpiked white Flowers.*

Campechia. *The Logwood.*

Conocarpus. Hort. Cliſ. *The Button-tree*, vulgo.

Conocarpus procumbens, foliis ſubrotundis. Houſt. *Trailing Button-tree, with roundiſh leaves.*

Arbor Americana, pinnatis Fraxini foliis, fructu reniformi Phaſeolum exprimente. Pluk. Phyt. *The Spaniſh Aſh*, vulgo.

Lauro affinis jaſmini folio alato, coſta media membranulis utrinque extantibus alata, ligni duritie ferro vix cedens. Sloan. Cat. Jam. *The Iron Wood-tree.*

Lauro affinis Terebinthini folio alato, ligno odorato candido, flore albo. Sloan. Cat. *Lignum Rhodium, or Lignumrorum.*

Morus fructu viridi, ligno ſulphureo tinctorio. Sloan. Cat. Jam. *Fuſtick-Wood.*

Pſeudo-ſantalum croceum. Sloan. Cat. Jam. *The Breſiletto-tree.*

ADDENDA.

A CATALOGUE *of ſuch* MEDICINAL PLANTS *as may be cultivated in the* Engliſh *Gardens, being hardy enough to bear the Cold in the open Air. Such of them as do grow in the Fields, and are generally termed* Weeds, *are alſo diſtinguiſhed, that any Perſon, who is inclinable to Cultivate them, may know how to obtain them.*

ABrotanum mas, anguſtifolium, majus. C. B. P. *Southernwood.*

Abſinthium vulgare, majus. J. B. *Common Wormwood.* Engliſh, *in Lanes and on Dunghils.*

Abſinthium Pontium, tenuifolium, incanum. C. B. P. *Roman Wormwood.*

Abſinthium marinum, album. Ger. *Sea-Wormwood.* Engliſh, *on the Sea-ſhore.*

Acanthus ſativus vel mollis Virgilii. C. B. P. *Bears-breech.*

Acetoſa pratenſis. C. B. P. *Common Sorrel* Engliſh, *in Meadows and other Paſtures.*

Acetoſa arvenſis lanceolato. C. B. P. *Sheeps Sorrel.* Engliſh, *on dry gravelly ſoils.*

Acetoſa rotundifolia, hortenſis. C. B. P. French *Sorrel.*

Acorus verus ſive Calamus Aromaticus officinarum. C. B. P. *The true Acorus.* Engliſh, *in deep ſtanding Waters, but pretty rare.*

Adianthum foliis longioribus pulverulentis pediculo nigro. C. B. P. *Black Maiden-hair.* Engliſh, *in joints of old Walls, and on the ſides of ſhady Banks.*

Adianthum foliis coriandri. C. B. P. *The true Maiden-hair.*

Agratum foliis ſerratis. C. B. P. *Sweet Maudlin.*

Agrimonia officinarum. Inſt. R. H. *Agrimony.* Engliſh, *in Woods and ſhady Lanes.*

Alcea vulgaris, major. C. B. P. *Verrain-Mallow.* Engliſh, *in Paſtures.*

Alchimilla vulgaris. C. B. P. *Ladies-Mantle.* Engliſh, *in moiſt Paſtures.*

Alkekengi officinarum. Inſt. R. H. *Winter Cherry.*

Allium ſativum. C. B. P. *Garlick.*

Alſine media. C. B. P. *Chick-weed.* Engliſh, *in ,every Dunghil, and in every Garden.*

Althæa Dioſcoridis & Plinii. C. B. P. *Marſh-mallows.* Engliſh, *in moiſt Lanes.*

Amaranthus maximus. C. B. P. *Flower Gentle.*

Ammi majus. C. B. P. *Biſhop's-weed.*

Anagallis phœnicio flore. C. B. P. *Pimpernel.* Engliſh, *on ploughed Lands.*

Anagallis cæruleo flore. C. B. P. *The Female Pimpernell.* Engliſh, *on ploughed Lands, but pretty rare.*

Anchuſa puniceis floribus. C. B. P. *Alkanet.*

Anethum hortenſe. C. B. P. *Dill.*

Angelica ſativa. C. B. P. *Angelica.*

Anonis ſpinoſa, flore purpureo. C. B. P. *Reſt-Harrow.* Engliſh, *on Commons and in other uncultivated Places.*

Anthora ſeu Aconitum ſalutiferum. C. B. P. *Wholeſome Monks-hood.*

Aparine vulgaris. C. B. P. *Clivers, or Gooſe-graſs.* Engliſh, *under hedges,* &c.

Apium paluſtre & Apium officinarum. C. B. P. *Smallage.* Engliſh, *in ſtanding Waters.*

Apium hortenſe. Ger. *Garden-Parſley.*

Apium Macedonicum. C. B. P. *Macedonian Parſley.*

Aquilegia ſylveſtris. C. B. P. *Wild Columbine.* Engliſh, *in woods, but rare.*

Ariſtolochia clematitis recta. C. B. P. *Creeping Birthwort.*

Ariſtolochia longa, verra. C. B. P. *Long Birthwort.*

Ariſtolochia rotunda, flore ex purpurâ nigro. C. B. P. *Round Birthwort.*

Artemiſia vulgaris, major. C. B. P. *Mugwort.* Engliſh, *on the ſides of Fields.*

Arum vulgare. Ger. *Wake-Robin.* Engliſh, *in Woods and under Hedges.*

Arundo vulgaris, ſive Phragmites Dioſcoridis. C. B. P. *The Reed.* Engliſh, *in deep Waters.*

Aſarum vulgare. Park. *Aſarabacca.* Engliſh, *in moiſt ſhady Places but rare.*

Aſclepias flore albo. C. B. P. *Swallow-wort, or, Tame-Poiſon.*

Aſparagus ſativus. C. B. P. *Sparagus.*

Aſperula ſive Rubeola montana odora. C. B. P. *Woodroof.* Engliſh, *in Woods, and ſhady Places.*

Aſphodelus albus, ramoſus mas. C. B. P. *The true white Aſphodel, or King's-ſpear.*

Aſphodelus luteus, & flore, & radice. C. B. P. *Yellow King's-ſpear.*

Aſplenium ſive Ceterach. J. B. *Spleen-wort, or Milt-waſte.* Engliſh, *on old Walls.*

After Atticus cæruleus, vulgaris. C. B. P. *Blue* Italian *Starwort.*

Atractylis lutea. C. B. P. *Yellow Diſtaff-Thiſtle.*

Atriplex hortenſis, alba, ſive pallide virens. C. B. P. *Garden-Orach.*

Atriplex fœtida. C. B. P. *Stinking Orach.* Engliſh, *on Dunghills, and in cultivated Lands.*

Balſamita major. Dod. p. *Coſtmary, or Ale-coſte.*

Bardana vulgaris, major. Park. *Burdock.* Engliſh, *By the Sides of Roads.*

Behen album, officinarum. J. B. *Spattling Poppy.* Engliſh, *On arable Land.*

Bellis ſylveſtris, caule folioſo, major. C. B. P. *Ox-eye Daiſy.* Engliſh, *In Corn-fields, and in Paſtures.*

Bellis ſylveſtris, minor. C. B. P. *Daiſy.* Engliſh, *In Graſs Fields.*

Berberris dumetorum. C. B. P. *The Berberry, or Pipperidge Buſh.* Engliſh, *In ſome Hedges.*

Beta alba vel palleſcens, quæ Cicla officinarum. C. B. P. *The White Beet.*

Beta rubra, vulgaris. C. B. P. *The red Beet.*

Betonica purpurea. C. B. P. *Wood Betony.* Engliſh, *In woods,* &c.

Biſtorta radice minus intorta. C. B. P. *Biſtort, or Snake-weed.* Engliſh, *In moiſt meadows.*

Blitum album, majus. C. B. P. *White Blites.*

Blitum rubrum, majus. C. B. P. *Red Blites.*

Borago floribus cæruleis. J. B. *Borrage.* Engliſh, *In arable Land.*

Botrys Ambroſioides vulgaris. C. B. P. *Oak of* Jeruſalem.

Braſſica capitata, alba. C. B. P. *Cabbage.*

Bryonia aſpera, ſive alba, baccis rubris. C. B. P. *Briony.* Engliſh, *Under Hedges, and on the Sides of Banks.*

Bryonia lævis, ſive nigro, ramoſa. C. B. P. *Black Briony.* Engliſh, *In woods and under Hedges.*

Bugloſſum anguſtifolium, majus. C. B. P. *Garden Bugloſs.*

Bugloſſum ſylveſtre, minus. C. B. P. *Wild Bugloſs.* Engliſh, *On arable Land.*

Bugula vulgaris. Park. *Bugle.* Engliſh, *In moiſt Meadows and Woods.*

Buphthalmum cotulæ folio. C. B. P. *Ox-eye.*

Burſa paſtoris, major, folio ſinuato. C. B. P. *Shepherds Purſe.* Engliſh, *By the ſides of Paths every where.*

Buxus arboreſcens. C. B. P. *The Box-tree.* Engliſh, *On* Box-hill, *near* Darkin, *in* Surry.

Calamintha vulgaris, vel officinarum Germaniæ. C. B. P. *Mountain Calamint,* Engliſh, *On uncultivated Land.*

Calamintha pulegii odore, ſive Nepeta. C. B. P. *Calamint with the ſcent of Penny-Royal.* Engliſh, *On the ſides of Roads and other uncultivated Places.*

Calamintha arvenſis verticillata: C. B. P. *Water Calamint.* Engliſh, *By the Sides of Ditches, and in moiſt arable Land.*

Calcitrapa flore purpureo. Vaill. *The Star-thiſtle.* Engliſh, *On the ſides of Banks.*

Caltha vulgaris. C. B. P. *Marigold.*

Cannabis ſativa. C. B. P. *Hemp.* Engliſh, *On Dunghills.*

Capparis ſpinoſa, fructu minore, folio rotundo. C. B. P. *Caper.*

Cardamine magno flore purpuraſcente. Inſt. R. H. *Ladies-ſmock or cuckow-flower.* Engliſh, *In meadows.*

Cardiaca. Inſt. R. H. *Mother-wort.* Engliſh, *By the ſides of Paths.*

Carduus albis maculis notatus, vulgaris. C. B. P. *Our Lady's thiſtle.* Engliſh, *On uncultivated Places.*

ADDENDA.

Carline acaulos, magno flore. C. B. P. *The Carline Thiſtle.*

Carthamus officinarum, flore croceo. Inſt. R. H. *Safflower, or Baſtard Saffron.*

Carui Cæſalp. *Carraway.* Engliſh, *On Dunghills, but rare.*

Caryophyllata vulgaris. C. B. P. *Avens or Herb-Bennet.* Engliſh, *In Woods and under Hedges.*

Caryophyllus altilis major. C. B. P. *Clove-Gilly-flower.*

Centaurium majus, folio in lacinias plures diviſo. C. B. P. *Great Centory.*

Centaurium minus. C. B. P. *Centory.* Engliſh, *Incultivated Lands and in Woods.*

Cepa vulgaris. C. B. P. *Onion.*

Chærophyllum ſativum. C. B. P. *Chervil.*

Chamædrys vulgo vera exiſtimata. J. B. *Germander.* Engliſh, *On Chalky Lands.*

Chamæmelum nobile ſive Leucanthemum odoratius. C. B. P. *Camomile.* Engliſh, *On Commons and Heaths.*

Chamæmelum vulgare Leucanthemum Dioſcoridis. C. B. P. *May-Weed, Field Camomil.* Engliſh, *On Arable Land, and Dunghills.*

Chamæpitys lutea, vulgaris, ſive folio trifido. C. B. P. *Ground Pine.* Engliſh, *On arable Land.*

Chelidonium majus, vulgare. C. B. P. *Celandine.* Engliſh, *In Woods, and under Hedges.*

Chelidonia rotundifolia, minor. C. B. P. *Pilewort.* Engliſh, *By the ſides of Ditches, and in other moiſt Places.*

Chenopodium folio triangulo. Inſt. R. H. Engliſh, *Mercury or All-good.* Engliſh, *In Lanes, and unfrequented Places.*

Cicer ſativum. C. B. P. *Cicers, or Chich-Peaſe.*

Cichorium ſylveſtre ſive officinarum. C. B. P. *Wild Succory.* Engliſh, *in Lanes and Commons.*

Cicuta major. C. B. P. *Hemlock.* Engliſh, *On the ſide of Banks.*

Cinara hortenſis, foliis aculeatis & non aculeatis. C. B. P. *Artichoke.*

Ciſtus mas, folio oblongo, incano. C. B. P. *Holy Roſe.*

Ciſtus Ladanifera, Cretica, flore purpureo. Tour. Cor. *The Gum Ciſtus.*

Cnicus ſylveſtris, hirſutior, ſive Carduus Benedictus. C. B. P. *Carduus, or, The Bleſſed Thiſtle.*

Cochlearia folio ſubrotundo. C. B. P. *Scurvy-Graſs.*

Cochlearia folio ſinuato. C. B. P. *Sea Scurvy-Graſs.* Engliſh, *In Salt Marſhes.*

Conyza minor, flore globoſa. C. B. P. *Flea-bane.* Engliſh, *On Chalky, uncultivated Ground.*

Coriandrum majus. C. B. P. *Coriander.*

Coronopus ſylveſtris, hirſutior. C. B. P. *Bucks-horn-Plantain.* Engliſh, *On Commons and uncultivated Places.*

Coronopus Ruelli. J. B. *Swines Creſs.* Engliſh, *On moiſt Commons.*

Corylus ſylveſtris. C. B. P. *Haſel.* Engliſh, *In Woods.*

Cotula fætida. Dod. *Stinking Camomil.* Engliſh, *On arable Land.*

Cotyledon major. C. B. P. *Navel-wort, or Wall Penny-wort.* Engliſh, *On the ſides of Banks, but rare.*

Crithmum ſive Fœniculum maritimum, minus. C. B. P. *Sampire.* Engliſh, *On the Rocks by the Sea-ſide.*

Crocus ſativus. C. B. P. *Saffron.*

Cruciata hirſuta. C. B. P. *Croſs-wort.* Engliſh, *By the Sides of Hedges.*

Cucumis ſylveſtris aſininus dictus. C. B. P. *Wild Cucumber.*

Cucumis ſativus, vulgaris. C. B. P. *Garden Cucumber.*

Cupreſſus meta in faſtigium convoluta, quæ fæmina Plinii. C. B. P. *The Common Cypreſs.*

Cyanus montanus, latifolius vel Verbaſculum Cyanoides. C. B. P. *The Great Blue-Bottle.*

Cyanus minor ſive ſegetum. C. B. P. *The ſmall Blue-bottle.* Engliſh, *Amongſt Corn,* &c.

Cyclamen Hederæ folio. C. B. P. *Sow-bread.*

Cynogloſſum majus, vulgare. C. B. P. *Hounds-tongue.* Engliſh, *By Hedges Sides, and in other uncultivated Places.*

Cyperus odoratus, radice longa, ſive Cyperus officinarum. C. B. P. *Long Cyprus.*

Daucus foliis Fœniculi tenuiſſimis. C. B. P. *Daucus of* Crete, *or Candy Carrot.*

Daucus vulgaris. Cluſ. Hiſt. *Wild Carrot or Birds-neſt.* Engliſh, *On the Side of Paths, and other uncultivated Places.*

Delphinium majus, ſive vulgare. Park. *Larks-Spur.*

Dens leonis latiore folio. C. B. P. *Dandelion.* Engliſh, *On Walls, and in Graſs-fields every where.*

Digitalis purpurea, folio aſpero. C. B. P. *Fox-Glove.* Engliſh, *On the ſides of Banks, and in other uncultivated Places.*

Dipſacus ſativus. C. B. P. *The Manured teaſel.*

Dipſacus ſylveſtris aut Virga paſtoris major. C. B. P. *The wild Teaſel.* Engliſh, *On dry Banks.*

Doronicum radice ſcorpii. C. B. P. *Leopard's-bane.*

Dracunculus polyphyllus. C. B. P. *Dragon.*

Echium vulgare. C. B. P. *Vipers-Bugloſs.* Engliſh, *On Fallow'd Land, and amongſt the Corn.*

Elatine folio ſubrotundo. C. B. P. *Fluellin or Female Speedwell.* Engliſh, *On arable Land.*

Endivia latifolia ſativa. C. B. P. *Endive.*

Equiſetum paluſtre, longioribus ſetis. C. B. P. *Horſe-tail.* Engliſh, *By the ſide of Ditches, and other moiſt places.*

Eruca latifolia, alba, ſativa Dioſcoridis. C. B. P. *Rocket.*

Eryngium maririmum. C. B. P. *Eryngo.* Engliſh, *On the Sea-ſhores.*

Eryſimum vulgare. C. B. P. *Hedge Muſtard.* Engliſh, *On Walls, and by the way-ſides, very ccmmon.*

Eupatorium cannabinum. C. B. P. *Hemp-leav'd Agrimony.* Engliſh, *By the ſides of Ditches, and ſtanding Waters.*

Euphraſia officinarum. C. B. P. *Eye-bright.* Engliſh, *In Commons, and uncultivated Fields.*

Faba. C. B. P. *The Garden Bean.*

Faba minor, ſive Equina. C. B. P. *The Horſe-Bean.*

Filipendula vulgaris, an molon Plinii. C. B. P. *Dropwort.* Engliſh, *On Commons,* &c.

Filix ramoſa, major, pinnulis obtuſis non dentatis. C. B. P. *Female Fern.* Engliſh, *On Commons and Heaths.*

Filix non ramoſa, dentata. C. B. P. *The Male-Fern.* Engliſh, *On the ſide of Banks, and in Woods.*

Fœniculum vulgare, Germanicum. C. B. P. *Fennel.* Engliſh, *On uncultivated Ground.*

Fœniculum dulce. C. B. P. *Sweet-Fennel.*

Fœnum Græcum ſativum. C. B. P. *Fenugreek.*

Fragaria vulgaris. C. B. P. *Straw-berry.* Engliſh, *In woods.*

Frangula ſeu Alnus nigra, baccifera. Park. *Berry-bearing Alder.* Engliſh, *In moiſt Woods.*

Fraxinella. Cluſ. Hiſt. *Fraxinella or White Dittany.*

Fumaria officinarum & Dioſcoridis. C. B. P. *Fumitory.* Engliſh, *On arable Land.*

Galega vulgaris. C. B. P. *Goats-Rue.*

Gallium luteum. C. B. P. *Ladies Bed-ſtraw or Cheeſe-Rening.* Engliſh, *On the ſide of Banks, in Meadows.*

Geniſta anguloſa & ſcoparia. C. B. P. *Broom.* Engliſh, *On Commons,* &c.

Gentiana major, lutea. C. B. P. *Gentian or Felwort.*

Geranium folio malvæ rotundo. C. B. P. *Doves-foot, Cranes-bill.* Engliſh, *On the ſides of Banks.*

Geranium moſchatum. C. B. P. *Musk-Cranes-bill.* Engliſh, *In unfrequented lanes, but rare.*

Geranium Robertianum, primum. C. B. P. *Herb-Robert.* Engliſh, *by Hedges.*

Glycirrhiza ſiliquoſa, vel Germanica. C. B. P. *Liquorice.*

Gnaphalium vulgare, majus. C. B. P. *Cudweed.* Engliſh, *on Commons,* &c.

Gramen Canium arvenſe ſive Gramen Dioſcoridis. C. B. P. *Dog-graſs or Couch-graſs.* Engliſh, *On arable Land every where.*

Gratiola Centauroides. C. B. P. *Hedge-hyſſop.*

Groſſularia ſpinoſa, ſativa. C. B. P. *Gooſe-berry.*

Harmala. Dod. p. *Wild-Rue.*

Hedera arborea. C. B. P. *Ivy.* Engliſh, *climbing on Trees.*

Hedera terreſtris vulgaris. C. B. P. *Ground-Ivy or Alehoof.* Engliſh, *Under hedges and on Bank ſides.*

Helenium vulgare. C. B. P. *Elecampane.*

Helleborus albus, flore ſubviridi. C. B. P. *White Hellebore.*

Helleborus niger, flore roſeo. C. B. P. *Black Hellebore.*

Hepatica flore ſimplici cæruleo. Cluſ. Hiſt. *Noble Liverwort.*

Herba Paris. Ger. *Herb Paris, One Berry or true Love.* Engliſh, *In ſhady Woods.*

Herniaria glabra. J. B. *Rupturewort.*

Hieracium majus, folio Sonchi. C. B. P. *Hawkweed.* Engliſh, *On the Way ſides pretty common.*

ADDENDA.

Hordeum diſtichum. C. B. P. *Barley.*

Horminum Sclarea dictum. C. B. P. *Clary.*

Horminum ſylveſtre Lavendulæ flore. C. B. P. *Wild Clary.* Engliſh, *On uncultivated Fields.*

Hyacinthus oblongo flore cœruleus major. C. B. P. Engliſh, *Hair-Bells, in Woods and under Hedges.*

Hyoſcyamus albus, Major. C. B. P. *White Henbane.*

Hyoſcyamus vulgaris niger. C. B. P. *Black Henbane.* Engliſh, *On Commons and uncultivated Land.*

Hypericum vulgare. C. B. P. *Saint John's Wort.* Engliſh, *Under Hedges and by the Way-ſides.*

Hyſſopus officinarum, cœrulea ſeu ſpicata. C. B. P. *Hyſſop.*

Jaſminum vulgatius, flore albo. C. B. P. *Jaſmine.*

Iberis latiore folio. C. B. P. *Sciatica-Creſs.*

Imperatoria major. C. B. P. *Maſterwort.*

Iris alba, Florentina. C. B. P. *Orris.*

Iris vulgaris, Germanica, ſive ſylveſtris. C. B. P. *Garden-Flower-de-luce.*

Iris ſylveſtris fœtida. Inſt. R. H. *Stinking Gladwin.* Engliſh, *in Woods and moiſt uncultivated places.*

Iris paluſtris lutea. Ger. *Baſtard Acorus.* Engliſh, *In ſtanding waters.*

Iſatis ſativa vel latifolia. C. B. P. *Woad.*

Juniperus vulgaris, fruticoſa. C. B. P. *Juniper.* Engliſh, *On Heaths.*

Kali majus, cochleato ſemine. C. B. P. *Glaſs-wort.*

Lactuca ſativa. C. B. P. *Lettuce.*

Lamium album, non fœtens, folio oblongo. C. B. P. *White Archangel.* Engliſh, *under Hedges.*

Lamium purpureum, fœtidum, folio ſubrotundo, ſive Galeopſis Dioſcoridis. C. B. P. *Red Archangel, or Dead Nettles.* Engliſh, *on the ſides of Banks.*

Lapathum folio acuto, plano. C. B. P. *Sharp-pointed Dock.* Engliſh, *In Fields and uncultivated Places.*

Lapathum aquaticum, folio cubitali. C. B. P. *The great Water Dock.* Engliſh, *in ſtanding Waters.*

Lapathum hortenſe, rotundifolium, ſive Montanum. C. B. P. *Baſtard Monks Rhubarb.*

Lapathum folio acuto, rubente. C. B. P. *Bloodwort.* Engliſh, *On the Way ſide.*

Lapathum hortenſe, folio oblongo, ſive ſecundum Dioſcoridis. C. B. P. *Patience.*

Lapathum hortenſe, latifolium. C. B. P. *True Monks Rhubarb.*

Lapathum præſtantiſſimum, Rhabarbarum officinarum dictum. Moriſ. *Rhapontic.*

Lavendula anguſtifolia. C. B. P. *Lavender.*

Lavendula latifolia. C. B. P. *Lavender Spike.*

Laureola ſemper-virens flore viridi, quibuſdam Laureola mas. J. B. *Spurge-Laurel.* Engliſh, *in Woods.*

Laureola folio deciduo, flore purpureo, officinis Laureola fœmina. C. B. P. *Mezereon, or Spurge Olive.*

Laurus vulgaris. C. B. P. *The Bay.*

Lens vulgaris. C. B. P. *The Lentil.*

Lenticula paluſtris vulgaris. C. B. P. *Ducks-meat.* Engliſh, *on the Surface of ſtanding Waters every where.*

Lepidum latifolium. C. B. P. *Dittander, or Pepperwort.* Engliſh, *on uncultivated Ground, but not very common.*

Leucoium incanum, majus. C. B. P. *Stock Gilly-flower.*

Leucoium luteum, vulgare. C. B. P. *Wall-flower.* Engliſh, *on old Walls and Buildings.*

Leviſticum vulgare. C. B. P. *Lovage.*

Lichen terreſtris cinereus. Raii Syn. *Aſh colour'd Ground Liverwort.* Engliſh, *on Heaths and Commons.*

Liguſtrum Germanicum. C. B. P. *Privet.* Engliſh, *in Hedges.*

Lilium album, flore erecto & vulgare. C. B. P. *The White Lilly.*

Lilium Convallium, album. C. B. P. *Lillies of the Valley.* Engliſh, *In ſhady Woods.*

Limonium maritimum, majus. C. B. P. *Sea Lavender.* Engliſh, *In the Salt Marſhes.*

Linaria vulgaris, lutea, flore majore. C. B. P. *Toad-flax.* Engliſh, *On the ſide of Banks.*

Lingua Cervina, officinarum. C. B. P. *Hart's-tongue.* Engliſh, *On the Wall of Wells, and in other moiſt Places.*

Linum ſativum. C. B. P. *Flax.*

Linum pratenſe, floſculis exiguis. C. B. P. *Mountain or Purging Flax.* Engliſh, *In Meadows and Paſtures.*

Lithoſpermum majus, erectum. C. B. P. *Gromill or Grey Mill.* Engliſh, *On uncultivated Land.*

Lotus hortenſis odora. C. B. P. *Sweet Trefoil.*

Lunaria racemoſa, minor. C. B. P. *Moonwort.* Engliſh, *On Commons and Heaths.*

Lupinus ſativa, flore albo. C. B. P. *White Lupin.*

Lupulus mas & fœmina. C. B. P. *Hop.*

Lycoperſicon fructu cераſi. Inſt. R. H. *Love-apple.*

Lyſimachia lutea major. C. B. P. *Looſeſtrife.* Engliſh, *On the Side of Ditches.*

Majorana vulgaris. C. B. P. *Sweet Marjoram.*

Malva ſylveſtris, folio ſinuato. C. B. P. *Mallow.* Engliſh, *On Banks, and in uncultivated Places.*

Malva roſea, folio ſubrotundo. C. B. P. *Hollyhock.*

Mandragora fructu rotundo. C. B. P. *Mandrake.*

Marrubium album, vulgare. C. B. P. *White Horehound.* Engliſh, *On dry chalky Land.*

Marrubium nigrum, fœtidum, ballote Dioſcoridis. C. B. P. *Black or ſtinking Horehound.* Engliſh, *On Banks, and by the Way-ſide.*

Marum vulgare. Ger. *Herb-maſtick, or Maſtick-thyme.*

Marum Syriacum vel Creticum. H. L. *Marum, or* Syrian *Maſtick.*

Matricaria vulgaris vel ſativa. C. B. P. *Feverfew.* Engliſh, *On Dunghills, and in unfrequented Lanes.*

Melilotus officinarum Germaniæ. C. B. P. *Melilot.* Engliſh, *By the Side of cultivated Fields.*

Meliſſa hortenſis. C. B. P. *Balm.*

Mentha anguſtifolia, ſpicata. C. B. P. *Mint, or Spearmint.*

Mentha rotundifolia, paluſtris, ſeu aquatica major. C. B. P. *Water-mint.* Engliſh, *In Ditches and ſhallow Waters.*

Mentha ſpicis brevioribus & habitioribus, foliis Menthæ fuſcæ ſapore fervido Piperis. Raii Syn. *Pepper-mint.* Engliſh, *In watery Places.*

Mentha ſylveſtris longiore folio. C. B. P. *Horſe mint.* Engliſh, *In uncultivated Places.*

Mercurialis teſticulata ſive mas, & ſpicata ſive fœmina Dioſcoridis & Plinii. C. B. P. French *Mercury.* Engliſh, *On the Way-ſide.*

Meſpilus Apii folio ſylveſtris, ſpinoſa ſive oxyacantha. C. B. P. *The White-thorn, or Hawthorn.* Engliſh, *In Hedges.*

Meſpilus vulgaris. J. B. *The common Medlar.*

Meum foliis Anethi. C. B. P. *Mew or Spignel.*

Milium ſemine luteo vel albo. C. B. P. *Millet.*

Millefolium vulgare album. C. B. P. *Yarrow Milfoil, or Noſebleed.* Engliſh, *By the Paths-ſides every where.*

Myrrhis magno ſemine, longo, ſulcato. J. B. *Sweet Cicely, or ſweet Fern.*

Napus ſativus. C. B. P. *Sweet Navew, or* French *Turnep.*

Napus ſylveſtris. C. B. P. *Wild Navew, or Cole-ſeed,* Engliſh, *On Banks.*

Naſturtium aquaticum, ſupinum. C. B. P. *Water-creſs.* Engliſh, *In Ditches and ſtanding Waters.*

Naſturtium hortenſe, vulgatum. C. B. P. *Garden-creſs.*

Nepeta major, vulgaris. Park. *Nep, or Catmint.* Engliſh, *On chalky, dry Fields.*

Nicotiana major, latifolia. C. B. P. *Tobacco.*

Nigella flore minore, ſimplici candido. C. B. P. *Fennel Flower.*

Ocymum vulgatius. C. B. P. *Baſil.*

Olea ſativa. C. B. P. *The Olive-tree.*

Ophyogloſſum vulgatum. C. B. P. *Adders-tongue.* Engliſh, *In moiſt Meadows.*

Origanum ſylveſtre. Cunila bubula Plinii. C. B. P. *Wild Marjoram.* Engliſh, *On dry uncultivated Places.*

Origanum onites. C. B. P. *Origany of* Crete.

Orchis morio mas, foliis maculatis. C. B. P. *Male Satyrium, or Fools-ſtones.* Engliſh, *In Woods and moiſt Meadows.*

Orchis morio fœmina. C. B. P. *Female Satyrium.* Engliſh, *In Meadows.*

Orobus ſiliquis articulatis, ſemine majore. C. B. P. *Bitter Vetch.*

Oſmunda Regalis. Ger. *Flowering Fern, or Oſmund-royal.*

Oxys. Inſt. R. H. *Wood-ſorrel.* Engliſh, *In moiſt Woods.*

Pœonia fœmina, flore rubro, majore. C. B. P. *Piony.*

Pœonia folio nigricante ſplendido quæ mas. C. B. P. *Male-piony.*

Panax Coloni & Marrubium aquaticum, acutum. Ger. *Clowns Allheal.* Engliſh, *By the Side of Ditches, and other watery Places.*

ADDENDA.

Panax paſtinacæ folio. C. B. P. *Hercules's Allheal.*

Panicum Germanicum, ſive panicula minore. C. B. P. *Panick.*

Papaver hortenſe ſemine albo. C. B. P. *White-poppy.*

Papaver hortenſe, ſemine nigro. C. B. P. *Black-poppy.*

Papaver erraticum. Rhoia's Dioſcoridi. Theophraſti. Plinio. C. B. P. *Red-poppy.* Engliſh, *On arable Land.*

Parietaria officinarum. C. B. P. *Pellitory of the Wall.* Engliſh, *On Walls.*

Paronychia rutaceo folio. Ger. *Blue-leav'd Whitlow-graſs.* Engliſh, *On Walls and Buildings.*

Paſtinaca ſativa, latifolia. C. B. P. *Parſnep.*

Paſtinaca ſylveſtris latifolia. C. B. P. *Wild-parſnep.* Engliſh, *On uncultivated Places.*

Pentaphylloides Argentina dicta. Raii. Syn. *Silver-weed, or wild Tanſey.* Engliſh, *On moiſt Commons, and on the Side of Ditches.*

Perfoliata vulgatiſſima, ſive arvenſis. C. B. P. *Thorough-wax.* Engliſh, *On arable Land.*

Periclymenum non perfoliatum Germanicum. C. B. P. *Honeyſuckle.* Engliſh, *In Hedges.*

Perſicaria mitis maculoſa. C. B. P. *Spotted Arſmart.* Engliſh, *On Dunghills.*

Perſicaria urens, ſeu Hydropiper. C. B. P. *Arſmart, or Water-pepper.* Engliſh, *By the Side of Ditches, and in other watery Places.*

Petaſites major & vulgaris. C. B. P. *Butter-bur.* Engliſh. *By Ditches Sides.*

Peucedanum Germanicum. C. B. P. *Hogs-fennel, or Sulphurwort.* Engliſh, *But very rare.*

Phellandrium vel Cicutaria aquatica quorundam. J. B. *Water-hemlock.* Engliſh, *In ſtanding Waters.*

Piloſella major, repens, hirſuta. C. B. P. *Mouſe-ear.* Engliſh, *On Walls and dry gravelly Commons.*

Pimpinella ſanguiſorba, minor. C. B. P. *Burnet.* Engliſh, *On chalky Ground.*

Pimpinella ſaxifraga, major, umbellâ candida. C. B. P. *Burnet-ſaxifrage.* Engliſh, *Under Hedges, and by the Side of Fields.*

Pimpinella ſaxifraga major, altera. C. B. P. *The leſſer Burnet-ſaxifrage.* Engliſh, *In Paſtures.*

Piſum arvenſe, flore candido, fructu rotundo albo. C. B. P. *Peaſe.*

Plantago latifolia, ſinuata. C. B. P. *Plantain.* Engliſh, *In moiſt Places.*

Plantago anguſtifolia, major. C. B. P. *Narrow-leav'd Plantain, or Ribwort.* Engliſh, *On Dunghills, and by the Way-ſide every where.*

Plumbago quorundum. Cluſ. H. *Tooth-wort, or Lead-wort.*

Polium maritimum, erectum Monſpeliacum. C. B. P. *Poley-mountain.*

Polium anguſtifolium, Creticum. C. B. P. *Poley of* Crete.

Polygonatum latifolium, vulgare. C. B. P. *Solomon's-ſeal.* Engliſh, *In ſome Woods, but not common.*

Polygonium latifolium. C. B. P. *Knot-graſs.* Engliſh, *In uncultivated Places.*

Polypodium vulgare. C. B. P. *Polypody.* Engliſh, *On ſhady Banks and Walls.*

Porrum commune capitatum. C. B. P. *The Leek.*

Portulaca latifolia, ſeu ſativa. C. B. P. *Purſlane.*

Primula veris. Inſt. R. H. *Primroſe.* Engliſh, *In Woods and under Hedges.*

Primula veris, major. Ger. *Cowſlip, or Pagels.* Engliſh, *In Meadows.*

Prunella major folio non diſſecto. C. B. P. *Self-heal.* Engliſh, *In Meadows and Paſture-land.*

Prunus ſylveſtris. C. B. P. *The Sloe-tree.* Engliſh, *In Hedges.*

Pſyllium majus, erectum. C. B. P. *Fleawort.*

Ptarmica vulgaris, folio longo ſerrato, flore albo. J. B. *Sneezwort.* Engliſh, *In Woods and under Hedges.*

Pulegium latifolium. C. B. P. *Pennyroyal.* Engliſh, *On moiſt Commons.*

Pulegium anguſtifolium. C. B. P. *Harts-pennyroyal.*

Pulmonaria maculoſa, latifolia. Park. *Spotted Lungwort, or* Jeruſalem *Sage.*

Punica ſativa. Inſt. R. H. *Pomegranate.*

Punica ſylveſtris flore pleno majore. Inſt. R. H. *The wild Pomegranate, with a large double Flower.*

Pyrethrum Hiſpanicum. C. B. P. *Pellitory of* Spain.

Pyrola rotundifolia, major. C. B. P. *Winter-green.* Engliſh, *In ſhady Woods in the North.*

Quinquefolium majus, repens. C. B. P. *Cinquefoil.* Engliſh, *In Paſtures.*

Ranunculus pratenſis, radice verticilli modo rotundo. C. B. P. *Crow-foot.* Engliſh, *In Paſtures.*

Ranunculus Apii folio, lævis. C. B. P. *Marſh Crow-foot.* Engliſh, *In ſtanding Waters, very common.*

Raphanus minor oblongus. C. B. P. *Radiſh.*

Raphanus ruſticanus. C. B. P. *Horſe-radiſh.* Engliſh, *On Dunghills, and by the ſide of Fields.*

Rapa rotunda ſativa. C. B. P. *Turnep.*

Rhamnus Catharticus. C. B. P. *Buck-thorn.* Engliſh, *In Hedges.*

Rhus folio Ulmi. C. B. P. *Sumach.*

Ribes vulgaris, fructu rubro. H. L. *Red Currants.*

Ros ſolis folio rotundo. C. B. P. *Roſa-ſolis, or Sun-dew.* Engliſh, *On Commons where there are Bogs.*

Roſa alba, vulgaris, major. C. B. P. *The white Roſe.*

Roſa Damaſcena, flore pleno. Hort. Eyſt. *The Damask Roſe.*

Roſa rubra, multiplex. C. B. P. *The red Roſe.*

Roſa ſylveſtris, vulgaris, flore odorato, incarnato. C. B. P. *The Dog Roſe, or Wild Briar.* Engliſh, *In Hedges.*

Roſmarinus hortenſis, anguſtiore folio. C. B. P. *Roſemary.*

Rubia tinctorum, ſativa. C. B. P. *Madder.*

Rubus vulgaris, ſive Rubus fructu nigro. C. B. P. *The Bramble, or Black-berry.* Engliſh, *By Hedges very common.*

Rubus Idæus ſpinoſus, fructu rubro. J. B. *Rasberry-buſh.* Engliſh, *In ſome Woods.*

Ruſcus Myrtifolius, aculeatus. Inſt. R. H. *Kneeholm, or Butchers-broom.* Engliſh, *In Woods; and on Commons.*

Ruſcus latifolius, fructu folio innaſcente. Inſt. R. H. *Horſe-tongue, or Double-tongue.*

Ruſcus latifolius, fructu folio inſidente. Inſt. R. H. *The Bay of* Alexandria.

Ruta hortenſis, latifolia. C. B. P. *Rue.*

Ruta Muraria. C. B. P. *White Maiden-hair, or Wall Rue.* Engliſh, *On Walls, and other Buildings in moiſt Places.*

Sabina folio Tamariſci Dioſcoridis. C. B. P. *Savin.*

Salvia nigra. C. B. P. *Common red Sage.*

Salvia minor, aurita & non aurita. C. B. P. *Sage of Virtue.*

Sambucus fructu in umbella nigro. C. B. P. *Elder.* Engliſh, *In Hedges.*

Sambucus racemoſa, rubra. C. B. P. *Mountain Elder.*

Sambucus humilis, ſive Ebulus. C. B. P. *Dwarf-elder, or Danewort.* Engliſh, *But not common.*

Sanicula officinarum. C. B. P. *Sanicle.* Engliſh, *In Woods and ſhady Places.*

Santolina foliis teretibus. R. H. *Lavender-cotton.*

Saponaria major, lævis. C. B. P. *Sopewort,* Engliſh, *On the Side of Banks.*

Satureia hortenſis, ſive cunila ſativa. Plinii. C. B. P. *Savory.*

Satureia montana, durior. C. B. P. *Winter-ſavory.*

Saxifraga rotundifolia, alba. C. B. P. *White Saxifrage.* Engliſh, *In Meadows.*

Scabioſa pratenſis, hirſuta, quæ officinarum. C. B. P. *Scabious.* Engliſh, *On arable Land.*

Scabioſa radice ſucciſa, flore globoſo. Raii Syn. *Devils-bit, or Wood-ſcabious.* Engliſh, *In Woods, and under Hedges.*

Scordium legitimum. Park. *Scordium, or Water-germander.* Engliſh, *In watery Places, but not common.*

Scordium alterum, ſive ſalvia agreſtis. C. B. P. *Wood-ſage.* Engliſh, *In Woods, and on Heaths.*

Scorzonera latifolia, ſinuata. C. B. P. *Scorzonera, or Vipers-graſs.*

Scrophularia nodoſa, fœtida. C. B. P. *Figwort.* Engliſh, *In Woods and ſhady Places.*

Scrophularia aquatica, major. C. B. P. *Water-figwort, or Water-betony.* Engliſh, *By the Side of Ditches.*

Secale hybernum vel majus. C. B. P. *Rie.*

Sedum majus, vulgare. C. B. P. *Houſeleek.* Engliſh, *On Houſe-tops and Walls.*

Sedum minus teretifolium, album. C. B. P. *Leſſer Houſe-leek.* Engliſh, *On Walls,* &c.

Sedum minus, vermiculatum, acre. C. B. P. *Wall-pepper, or Stone-crop.* Engliſh, *On Walls and Buildings.*

Senecio minor, vulgaris. C. B. P. *Groundſel.* Engliſh, *On Walls, and on arable Lands, and alſo By-paths every where.*

Serpyllum vulgare, minus. C. B. P. *Mother of Thyme.* Engliſh, *On Heaths and Commons.*

Seſeli pratenſe, Silaus fortè Plinio. C. B. P. *Meadow-ſaxifrage.* Engliſh, *In moiſt Paſtures.*

ADDENDA.

Siler montanum, majus. Mor. Umb. *Siler Mountain, Baſtard Lovage, or common Hartwort.*

Sinapi Rapi folio. C. B. P. *Muſtard,* Engliſh, *On Dunghills,* &c.

Sinapi hortenſe, ſemine albo. C. B. P. *White Muſtard.*

Siſarum Germanorum. C. B. P. *Skirret.*

Sium latifolium. C. B. P. *Broad-leav'd Water-parſnip.* Engliſh, *In ſtanding Waters.*

Sium aromaticum, ſiſon officinarum. Inſt. R. H. *The* German, *or common Amomum.* Engliſh, *Under Hedges, and in ſhady Lanes.*

Smyrnium. Math. *Alexanders.* Engliſh, *By the Side of Fields, but not common.*

Solanum hortenſe. Ger. *Nightſhade.* Engliſh, *On Dunghills.*

Solanum ſcandens ſeu Dulcamara. C. B. P. *Woody Nightſhade.* Engliſh, *In Hedges.*

Soldanella maritima, minor. C. B. P. *Sea Colewort, or Sea Bindweed.* Engliſh, *On the Sea-ſhore.*

Sonchus aſper, laciniatus. C. B. P. *Prickly Sow-thiſtle.* Engliſh, *On arable Land.*

Sonchus lævis laciniatus, latifolius. C. B. P. *Smooth Sow-thiſtle.* Engliſh, *With the former.*

Sophia Chirurgorum. Ger. *Flixweed.* Engliſh, *On arable Land.*

Sorbus ſativa. C. B. P. *The true Service.*

Sorbus torminalis. Ger. *The wild Service.* Engliſh, *In Hedges.*

Spinachia vulgaris, capſula ſeminis aculeata. Inſt. *Spinach.*

Staphiſagria. Math. *Staves-acre.*

Stœchas purpurea. C. B. P. *Stæchas,* French *Lavender, or Stickadove.*

Stœchas Citrina, tenuifolia, Narbonenſis. J. B. *Goldylocks.*

Stramonium fructu ſpinoſo, oblongo flore albo. Inſt. R. H. *Thorn-apple.* Engliſh, *On Dunghills.*

Symphytum conſolida major, fœmina, flore albo vel pallide luteo. C. B. P. *Comfrey.* Engliſh, *In uncultivated Places.*

Tamariſcus Narbonenſis. Lob. *Tamarisk.*

Tanacetum vulgare, luteum. C. B. P. *Tanſey.* Engliſh, *In unfrequented Lanes.*

Telephium vulgare. C. B. P. *Orpine.* Engliſh, *In Woods and moiſt Land.*

Thapſia Carotæ folio. C. B. P. *Deadly Carrot.*

Thlaſpi arvenſe, ſiliquis latis. C. B. P. *Treacle Muſtard.* Engliſh, *In arable Land, but rare.*

Thlaſpi arvenſe, Vaccariæ incano folio, majus. C. B. P. *Mithridate-muſtard.* Engliſh, *In arable Land, and near Hedges.*

Thuya Theophraſti. C. B. P. *Tree of Life.*

Thymelæa foliis Lini. C. B. P. *Spurge-flax.*

Thymus vulgaris, folio tenuiore. C. B. P. *Thyme.*

Tithymalus latifolius, Cataputia dictus. H. L. *Garden-ſpurge.*

Tithymalus paluſtris, fruticoſus. C. B. P. *German-ſpurge, or Greater Eſula.*

Tithymalus foliis Pini, fortè Dioſcoridis Pytyuſa. C. B. P. *The leſſer Eſula.*

Tragacantha. C. B. P. *Goats-thorn.*

Tormentilla ſylveſtris. C. B. P. *Tormentil.* Engliſh, *On Heaths.*

Trichomanes ſive polytrichum officinarum. C. B. P. *Maiden-hair.* Engliſh, *On Walls, and the Side of ſhady Banks.*

Trifolium pratenſe, purpureum, majus. C. B. P. *Trefoil.* Engliſh, *In Paſtures.*

Trifolium arvenſe, humile ſpicatum, ſive Lagopus. C. B. P. *Hares-foot Trefoil.* Engliſh, *On arable Land.*

Trifolium paluſtre. C. B. P. *Bog-bean, or Marſh-trefoil.* Engliſh, *On Bogs.*

Triticum hybernum, ariſtis carens. C. B. P. *Wheat.*

Tuſſilago vulgaris. C. B. P. *Colts-foot.* Engliſh, *On barren Land.*

Valeriana hortenſis, phu folio oluſatri. Dioſcoridis. C. B. P. *Valerian.*

Valeriana paluſtris, minor. C. B. P. *The leſſer Valerian.* Engliſh, *On moiſt Meadows, and in Woods.*

Valeriana ſylveſtris, major, foliis anguſtioribus. Rand. *Wild Valerian.* Engliſh, *In chalky Cloſes.*

Verbaſcum mas latifolium, luteum. C. B. P. *Mullein.* Engliſh, *On dry Banks, and ſandy Land.*

Verbena communis, cœruleo flore. C. B. P. *Vervain.* Engliſh, *Near Farm Yards.*

Veronica mas ſupina & vulgatiſſima C. B. P. *Speedwell, or Paul's-betony.* Engliſh, *In woody Places.*

Veronica aquatica, major, folio ſubrotundo. Mor. Hiſt. *Brooklime.* Engliſh, *In ſtanding Water.*

Vicia ſativa, vulgaris, ſemine nigro. C. B. P. *Vetch, or Tare.*

Viola martia purpurea flore ſimplici odore. C. B. P. *Violet.* Engliſh, *In Woods, and near Hedges.*

Viola tricolor, hortenſis, repens. C. B. P. *Hearts-eaſe, or Panſies.*

Vinca pervinca, vulgaris. Ger. *Periwincle.* Engliſh, *In Hedges and Woods.*

Virga aurea anguſtifolia minus ſerrata. C. B. P. *Golden-rod.* Engliſh, *In Woods, and near Hedges.*

Vitex foliis anguſtioribus, cannabis modo diſpoſitis. C. B. P. *The Chaſte-tree.*

Vitis Idæa foliis oblongis crenatis, fructu nigricante. C. B. P. *Bilberry.* Engliſh, *On moory Heaths.*

Vitis Vinifera. C. B. P. *The Vine.*

Ulmaria. Cluſ. *Meadow-ſweet, or Queen of the Meadows.* Engliſh, *In moiſt Meadows, and by the Side of Ditches.*

Urtica urens, maxima. C. B. P. *Nettle.* Engliſh, *By Hedges and Banks.*

Urtica urens, pilulas ferens ſanctiſſima Dioſcoridis, ſemine lini. C. B. P. *The Roman Nettle.*

Xanthium. Dod. *The leſſer Burdock.*

Zea Briza dicta, vel monococcos Germanica. C. B. P. *Spelt, or St. Peter's Corn.*

A CATALOGUE *of the* LARGE TREES *which are placed in the* London Diſpenſatory, *as* MEDICINAL PLANTS, *but generally grow too large to be admited into ſmall Gardens.*

ABIES Mas, conis ſurſum ſpectantibus. C. B. P. *The Silver Fir.*

Abies tenuiore folio, fructu deorſum inflexo. C. B. P. *The common or Spruce-fir, or Pitch-tree.*

Amygdalus ſativa. C. B. P. *The Almond-tree.*

Armeniaca fructu majore. Inſt. R. H. *The Apricock.*

Betula. C. B. P. *The Birch-tree.* Engliſh, *In Woods.*

Caſtanea ſativa. C. B. P. *The Cheſnut-tree.*

Ceraſus major, ac ſylveſtris, fructu ſubdulci nigro colore inficiente. C. B. P. *The black Cherry.* Engliſh, *In Hedge-rows, and ſome Woods.*

Ceraſus ſativa, rotunda, rubra & acida. C. B. P. *The red Cherry.*

Cydonia fructu oblongo, læviori. Inſt. R. H. *The Quince-tree.*

Ficus communis. C. B. P. *The Fig-tree.*

Fraxinus excelſior. C. B. P. *The Aſh-tree.* Engliſh, *In Hedge-rows.*

Fraxinus rotundiore folio. C. B. P. *The Manna Aſh.*

Ilex aculeata Cocciglandifera. C. B. P. *The Kermes Oak.*

Larix folio deciduo, conifera. J. B. *The Larch-tree.*

Malus ſylveſtris, acido fructu albo. Inſt. R. H. *The Crab-tree.* Engliſh, *In Hedges.*

Malus ſativa. Raii Syn. *The Apple-tree.*

Morus fructu nigro. C. B. P. *The Mulberry.*

Nux juglans ſive Regia vulgaris. C. B. P. *The Walnut.*

ADDENDA.

Perſica molli carne, & vulgaris, viridis & alba. C. B. P. *The Peach-tree.*

Pinus ſativa. C. B. P. *The Pine-tree.*

Pinus ſylveſtris. C. B. P. *The Wild Pine or Pineaſter.*

Populus nigra. C. B. P. *The Black Poplar.* Engliſh, *in Hedge-rows.*

Pyrus ſativa. C. B. P. *The Pear-tree.*

Quercus latifolia, fœmina. C. B. P. *The Oak-tree.* Engliſh, *in Foreſts.*

Salix vulgaris alba, arboreſcens. C. B. P. *The Willow.* Engliſh, *By the ſide of Rivers.*

Suber latifolium, perpetuò virens. C. B. P. *The Cork-tree.*

Tilia fœmina, folio majore. C. B. P. *The Lime-tree.*

Ulmus Campeſtris & Theophraſti. C. B. P. *The Elm-tree.* Engliſh, *in Hedge-rows.*

A ſhort EXPLANATION *of the* TECHNICAL WORDS *made uſe of in this* WORK, *ſome of which have been inſerted in the Body of the* WORK; *but for the eaſier turning to them, it has been thought proper to draw them up in this Place together.*

Acaulis & Acaulos, without a Stalk; that is, when the Flower of the Plant grows cloſe to the Ground, having no viſible Stalk, as in the *Carline-thiſtle*, &c.

Acinus & Acini, are the Berries or Fruit of the *Elder*, *Privet*, *Ivy*, &c.

Ala is the Sinus of a Stalk, which the Leaf or Pedicle makes with the Stalk or Branches, from whence a new Offſpring is wont to put forth.

Amentaceous Flowers are ſuch as have an Aggregate of Summits hanging down in form of a Rope or Cats-tail: as the male Flowers of the *Mulberry*, the *Hazel*, *Walnut* and *Oak*. Theſe are alſo called *Iulus*, and in *Engliſh*, *Katkins*.

Apetalous Flowers. See *Flos*.

Apices, Summits, are thoſe Bodies which hang upon the Chives or Threads which generally ſurround the Pointals of Flowers, and contain the prolifick Powder, which is analogous to the male Sperm in Animals, as in *Plate* III. *Fig.* 32. *b*.

Arbor, a Tree is defined to be a woody Plant of the largeſt Growth, whoſe Trunk is perennial and ſingle, and divided into many large Branches, which are again divided into ſmaller Twigs, on which the Leaves, Flowers and Fruits are produced.

Ariſta is that ſharp-pointed Needle which ſtands out from the Husk or Covering of the Grain of *Corn*, *Graſs*, &c. and is called *Awn*, or *Beard*.

Articulation is the Connection of Parts that conſiſt of Joints or Knees, ſuch as the Pods of *Birdsfoot*, French *Honeyſuckle*, &c. which when ripe, divide into ſo many Parts, as there are Knees or Joints.

Axis is a taper Column placed in the Centre of ſome Flowers or Katkins, about which the other parts are diſpoſed.

Bacca, i. e. a Berry, is a roundiſh Fruit, for the moſt part ſoft, containing one or more Seeds in a pulpy Subſtance.

Balauſtium, is the Cup of the Flower of the *Wild Pomegranate*.

Barbulæ, are the half Florets of compound Flowers.

Bivalve the Pods or Husks of Plants, which open lengthways in two parts, like the Shell of a *Muſcle*, are termed *Bivalve*.

Brachia are the Diviſions of the large Branches of Trees from the Trunk.

Bulbus, bulbous Roots, are ſuch as conſiſt either of ſeveral Coats involving one another, or of ſeveral Scales lying one over another. The firſt of theſe is called a tunicated Root, (of this Sort is the *Onion*, *Tulip*, &c.) and the laſt is called a ſquamous (i. e. a ſcaly) Root, of which Sort is the *Lily*, *Martagon*, &c.

Calypha is the thin Involucrum or Cover of ſome Seeds.

Caly, or Empalement, is generally underſtood to mean thoſe leſs tender Leaves, which cover the other Parts of the Flower.

Capillaments in Flowers, are generally underſtood to mean the Chives which ſupport the *Apices*.

Capitulum is the Head or Top of any Plant.

Capſula is the ſhort Pod or Husk of a Plant containing the Seed.

Carina is the concave Petal or Segment of a Butterfly-flower, which reſembles the Keel or lower part of a Boat.

Caudex is the Trunk of a Tree.

Caulis is a part of a Plant receiving the Nouriſhment from the Root, and conveying it into the other parts with which it is cloath'd, not having one Side diſtinguiſhable from the other. The Stalk of a Tree is called the *Trunk*, and in *Corn* and *Graſs*, it is called the *Blade*.

Caulis volubilis, a twining Stalk, is that which twiſts about any Prop without the Help of Tendrils; as the *Hop*, *Kidney-bean*, &c.

Caulis ſcandens a climbing Stalk, is that which climbs by the Help of Tendrils; as the *Vine*, *Briony*, &c.

Caulis repens, a creeping Stalk, is that which lies on the Ground, and propagates itſelf by emitting Roots, as the *Ivy*, *Strawberry*, &c.

Caulis procumbens, a procumbent or trailing Stalk, is that which lies on the Ground without emitting Roots.

Cirri are the little Fibres of the Roots of Plants.

Claviculus, or *Capreolus*, (i. e. Tendrils) is a Part of a Stalk, curling and laying hold on any adjacent Body, and is always produced at a Joint. Theſe are alſo called *Claſpers*.

Coma is the Top of a Branch or Flower.

Conus, i. e. Cone, is the Fruit of the *Pine*, *Fir*, *Cedar*, &c.

Corymbus ſignifies a Cluſter of Flowers or Fruit, ſtanding on Pedicles, which are diſpoſed in ſuch a manner as to form a Sphere; of this Sort is the *Ivy*, &c.

Crena, or crenated Leaves, are ſuch as are cut about the Edges, into ſeveral obtuſe Segments, as in *Plate* I. *Fig.* 2.

Cubitus, a Cubit, i. e. a Foot and half; ſo the Stalks of Plants are termed *Cubitalis*, *Bicubitalis*, &c. according to their Height.

Culmus is the Stalk or Blade of *Corn*.

Cylindrus, i. e. Cylinder, the Fruit of Plants are termed cylindrical, when they reſemble a Column.

Cytinus is generally underſtood to mean the Flowers of the true Pomegranate; but by ſome Writers the Cups of Flowers which expand after the ſame manner, are termed *Cytiniformes*.

Denticulatus, i. e. indented; thoſe Leaves of Plants which are cut about the Edges into ſeveral Segments more acute than the crenated Leaves, are termed denticulated, as in *Plate* I. *Fig.* 1.

Digitated Leaves are compound Leaves divided into ſeveral Parts, all of which meet together at the Tail, in form of a Hand, as in *Plate* II. *Fig.* 14.

Diſcus, i. e. the Disk, is an Aggregate of Florets, forming, as it were, a plain Surface, as in *Plate* III. *Fig.* 10.

Diſſepimentum is the thin Septum, which divides the ſeveral Cells in the Fruit of Plants.

Echinus; thoſe Plants or Parts of Plants which are beſet very cloſely with Spines, like a *Hedgehog*, are termed *echinated*.

Emarginatus; thoſe Leaves of Plants which are hollowed at their Extremities, ſo as to form a Heart, are called emarginated Leaves, as in *Plate* I. *Fig.* 7.

Embryo is the tender Fœtus of the Plant.

Fimbria, Fringe; thoſe Parts of the Plants or Flowers, whoſe Borders end in ſmall Threads, reſembling fringed Linen, are termed *fimbriated*.

Fiſtulous Plants are ſuch whoſe Stalks are hollow like a Pipe.

Flos, i. e. a Flower, is the Organs of Generation of both Sexes, adhering to a common Placenta, together with their common Coverings; or of either Sex ſeparately, with its proper Coverings, if it have any.

ADDENDA.

The Flowers of Plants are diſtinguiſhed by Botaniſts in the following Manner:

Flos amentacous, i. e. armentaceous Flowers; theſe are ſuch as are termed *Katkins*.

Flos apetalus, i. e. Flowers without Leaves; theſe are ſuch as have no other Covering to the Parts of Generation but the *Calyx*.

Flos campaniformis is ſuch a Flower as is ſhaped like a Bell, as in *Plate* III. *Fig.* 19 and 20. Thoſe Flowers which ſpread in the Manner of the *Figure* 19. are termed open bell-ſhap'd Flowers. But thoſe like *Fig.* 20. are called tubulous bell-ſhap'd Flowers.

Flos caryophylleus is ſuch a Flower as is ſhaped like a Clove-gilliflower.

Flos compoſitus is a compound Flower, which is compoſed either of Florets, as in *Plate* III. *Fig.* 17. *a* and *b*; or Semi-florets, as in *Plate* III. *Fig.* 17. *c*; or of both together, as in *Plate* III. *Fig.* 17. Of this Kind is the *Blue-bottle*, *Knapweed*, &c.

Flos cruciformis, i. e. a croſs-ſhap'd Flower, which is compoſed of Four Petals, placed in form of a Croſs, as in *Plate* III. *Fig.* 5 and 32. Of this Sort is, the *Cabbage*, *Muſtard*, *Wall-flower*, &c.

Flos floſculoſus, i. e. a floſculous Flower, is that which is compoſed of ſeveral Florets; ſee *Plate* III. *Fig.* 1. *a* and *b*, included in one common Cup.

Flos infundibuliformis, i. e. a funnel-ſhap'd Flower, is that which is ſhaped like a Funnel, as in *Plate* III. *Fig.* 21. Of this Kind is the *Primroſe*, *leſſer Centaury*, &c.

Flos labiatus, i. e. a lip-ſhap'd Flower; this is an irregular monopetalous Flower, divided commonly into two Lips; the upper Lip is called the Creſt, and the under one the Beard. Sometimes the Creſt is wanting, and then the Style and Chives ſupply its Place; this is by ſome called an unilabiated Flower. See *Plate* III. *Fig.* 36. *a b c* and *d*.

Flos liliaceus, i. e. a lily-ſhap'd Flower, is generally compoſed of ſix Petals, which reſemble thoſe of the Lily, as in *Plate* III. *Fig.* 35. Of this Sort is the *Tulip*, *Aſphodel*, &c.

Flos monopetalus, i. e. a Flower compoſed of one Leaf; all thoſe Flowers whoſe Petals are joined at the Bottom, ſo that they fall off intire, are termed monopetalous Flowers, as in *Plate* III. *Fig.* 18.

Flos monopetalus anomalus, i. e. an irregular Flower conſiſting of one Leaf, as in *Plate* III. *Fig.* 30 and 31.

Flos papilionaceus, a papilionaceous or pea-bloom Flower, is one which in ſome meaſure reſembles a Butterfly with its Wings expanded. It always conſiſts of theſe four Parts; the Standard (or *Vexillum*), which is a large erect Segment or Petal; the two Wings (*Alæ*), which compoſe the Sides; and the Keel (*Carina*), which is a concave Petal or Segment reſembling the Keel of a Boat; this is ſometimes intire, and at other times it conſiſts of two Petals or Segments, adhering pretty cloſe together; ſee *Plate* III. *Fig.* 6. and 37. Of this Sort is the *Bean*, *Pea*, *Vetch*, &c.

Flos perſonatus, i. e. a perſonated Flower, that is, an irregular monopetalous Flower, whoſe upper Part reſembles the Beaks of Fowls, as in *Plate* III. *Fig.* 7 and 27. Of this Kind is the *Snapdragon*, *Toad-flax*, &c.

Flos urceolatus, or pitcher-ſhap'd Flower; of this Sort is the *Arbutus*, *Whortle-berry*, &c. See *Plate* III. *Fig.* 24.

Flos petalodes, i. e. a petalous Flower, that is, a Flower whoſe Organs of Generation are ſurrounded with Leaves, as in *Plate* III. *Fig.* 13.

Flos polypetalus, i. e. a polypetalous Flower, that is, a Flower compoſed of ſeveral Leaves. When theſe agree in Figure and Poſition, it is called a regular polypetalous Flower; but when the Petals do not agree in Figure and Poſition, it is called an irregular polypetalous Flower.

Flos radiatus, i. e. a radiated Flower, conſiſts of two Parts, the *Disk*, ſee *Plate* III. *Fig.* 10. which is an Aggregate of Florets forming a plain Surface, and the Rays (See *Plate* III. *Fig.* 10.) which are ſeveral Semi-florets ſet round the *Disk*, in form of a Star. Theſe are called radiated diſcous Flowers; but thoſe which have no ſuch Ray, are called naked diſcous Flowers.

Flos roſaceus, i. e. a roſe-ſhap'd Flower, that is, a Flower conſiſting of four or more Petals, which are placed circularly in form of a Roſe, as in *Plate* III. *Fig.* 14.

Flos ſcorpioides, that is, when the Flowers are ranged on one Side of the Pedicle, which twiſts at the Top in form of a Scorpion's Tail; of this Sort is the *Heliotropium*, &c.

Flos ſemifloſculoſus, i. e. a ſemifloſculous Flower, this is compoſed of ſeveral Semiflorets, included in one common *Calyx*.

Flos ſpicatus, i. e. a ſpiked Flower, is that whoſe Flowers are ſet thick on the Pedicle, is ſuch a manner as to form an acute Cone.

Flos ſtamineus, i. e. a ſtamineous Flower, is that which is compoſed of many Chives, included in a *Calyx*, having no Petals; of this Sort is the *Biſtort*, *Sparganium*, &c.

Flos ſterilis, barren Flowers; theſe have no Embryo adhering to them, ſo are called male Flowers, and falſe Flowers; of this Kind is the *Melon*, *Gourd*, &c.

Flos verticillatus, that is, a whorle-ſhap'd Flower; theſe Flowers grow cloſely united, ſurrounding the Stalk at the ſeveral Joints.

Flos umbellatus, i. e. an umbellated Flower, is when the Extremity of the Stalk or Branch is divided into ſeveral Pedicles or Rays, beginning from the ſame Point, and opening in ſuch a manner as to form a kind of inverted Cone, like an *Umbrella*. When the Pedicles into which the Stalk is divided are ſubdivided into others of the ſame Form, upon which the Flowers are diſpoſed; the firſt Order is called Rays, the ſecond Pedicles. That Umbel which conſiſts of Pedicles only, is called a ſimple Umbel; that which is compoſed both of Rays and Pedicles, is called a compound Umbel.

Folium, a Leaf, is a Part of a Plant, extended into Length and Breadth, in ſuch a manner as to have one Side diſtinguiſhable from the other. This is called in *Latin Folium*, to diſtinguiſh it from the Leaf of a Flower, which is called *Petalum*.

Folium ſimplex, a ſimple Leaf, is that which is not divided to the Middle, as in *Plate* I. *Fig.* 1, 2, 3, 4 and 5.

Folium compoſitum, a compound Leaf, is that which is divided into ſeveral Parts, each reſembling a ſimple Leaf; ſee *Plate* II. *Fig.* 20 and 21.

Folium digitatum, a digitated Leaf, is a compound Leaf divided into ſeveral Parts, all of which meet together at the Tail ſo as to reſemble a Hand; ſee *Plate* II. *Fig.* 14 and 15.

Folium trifoliatum a trifoliated Leaf, is a digitated Leaf conſiſting of three Fingers, as in *Plate* II. *Fig.* 18.

Folium trilobatum a trilobated Leaf, conſiſts of three obtuſe Lobes, which are not divided to the Bottom; ſee *Plate* II. *Fig.* 17.

Folium heptafoliatum, a heptafoliated Leaf, is a digitated Leaf conſiſting of ſeven Fingers; ſee *Plate* I. *Fig.* 10.

Folium quinquefoliatum, a quinquefoliated Leaf, is a digitated Leaf conſiſting of five Fingers; ſee *Plate* II. *Fig.* 15.

Folium pennatum, a pennated Leaf, is a compound Leaf divided into ſeveral Parts, each of which is called a Lobe, placed along the middle Rib, either alternately, (as in *Plate* II. *Fig.* 22.) or by Pairs (as in *Plate* II. *Fig.* 21.) When the middle Rib is terminated by an odd Lobe, (as in *Fig.* 21.) it is called an unequal pennated Leaf; and when it is not terminated by an odd Lobe, (as in *Fig.* 20.) it is termed an equal pennated Leaf. When the Lobes are all nearly of the ſame Form and Bigneſs, it is called an uniform pennated Leaf; when they are not ſo, it is termed difform.

Folium alatum, a winged Leaf, is, as it were, compoſed of ſeveral pennated Leaves.

Folium ramoſum, a ramoſe Leaf, is that which is ſtill farther divided than the winged Leaf, as in the common or female Fern.

Cauda, the Tail of a Leaf, is a Production of the middle Rib, and connects the Leaf with the Stalk, after the manner of a Pedicle; when the middle Rib has an Appendix of the Leaf running along it, it is often called a winged Leaf, ſee *Plate* I. *Fig.* 12.

Folium integrum, an intire Leaf, is that which has no Diviſion on the Edges, as in *Plate* I. *Fig.* 5.

Folium angulatum, an angular Leaf, is that whoſe Margin is cut into ſeveral Angles, as in *Plate* I. *Fig.* 4.

Folium auriculatum, an eared Leaf, is that whoſe Baſe next the Pedicle is indented ſomewhat reſembling an Ear, as in *Plate* I. *Fig.* 8.

Folium ſagittatum, a ſpear-ſhap'd Leaf, is that which ends in three ſharp Angles reſembling a Dart, as in *Plate* II. *Fig.* 19.

Folium ſinuatum, a ſinuated Leaf, is that which is cut about the Edges into ſeveral long and large Segments, as in *Plate* I. *Fig.* 11.

Folium ſerratum, a ſerated Leaf, is that which is cut about the Edges into ſeveral acute Segments like the Teeth of a Saw, as in *Plate* I. *Fig.* 6.

Folium crenatum, a crenated Leaf, is that which is cut about the Edges into ſeveral obtuſe Segments, as in *Plate* I. *Fig.* 2.

Folium laciniatum, a jagged Leaf, is that which is cut about the Edges into ſeveral deep Portions, in an irregular Manner, as in *Plate* I. *Fig.* 13.

ADDENDA.

Folio umbilicatum, an umbilicated Leaf, is that which has the Pedicle faſtened to the Backſide of a Leaf, ſo that on the upper Side of the Leaf, there is a ſmall Cavity formed like a Navel, as in *Plate* II. *Fig.* 16.

Folliculus, is a leafy membranaceous Sheath or Covering, which ſurrounds the Fruit or Seed; as the *Winter-cherry*, &c.

Fornicatus or fornicated Petals, are ſuch Flower-leaves as are arched after the manner of the *Galea*, or Creſt, of the *Clary*, *Sage*, &c. as in *Plate* III. *Fig.* 36.

Fructus, a Fruit; by the Word Fruit, are to be underſtood the Seeds of all Plants with their Covering.

Fructus umbilicatus, an umbilicated Fruit, is that which had the other Parts of the Flower growing on its Top when it was an Ovary; they uſually form a Cavity, which is known by the Name of the *Umbilicus* or *Navel*; as in the *Medlar*, *Roſe*, *Pomegranate*, &c.

Frutex, a Shrub, is a Plant with many woody perennial Trunks, ſuch as *Roſes*, *Syringa's*, Spaniſh *Broom*, &c. which divide into ſeveral Stems near the Ground. But the Word is frequently uſed by Gardeners, for all woody Plants of low Growth.

Geniculum, Knots; ſuch Roots and Pods of Plants, are ſaid to be geniculated as are divided into Joints.

Gluma is the Huſk or Chaff of *Corn*.

Habitus plantæ is the outward Appearance of Plants.

Herba, an Herb; by an Herb are meant, all ſuch Plants whoſe Stalks die to the Ground every Year. Thoſe whoſe Roots do not continue longer than one Year, are termed *annual* Plants; thoſe whoſe Roots continue two Years, are termed *biennial Plants*; and thoſe whoſe Roots continue many Years, are termed *perennial Plants*.

Imbricatus; the Leaves or Scales of Plants are ſaid to be imbricated, when they are diſpoſed ſo as lie one on the Edge of the other, after the manner of Tyles on a Houſe.

Internodium is that Part of the Stalks of Plants between the Knots or Joints.

Iulus is a Katkin.

Lanugo, Down; the Seeds of Plants which have a downy Subſtance faſtened to them, which ſerves as Wings to tranſport them, are termed *lanuginous*; as the *Thiſtle*, &c.

Loculamenta are the Cells in the Fruit of Plants, where the Seeds are lodged, which are divided by ſmall Partitions.

Locuſta is the outer Covering of the Flower and Grain of Corn which incloſes the Chaff.

Malleolus, Mallet; the Cuttings of Vines, which are taken with Joints of the old Wood to their Bottom, ſo as to reſemble a little Mallet, are termed *Malleoli*; which Cuttings more certainly take Root than any other, and always make better Plants.

Marginatus, bordered; the Seeds of Plants which have a thin leafy Border round them, are ſaid to be *marginated*; as thoſe of the *Stock-gilliflower*, *Honeſty*, &c.

Mucro, a ſharp Point; thoſe Leaves or Fruits of Plants, which are terminated in a ſharp Point, are termed *mucronated*.

Multicapſular Plants are ſuch as have ſeveral Pods of Seeds ſucceeding each Flower; as the *Celandine*, *Columbine*, &c.

Nucleus, a Kernel, is that Part of the Fruit which is incloſed in a hard Shell; as the Kernel of the *Almond*, *Apricock*, &c.

Oſſiculum, a Shell, is the hard ſtony Covering of Seeds.

Panicula, a Panicle, is a Stalk diffuſed into ſeveral Pedicles, ſuſtaining the Flowers or Fruits; of this Sort are the *Oat*, *Millet*, &c.

Pappus, Down; ſee *Lanugo*.

Pediculus, a Pedicle, is that Part of a Stalk which immediately ſuſtains a Leaf, a Flower, or a Fruit; and in *Engliſh*, is called *Footſtalk*.

Petala, Petals, are the tender fine-coloured Leaves, which are generally the moſt conſpicuous Parts of a Flower; ſo thoſe Flowers which conſiſt of one Leaf, are called *monopetalous* Flowers; thoſe of two Leaves, are called *bipetalous*; thoſe of the three Leaves, *tripetalous*; thoſe of four Leaves, *tetrapetalous*; thoſe of five Leaves, *pentapetalous*; thoſe of ſix Leaves, *hexapetalous*; and thoſe of a greater Number of Leaves, are termed *polypetalous*.

Piſtillum, Pointal or Style, is that Column which occupies the Center of the Flower, riſing on the Top of the Embryo, and is generally ſurrounded with the Chives; ſee *Plate* III. *Fig.* 3. Theſe differ greatly in their Form; for in ſome Flowers they are roundiſh, in others, triangular, oval or ſquare.

Placenta is that Part of the Pod or Huſk of a Plant, to which the Seeds are faſtened, and by which they are nouriſhed till they are ripe.

Planta, a Plant, is an organical Body, deſtitute of Senſe, and ſpontaneous Motion, adhering to another Body in ſuch a manner as to draw from it its Nouriſhment; propagating itſelf by Seed. Under this generical Name, are included *Trees*, *Shrubs*, *Underſhrubs* and *Herbs*.

Polypetalous, many Leaves; thoſe Plants are termed *polypetalous*, whoſe Flowers are compoſed of ſeveral Leaves.

Pomum, an Apple, is generally underſtood to be any fleſhy Veſſel containing more Seeds than one; ſo that all Plants which produce ſuch Fruit, are termed *pomiferous*, i. e. apple-bearing.

Prunum, a Plum, is a fleſhy Veſſel incloſing a hard brittle Shell, in which is one or two Seeds, ſo that all Plants which produce ſuch Fruit, are termed *pruniferous*, i. e. plum-bearing.

Pulpa, Pulp, is the ſoft Part of Fruits which ſurrounds the Seeds, as in the *Tamarind*, *Caſſia*, &c.

Pyramidatus, pyramidal; thoſe Flowers or Fruits which grow in form of a Pyramid, are termed *pyramidal*.

Racemus, a Cluſter, is a Stalk divided or branched into ſeveral Pedicles, ſuſtaining the Flowers or Fruits thick ſet together (as in the *Vine*, *Currant*, &c.): the firſt of theſe Conditions diſtinguiſhes it from a Spike; the laſt from a Panicle.

Radix, a Root, is that Part of a Plant by which it naturally receives its Nouriſhment. Theſe are of different Forms and Contextures, ſome of them being fibrous, others fleſhy or woody.

Radix fibroſa, a fibrous Root, is that which conſiſts only of ſmall Fibres like Hairs: of this Sort is *Graſs*, *Corn*, &c.

Radix tuberoſa, a tuberous Root, is that which conſiſts of an uniform fleſhy Subſtance, and is generally of a roundiſh Figure: of this Sort is the *Sow-bread*, &c.

Radix bulboſa, a bulbous Root, is that which conſiſts of ſeveral Coats involving one another, or of ſeveral Scales lying one over another. The firſt of theſe is called a tunicated Root; of this Sort are the *Onion*, *Tulip*, *Hyacinth*, &c. (from whence the *French* call all theſe Sorts of Roots *Onions*;) the laſt is called a ſquamous (or ſcaly) Root; of this Sort are the *Lily*, *Martagon*, &c.

Radix teſticulata, a teſticulated Root, is a double tuberous Root; for it conſiſts of two Knobs reſembling a pair of Teſticles; of this Sort are ſome of the *Orchis's*.

Radix palmata, a handed Root, is a tuberous Root, divided, as it were, into ſeveral Fingers, ſo as to reſemble a Hand; of this Sort is the *Handed-orchis*.

Radix aſphodeli, an aſphodel Root, is that which is compoſed of ſeveral oblong fleſhy Knobs; of this Kind are the *Kingſpear*, *Day-lily*, &c.

Radix granuloſa, a granulous Root, is a Kind of grumous Root, conſiſting of many ſmall fleſhy Knobs, reſembling Grains of *Corn*; of this Kind is the *white Saxifrage*.

Radix grumoſa, a grumous Root, is that which conſiſts of many oblong fleſhy Knobs, joined to one Centre at the Top; of this Sort is the *Ranunculus*.

Ramus, a Branch, is the Diviſion of a Stalk; in Trees it is often called a Bough.

Semen, a Seed, is that Part of a Plant which is committed to the Earth, in order to obtain a Plant of the like Kind with its Parent Plant, which produced it.

Semen, a Seed, is a Body perfected by the mutual Operation of both Sexes; containing the Rudiment of ſuch Plant as that from which it was taken; ſo may properly be judged to be analogous to the Egg of an oviparous Animal.

Semen nudum, a naked Seed, is that which has no Covering beſide the Empalement remaining upon it till the Time of Vegetation.

Semen pappoſum, a downy Seed, is that which has a downy Subſtance like Wool faſtened to it, by which it is tranſported in the Air to a great Diſtance from the Parent-plant.

Siliqua, a Pod, is a long flat or round membranaceous Veſſel, containing one or two Rows of Seeds.

Spica, a Spike, is a Part of a Stalk thick-ſet with Flowers or Fruit, in ſuch a manner as to form an acute Cone.

Stamina, or Chives, are thoſe ſlender Threads which en-pl 1

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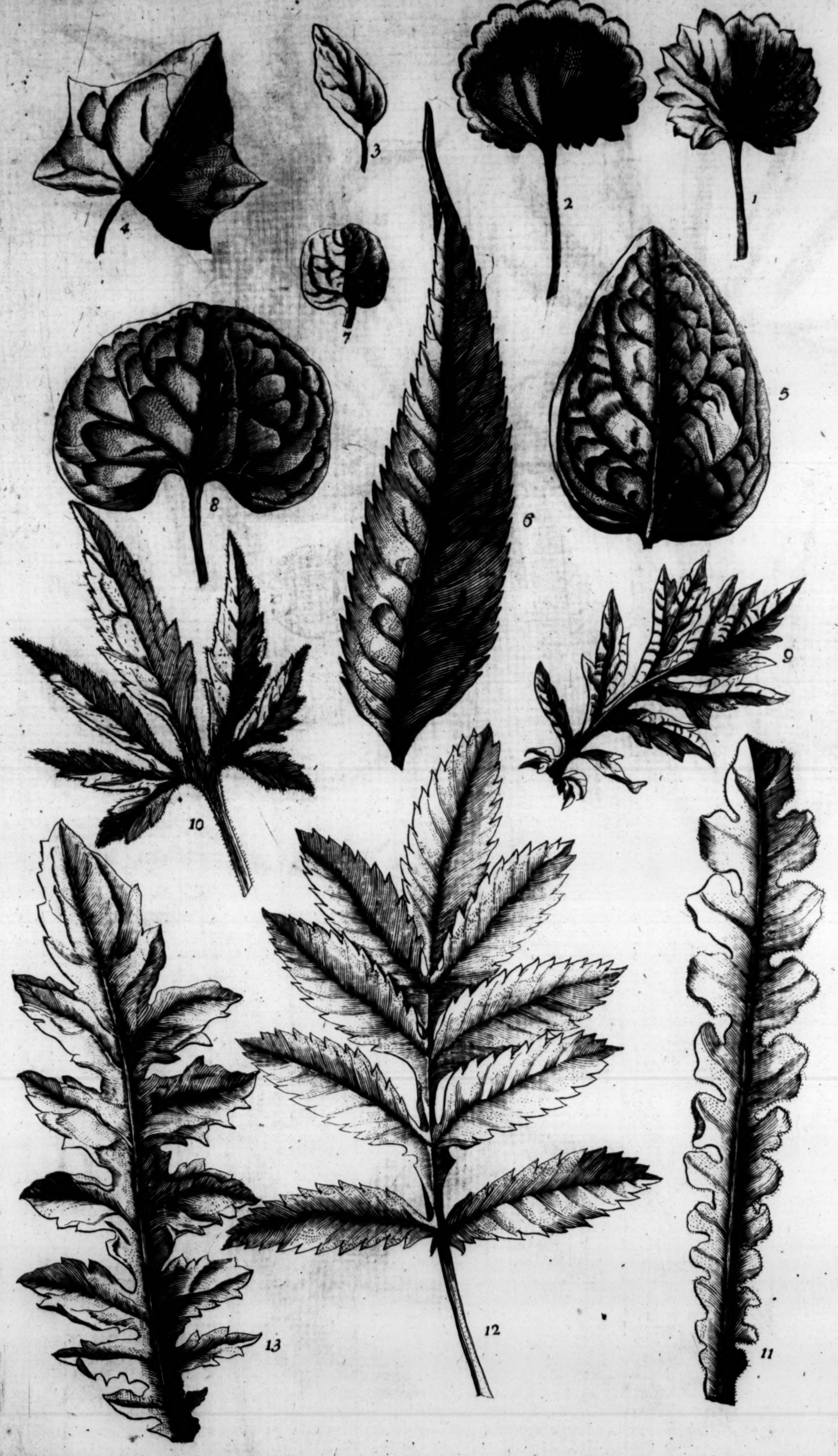
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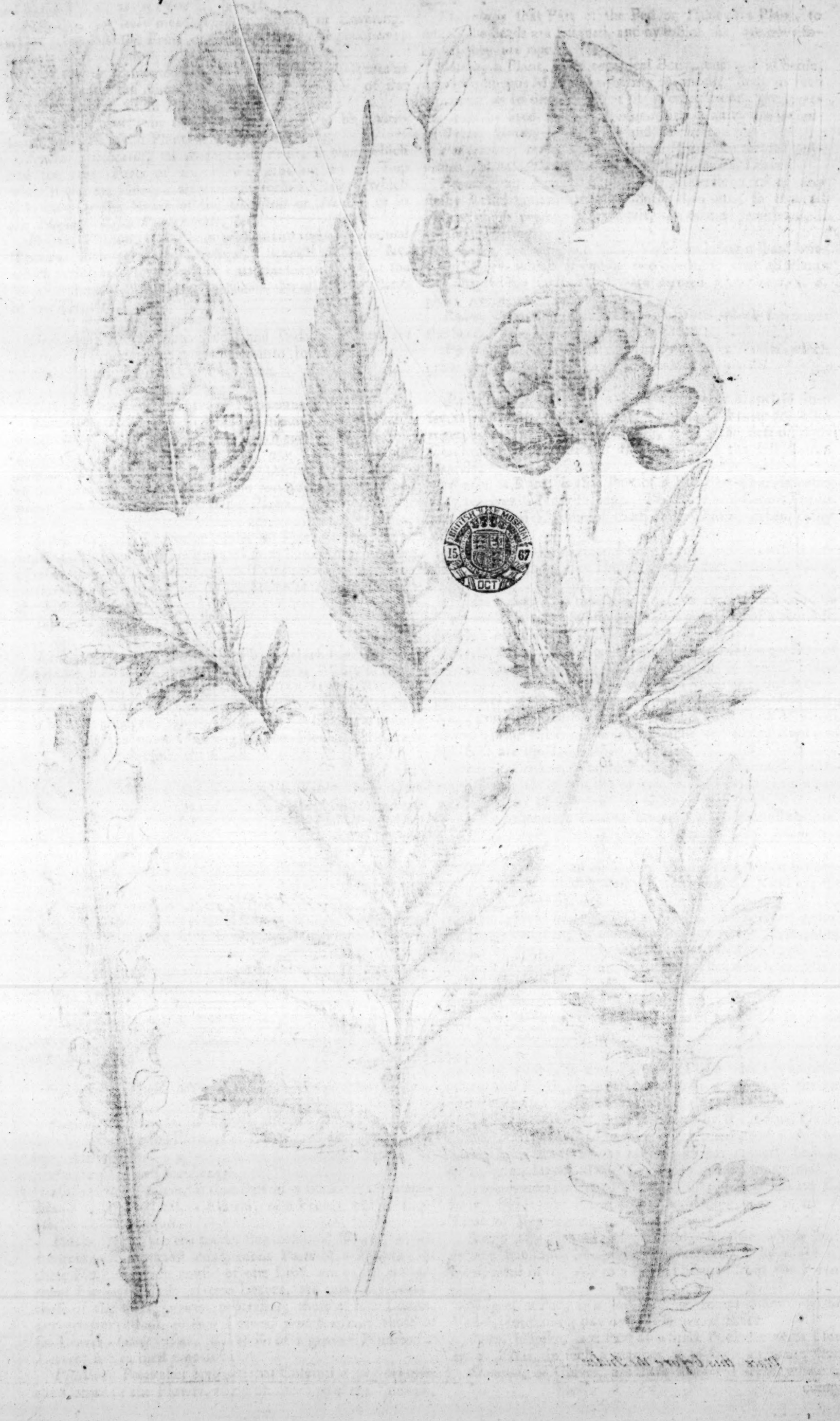

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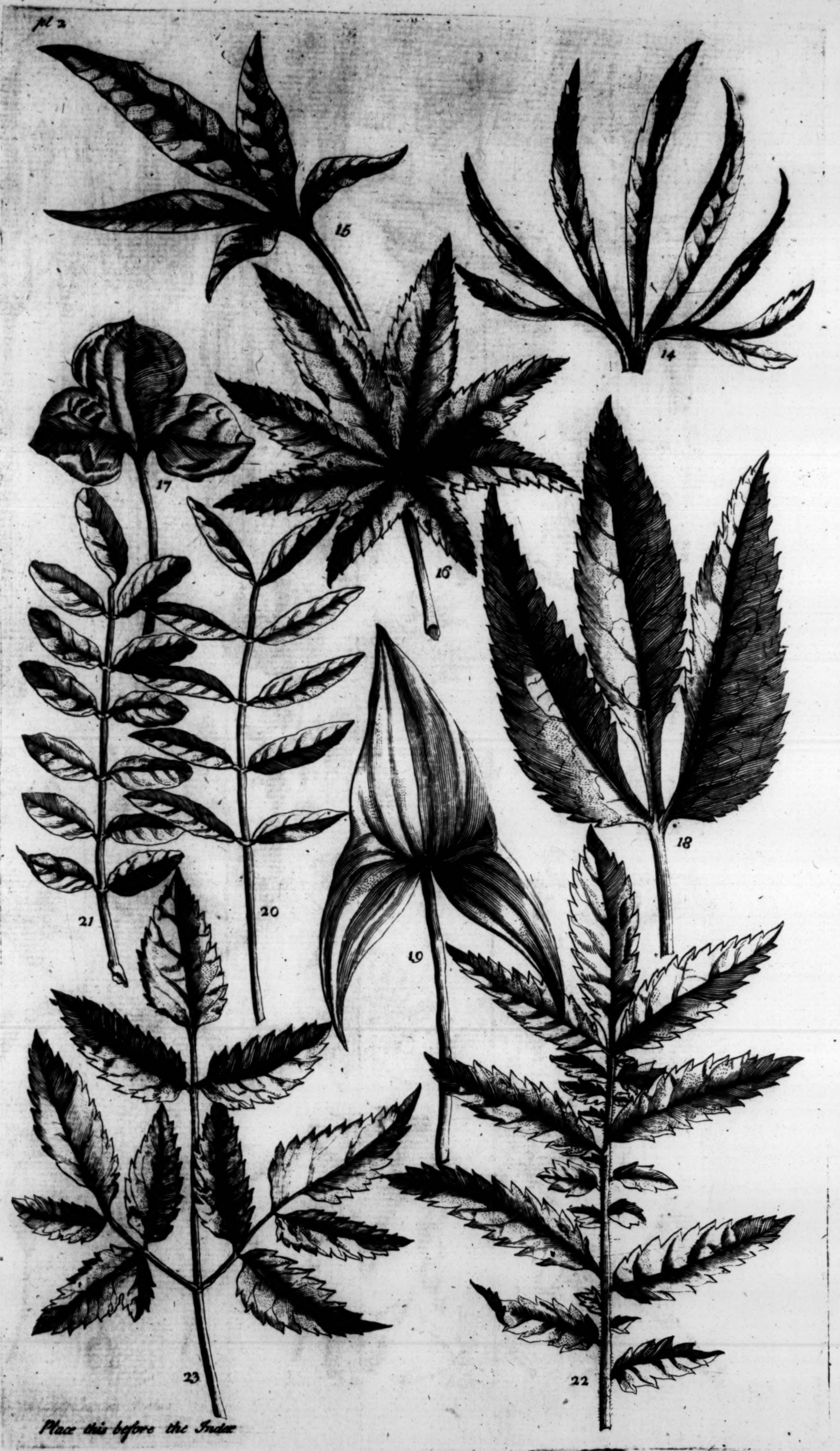
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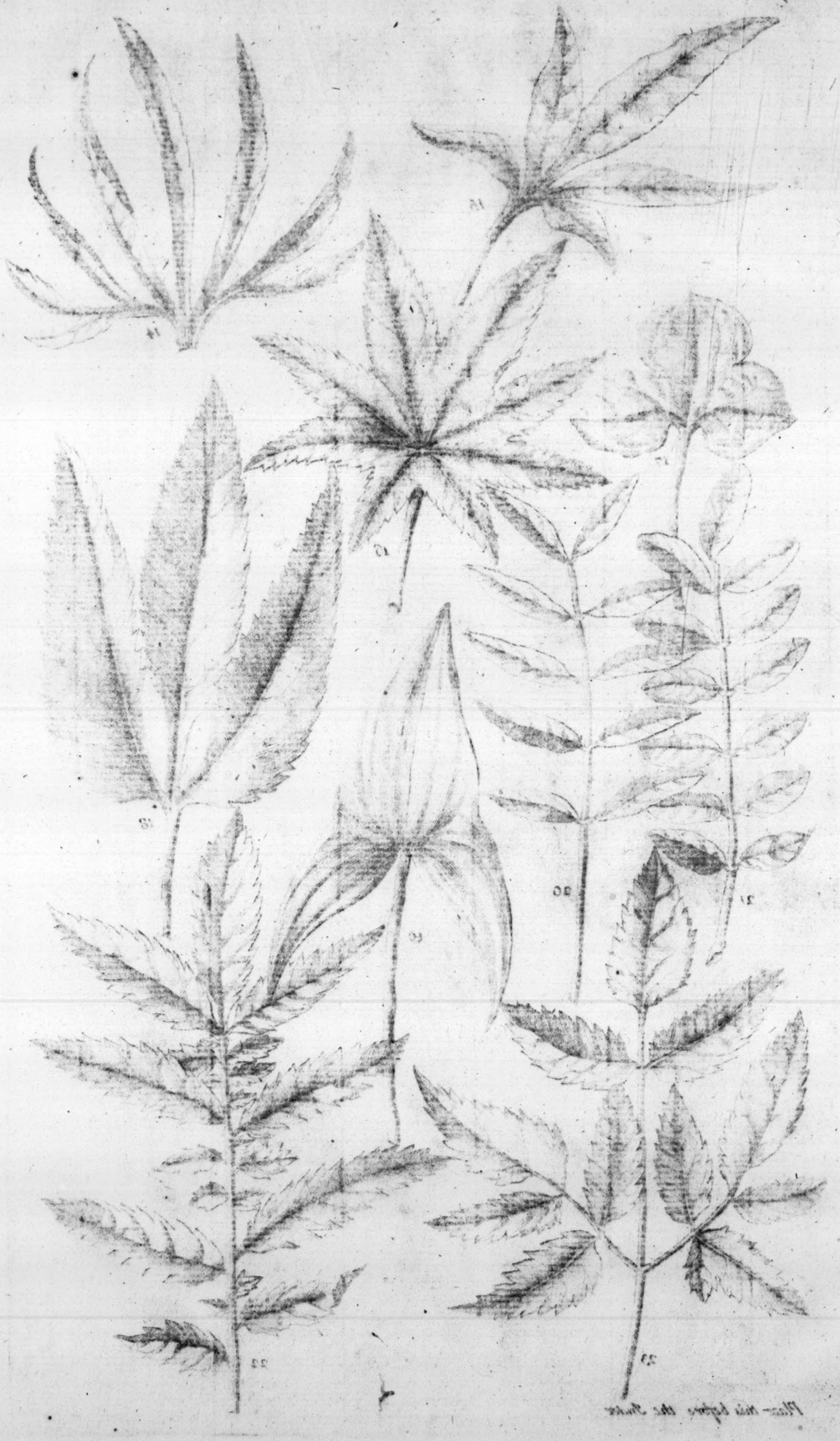

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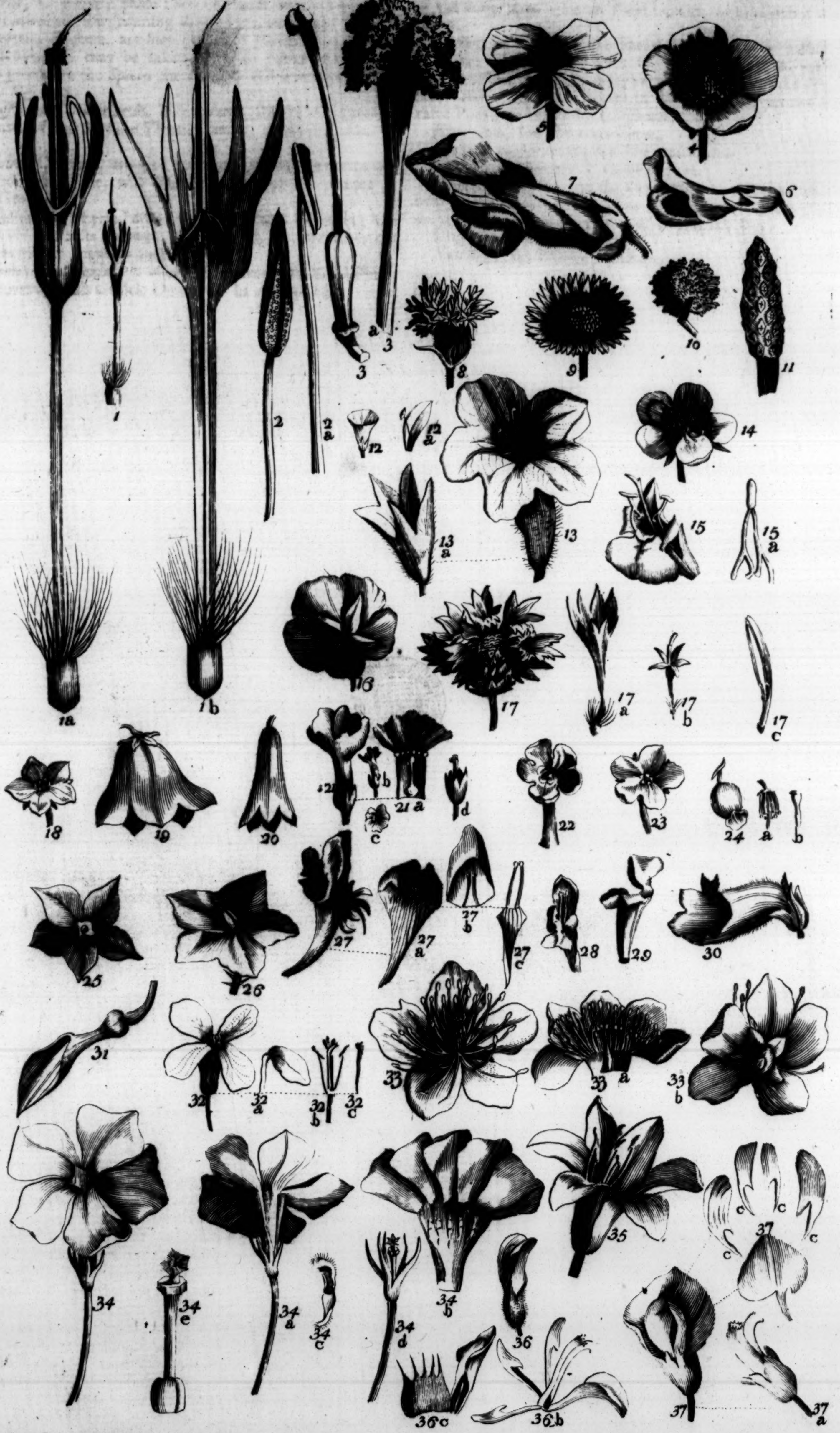
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ADDENDA.

compaſs the *Style* in the Centre of Flowers, and ſupport the Apices or Summits which contain the male Duſt.

Strobilus is the Cone or Fruit of the *Pine-tree*.

Striæ, Channels; thoſe Parts of Plants which have ſmall longitudinal Furrows running along them, are termed *ſtriated*.

Stolones, Suckers, are ſuch Shoots of Plants as ariſe from the Root, and may be taken off with Fibres to them, ſo as to propagate the *Species* thereby; of this Sort is the *Philbert*, *Fig*, &c.

Suffrutex, Underſhrub, is a woody Plant, not gemmiparous; of this Sort are *Thyme*, *Savage*, *Lavender*, &c.

Talea, Cuttings, are ſuch Parts of a Branch, as when cut off from the Tree, will take Root, if they are planted in the Ground.

Thyrſus, a Thyrſe, differs from a Spike, in having the Flowers or Fruits ſet more looſely on it, ſo that there are Spaces viſibly between them.

Tomentum, Flocks, is when the Leaves or Stalks of Plants are covered with a thick Down, as in *Mullein*, &c.

Tracheæ are the Air-veſſels in Plants.

Turiones, Buds, are the future Shoots of Plants, which being inoculated into a proper Stock, will produce a Tree of the ſame Kind with its Parent-plant, from which it was taken.

Vagina, or *Theca*, is the Sheath or Covering of a Bud.

Valvæ, Valves, the Sides of the Pod or Seed-veſſel, which, when they open lengthways in two Parts like *Muſcles*, *Cockles*, and ſuch Kinds of Shell-fiſh, are termed bivalve Pods; as in the *Stockgilliflower*.

Verticillum, ſee *Flos verticillatus*.

Vexillum or Standard, ſee *Flos papilionaceus*.

Vimen is the flexible Shoot of a Tree.

Viticulæ, Runners, are the ſlender Shoots of Plants, which trail on the Ground, and emit Roots at their Joints ſo as to propagate; as in *Strawberries*, *Cinquefoil*, &c.

Umbella, ſee *Flos umbellatus*.

Umbilicus, ſee *Fructus umbilicatus*.

A GENE-

A GENERAL INDEX OF THE ENGLISH *Names of all the* PLANTS *which are mentioned in this* DICTIONARY, *referring to the* LATIN *Names under which they are treated.*

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A

Abele-tree, *ſee* Populus alba
Acacia, the true, *ſee* Acacia
Acacia, the Virginian, *ſee* Pſeudoacacia
Aconite, *or* Wolfſbane, *ſee* Aconitum
——Winter, *ſee* Aconitum hyemale
Adams apple, *ſee* Aurantium, *or* Muſa
Adderſwort, *or* Snakeweed, *ſee* Biſtorta
Adders-tongue, *ſee* Ophioglоſſum
Adonis flower, *ſee* Adonis
African Marygold, *ſee* Tagetes
Agnus caſtus, *or* Chaſte-tree, *ſee* Vitex
Agrimony, *ſee* Agrimonia
——Baſtard, *ſee* Agrimonoides
——Dutch, *ſee* Eupatorium
Agrimony Hemp, *ſee* Bidens
Ague-tree, *or* Saſſafras, *ſee* Cornus
Alder-tree, *ſee* Alnus
——Berry-bearing, *ſee* Frangula
Alecoſt, *or* Coſtmary, *ſee* Balſamita
Alehoof, *or* Ground-Ivy, *ſee* Chamæclema
Alexanders, *or* Aliſſanders, *ſee* Smyrnium
Alleluja, *or* Wood-ſorrel, *ſee* Oxys
Allheal, *ſee* Panax
——Clowns, *ſee* Sideritis
Alleygator Pear-tree, *ſee* Perſea
Alkanet, *ſee* Anchuſa
All-ſpice, *ſee* Myrtus
Almond-tree, *ſee* Amygdalus
——the Dwarf, *ſee* Perſica
Aloes, *ſee* Aloe
——Water, *ſee* Aloides
Amaranth, *ſee* Amaranthus
Amaranth Globe, *ſee* Amaranthoides
Amber-liquid, *ſee* Styrax
Amber-tree, *ſee* Frutex ambram ſpirans
Ambroſia, *ſee* Chenopodium
Ameos, *or* Biſhopſweed, *ſee* Ammi
Amomum Plinii, *ſee* Solanum
Amoris Pomum, *ſee* Lycoperſicon
Anacardium, *ſee* Acajou
Anemony, *ſee* Anemone
——the Wood, *ſee* Anemonoides
Angelica
——the Berry-bearing, *ſee* Aralia
——the Tree, *ſee* Aralia
Aniſe, *ſee* Aniſum
Anotto, *ſee* Mitella
Apple, *ſee* Malus
——the Mad, *ſee* Melongena
Apple of Love, *ſee* Lycoperſicon
——the Cuſtard, *ſee* Guanabanus
——the male Balſam, *ſee* Momordica
——the Paradiſe, *ſee* Malus
——the Sweet, *ſee* Guanabanus
——the Sour, *ſee* Guanabanus
——the Star, *ſee* Guanabanus
——the Fig, *ſee* Malum
——the Thorn, *ſee* Stramonium
Apricock, *ſee* Armeniaca
Archangel, *ſee* Lamium
Arrach, *or* Orrach, *ſee* Atriplex *and* Chenopodium
Arrow-root, *ſee* Maranta
Arſe-ſmart, *ſee* Perſicaria
Artichoke, *ſee* Cinara
Aſarabacca, *ſee* Aſarum
Aſh-tree, *ſee* Fraxinus
Aſh, the Mountain, *ſee* Sorbus
Aſh, the Spaniſh, *vide* Arbor Americana, *&c.*
Aſparagus, *or* Sperage, *ſee* Aſparagus
Aſpen-tree, *ſee* Populus Libyca
Aſphodel, *ſee* Aſphodelus
Aſphodel-lily, *ſee* Lilio-aſphodelus
Avens, *ſee* Caryophyllata
Avocada-pear, *ſee* Perſea
Ax-vetch, *ſee* Securidaca
Azarole, *ſee* Meſpilus

B

Balm of Gilead-Fir, *ſee* Abies
Balſamine, Female, *ſee* Balſamina
——Male, *ſee* Momordica
Balſam-tree, *ſee* Terebinthus
Balſam of Capevi, *ſee* Copaiba
Banana, *ſee* Muſa
Bane-berries, *ſee* Chriſtophoriana
Barbados, flower-fence, *ſee* Poinciana
Barbados Cherry, *ſee* Malpighia
Barley, *ſee* Hordeum
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Graſs-vipers, *ſee* Scorzonera
Gray-mill, *or* Gromil, *ſee* Lithoſpermum
Green-winter, *ſee* Pyrola
Ground-ivy, *ſee* Chamæclema
Ground-pine, *ſee* Chamæpytis
——— the ſtinking, *ſee* Camphorata
Groundſel, *ſee* Senecio
——— African, *ſee* Cacalianthemum
Guava, *or* Guajava, *ſee* Gujava
Guiney-corn, *ſee* Milium
——— Henweed, *ſee* Petiveria
——— Wheat, *ſee* Mays
Gum-ſuccory, *ſee* Chondrilla

H

Hair-bells, *ſee* Hyacinthus
Hard-beam, *ſee* Carpinus
Hares-ear, *ſee* Bupleurum
Haresfoot-trefoil, *ſee* Trifolium
Hares-lettuce, *ſee* Sonchus
Hares-ſtrong, *ſee* Peucedanum
Harmel, *ſee* Harmala
Hartwort, *ſee* Tordylium
——— of Ethiopia, *ſee* Bupleurum
Hartshorn, *ſee* Coronopus
Harts-tongue, *ſee* Lingua Cervina
Hatchet-vetch, *ſee* Securidaca

I N D E X.

Hawkweed, *ſee* Hieracium
Hawthorn, *ſee* Meſpilus
Hazel, *ſee* Corylus
—— Witch, *ſee* Ulmus
Hearts-eaſe, *ſee* Viola tricolor
Heath, *ſee* Erica
——— the black berried, *ſee* Empetrum
——— the low Pine, *ſee* Coris
Hedgehog-thiſtle, *ſee* Melocactus
Hedge-hyſſop, *ſee* Digitalis
Hedge-muſtard, *ſee* Eryſimum
Hellweed, *ſee* Convolvulus
Hellebore, the black, *ſee* Helleborus
——— the baſtard, *ſee* Helleborine
——— the white, *ſee* Veratrum
——— the greateſt black, *ſee* Helleborus
Helmet-flower, *ſee* Caſſida
Hemlock, *ſee* Cicuta
—— baſtard, *ſee* Cicutaria
—— Water, *ſee* Phellandrium
Hemp, *ſee* Cannabis
—— Agrimony, *ſee* Eupatorium
—— Water, *ſee* Bidens
Henbane, *ſee* Hyoſcyamus
——— the yellow, *ſee* Nicotiana
Herb-bennet, *ſee* Caryophyllata
——— Chriſtopher, *ſee* Chriſtophoriana
——— Gerard, *ſee* Angelica
——— of Grace, *ſee* Ruta
——— Paris, *ſee* Herba Paris
——— Robert, *ſee* Geranium
——— Trefoil, *ſee* Trifolium
——— Trinity, *ſee* Viola tricolor
——— True-love, *ſee* Herba Paris
——— Two-pence, *ſee* Nummularia
——— Willow, *ſee* Salicaria
Hercules's All-heal, *ſee* Paſtinaca
Hermodactyl, *ſee* Hermodactylus
Hig-taper, *ſee* Verbaſcum
Hogs-fennel, *ſee* Peucedanum
Hollow-root, *ſee* Fumaria
Hollyhock, *ſee* Malva roſea
Holly-tree, *ſee* Aquifolium
Holly-knee, *ſee* Ruſcus
—— the Sea, *ſee* Eryngium
Holm-oak, *ſee* Ilex
Holy thiſtle, *ſee* Cnicus
—— roſe, *ſee* Ciſtus
Honeyſuckle, *ſee* Caprifolium
—— French, *ſee* Hedyſarum
—— trumpet, *ſee* Periclymenum
—— upright, *ſee* Chamæceraſus
Honeſty, *ſee* Lunaria
Honey-flower, *ſee* Melianthus
Honey-wort, *ſee* Cerinthe
Honewort, *ſee* Selinum
Hops, *ſee* Lupulus
Hop-hornbeam, *ſee* Carpinus
Horehound, *ſee* Marrubium
—— baſe, *ſee* Stachys
—— baſtard, *ſee* Marrubiaſtrum
—— black, *ſee* Ballote
—— water, *ſee* Lycopus
Hornbeam, *ſee* Carpinus
Horned-poppy, *ſee* Glaucium
Horſe-cheſnut, *ſee* Hippocaſtanum
—— ſcarlet, *ſee* Pavia
Horſe-mint, *ſee* Mentha
Horſe-radiſh, *ſee* Cochlearia
Horſe-ſhoe-vetch, *ſee* Ferrum Equinum
Horſe-tail, *ſee* Equiſetum
Horſe-tongue, *ſee* Ruſcus
Horns *and* Hedgehog, *ſee* Medica
Hoſe-in-hoſe, *ſee* Primula veris
Hounds-tongue, *ſee* Cynogloſſum
Houſleek, *ſee* Sedum
Humble-plant, *ſee* Mimoſa
Hyacinth *ſee* Hyacinthus
——— grape, *ſee* Muſcari
——— ſtarry, *ſee* Hyacinthus ſtellatus
Hyſſop, *ſee* Hyſſopus
—— hedge, *ſee* Digitalis

I

Jacinth, *ſee* Hyacinthus
Jack-by-the-hedge, *ſee* Thlaſpi
Jack-in-a-box, *ſee* Hernandia
Jacob's-ladder, *ſee* Polemonium
Jalap, *ſee* Convolvulus
Jaſmine, *ſee* Jaſminum
—— tree, *ſee* Plumeria
—— Perſian, *ſee* Lilac
—— ſcarlet, *ſee* Bignonia
Jeruſalem-cowſlip, *ſee* Pulmonaria
—— ſage, *ſee* Phlomis
Jeſuits-bark, the falſe, *ſee* Ageratum
Jews-mallow, *ſee* Corchorus
Immortal-eagle-flower, *ſee* Balſamina
———flower, *ſee* Elichryſum
Indian-arrow-root, *ſee* Maranta
———creſs, *ſee* Naſturtium
———corn, *ſee* Mays
———fig, *ſee* Opuntia
———god-tree, *ſee* Ficus
——reed, *ſee* Cannacorus
Indigo, *ſee* Anil
Job's-tears, *ſee* Lachryma Jobi
St. John's bread, *ſee* Siliqua edulis
St. John's-wort, *ſee* Hypericum
Sweet-John's, *ſee* Caryophyllus barbatus
Jonquil, *ſee* Narciſſus
Iron-wood, *ſee* Lauro-affinis
Ironwort, *ſee* Sideritis
Jucca, *ſee* Yucca
Judas-tree, *ſee* Siliquaſtrum
Jujube, *ſee* Ziziphus
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Juniper, *ſee* Juniperus
Jupiter's-beard, *ſee* Barba Jovis
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K

Kidney-bean, *ſee* Phaſeolus
———tree, *ſee* Phaſeoloides
Kidney-vetch, *ſee* Vulneraria
Kidney-wort, *ſee* Geum *and* Cotyledon
Kings-ſpear, *ſee* Aſphodelus
Knapweed, *ſee* Jacea
Knee-holm, *ſee* Ruſcus
Knee-holly, *ſee* Ruſcus
Knot-berries, *ſee* Chamæmorus
Knot-graſs, *ſee* Polygonum

L

Laburnum, *ſee* Cytiſus
Ladies-bed-ſtraw, *ſee* Gallium
——bower, *ſee* Clematitis
——comb, *ſee* Scandix
——mantle, *ſee* Alchimilla
——ſeal, *ſee* Tamnus
——ſmock, *ſee* Cardamine
——Slipper, *ſee* Calceolus
——traces, *ſee* Orchis
Ladder-to-heaven, *ſee* Polygonatum
Lakeweed, *ſee* Perſicaria
Lambs-lettuce, *ſee* Valerianella
Larch-tree, *ſee* Larix
Lark-ſpur, *ſee* Delphinium
Laſerwort, *ſee* Laſerpitium
Lavender, *ſee* Lavendula
———cotton, *ſee* Santolina
———ſea, *ſee* Limonium
———French, *ſee* Stœchas
Laurel, *ſee* Lauroceraſus
———Alexandrian, *ſee* Ruſcus
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———ſpurge, *ſee* Thymelea
Lauruſtinus, *ſee* Tinus
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———lambs, *ſee* Valerianella
Life-everlaſting, *ſee* Elichryſum
Lily, *ſee* Lilium
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——daffodil, *ſee* Lilio-narciſſus
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——hyacinth, *ſee* Lilio-hyacinthus
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——St. Brunos, *ſee* Liliaſtrum
——the Superb, *ſee* Methonica
——water, *ſee* Nymphæa
Lime-tree, *ſee* Tilia
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——tail, *ſee* Leonurus
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Liquorice, *ſee* Glycyrrhiza
———vetch, *ſee* Orobus
———wild, *ſee* Aſtragalus
Live-ever, *ſee* Anacampſeros
Live-in-idleneſs, *ſee* Viola tricolor
Liverwort, *ſee* Lichen
———noble, *ſee* Hepatica
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Locuſt-tree, *or* St. John's-bread, *ſee* Siliqua edulis
———baſtard, *ſee* Courbaril
———Virginian, *ſee* Acacia
Logwood, *ſee* Campechiana
London-pride, *ſee* Geum
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Looſeſtrife, *ſee* Lyſimachia.
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Love-apple, *ſee* Lycoperſicon
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M

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———petty, *ſee* Rubeola
Mad-apple, *ſee* Melongena
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Mahogany, *ſee* Arbor Americana, *&c.*
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———Indian, *ſee* Malvinda
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———Venice, *ſee* Ketmia
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Mandrake, *ſee* Mandragora
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O

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P.

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